



CITY OF CRESTVIEW FLORIDA

VINEYARD VILLAGE SITE IMPROVEMENTS WEST FIELD AVENUE

PREPARED FOR:

Mayor JB Whitten
Councilor Precinct 1 – Joe Blocker
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Tim Bolduc, City Manager
Jayce Vanderford, Project Manager

NOVEMBER 2023

Prepared By:

AHE ALDAY-HOWELL
ENGINEERING, INC.

4100 S. Ferdon Blvd. Ste B2
Crestview, FL 32536
(850) 634-6084

Bid Set # _____

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Unless otherwise indicated or modified on the plans or specifications all work shall be in accordance with the City of Crestview Engineering Standards Manual and the Florida Department of Transportation FY2023-2024 Standard Specifications for Road and Bridge Construction, supplements, and special provisions there to.

DRAWINGS

COMPONENTS OF CONTRACT PLANS SET
BOUNDARY AND TOPOGRAPHIC SURVEY
BID PLANS (CIVIL)

City of Crestview
23-12-06-PS
Vineyard Village Site Improvements

ADVERTISEMENT FOR BIDS

Sealed Bids for the construction of **Vineyard Village Site Improvements** will be received by the **Crestview City Council** at city hall located at **198 N. Wilson Street, Crestview, FL**, until **2:00 p.m.** local time on **December 6, 2023**, at which time the Bids received will be “publicly” opened and read. The Project consists of approximately 230 tons of asphalt pavement, 2,053 square yards of base, and 1,661 LF of pipe (water/sewer/storm), 8 mitered end sections, 2 manholes, 28 water services, 786 LF of curb, and 8 inlets.

A Non-mandatory Pre-Bid Meeting will be held **November 16, 2023** at **10:00 am** local time, Crestview City Hall, Council Chambers, 198 N. Wilson St., Crestview, FL 32536.

Bids will be received for a single prime Contract. Bids shall be on a lump sum basis and awarded based on the lump sum of the unit prices.

The Issuing Office for the Bidding Documents is:

City of Crestview - City Hall
Attn: City Clerk – Maryanne Schrader
PO Box 1209
198 N Wilson Street
Crestview, FL 32536
Ph. (850) 682-1560
Fax: (850) 682-8077
Email: cityclerk@cityofcrestview.org

Prospective Bidders may examine the Bidding Documents at the Issuing Office on Mondays through Thursdays between the hours of **7 a.m. to 5 p.m.** or Fridays between the hours of **7 a.m. to 11 a.m.** and may obtain copies of the Bidding Documents from the Issuing Office as described below.

Bidding Documents may be obtained from the Issuing Office during the hours indicated above. Bidding Documents are available as portable document format (PDF) files e-mailed free of charge. Alternatively, printed Bidding Documents may be obtained from the Engineer of Record’s Office either via in-person pick-up or via mail, upon Engineer Office’s receipt of payment for the Bidding Documents. The non-refundable cost of printed Bidding Documents is \$ 250 per set, payable to “**Alday-Howell Engineering, Inc.**”, plus a non-refundable shipping charge. Upon Issuing Office’s receipt of payment, printed Bidding Documents will be sent via the prospective Bidder’s delivery method of choice; the shipping charge will depend on the shipping method chosen. The date that the Bidding Documents are transmitted by the Issuing Office will be considered the prospective Bidder’s date of receipt of the Bidding Documents. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda if any, obtained from sources other than the Issuing Office.

Bid security shall be furnished in accordance with the Instructions to Bidders.

Owner: **City of Crestview**
By: **Maryanne Schrader** Title: **City Clerk**
Date: **November 1, 2023**

The City of Crestview reserves the right to accept or reject, in part or in total, any or all proposals and to waive any informalities as deemed in the best interest of the city. All proposals must be marked on the outside of the envelope with the proposer's name, the time and date of the opening. It shall be the bidders' responsibility to ensure that proposals are delivered to the above address at the appointed time.

The City of Crestview, Florida does not discriminate on the basis of race, color, national origin, sex, religion, age, and handicapped status in employment or provision of service.

+ + END OF ADVERTISEMENT FOR BIDS + +

SUGGESTED INSTRUCTIONS TO BIDDERS

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ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office* – The office from which the Bidding Documents are to be issued.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within [5] days of Owner's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:

A. Evidence of Bidder's authority to do business in the state where the Project is located.

B. Bidder's state or other contractor license number, if applicable.

C. Subcontractor and Supplier qualification information; coordinate with provisions of Article 12 of these Instructions, "Subcontractors, Suppliers, and Others."

D. Bidder's underground utility and excavation contractor license number

E. Other required information regarding qualifications

3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or

storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions
 - 1. The Supplementary Conditions identify:
 - a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
 - b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
 - c. reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
 - d. Technical Data contained in such reports and drawings.
 - 2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
 - 3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.
- B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.
- C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

- A. Bidder shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site.
- B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations,

investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

- D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *Owner's Safety Program*

- A. Site visits and work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.05 *Other Work at the Site*

- A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

- A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;
- E. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the

Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

- F. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- G. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;
- H. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
- I. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – INTERPRETATIONS AND ADDENDA

- 6.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than seven days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 6.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

ARTICLE 7 – BID SECURITY

- 7.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of [5%] percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.
- 7.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.
- 7.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.
- 7.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 8 – CONTRACT TIMES

8.01 The number of days within which, or the dates by which, the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 9 – LIQUIDATED DAMAGES

9.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 10 – SUBSTITUTE AND “OR-EQUAL” ITEMS

10.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those “or-equal” or substitute or materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an “or-equal” or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids. Each such request shall comply with the requirements of Paragraphs 7.04 and 7.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer’s decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

10.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

ARTICLE 11 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

11.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

11.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.

11.03 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work:

If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder’s Bid price will be increased (or decreased) by the difference in cost

occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

- 11.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

ARTICLE 12 – PREPARATION OF BID

- 12.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
- B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words “No Bid” or “Not Applicable.”
- 12.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.
- 12.03 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.
- 12.04 A Bid by an individual shall show the Bidder’s name and official address.
- 12.05 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 12.06 All names shall be printed in ink below the signatures.
- 12.07 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 12.08 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 12.09 The Bid shall contain evidence of Bidder’s authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder’s state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 13 – BASIS OF BID

- 13.01 *Lump Sum*
- A. Bidders shall submit a Bid on a lump sum basis as set forth in the Bid Form.

13.02 *Unit Price*

- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.
- B. The “Bid Price” (sometimes referred to as the extended price) for each unit price Bid item will be the product of the “Estimated Quantity” (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding “Bid Unit Price” offered by the Bidder. The total of all unit price Bid items will be the sum of these “Bid Prices”; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.
- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

13.03 *Allowances*

- A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

ARTICLE 14 – SUBMITTAL OF BID

- 14.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.
- 14.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation “BID ENCLOSED.” A mailed Bid shall be addressed to [Maryanne Schrader, City Clerk, PO Box 1209, 198 N. Wilson Street, Crestview, FL 32536].
- 14.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 15 – MODIFICATION AND WITHDRAWAL OF BID

- 15.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.
- 15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.

- 15.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 16 – OPENING OF BIDS

- 16.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 17 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 17.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 18 – EVALUATION OF BIDS AND AWARD OF CONTRACT

- 18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.
- 18.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.
- 18.03 Evaluation of Bids
- A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.
 - B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.
- 18.04 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.
- 18.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 19 – BONDS AND INSURANCE

- 19.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the

Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 20 – SIGNING OF AGREEMENT

20.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. Within ten days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

BID FORM

City of Crestview
Vineyard Village Site Improvements
Alday-Howell Engineering, Inc. Project #22-030

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Maryanne Schrader, City Clerk, City of Crestview

PO Box 1209, 198 North Wilson Street, Crestview, FL 32536

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

<u>Addendum No.</u>	<u>Addendum, Date</u>
_____	_____
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder’s safety precautions and programs.

E. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid

and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

- F. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- G. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- H. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- I. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER’S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. “corrupt practice” means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
 - 2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
 - 4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents. for the following price(s):

UNIT PRICE WORK - VINEYARD VILLAGE					
PAY ITEM NO.	DESCRIPTION	UNIT	EST. QTY.	BID UNIT PRICE	BID PRICE
0101-1	ROADWAY MOBILIZATION	LS	1		
0102-1	MAINTENCE OF TRAFFIC	LS	1		
0104-10-3	SEDIMENT BARRIER	LF	911		
0104-18	INLET PROTECTION SYSTEM	EA	6		
0110-1-1	CLEARING & GRUBBING	AC	1.92		
0110-21	TREE PROTECTION BARRIER	LF	392		
0120-1	REGULAR EXCAVATION	CY	1080		
0120-6	EMBANKMENT	CY	1330		
0160-4	TYPE B STABILIZATION	SY	2053		
0285-704	OPTIONAL BASE GROUP 4	SY	877		
0285-706	OPTIONAL BASE GROUP 6	SY	1176		
0334-1-52	SUPERPAVE ASPHALTIC CONCRETE, TRAFFIC B, PG 76-22	TN	230		
0425-152-1	INLETS, DT BOT, TYPE, C, <10'	EA	3		
0425-5	MANHOLE, ADJUST	EA	1		
0425-10	YARD DRAIN	EA	3		
0430-175-112	PIPE CULVERT OPTIONAL MATERIAL, ROUND, 12" SD	LF	309		
0430-175-115	PIPE CULVERT OPTIONAL MATERIAL, ROUND, 15" SD	LF	317		
0430-175-118	PIPE CULVERT OPTIONAL MATERIAL, ROUND, 18" SD	LF	58		
0430-984-121	MITERED END SECTION, ROUND, 12" SD	EA	1		
0430-984-123	MITERED END SECTION, ROUND, 15" SD	EA	4		

0430-984-125	MITERED END SECTION, ROUND, 18" SD	EA	4		
0519-78	BOLLARDS	EA	3		
0520-1-10	CONCRETE CURB & GUTTER TYPE F	LF	419		
0520-2-100	CONCRETE CURB, RIBBON CURB	LF	369		
0520-8-1	CONCRETE WHEEL STOP	EA	41		
0522-1	CONCRETE SIDEWALK, 4" THICK	SY	657		
0522-2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	200		
0524-1-2	CONCRETE DITCH PAVMENT, NON- REINFORCED, 4"	SY	18.3		
0530-3-3	RIPRAP, RUBBLE, BANK AND SHORE	TN	16.9		
0530-3-4	RIPRAP, RUBBLE, F&I, DITCH LINING	TN	7.2		
0550-10-110	FENCING, TYPE A, 0.0-5.0', STANDARD	LF	660		
0550-10-410	FENCING, WOOD FENCE, 6'	LF	36		
0550-60-112	FENCE GATE, TYPE A, 0-6.1' OPENING	EA	2		
0550-60-412	FENCE GATE, WOOD, 6.1-12.0' OPENING	EA	1		
0570-1	PERFORMANCE TURF (SEED AND MULCH)	SY	853		
0570-1-3	PERFORMANCE TURF (SOD AND SOIL)	SY	574		
0580-1-1	LANDSCAPE COMPLETE, SMALL PLANTS	LS	1		
0580-1-2	LANDSCAPE COMPLETE, LARGE PLANTS	LS	1		
0590-70	IRRIGATION SYSTEM	LS	1		
0700-1-11	SINGLE POST SIGN, F&I, GROUND MOUNT, UP TO 12 SF	EA	4		
0700-1-50	SINGLE POST SIGN, RELOCATE	EA	2		
0711-11-123	THERMOPLASTIC, STANDARD, WHITE, SOLID, 12" FOR CROSSWALK	LF	92		

0711-11-125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE AND CROSSWALK	LF	116		
0711-11-160	THERMOPLASTIC, STANDARD, WHITE, MESSAGE OR SYMBOL	EA	3		
0711-11-421	THERMOPLASTIC, STANDARD, BLUE, SOLID, 6"	LF	120		
0711-16-101	THERMOPLASTIC, STANDARD, WHITE, SOLID, 6"	LF	976		
0711-16-201	THERMOPLASTIC, STANDARD, YELLOW, SOLID, 6"	LF	70		
0751-36-12	BICYCLE RACK, F&I, 2-6 BICYCLES	EA	2		
1050-13-001W	UTILITY PIPE, WATER SERVICE PIPING, F&I, 0-1.9"	LF	1581		
1050-31-204W	UTILITY PIPE, PVC, F&I, WATER, 4"	LF	136		
1050-31-206W	UTILITY PIPE, PVC, F&I, WATER, 6"	LF	360		
1050-31-206G	UTILITY PIPE, PVC, F&I, GRAVITY SEWER, 6"	LF	287		
1050-31-208G	UTILITY PIPE, PVC, F&I, GRAVITY SEWER, 8"	LF	194		
1060-11-211	UTILITY STRUCTURE, BELOW GROUND, F&I, SEWER, 0-6' DIA.	EA	2		
1080-21-100	UTILITY FIXTURE, METER BOX, F&I, UP TO 1"	EA	28		
1080-21-102	UTILITY FIXTURE, METER BOX, F&I, UP TO 2"	EA	2		
1080-22-1015	UTILITY FIXTURE, RPZ BACKFLOW ASSEMBLY, F&I, 1.5"	EA	1		
1080-22-104	UTILITY FIXTURE, RPZ BACKFLOW ASSEMBLY, F&I, 4"	EA	2		
1080-22-106	UTILITY FIXTURE, RPZ BACKFLOW ASSEMBLY, F&I, 6"	EA	1		

1080-23-108	UTILITY FIXTURE - TAPPING SADDLE/SLEEVE, F&I, 8"	EA	2		
1644-116-08	FIRE HYDRANT ASSEMBLY, STANDARD, F&I, 3 WAY, 2 HOSE, 1 PUMPER, 6"	EA	1		
GRAND TOTAL OF ALL UNIT PRICE BID ITEMS				\$	_____

Pay Item Notes:

0102-1 Maintenance of Traffic: Includes payment for all work zone signs, temporary barricades, channelizing devices, portable changeable message signs, detour signs, flagmen and all other items needed to maintain a safe work zone and maintain traffic through the duration of the construction activities.

0110-1-1 Clearing & Grubbing: Includes payment for sawcut needed for asphalt removal as shown in the plans. Also includes cost to remove any remaining structures and all existing utilities that are not to remain in use.

0520-1-10 Concrete Curb & Gutter Type F: Includes payment for drop curb and 18" Modified Type F Curb and Gutter.

0524-1-2 Concrete Ditch Pavement, Non-Reinforced 4": includes payment for concrete emergency spillway and associated skimmer.

0580-1-1 and 0580-1-2 Landscape Complete: Includes payment for mulching the landscape areas within the landscape buffer shown in the plans.

0590-70 Irrigation System: Includes payment for design and installation of entire irrigation system. This includes all pipe, fittings, nozzles, timers/control boxes, valves, etc. Also includes payment for preparation of shop drawings for engineer's review and approval prior to installation.

0700-1-11 Single Post Sign, F&I, Ground Mount, Up to 12 SF: Includes payment for concrete bollards required along with Handicap Parking Stall signage.

1060-11-211 Utility Structure, Below Ground, F&I, Sewer, 0-6' Dia: includes payment for dog-house style sanitary sewer manhole.

1080-21-100 and 1080-21-102: Utility Fixture, Meter Box: Includes payment to furnish and install tapping saddle, corp stop, curb stop, water meter and meter box.

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and the bid award and final payment will be based on the lump sum bid amount. Once awarded, the owner reserves the right to add or deduct from the scope due to budgetary reasons. Those adds or deduction are to be based on the unit prices included in the bid schedule.

Total of Lump Sum = Total Bid Price \$ _____

ARTICLE 6 – TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

- 7.01 The following documents are submitted with and made a condition of this Bid:
- A. Required Bid security;
 - B. List of Proposed Subcontractors;
 - C. List of Proposed Suppliers;
 - D. List of Project References;
 - E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;
 - F. Contractor's License No.: [REDACTED] **[or]** Evidence of Bidder's ability to obtain a State Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;
 - G. Required Bidder Qualification Statement with supporting data; and
 - H. *[List other documents and edit above as pertinent]*

ARTICLE 8 – DEFINED TERMS

- 8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

By:

[Signature] _____

[Printed name] _____

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

Bidder's License No.: _____

(where applicable)

NOTE TO USER: Use in those states or other jurisdictions where applicable or required.

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (*Name and Address*):

SURETY (*Name and Address of Principal Place of Business*):

OWNER (*Name and Address*):

City of Crestview
198 N. Wilson Street,
Crestview, FL 32536

BID

Bid Due Date: December 6, 2023
Vineyard Village Site Improvements

BOND

Bond Number:

Date (*Not earlier than Bid due date*):

Penal sum _____ \$ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

(Seal)
Bidder's Name and Corporate Seal

(Seal)
Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

NOTICE OF AWARD

Date of Issuance:

Owner: City of Crestview

Owner's Contract No.:

23-12-06-PS

Engineer: Alday-Howell
Engineering, Inc.

Engineer's Project No.:
22-030

Project: Vineyard Village

Contract Name: Vineyard
Village Site Improvements

Bidder:

Bidder's Address:

TO BIDDER:

You are notified that Owner has accepted your Bid dated [_____] for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

_____ .
[describe Work, alternates, or sections of Work awarded]

The Contract Price of the awarded Contract is: \$ _____ *[note if subject to unit prices, or cost-plus]*

unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically. *[revise if multiple copies accompany the Notice of Award]*

a set of the Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner [_____] counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security *[e.g., performance and payment bonds]* and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner:

Authorized Signature

By:

Title:

Copy: Engineer

**AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)**

THIS AGREEMENT is by and between Crestview City Council (“Owner”) and
_____ (“Contractor”).

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Vineyard Village Site Improvements

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by Alday-Howell Engineering, Inc.

3.02 The Owner has retained Alday-Howell Engineering, Inc. (“Engineer”) to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Days*

A. The Work will be substantially completed within 180 days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 210 days after the date when the Contract Times commence to run.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, 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 Owner if the Work is not completed on time. Accordingly, instead of

requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner \$ 1,000 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion 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 for each 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.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

- A. For all Work ~~other than Unit Price Work~~, a lump sum of: \$.

All specific cash allowances are included in the above price in accordance with Paragraph 13.02 of the General Conditions.

- ~~B. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item):~~

Unit Price Work					
Item No.	Description	Unit	Estimated Quantity	Unit Price	Extended Price
Total of all Extended Prices for Unit Price Work (subject to final adjustment based on actual quantities)					

~~The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer Contractor. The Unit Prices listed in the Contract are for the sole purpose of calculating the Cost of Change Proposals and Owner Claims related to changes in the Scope of Work for the Contract.~~

- C. Total of Lump Sum Amount and ~~Unit Price Work~~ (subject to final Unit Price adjustment) \$.

- D. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

- A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 Progress Payments; Retainage

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 20th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract

- a. 90 percent of Work completed (with the balance being retainage).
b. 90 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 Final Payment

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

- 7.01 All amounts not paid when due shall bear interest at the maximum legal rate.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

- A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

- B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.
- E. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
- F. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- G. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- H. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- I. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

- A. The Contract Documents consist of the following:
 - 1. This Agreement (pages 1 to [redacted], inclusive).
 - 2. Performance bond (pages [redacted] to [redacted], inclusive).
 - 3. Payment bond (pages [redacted] to [redacted], inclusive).
 - 4. Other bonds.
 - a. [redacted] (pages [redacted] to [redacted], inclusive).
 - 5. General Conditions (pages [redacted] to [redacted], inclusive).
 - 6. Supplementary Conditions (pages [redacted] to [redacted], inclusive).
 - 7. Specifications as listed in the table of contents of the Project Manual.
 - 8. Drawings (not attached but incorporated by reference) consisting of [redacted] sheets with each sheet bearing the following general title: [redacted] [or] the Drawings listed on the attached sheet index.

9. Addenda (numbers █ to █, inclusive).
10. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages █ to █, inclusive).

NOTE(S) TO USER:

1. *As noted in the introduction to this Agreement, in the typical case bidding-related documents such as the Instructions to Bidders and Bid are not included as Contract Documents. Include Contractor's Bid as a Contract Document here only as a matter of necessity, for example if the Bid contains numerous line items and their prices, and rekeying such information would be burdensome and susceptible to error.*
 2. *List other required attachments (if any), such as documentation submitted by Contractor prior to Notice of Award and documents required by funding or lending agencies.*
11. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.
 - B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
 - C. There are no Contract Documents other than those listed above in this Article 9.
 - D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 Terms

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 Assignment of Contract

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 *Other Provisions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, published by the Engineers Joint Contract Documents Committee®, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

OWNER:

CONTRACTOR:

By: _____

By: _____

Title: _____

Title: _____

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

Attest: _____

Attest: _____

Title: _____

Title: _____

Address for giving notices:

Address for giving notices:

License No.: _____
(where applicable)

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

NOTE TO USER: Use in those states or other jurisdictions where applicable or required.

NOTICE TO PROCEED

Owner:	City of Crestview	Owner's Contract No.:	23-12-06-PS
Contractor:		Contractor's Project No.:	
Engineer:	Alday-Howell Engineering, Inc.	Engineer's Project No.:	22-030
Project:	Vineyard Village Site Improvements	Contract Name:	Vineyard Village Site Improvements
		Effective Date of Contract:	

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [REDACTED], 20[REDACTED]. [see Paragraph 4.01 of the General Conditions]

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, [the date of Substantial Completion is _____, and the date of readiness for final payment is _____] **or** [the number of days to achieve Substantial Completion is _____, and the number of days to achieve readiness for final payment is _____].

Before starting any Work at the Site, Contractor must comply with the following:
[Note any access limitations, security procedures, or other restrictions]

Owner:

Authorized Signature

By:

Title:

Date Issued:

Copy: Engineer

PERFORMANCE BOND

CONTRACTOR *(name and address):*

SURETY *(name and address of principal place of business):*

OWNER *(name and address):*

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location):*

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract):*

Amount:

Modifications to this Bond Form: None See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal *(seal)*

Surety's Name and Corporate Seal *(seal)*

By: _____
Signature

By: _____
Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence,

to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims

for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*:

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: None See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

_____ *(seal)*

Contractor's Name and Corporate Seal

_____ *(seal)*

Surety's Name and Corporate Seal

By: _____

Signature

By: _____

Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____

Signature

Attest: _____

Signature

Title

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
 - 5.1 Claimants who do not have a direct contract with the Contractor,
 - 5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2 Pay or arrange for payment of any undisputed amounts.
 - 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. **Definitions**
 - 16.1 **Claim:** A written statement by the Claimant including at a minimum:
 1. The name of the Claimant;
 2. The name of the person for whom the labor was done, or materials or equipment furnished;
 3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 4. A brief description of the labor, materials, or equipment furnished;
 5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 7. The total amount of previous payments received by the Claimant; and
 - 16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
 - 16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
 - 16.4 **Owner Default:** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.
18. Modifications to this Bond are as follows:



Contractor's Application for Payment No.

	Application Period:	Application Date:
To (Owner): City of Crestview	From (Contractor):	Via (Engineer):
Project: Vineyard Village Site Improvements	Contract:	
Owner's Contract No.: 23-12-06-PS	Contractor's Project No.:	Engineer's Project No.: 22-030

**Application For Payment
Change Order Summary**

Approved Change Orders	Number	Additions	Deductions	
				1. ORIGINAL CONTRACT PRICE..... \$ _____
				2. Net change by Change Orders..... \$ _____
				3. Current Contract Price (Line 1 ± 2)..... \$ _____
				4. TOTAL COMPLETED AND STORED TO DATE (Column F total on Progress Estimates)..... \$ _____
				5. RETAINAGE:
				a. X _____ Work Completed..... \$ _____
				b. X _____ Stored Material..... \$ _____
				c. Total Retainage (Line 5.a + Line 5.b)..... \$ _____
				6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5.c)..... \$ _____
				7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)..... \$ _____
				8. AMOUNT DUE THIS APPLICATION..... \$ _____
				9. BALANCE TO FINISH, PLUS RETAINAGE (Column G total on Progress Estimates + Line 5.c above)..... \$ _____
	TOTALS			
	NET CHANGE BY			
	CHANGE ORDERS			

Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:

(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;

(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all Liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such Liens, security interest, or encumbrances); and

(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor Signature

By: _____ Date: _____

Payment of: \$ _____
(Line 8 or other - attach explanation of the other amount)

is recommended by: _____ (Date) _____
(Engineer)

Payment of: \$ _____
(Line 8 or other - attach explanation of the other amount)

is approved by: _____ (Date) _____
(Owner)

Approved by: _____ (Date) _____
Funding or Financing Entity (if applicable)

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: City of Crestview
 Contractor:
 Engineer: Alday-Howell Engineering, Inc.
 Project: Vineyard Village Site Improvements

Owner's Contract No.: 23-12-06-PS
 Contractor's Project No.:
 Engineer's Project No.: 22-030
 Contract Name: Vineyard
 Village Site Improvements

This [preliminary] [final] Certificate of Substantial Completion applies to:

- All Work The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]*

Amendments to Owner's responsibilities: None
 As follows

Amendments to Contractor's responsibilities: None
 As follows:

The following documents are attached to and made a part of this Certificate: *[punch list; others]*

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER: By: _____ (Authorized signature) Title: _____ Date: _____	RECEIVED: By: _____ Owner (Authorized Signature) Title: _____ Date: _____	RECEIVED: By: _____ Contractor (Authorized Signature) Title: _____ Date: _____
--	--	---

CERTIFICATE OF FINAL COMPLETION

Owner: City of Crestview	Owner's Contract No.: 23-12-06-PS
Contractor:	Contractor's Project No.:
Engineer: Alday-Howell Engineering, Inc.	Engineer's Project No.: 22-030
Project: Vineyard Village Site Improvements	Contract Name: Vineyard Village Site Improvements

This [preliminary] [final] Certificate of Final Completion applies to:

All Work under the Contract Documents or to the following specified parts thereof:

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be complete in accordance with the Contract Documents on

Date of Final Completion

Notice to Proceed: _____(DATE)

Notice Contract Time: _____(CALENDAR DAYS)

Additional Contract Time
Approved by Change Order: _____(CALENDAR
DAYS)

Total Approved Contract Time: _____(CALENDAR
DAYS)

Actual Contract Time: _____(CALENDAR DAYS)

Unapproved Construction Time: _____(CALENDAR DAYS)

A warranty inspection will be held on: _____

The Warranty will expire on: _____

The following documents are attached to and made a part of this Certificate: _____

This certificate constitutes an acceptance of work in accordance with the Contract Documents. However, this certification shall not release the Contractor or its sureties from any obligations under the Contract Documents. The Performance Bond remains in full force and effect through the one (1) year warranty period.

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by



Issued and Published Jointly by



These General Conditions have been prepared for use with the Agreement Between Owner and Contractor for Construction Contract (EJCDC® C-520, Stipulated Sum, or C-525, Cost-Plus, 2013 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other.

To prepare supplementary conditions that are coordinated with the General Conditions, use EJCDC's Guide to the Preparation of Supplementary Conditions (EJCDC® C-800, 2013 Edition). The full EJCDC Construction series of documents is discussed in the Commentary on the 2013 EJCDC Construction Documents (EJCDC® C-001, 2013 Edition).

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer

has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor’s plan to accomplish the Work within the Contract Times.
30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.
33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals and the performance of related construction activities.
35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.
38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:*
 1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:*
 1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:*
 1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).
- E. *Furnish, Install, Perform, Provide:*
 1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner’s Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 2. a preliminary Schedule of Submittals; and

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

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or

computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

- A. Standards Specifications, Codes, Laws and Regulations
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

- A. *Reporting Discrepancies:*
 - 1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict,

error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

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

4.03 *Reference Points*

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

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 2. abnormal weather conditions;
 3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
 4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.
- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

- A. *Limitation on Use of Site and Other Areas:*
 - 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 - 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part

by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
 - 3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
 2. is of such a nature as to require a change in the Drawings or Specifications; or
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

- c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or
 - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
 1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
 2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
 - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after

becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Possible Price and Times Adjustments:*
 - 1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
 - d. Contractor gave the notice required in Paragraph 5.05.B.
 - 2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
 - 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

- A. *Reports and Drawings*: The Supplementary Conditions identify:
1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
 2. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
- H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is

maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

- A. *Workers' Compensation:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
 - 2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
 - 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
 2. claims for damages insured by reasonably available personal injury liability coverage.
 3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage:
 - a. Such insurance shall be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
 2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Broad form property damage coverage.
 4. Severability of interest.
 5. Underground, explosion, and collapse coverage.
 6. Personal injury coverage.
 7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
 8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- D. *Automobile liability:* Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.
- E. *Umbrella or excess liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor's pollution liability insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result

of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

- G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
- I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
1. include at least the specific coverages provided in this Article.
 2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
 3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
 4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
 5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 - 1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
 - 2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.
 - 3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
 - 4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
 6. extend to cover damage or loss to insured property while in transit.
 7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
 8. allow for the waiver of the insurer's subrogation rights, as set forth below.
 9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
 10. not include a co-insurance clause.
 11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
 12. include performance/hot testing and start-up.
 13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.
- C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- D. *Partial Occupancy or Use by Owner:* If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance:* If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property:* If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the

policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 Supervision and Superintendence

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 Labor; Working Hours

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 Services, Materials, and Equipment

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and

guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

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

7.04 "Or Equals"

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) it has a proven record of performance and availability of responsive service; and
 - 4) it is not objectionable to Owner.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense:* Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

- D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
 - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
 - 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
 - 3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - a. shall certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design,
 - 2) be similar in substance to that specified, and
 - 3) be suited to the same use as that specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from that specified, and

- 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
 - C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
 - D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
 - E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
 - F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

- O. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

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

7.10 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

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

7.12 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
 - C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
 - D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
 - E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
 - F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
 - G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

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

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or

exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements:*

1. Before submitting a Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Contractor shall submit the number of copies required in the Specifications.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to

provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples:*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.
 5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
 6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
 7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.
2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. use or occupancy of the Work or any part thereof by Owner;
 5. any review and approval of a Shop Drawing or Sample submittal;
 6. the issuance of a notice of acceptability by Engineer;
 7. any inspection, test, or approval by others; or
 8. any correction of defective Work by Owner.

- D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop

Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. an itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. the extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.
- C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

- D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

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

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

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

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during

or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

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

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
 - 1. *Change Orders:*
 - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
 - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
 - 2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an

adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:
 1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on

the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under

the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
 2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
 3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 Execution of Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders covering:
1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and
 4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

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

ARTICLE 12 – CLAIMS

12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
 - 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 - 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
 - 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim

submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
 2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:
 1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable

thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes

other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

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

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 Allowances

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

- B. *Cash Allowances*: Contractor agrees that:
 - 1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 Access to Work

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

14.02 Tests, Inspections, and Approvals

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
 - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 - 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 - 3. by manufacturers of equipment furnished under the Contract Documents;
 - 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 - 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to

cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

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

14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will

include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments:*
1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
 2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
 3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- C. *Review of Applications:*
1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
 2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

- a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
 4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
 5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
 6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

- e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due:*

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

E. *Reductions in Payment by Owner:*

- 1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. the Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. the Contract Price has been reduced by Change Orders;
 - i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
 - j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - l. there are other items entitling Owner to a set off against the amount recommended.
- 2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount

remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.
 - 2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 - 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

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

15.06 *Final Payment*

- A. *Application for Payment:*
 - 1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of

inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
 - d. a list of all disputes that Contractor believes are unsettled; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

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

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due:* Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation,

including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such other adjacent areas;
 - 2. correct such defective Work;
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses,

and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for

expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this Article:
 - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and
 - 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this Article, Owner or Contractor may:
 - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
 - 2. agree with the other party to submit the dispute to another dispute resolution process; or
 - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

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

18.03 *Cumulative Remedies*

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

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Headings*

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

Supplementary Conditions

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.03 *Subsurface and Physical Conditions*

SC 5.03 Delete Paragraphs 5.03.A and 5.03.B in their entirety and insert the following:

- A. No reports of explorations or tests of subsurface conditions at or adjacent to the Site, or drawings of physical conditions relating to existing surface or subsurface structures at the Site, are known to Owner.

SC-5.06 *Hazardous Environmental Conditions*

SC 5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.
- B. Not Used.

ARTICLE 6 – BONDS AND INSURANCE

SC-6.03 *Contractor's Liability Insurance*

SC 6.03 Add the following new paragraph immediately after Paragraph 6.03.J:

- K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

- 1. Workers' Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

State:	<u>Statutory</u>
Federal, if applicable (e.g., Longshoreman's):	<u>Statutory</u>
Jones Act coverage, if applicable:	
Bodily injury by accident, each accident	\$ <u>\$500,000</u>
Bodily injury by disease, aggregate	\$ <u>\$500,000</u>

Employer's Liability:

Bodily injury, each accident	\$ <u>\$500,000</u>
Bodily injury by disease, each employee	\$ <u>\$500,000</u>
Bodily injury/disease aggregate	\$ <u>\$500,000</u>

For work performed in monopolistic states, stop-gap liability coverage shall be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:

\$ \$500,000

Foreign voluntary worker compensation Statutory

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

General Aggregate \$ \$2,000,000

Products - Completed Operations Aggregate \$ \$1,000,000

Personal and Advertising Injury \$ \$1,000,000

Each Occurrence (Bodily Injury and Property Damage) \$ \$1,000,000

3. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

Bodily Injury:

Each person \$ \$1,000,000

Each accident \$ \$1,000,000

Property Damage:

Each accident \$ \$1,000,000

[or]

Combined Single Limit of \$ _____

4. Excess or Umbrella Liability:

Per Occurrence \$ \$1,000,000

General Aggregate \$ \$1,000,000

L. To the fullest extent permitted by law the Recipient's contractor shall indemnify and hold harmless the Recipient, the State of Florida, Department of

Transportation, and its officers and employees, from liabilities, damages, losses and costs, including, but not limited to, reasonable attorney's fees, to the extent caused by the negligence, recklessness or intentional wrongful misconduct of contractor and persons employed or utilized by contractor in the performance of this Contract. This indemnification shall survive the termination of this Agreement. Nothing contained in this paragraph is intended to nor shall it constitute a waiver of the State of Florida and the Recipient's sovereign immunity. To the fullest extent permitted by law, the Recipient's consultant shall indemnify and hold harmless the Recipient, the State of Florida, Department of Transportation, and its officers and employees from liabilities, damages, losses, and costs, including, but not limited to, reasonable attorney fees to the extent caused, in whole or in part, by the professional negligence, error or omission, recklessness, or intentional wrongful conduct of the consultant or persons employed or utilized by the consultant in the performance of the Agreement. This indemnification shall survive the termination of this Agreement. Nothing contained in this paragraph is intended to nor shall it constitute a waiver of the State of Florida and the Recipient's sovereign immunity.

ARTICLE 10 – ENGINEER’S STATUS DURING CONSTRUCTION

SC-10.03 *Project Representative*

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.A:

- B.** The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.
- 1.** General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.
 - 2.** Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.
 - 3.** Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.
 - 4.** Liaison:
 - a.** Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
 - b.** Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

- c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
5. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.
6. Shop Drawings and Samples:
 - a. Record date of receipt of Samples and Contractor-approved Shop Drawings.
 - b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.
 - c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.
7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.
8. Review of Work and Rejection of Defective Work:
 - a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
9. Inspections, Tests, and System Start-ups:
 - a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.
 - b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.
10. Records:
 - a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field

Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.

- b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
- c. Maintain records for use in preparing Project documentation.

11. Reports:

- a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.
- b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
- c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.

12. Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

13. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

14. Completion:

- a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.
- b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.
- c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.

C. The RPR shall not:

- 1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including “or-equal” items).**
- 2. Exceed limitations of Engineer’s authority as set forth in the Contract Documents.**
- 3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.**
- 4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor’s work.**
- 5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.**
- 6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.**
- 7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.**
- 8. Authorize Owner to occupy the Project in whole or in part.**

Date of Issuance:

Owner: City of Crestview

Contractor:

Engineer: Alday-Howell Engineering, Inc.

Project: Vineyard Village Site Improvements

Effective Date:

23-12-06-PS

Owner's Contract No.:

Contractor's Project No.:

Engineer's Project No.: 22-030

Contract Name:

Vineyard Village Site
Improvements

Contractor is directed to proceed promptly with the following change(s):

Item No.	Description

Attachments (list documents supporting change):

Purpose for Work Change Directive:

Authorization for Work described herein to proceed on the basis of Cost of the Work due to:

- Nonagreement on pricing of proposed change.
- Necessity to expedite Work described herein prior to agreeing to changes on Contract Price and Contract Time.

Estimated change in Contract Price and Contract Times:

Contract Price \$ _____ (increase/decrease) Contract Time _____ (increase/decrease)
days

Recommended for Approval by Engineer:	Date
Authorized for Owner by:	Date
Received for Contractor by:	Date

Received by Funding Agency (if applicable):

Date

Date of Issuance:

Effective Date:

Owner: City of Crestview

Owner's Contract No.:
23-12-06-PS

Contractor:

Contractor's Project No.:

Engineer: Alday-Howell Engineering, Inc.

Engineer's Project No.: 22-030

Project: Vineyard Village Site Improvements

Contract Name: Vineyard
Village Site
Improvements

The Contract is modified as follows upon execution of this Change Order:

Description:

Attachments: *[List documents supporting change]*

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIMES <i>[note changes in Milestones if applicable]</i>
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: \$ _____	[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: Substantial Completion: _____ Ready for Final Payment: _____ days
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] of this Change Order: \$ _____	[Increase] [Decrease] of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ days or dates

<p>RECOMMENDED:</p> <p>By: _____ Engineer (if required)</p> <p>Title: _____</p> <p>Date: _____</p>	<p>ACCEPTED:</p> <p>By: _____ Owner (Authorized Signature)</p> <p>Title: _____</p> <p>Date: _____</p>	<p>ACCEPTED:</p> <p>By: _____ Contractor (Authorized Signature)</p> <p>Title: _____</p> <p>Date: _____</p>
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Approved by Funding Agency (if applicable)

By: _____ Date: _____

Title: _____

STATEMENT OF NO PROPOSAL

If you will not be bidding on this product/service, please help us by completing and returning only this page to:

**City of Crestview, Attn: City Clerk - Maryanne Schrader
PO Box 1209
198 North Wilson Street
Crestview, FL 32536**

Proposal # _____ and Description: _____

We, the undersigned, decline to submit a proposal on the above project for the following reason(s):

<input type="checkbox"/> We are not able to respond to the Invitation to Bid by the specified deadline.
<input type="checkbox"/> Our Company does not offer this product or service.
<input type="checkbox"/> Our current work schedule will not permit us to perform the required services.
<input type="checkbox"/> Specifications are incomplete or information is unclear (explain below)

<input type="checkbox"/> Other (Please specify below)

Company Name: _____
Telephone: _____ Email: _____

Name and Title of Individual Completing this Form: _____

REFERENCES

THIS SHEET MUST BE COMPLETED AND RETURNED WITH PROPOSAL

PROVIDE AT LEAST THREE NON-CITY REFERENCES FOR WHOM YOUR COMPANY HAS PROVIDED THE SAME OR SIMILAR SERVICES WITHIN THE LAST 2 YEARS.

Reference No. 1:	Company Name:	_____
	Address:	_____
	Telephone:	_____
	Contact Person:	_____
	Email Address:	_____

Reference No. 2:	Company Name:	_____
	Address:	_____
	Telephone:	_____
	Contact Person:	_____
	Email Address:	_____

Reference No. 3:	Company Name:	_____
	Address:	_____
	Telephone:	_____
	Contact Person:	_____
	Email Address:	_____

Proposers Name: _____

EXHIBIT A – PROPOSER QUALIFICATION FORM

Proposers, aided by this form, must show that they are competent and have the necessary resources to fulfill the conditions of the concession agreement.

Failure to submit this form with all questions answered may be grounds for disqualification:

Are there any judgments, claims or suits pending or outstanding by or against you?

_____ **Yes** _____ **No**

If the answer to the question is yes, submit details on a separate sheet.

List all lawsuits that have been filed by or against your firm in the last five (5) years:

The Proposer understands that information contained in this Proposer Qualification Form, together with Exhibits A through D, is to be relied upon by the City and such information is warranted by the Proposer to be true. The undersigned Proposer agrees to furnish such additional information, prior to the acceptance of any proposal relating to the qualifications and stability of the Proposer, as may be required by the City.

The Proposer understands that the City has the right to verify the information submitted and to seek any additional information relating to Proposer qualifications and stability.

The discovery of any misstatement, which, in sole opinion of the City, materially affects the Proposer’s qualifications to perform under the agreement, may cause the City to reject the proposal, and if after the proposal awarded, to cancel/terminate the agreement.

Dated this _____ day of _____, 2023.

IF INDIVIDUAL

WITNESS:

(Signature)

(Type or Print Name)

SUBMISSION CHECKLIST

Bidders should check off each of the following items as completed and submit with bid response

Checklist Elements	Included
<ul style="list-style-type: none"> • Submit one (1) original signature and five (5) copies of your original proposal document and a PDF version on a jump drive that is clearly labeled containing a copy of the original document. 	
<ul style="list-style-type: none"> • Include any required drawings; descriptive literature; qualifications; schedules; product compliance / exceptions; alternatives; questionnaire; references, forms, tabs, pricing/cost; and any information required of the Proposer identified in the text of the bid. 	
<ul style="list-style-type: none"> • Include any delivery information. 	
<ul style="list-style-type: none"> • Complete and include this form with your bid document. Do not forget to have an authorized individual sign in the appropriate pages. 	
<ul style="list-style-type: none"> • Be sure the proposal document has been signed in original on the Cover Sheet page with any bid addendums initialed. 	
<ul style="list-style-type: none"> • Proposal document needs to be received by the OPENING DATE & TIME indicated on the bid cover page. The mailing envelope must be addressed to: <div style="text-align: center;"> City of Crestview City Clerk PO Box 1209 198 North Wilson Street Crestview, Florida 32536 </div> 	
<ul style="list-style-type: none"> • The mailing envelope should be sealed and marked with: Bid Number: 23-12-06-PS Bid Title: Vineyard Village Site Improvements Bid Opening Date: December 6, 2023 	

ALL COURIER DELIVERED PROPOSALS MUST HAVE THE BID NUMBER AND TITLE ON THE OUTSIDE OF THE COURIER PACKAGE.

CITY OF CRESTVIEW
DEPARTMENT OF PUBLIC SERVICES



ENGINEERING STANDARDS MANUAL

Adopted February 2021

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Director of Public Services

Marc D. Bonifay, P.E.
City Engineer

Latest Revisions: August 2022

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1.0 INTRODUCTION

The 2021 City of Crestview Land Development Code was adopted on February 8, 2021 and became effective on February 24, 2021. Many requirements contained in the previous Land Development Code will now be located in the Engineering Standards Manual (ESM) of Crestview. The ESM is referenced throughout the Land Development Code, containing uniform minimum standards for the design and construction of required improvements acceptable within the City of Crestview.

2.0 POLICY

The Engineering Standards Manual shall serve as the official document that contains the minimum standards for design and construction of required improvements throughout the City of Crestview. The Public Services Director shall establish and maintain the Engineering Standards Manual and such other standards for work within the public rights of way.

3.0 EROSION & SEDIMENTATION CONTROL

Erosion and sedimentation control measures shall be installed around the perimeter of all construction sites that disturb the existing topography. Unless otherwise noted by City standards, all erosion control measures shall comply with the latest version of the Florida Department of Transportation's (FDOT) Design Standards and the Florida Department of Environmental Protection's (FDEP) Florida Stormwater Erosion and Sedimentation Control Inspector's Manual. All development shall provide for erosion and sedimentation control as follows:

- A. An erosion control plan is required as part of the Stormwater Management Plan.
- B. The plan shall show the location of all erosion control measures, provide details of each and list the construction sequences.
- C. Before the commencement of construction activity, erosion control measures must be installed.
- D. Silt fencing shall be installed around the perimeter of the site to provide for erosion control and define the limits of construction activity.
- E. On site and downstream inlets shall be protected by temporary inlet protection.
- F. All soil stockpiles shall be protected against dusting and erosion.
- G. At all times during and after construction, disturbed areas shall be stabilized. Final stabilized areas shall be sodded/seeded and established prior to project closeout.

4.0 STORMWATER MANAGEMENT

4.1 Retention/Detention Basins

In order to ensure the objectives and performance standards of this article will be met, the design, construction and maintenance of stormwater management facilities and drainage systems shall be consistent with the following standards:

- A. Stormwater management plans must be prepared, signed and sealed by a professional engineer registered in the state of Florida. This plan must include a drainage map delineating the watersheds of all onsite and offsite runoff.
- B. All developments shall treat the first flush of runoff on-site and assure that the post development runoff conditions will not exceed the predevelopment conditions for the critical duration 25-year storm event up to and including the 24-hour duration. This will include the subject site and any offsite contributing areas.
- C. The required treatment volume (first flush) shall be the runoff from one inch of rainfall with a minimum volume of one-half inch of runoff. This volume shall be retained or detained onsite to meet stormwater quality compliance. The volume calculation is: Area x Runoff Coefficient x 1" or Area x ½" whichever is greater.
- D. Only treatment methods outlined in in the NFWFMD's Environmental Resource Permit Applicant's Handbook Volume II can be used for stormwater treatment.
- E. Runoff from impervious surfaces shall be treated to remove oil and sediment before it enters receiving waters. A skimmer shall be installed on all retention/detention basin overflow devices for this purpose. The skimmer shall be hydraulically designed to accommodate the required flow around the skimmer and into the overflow structure without overtopping the skimmer. Detailed dimensions and calculations shall be provided.
- F. The treatment volume retained in retention basins must be recovered through percolation within 72 hours following a storm event using a factor of safety of 2. Only the bottoms and applicable sides slopes can be used in recovery calculations. For wet detention ponds, the bleed down orifice must be properly sized to drawdown one-half the treatment volume between 48 and 60 hours.
- G. Percolation rates utilized in recovery calculations shall be obtained from a signed and sealed geotechnical report. In any circumstance, the maximum design percolation rate is not to exceed 2.5 feet per hour.
- H. For the purpose of stormwater quantity/flood control the post development discharge rate must not exceed predevelopment discharge rate for the 25-year storm event. The published FDOT 25-year/1-hour, 2-hour, 4-hour, 8-hour, and 24-hour rainfall distributions shall be analyzed to determine the critical duration and demonstrate compliance. In lieu of the FDOT rainfall distributions, the NRCS Type III distribution may be used for the 25-year storm.
- I. Developments that discharge directly into tidally influenced surface waters of the state must still meet treatment volume requirements but are not required to provide attenuation.

- J. In areas where there is no legal or positive outfall for stormwater from the development site, the 100 year/critical duration storm event will be retained on site with no discharge. This volume must be recovered within 15 days.
- K. For ponds with a berm higher than 18 inches, a minimum freeboard of 20% of the total depth shall be provided during the 100-year/critical duration storm, with a maximum freeboard depth of one foot.
- L. All pond berms higher than 3 feet must have a clay core compacted to 95% and keyed into the natural grade. The minimum top width of the berm must be equal to the height of the berm with 3 feet as a minimum.
- M. The banks of detention and retention areas shall slope at a gentle grade into the water to a minimum depth of 2 feet below the water control elevation as safeguard against drowning, personal injury or other accidents, to encourage the growth of vegetation and to allow the alternate flooding and exposure of areas along the shore as water levels periodically rise and fall. All slopes steeper than 4:1 with a depth greater than 2 feet shall be fenced. The minimum height of the fence is 6 feet.
- N. Maintenance access must be provided to all stormwater management facilities.
- O. The City reserves the right to require compliance to higher standards for stormwater quantity and quality in areas of special concern as designated by the City.
- P. Runoff coefficients ("C") used in design calculations shall not exceed the following:

Wetland	0.15 Max.
Wooded	0.20 Max.
Undeveloped	0.25 Max.
Vegetated	0.25 Min.
Single-Family Residential	0.40 Min.
Multi-Family Residential	0.70 Min.
Commercial & Industrial	0.80 Min.
Gravel & Pervious Parking	0.60 Min.
Impervious	0.90 Min.

4.2 Stormwater Conveyances

Drainage calculations are required for all stormwater conveyances including but not limited to pipes, inlets, curb & gutter, and open channels/swales within city rights of way and easements. Calculations must demonstrate capacity for the 25-year/critical duration storm as follows:

- A. A drainage map with delineated watersheds for each conveyance is required.
- B. The minimum allowable pipe diameter is 15 inches. Accepted pipe materials are Reinforced Concrete, Corrugated Polyvinyl Chloride, Polypropylene, and High-Density Polyethylene. High-Density Polyethylene is not permitted under streets.
- C. All pipes and storm sewers must be shown in profile view and have a continuous descending slope of 0.2% minimum to the discharge point. Head driven/bubble-up systems are prohibited. Where pipe sizes increase, crowns will be matched. Maximum pipe lengths between drainage structures is 400 feet.

- D. All pipe calculations must use the slope of the hydraulic grade line not the pipe slope and account for any tailwater conditions. Systems discharging into ponds must use the discharge elevation of the pond as a minimum tailwater condition. The hydraulic grade line cannot exceed the grate top, slot, or throat elevation of any inlet within the system.
- E. The minimum allowable grate area for inlets without slots or throats is 12 square feet. Ditch bottom inlets not in vehicular use areas shall have grate tops a minimum of 6 inches above grade with a slot at grade.
- F. Flows from the design storm cannot exceed the published capacities for each inlet. Inlets in a sag curve must account for bypass flows from any upstream inlets on slope.
- G. The minimum slope for gutters is 0.3% and gutter spread calculations cannot exceed the top of curb.
- H. All open channels/swales shall be fully stabilized, have a minimum slope of 0.3% and require both capacity and velocity calculations. Any channel/swale with a velocity greater than 3 feet/second must be concrete. A channel/swale with a velocity greater than 6 feet/second requires energy dissipaters. Side slopes shall be 6 to 1 or flatter for grass and 3 to 1 or flatter for concrete.
- I. Open channels/swales in road rights-of-way shall have minimal depth, 6 to 1 or flatter side slopes and a 4-foot shoulder with a maximum cross slope of 6%.
- J. Drainage easements must have a minimum width of 20 feet. Easements for open channels shall provide 10-foot for maintenance access in addition to the top width of the channel. Wider easements will be required for deep and/or large pipes.

5.0 ROADS & STREETS

All streets within the City of Crestview shall be designed and constructed to accommodate vehicles, bicycles and pedestrians. The construction shall be in accordance with the Florida Department of Transportation’s (FDOT) - Standard Specifications for Road and Bridge Construction; Roadway and Traffic Design Standards; and Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (known as the “Florida Greenbook”); latest editions. The standards of this chapter apply to both public and private streets. Streets are classified below by vehicles per day (VPD):

Classification	Trips (VPD)
Arterial Streets	> 9000
Major Streets	5001 – 9000
Collector Streets	2500 – 5000
Residential Streets	< 2500

5.1 Traffic Study

A traffic study is required for all developments to estimate trip generation, internal traffic volumes and circulation, and projected traffic volumes and distributions at external access points and the surrounding roadway network. The study will address capacity issues of all existing roads in the area. This study shall utilize the latest edition of the Institute of Transportation Engineers (ITE) Trip Generation manual. Any development that generates significant capacity impacts to the surrounding roadway network, the developer will be required to provide additional roadway improvements deemed necessary by the City to mitigate impacts.

5.2 Street Layout

Streets will intersect at angles no less than 60 degrees. Unaligned intersections shall be separated by a minimum of 150 feet between centerlines. Intersections involving more than four basic street approaches are prohibited. Streets will be laid out to avoid environmentally sensitive areas.

A. Right-of-way minimum requirements:

1. Arterial streets: 100 feet.
2. Major streets: 80 feet.
3. Collector streets: 66 feet.
4. Commercial/Industrial/Institutional streets: 60 feet.
5. Residential streets 600 feet or more in length or more than 30 DU's: 60 feet, 50 feet w/curb & gutter.
6. Residential streets less than 600 feet in length and 30 or less DU's: 40 feet w/curb & gutter.
7. Cul-de-sacs: 100 feet in diameter.
8. Alleys and service drives: 30 feet.

B. Access points:

1. Access points onto or from arterial, major, or collector roadways to commercial, industrial and/or other roadways shall have a minimum spacing measured centerline to centerline as follows:

Classification	Spacing (ft)
Principal arterials	300
Minor arterials	250
Major streets	185
Collectors	140

2. The limits listed above apply to all roadways within the City except those designated limited access roads. Roads with this designation are as follows:

Name	Sections
Redstone Ave.	Brookmeade Dr. intersection to the east

The following “limited access” standards apply to the roadways listed above:

- a. Access points shall be located no closer than 500 feet apart regardless of which side of the street the access point is located.
 - b. Median cuts shall be located no closer than 500 feet.
 - c. Deceleration, acceleration, stacking lanes and median cuts shall be installed and constructed per FDOT standards.
 - d. Other than existing driveways, no access will be allowed requiring a backing maneuver into the right of way.
 - e. Other than heretofore platted lots of record, no access will be allowed serving individual private residential driveways.
 - f. Residential developments contiguous to limited access roads shall be accessed by collector streets at a minimum distance of 500 feet apart.
 - g. New connections to one side of the limited access road shall, were possible, coincide with existing intersections on the opposite side.
 - h. This section is not intended to deny access to any existing lot, parcel, or tract of land for which the only means of access to the same would be by the limited access road, but is intended to limit any further divisions into parcels or lots unless compliance herewith is accomplished.
- C. Clear visibility triangle: In order to provide the motorist with a clear view of intersecting streets and driveway connections, there shall be a triangular area of clear visibility formed by two intersecting streets or the intersection of a driveway and a street. The following standards shall be met:
1. Nothing shall be erected, placed, parked, planted or allowed to grow in such a manner as to materially impede vision between a height of two feet and ten feet above grade, measured at the centerline of the intersection.
 2. The clear visibility triangle shall be formed as specified in the “Florida Greenbook”.
 3. Clear visibility triangles shall be provided at all intersections and driveways regardless of the direction of travel. For example, clear vision triangles shall be provided for both directions at an intersection even though one or both streets are one way only. Likewise, clear vision triangles shall be provided in both directions at a driveway connection even if the driveway is one way in only.
- D. Dead-end streets: All permanent dead-end streets require a cul-de-sac at the end. All dead-end streets that stub-out to undeveloped adjacent parcels or future phases of

development shall have a temporary turning circle with a minimum diameter of 60 feet. A dead-end street shall not exceed 1320 feet in length.

5.3 Roadway Design

All roads shall, to the extent practicable, conform to the natural topography of the site preserving existing hydrology and vegetative patterns while minimizing erosion potential, runoff and the need for site alteration. All roads must have a centerline crown section with a minimum 2% slope to the sides. Inverted crown sections are not allowed.

- A. Subgrade: Unsuitable material such as stumps, roots, muck, etc., shall be removed to at least a depth of 2 feet below the subgrade. The subgrade shall be stabilized to a depth of 12 inches and a width of 3 feet beyond the edge of pavement. The subgrade shall be stabilized to obtain a minimum Limerock Bearing Ratio (LBR) of 40 and compacted to 98 percent of the maximum density as determined by modified AASHTO 180.
- B. Pavement minimum width, thickness, and base: All asphalt shall be tested per FDOT standard requirements. Structural course shall be SP-12.5 Superpave. Surface course shall be 1-inch of FC-9.5 Friction Course (Arterial, Major & Collectors). The base shall be stabilized to obtain a minimum Limerock Bearing Ratio (LBR) of 100 and compacted to 98 percent of the maximum density as determined by modified AASHTO 180.
 1. Major streets: 26 feet, 3 inches, Optional Base Group 9.
 2. Collector streets: 24 feet, 2-½ inches, Optional Base Group 6.
 3. Commercial/Industrial/Institutional streets: 24 feet, 2 inches, Optional Base Group 6.
 4. Residential streets 600 feet or more in length or more than 30 DU's: 24 feet, 1-½ inches, Optional Base Group 4.
 5. Residential streets less than 600 feet in length and 30 or less DU's: 22 feet, 1-½ inches, Optional Base Group 4.
 6. Alleys and service drives: 20 feet, 1-½ inches, Optional Base Group 4.
 7. Intersections: 25-foot minimum radii, 2-inch thickness.
 8. Cul-de-sacs: 80 feet in diameter, 25-foot return radii, 2-inch thickness.
 9. One-way lanes: 16 feet in width.
- C. Curb and gutter: Concrete curb and gutter is required on all residential streets unless lot widths are 110 feet in width or greater. On streets where curb and gutter is not required, ribbon curb is required. All curb and gutter and ribbon curb shall be as follows:
 1. Curb and gutter shall be a minimum of 18 inches wide by 8 inches deep and be of a barrier, mountable or header type.
 2. Forms may be wood or metal and shall be set using sufficient supports to hold the concrete without moving.
 3. Contraction joints shall be constructed every 10 feet, but no section shall be less than 4 feet. Steel templates shall be used for these joints and withdrawn after initial set. At intervals not to exceed 50 feet and at all structures, inlets and radius points, a ½ inch full-depth expansion joint shall be constructed of an approved material.

- Expansion joints shall be constructed with preformed materials cut and shaped to the cross-section of the curb.
4. Compressive strength of the concrete shall not be less than 2500 psi at the end of 28 days. No concrete shall be placed when air temperature is 40 degrees Fahrenheit and falling.
 5. Ribbon curb will be a minimum 12 inches wide by 8 inches deep with one reinforcing bar or wire mesh with 3000 psi concrete and a minimum 3-inch cover. Maximum street grade for ribbon curb is 5 percent.
- D. Shoulders: Shoulders are required on all streets not requiring curb and gutter and must have a minimum width of 4 feet. All shoulders shall have a cross slope of 6% or less and be stabilized with sod or other turf material approved by the City.
- E. Geometric design: All geometric design shall be per the "Florida Greenbook" and use a design speed of no less than 25 mph. The minimum vertical grade for any street is 0.3 percent.

5.4 Testing

It is the contractor's responsibility to provide the City all roadway test results which will include compaction tests for the subgrade, compaction and thickness of the base, and core samples of the asphalt. All tests are to be taken immediately before the next layer of the road cross section is installed. Any deficiencies must be corrected and retested before proceeding. Testing must be performed by a qualified geotechnical firm. Frequencies are as follows:

- A. Curb-pad: Test at 300-foot intervals, alternating from left side to right side and any other locations as directed by the City.
- B. Subgrade: Test at 300-foot intervals, alternating from left side to centerline to right side with additional tests at all intersections, cul-de-sacs, manholes, inlets, drainage structures and any other locations as directed by the City.
- C. Base: Test at 200-foot intervals, alternating from left side to centerline to right side with additional tests at all intersections, cul-de-sacs, and other locations as directed by the City.
- D. Asphalt: Test at 300-foot intervals, alternating from left side to centerline to right side with additional tests at all intersections, cul-de-sacs, and other locations as directed by the City.

The City has the authority to require additional testing due to weather conditions.

6.0 DRIVEWAYS, PARKING & VEHICULAR ACCESSABILITY

6.1 Driveways

All driveways constructed within the City of Crestview shall be paved from the edge of pavement to the right-of-way line. Driveways shall be constructed of a minimum of 3000 psi concrete or

asphalt pavement. Driveways shall have a minimum thickness of 5 inches for reinforced concrete pavement or 1 ½ inches of asphalt pavement. Driveways connecting to state roads shall be in accordance with FDOT Standards. The City reserves the right to require additional paving or reinforcement depending upon the type and amount of expected vehicular traffic. Construction of city street driveways shall conform to the following guidelines:

- A. Residential: Minimum width 10 feet and maximum width 24 feet with radii or flares of 5 feet.
- B. Commercial/Industrial/Institutional: Minimum width 16 feet for one-way operation and 24 feet for two-way with minimum right turn radii of 25 feet. Maximum width is 36 feet. A 24-inch thermoplastic stop bar and stop sign are required at all street connections.
- C. Minimum angle: Minimum acute angle measured from the edge of pavement is 45 degrees for one-way operation and 60 degrees for two-way.
- D. All driveways crossing drainage swales shall have a culvert with a minimum diameter of 15 inches.
- E. For driveways that intersect City sidewalks, the cross slope of a 5-foot wide section is to not exceed 1:50 (2%). Longitudinal slope is not to exceed 1:20 (5%). This section shall be striped as a crosswalk.
- F. Concrete shall be cured a minimum of 24 hours after pouring.
- G. Expansion joints shall be provided where concrete is placed adjacent to the existing curb, driveways, buildings and walkways.
- H. All driveways shall meet the clear visibility triangle and spacing requirements of Chapter 5.
- I. Grades shall follow the FDOT Standard Index. Residential driveways shall not exceed an algebraic difference in grades greater than 15% and no grade shall exceed 25%.

6.2 Parking

Parking facilities shall be provided for all developments within the City unless located in the downtown or C2 parking districts. On-street parking is prohibited except in the downtown or C2 districts. The facilities shall be maintained for as long as the use exists. Parking lots shall be surfaced with gravel, asphalt, concrete, brick pavers or pervious pavers. Signage and striping are required on all parking lots. The City reserves the right to require additional signage, paving, or reinforcement depending upon the type and amount of expected vehicular traffic.

- A. Parking spaces: Parking spaces and access drive aisles shall be sized in conformance with the following:

Parking Angle (degrees)	Stall Width (ft)	Stall Depth (ft)	Aisle Width 1-way/2-way (ft)
Parallel	9.0	24.0	16.0/24.0
30	9.0	18.0	16.0/24.0
45	9.0	20.5	16.0/24.0

60	9.0	22.0	18.0/24.0
90	9.0	20.0	Na/24.0

Spaces in areas surfaced with asphalt or concrete shall be demarcated with a 6-inch white stripe. Areas with other surfaces shall provide some form of demarcation. The proper number of handicapped spaces shall be provided in accordance with ADA standards and these spaces must be surfaced with asphalt or concrete.

- B. Loading spaces: The standard loading space shall be 10 feet wide, 50 feet long, and provide a minimum clearance of 13 feet. The City reserves the right to require longer spaces depending upon the type and amount of expected loading vehicles. Adequate area shall be provided for maneuvering, ingress and egress.
- C. Wheel stops, bumper guards & fencing: Wheel stops, bumper guards & fencing are required along streets, property lines and sidewalks to avoid the chance of encroachment.
- D. Drive aisles: Drive aisles shall have a minimum width of 16 feet for one-way circulation and 24 feet for two-way circulation. Signs and arrows are to be used to indicate the direction of circulation. The minimum interior turn radius is 10 feet.

7.0 SIDEWALKS & MULTI-USE PATHS

7.1 Sidewalk Standards

Sidewalks are required on City streets per the LDC. All Sidewalks constructed within the City of Crestview shall meet all current ADA requirements and be constructed of a minimum of 3,000 psi concrete and with a thickness no less than 4 inches. Where sidewalks cross driveways the minimum concrete thickness shall be 6 inches with fiber mesh reinforcing. The width of sidewalks shall be per the LDC but in no case less than 5 feet. Sidewalks located in state road right-of-way shall be in accordance with the Florida Department of Transportation's (FDOT) Standard Specifications for Road and Bridge Construction and FDOT Design Standards, latest edition. The City reserves the right to require a pedestrian/access easement in order to accommodate sidewalks. Construction of City sidewalks shall meet the following requirements:

- A. Subgrade shall be firm and unyielding.
- B. The cross slope for all sidewalks shall not exceed 1:50 (2%).
- C. The longitudinal slope shall not exceed 1:20 (5%).
- D. When longitudinal slopes exceed 1:20 it is considered a ramp. Ramps must have appropriate landings at each end and can have a longitudinal slope no greater than 1:12 (8.33%) for a maximum rise of 6 inches or 30 inches with ADA approved hand rails.
- E. Minimum clear width around obstacles shall be 36 inches.
- F. Concrete shall be cured a minimum of 24 hours after pouring.
- G. Tooled control joints ½ inch deep shall be provided at a maximum of every 5 feet.
- H. Expansion joints shall be provided at a maximum of every 50 feet and where concrete is placed adjacent to existing curbs, driveways, buildings and walkways.

7.2 Multi-Use Paths

The construction of multi-use paths is encouraged on City streets where bike lanes are not feasible. Multi-use paths shall be designed and constructed to accommodate both pedestrians and cyclists. Multi-use paths constructed within the City shall be constructed of a minimum of 3,000 psi concrete or asphalt. Multi-use paths shall have a minimum concrete thickness of 4 inches. One inch of asphalt may be used as an acceptable alternative to concrete. Construction of City multi-use paths shall conform to the following guidelines:

- A. Subgrade shall be firm and unyielding.
- B. The minimum width for all multi-use paths shall be 8 feet.
- C. The cross slope for all multi-use paths shall not exceed 1:50 (2%).
- D. The longitudinal slope shall not exceed 1:20 (5%).
- E. Minimum clear width around obstacles shall be 36 inches.
- F. Concrete shall be cured a minimum of 24 hours after pouring.
- G. Tooled control joints ½ inch deep shall be provided at a maximum of every 8 feet.
- H. Expansion joints shall be provided at a maximum of every 50 feet and where concrete is placed adjacent to existing curbs, driveways, buildings and walkways.

8.0 POTABLE WATER DISTRIBUTION

8.1 Purpose

The following standards are intended as a guide to the design engineer in the preparation of plans for potable water improvements. While the design standards given are intended as minimum design criteria, it is recognized there may be individual instances where a less stringent criteria may be approved without affecting the integrity of the system. All potable water distribution systems shall be designed and constructed in accordance with the City of Crestview's Standard Utility Specifications located in Appendix A of this manual.

8.2 General Description of Work

The following minimum requirements are considered acceptable to the City of Crestview in the distribution of water for domestic consumption. Deviations from these standards may be allowed by the City only upon a finding that, in accordance with sound engineering standards, the granting of the deviation will not work to increase the likelihood of a system failure. No deviation will be allowed unless it is clearly noted on the approved construction plans.

- A. All expansion shall conform to the City's Utility Master Plan for water maintained and amended by the City.
- B. When these standards differ from Local, State and/or Federal requirements, the more stringent requirement shall apply.

- C. The distribution system of a waterworks includes the mains, valves, hydrants, consumer service pipes and meters, and other appurtenances. The system shall be designed to provide an adequate supply of water to the consumers for fire protection at all times.

8.3 Regulations

The following agency regulations shall apply when applicable:

- A. Environmental Protection Agency and U.S. Public Health Service: The governing standards of these agencies will be followed when applicable.
- B. Florida Department of Environmental Protection: The water distribution system shall conform to the applicable State of Florida Department of Environmental Protection laws, policies, standards and rules and regulations for public water systems.
- C. Plumbing Codes: The provisions of the Plumbing Code of the City of Crestview and the Florida Building Code as it pertains to water supply and distribution, service line locations and materials, and backflow prevention devices, except as provided for elsewhere in these criteria, shall apply.
- D. Fire Codes: All aspects of the National Fire Protection Association (NFPA) code, latest edition shall apply to water distribution mains, fire service lines and fire hydrants.
- E. City of Crestview Public Services Department: All water distribution systems, that are to become a part of the City system shall be designed and constructed in accordance with these standards. Water system materials, installation of materials, and construction methods and procedures shall be in accordance with the current material and installation specifications in this manual.

8.4 Design Standards

All water distribution system plans must be prepared, signed and sealed by a professional engineer registered in the state of Florida and shall meet the following standards:

- A. Flow Requirements: In sizing the distribution system water mains, the required design flow shall be the sum of the required fire flow and two-thirds (2/3) of the required domestic flow as contained below:
1. *Required Domestic Flow (Residential)*: Required flow for domestic use in residential areas shall be in accordance with the following table:

Maximum No. of Dwelling Units	Minimum Supply per Unit (GPM)
50	4.0
100	3.0
200	2.0
>200	1.5

2. *Required Domestic Flow (Nonresidential):* The required flow for commercial, institutional, industrial and other nonresidential facilities shall be determined by the Engineer of Record and approved by the City for each specific instance. Documentation with references will be required for the method used to determine the capacity.
 3. *Required Fire Flow (Single Family Dwelling Areas):* Required fire flow for single family dwelling areas shall be 600 gpm per hydrant.
 4. *Required Fire Flow (Other Areas):* Required fire flow for areas other than those occupied by single family dwellings shall be as determined by the governing authority. No pumping stations shall be used to meet fire flows unless written approval is provided by the City. All fire hydrants installed shall be capable of supplying 600 gpm.
 5. *Single Connection:* A subdivision or development to be supplied by the City's public water system and having a flow requirement as determined herein of not more than 1500 gpm may have a single connection to the distribution system.
 6. *Multiple Connections:* A subdivision or development to be supplied by the City's public water system and having a flow requirement as determined herein of more than 1500 gpm minute shall have 2 or more connections to the distribution system. A single connection may be made by using a pipe diameter sufficient enough to provide 1 ½ times the required flow with provisions for future connections, provided approval by the City.
- B. Grid System: All mains shall be interconnected to form a grid system.
1. Interconnections between 6-inch mains shall not be more than 1000 feet apart unless so authorized by the City. When greater separation of interconnecting mains is necessary, larger diameter pipes will be used.
 2. If the installation of a "dead-end" main cannot be avoided, its dead-end length shall not exceed 600 feet unless authorized by the City and shall be 8-inch minimum. All dead-end mains of less than 8" shall have a permanent 2-inch blow-off (a post hydrant is acceptable). Dead-end mains of 8" or larger shall have provisions for a 4-inch blow-off mechanism (fire hydrant is acceptable).
- C. Distribution Mains: Distribution mains shall be of sufficient size to furnish the required flow at pressures and velocities as herein provided. Mains shall be located to provide service to each lot within a subdivision and to form a looped network as herein provided. All mains shall be installed only in dedicated streets, alleys, public rights-of-way or utility easements, in favor of the City for the use and benefit of the City. Utility easements must have a minimum width of 10 feet if adjacent to a right-of-way or 15 feet if not. All main locations and sizes shall be in accordance with the City's current "Utility Master Plan" and the approved subdivision master development plan and utility layout.
1. *Required Pressure:* Water pressure in the distribution system shall be not less than 35 psi with no fire hydrants in use. When fire hydrants are in use, water pressure in the main at sidewalk level shall not be less than 20 psi. When water pressure normally exceeds 100 psi, there shall be an approved type pressure regulator installed on the property side of the water meter in conformance with the Plumbing Code.

2. *Minimum Size:* Minimum distribution main diameter shall be 6 inches in single family residential areas and 8 inches in all other areas.
 3. *Standard Size:* Standard sizes of mains used shall have nominal diameters of 4, 6, 8, 12, 16, 20 and 24 inches.
 4. *Velocity:* Velocities in the mains shall not exceed 6 fps for non-fire flow conditions.
 5. *Cover:* A minimum cover of 30 inches must be provided. At road crossings, a minimum separation distance of 24 inches shall be maintained from the bottom of the base to the top of the pipe or the top of the casing when provided. At stream crossings, a minimum cover of 36 inches is required unless ball-joint ductile iron pipe is specified.
 6. *Crossings:*
 - a. Minor stream crossings: Crossings, where maximum stream width exceeds 25 feet and velocity at flood stage is between 5 and 9 fps, shall be encased in steel casing if buried or made with ductile iron pipe if elevated. This protection shall extend 5 feet beyond the bank and the pipe or casing shall be anchored to prevent shifting.
 - b. Major stream crossings: Crossings, where stream width of surface water exceeds 99 feet, shall be encased in steel casing. This protection shall extend 20 feet beyond the bank and the casing shall be anchored to prevent shifting.
 - c. Major road crossings shall be steel encased. Any additional requirements of the regulator agency responsible for the road shall be met.
 - d. When crossing under pipes, conduits, or other structures greater than 24 inches in diameter, and a 6-inch separation distance cannot be maintained, the pipe shall be encased in steel casing for a minimum of 5 feet distance on either side of the crossed pipe.
 7. *Air Release Valves:* Design of distribution system mains shall provide for the installation of adequately sized air release valves at appropriately selected locations.
 8. *Future Interconnections:* Provisions for future connecting mains shall be made by extending construction of all water mains to the exterior boundaries of the property wherever future connections to adjacent properties are anticipated or are required to form an interconnected grid system as described above.
 9. *Valves:* On distribution system mains up to 16 inches in diameter, a sufficient number of valves shall be installed so that no single case of accident, breakage, or repair to the water system will necessitate the shutdown of a length of pipe greater than 1000 feet. Valve spacing on 16-inch and larger distribution mains or transmission mains will vary depending on engineering design considerations. All valves shall be in accordance with the City Standard Specifications: 12 inch and smaller will be resilient seat gate valves, which may be direct buried with valve box; 16 inch and larger will be butterfly valves and installed in a vault.
- D. Fire Hydrants: Fire hydrants shall be located along public rights-of-way, preferably at street intersections. A 6-inch gate valve shall be installed between the water main and each fire hydrant. Fire hydrants shall be the dry barrel, breakaway traffic type. Fire

hydrants shall meet all requirements of the NFPA Code, latest edition and be provided as follows:

1. Spacing shall not exceed 500 feet (hose laid length) between hydrants in residential areas. New commercial buildings shall not be located over 300 feet (hose laid length) from a hydrant.
 2. Distance from roadway or access area to fire hydrant and clearance around the hydrant shall be accordance with the NFPA Code.
 3. Minimum clearance from the 4 ½-inch hydrant outlet to grade level shall be 12 - 18 inches as per NFPA.
 4. Placement of the 4 ½-inch hydrant outlet normally shall be on side facing the street or access area; however, the outlet can be located facing any direction at the discretion of the Fire Department in accordance with NFPA.
 5. All fire hydrants shall be fitted with a Hydra Storz with built-in check valve as per manufacture's specifications.
 6. A blue AA-ARC Long-Life Reflector with Type DB/AA2B two-way blue lens shall be placed on the edge-of-pavement directly in front of all fire hydrants.
- E. Water Services & Meters: Customer service lines shall be provided to all lots within a subdivision in accordance with the City Regulations. Customer service connections to industrial or commercial lots may be omitted provided approval of the City is obtained prior to plan approval.
1. Polyethylene tubing (200 psi rating) shall be used for 3/4 inch and 1-inch services. PVC pipe or ductile iron pipe may be used for 1½ inch and larger services.
 2. When services must cross under existing City paved streets, boring will be required and complete details must be provided. If the street is in poor condition, open cut may be approved by the City.
 3. All meters shall be adjacent to the property line and readily accessible to meter readers of the City; service lines shall terminate at the property line to facilitate the meter installation at or within 12 inches of the property line. It is the responsibility of the Developer/Contractor to locate the property line during construction so that service lines are terminated correctly.
 4. A water meter of size required to satisfy design criteria contained herein shall be installed by the City at each connection point to the City distribution system. The Developer/Contractor shall pay for the meter.
 5. All subdivisions to be supplied by the City's water system shall require a double service connection to each lot to provide for irrigation.
- F. Water Taps & Connections: The City will install and make all taps and connections to the existing City mains. The Developer/Contractor shall pay for the taps and connection.
1. *Service Saddles:*
 - a. For 3/4 inch and 1-inch taps on PVC pipe, a service saddle with a single 2-inch wide stainless-steel band or a double strap shall be furnished. The saddle shall be of cast or ductile iron and shall be epoxy, nylon or PE coated (10 mil minimum) approved styles as Ford F202 or Rockwell.

- b. For 1½ inch and 2-inch taps on PVC pipe, a more stable saddle is required. Saddles for these taps shall have either two each stainless steel 2-inch straps or a single stainless strap a minimum of ¾ inches wide. The saddle body shall be cast or ductile iron and shall be coated with epoxy or nylon, approved styles as Ford F202 and Rockwell.
2. *Tapping & Sleeve Valves:*
- a. All tapping sleeves for use on water mains 12 inches or less in diameter shall be constructed of 18-8 stainless steel for corrosion resistance. The leg of the tapping sleeve may be either extruded or welded to the tapping sleeve. All welds on the sleeve shall be fully passivated to restore stainless steel characteristics. The flange shall be stainless steel with recess to accept standard tapping valves. The flange shall conform to AWWA C207 Class D-ANSI 150 lb. drilling. Bolt holes shall straddle the pipe center line. The sleeve will be equipped with a ¾-inch NPT 18-89 stainless steel plug with a standard square head for testing. The gasket shall be of a 360-degree design and manufactured of gridded virgin GPR compounded for water service and complying with ASTM D2000-80M-4AA607. An 18-10 stainless steel armor shall be vulcanized to the gasket to bridge the gap between securing lugs. All bolts and nuts shall be 18-8 stainless steel with 5/8-inch NC threads. The lifter bar shall be of adequate design to provide a heavy bearing surface for all nuts. Bolt threads shall be fluorocarbon coated to prevent galling. Nyla Tron GS washers shall be provided for lubrication. Approved Ford - Fast Model.
 - b. All valves used will be resilient wedge type and designed for use with tapping equipment. They will have a non-rising stem and be of the resilient wedge type. All tapping valves will have an alignment ring to prevent misalignment with tapping sleeves. Valves will close clockwise (right), open counterclockwise (left) and be equipped with a standard 2-inch square operating nut. Valve outlets will have a flanged mechanical joint. Valves will meet or exceed provisions of AWWA Standard C509.
- G. Backflow Preventers: Backflow preventers (BFP's) are required on all service lines, irrigation lines and private fire lines to prevent contaminated water from flowing back into the potable water distribution system.
1. BFP's for commercial, industrial and institution use shall consist of reduced pressure devices. BFP's for fire lines can have a double check valve assembly device unless chemicals are used then a reduced pressure device shall be installed. BFP's for residential use shall consist of dual check valves for the potable line. Double check or pressure vacuum breaker devices installed at least 12 inches above ground shall be used on irrigation lines. The devices must be tested by the City annually.
 2. BFP's on metered lines will be located on the customer's side of the meter and on fire lines located on the customer's side of the right-of-way.
 3. All BFP devices shall meet or exceed the tests and requirements specified in the AWWA Standard Code, latest edition, and shall further be certified by Underwriter's Laboratories or Associated Factory Mutual Fire Insurance Companies.

4. All BFP devices shall be presently approved and certified by the university of Southern California Foundation for Cross-Connection Control.
5. BFP devices shall consist of 2 independently acting check valves internally force loaded in a normally closed position with resilient seat gate valves or ball valve located on the inlet and outlet of the BFP assembly. The 2 check valves shall be separated by an intermediate chamber in which there is an automatic relief method for venting to the atmosphere, internally force loaded in a normally open position.
6. All BFP devices shall be delivered, assembled with resilient seat gate valves for BFP devices greater than or equal to 3 inches and shall be delivered, assembled with ball valves for BFP devices less than 3". All valves shall be the same size or greater than the BFP device to which the valves are assembled.
7. *Resilient Seat Gate Valves:*
 - a. All resilient seat gate valves shall comply with the requirements of AWWA Standard, latest edition and the City of Crestview Utility Specifications.
 - b. All valves shall be Class B gray iron body, open stem and yoke, water valves suitable for buried vertical mounting. Stem nuts shall be independent of wedge and shall be of solid bronze conforming to ASTM B62.
 - c. All valves shall be open by turning a hand-wheel clockwise (to the right).
 - d. All valves shall have flange joints which conform to AWWA Standard C-110, latest edition. Flange joint accessories shall not be furnished with the valves.
8. *Ball Valves:*
 - a. All ball valves shall be brass or stainless-steel body with a chrome plated brass or stainless-steel ball.
 - b. Ball valves shall have reinforced Teflon sheets and stuffing box seals.
 - c. Ball valves shall have inside iron pipe threads on the connection ends of the valves.

9.0 SANITARY WASTEWATER COLLECTION

9.1 Purpose

The following standards are intended as a guide to the design engineer in the preparation of plans for sanitary wastewater improvements. While the design standards given are intended as minimum design criteria, it is recognized there may be individual instances where a less stringent criteria may be approved without affecting the integrity of the system. All sanitary wastewater collection systems shall be designed and constructed in accordance with the City of Crestview's Standard Utility Specifications located in Appendix A of this manual.

9.2 General Description of Work

The following minimum requirements are considered acceptable to the City of Crestview in the collection of sanitary wastewater from domestic and commercial customers. Deviations from

these standards may be allowed by the City only upon a finding that, in accordance with sound engineering standards, the granting of the deviation will not work to increase the likelihood of a system failure. No deviation will be allowed unless it is clearly noted on the approved construction plans.

- A. All expansion shall conform to the City's Utility Master Plan for wastewater maintained and amended by the City.
- B. When these standards differ from Local, State and/or Federal requirements, the more stringent requirement shall apply.
- C. The collection system for sanitary wastewater includes the gravity mains, manholes, consumer service pipes, lift stations, force mains, and other appurtenances. The system should be designed to provide the collection of sanitary wastewater from the customers and for the safe and economical transport to the treatment plant.

9.3 Regulations

The following agency regulations shall apply when applicable:

- A. Environmental Protection Agency and U.S. Public Health Service: The governing standards of these agencies will be followed when applicable.
- B. Florida Department of Environmental Protection: The wastewater collection shall conform to the applicable State of Florida Department of Environmental Protection laws, policies, standards and rules and regulations for public wastewater collection systems.
- C. Plumbing Codes: The provisions of the Plumbing Code of the City of Crestview and the Florida Building Code as it pertains to sanitary wastewater collection, service line locations and materials, except as provided for elsewhere in these criteria, shall apply.
- D. City of Crestview Public Services Department: All wastewater collection systems, that are to become a part of the City system shall be designed and constructed in accordance with these standards. Wastewater system materials, installation of materials, and construction methods and procedures shall be in accordance with the current material and installation specifications in this manual.

9.4 Design Standards

All wastewater collection system plans must be prepared, signed and sealed by a professional engineer registered in the state of Florida and shall meet the following standards:

- A. Flow Requirements: In sizing the collection system gravity mains, the required design flow shall be the sum of the required sanitary flow as contained below, plus allowance for infiltration and inflow.
 - 1. *Required Sanitary Flow (Residential)*: Required average daily flow for sanitary use in residential areas shall be based on 350 gallons per day per unit (100 gpcd x 3.5 persons) or as approved by the City.
 - 2. *Required Sanitary Flow (Nonresidential)*: The required flow for commercial, institutional, industrial and other nonresidential facilities shall be determined by the

Engineer of Record and approved by the City for each specific instance. Documentation with references will be required for the method used to determine the capacity.

3. **Required Infiltration Flow:** Required infiltration and inflow for developed areas shall be in accordance with the table (based on 100 gal/inch-dia./mile/day for new construction) depicted below.

Pipe Diameter (in)	Minimum I&I Flow (GPD/1000 ft)
8	150
10	190
12	225
15	300

Note: I & I may be neglected in sizing pipes but needs to be included for lift station flows. If existing lines are included, provide measured flows at maximum I & I time or basis for proposed flow allowance.

- B. **Collection System:** All gravity mains shall be connected at manholes. Provisions for future connecting mains shall be made by providing appropriate easement and/or extending construction of all wastewater mains to the exterior boundaries of the subdivision wherever future connections to adjacent subdivisions or lots are anticipated.
- C. **Gravity Mains:** Gravity mains shall be of sufficient size to carry the required flow at velocities as herein provided. Mains shall be located to provide service to each lot within a subdivision. All mains shall be installed only in dedicated streets, alleys, public rights-of-way or utility easements, in favor of the City for the use and benefit of the City. Utility easements must have a minimum width of 10 feet if adjacent to a right-of-way or 15 feet if not. All main locations and sizes shall be in accordance with the City's current "Utility Master Plan" and the approved subdivision master development plan and utility layout.
 1. **Main Size:** Minimum diameter shall be 8 inches in all areas. Standard sizes of gravity mains used shall have nominal diameters of 8, 10, 12, 15, 18, 21, 24, 30 and 36 inches.
 2. **Slopes:** Slopes shall be designed with a hydraulic gradient sufficient to prevent deposition of solids, by developing a minimum velocity of 2.0 fps as computed using Manning's formula and an "n" value of not less than 0.013 while flowing full (will have same velocity at 1/2 full). The following table establishes the minimum allowable slopes for various size pipes and indicates their approximate carrying capacity when flowing full at the minimum slope.

Pipe Size (in)	Minimum Slope (%)	Capacity Full (MGD +/-)
8	0.40	0.5
10	0.28	0.7

12	0.22	1.0
15	0.15	1.6
18	0.14	1.8

- a. In the case where the slope and volume are such that velocities exceeding 10 fps will be realized at average flow, special provision shall be made to protect against erosion. This protection may be secured utilizing cast iron, ductile iron, steel pipe or equivalent.
- b. Where velocities greater than 15 fps are attained or slopes are 20 percent or greater, special provision shall be made to protect against displacement by erosion and shock. This will be obtained by anchoring the sewer securely with concrete anchors or equal, with a minimum center to center spacing as follows:

Slope (%)	Minimum Spacing (ft)
20 - 35	36
36 - 50	24
> 50	16

- c. Full advantage of suitable topography and paralleling of ground slopes shall be made. Minimum slopes should only be used when necessary, particularly with 8-inch pipe.
 - d. Sewers shall be designed and laid with a uniform slope between manholes.
3. *Change in pipe size:* Change in pipe size shall not occur between manholes.
- a. Increasing Size: When a smaller sewer joins a larger one, the invert of the larger sewer shall be lowered sufficiently to maintain the same hydraulic gradient (i.e. match the crowns).
 - b. Decreasing Size: At times, due to increasing sewer slopes, a reduction in the size of the outgoing sewer from a manhole may be justified. Such a reduction shall not be permitted on sewers 24 inches in diameter or under but may be permitted on larger sewers.
4. *Cover:* A minimum cover of 30 inches must be provided.
- a. At road crossings, a minimum separation distance of 24 inches shall be maintained from the bottom of the base to the top of the pipe or the top of the casing when provided.
 - b. At buried stream crossings, a minimum cover of 36 inches is required.
5. *Crossings:*
- a. Major road crossings shall be steel encased. Any additional requirements of the regulator agency responsible for the road shall be met.
 - b. Buried stream crossing shall be steel encased. This protection shall extend 10 feet beyond the bank and the pipe or casing shall be anchored to prevent shifting.

- c. Aerial stream crossings shall be made with ductile iron pipe. This protection shall extend until 30 inches of cover is provided.
 - d. When crossing under pipes, conduits, or other structures greater than 24 inches in diameter, and a 60-inch separation distance cannot be maintained, the pipe shall be encased in steel casing for a minimum of 5 feet on either side of the crossed pipe.
6. *Manholes:* Manholes shall be installed at the end of each sewer line, at all junctions, at all changes in grade, size or alignment; with the following requirements:
- a. Maximum spacing shall be 400 feet up to and including 36-inch pipe. Spacing for pipes larger than 36-inch may be increased up to, but not to exceed 1000 feet.
 - b. Lamp holes may be substituted at the ends of short lines, not to exceed 150 feet in length.
 - c. A drop manhole shall be provided when a sewer enters a manhole at an elevation of 2 feet or more above the manhole invert. Where the difference in elevation is less than 2 feet, the invert shall be filleted to prevent solids deposition. Drop manholes shall use an outside drop connection, except inside drops may be approved for building services and laterals. Inside drops shall be secured to the interior wall of the manhole and provide access for cleaning.
 - d. The inside diameter of manholes shall be a minimum of 48 inches up to and including 24-inch pipe. For pipes larger than 24 inches, the inside diameter of the manhole shall be increased to provide at least a 12-inch space to each side of the pipe.
 - e. Manholes shall be reinforced concrete and coated with corrosion resistant "Spectra-Shield" coating to the interior. Only special conditions would dictate a cast in place or other type.
 - f. The manhole flow channel or invert shall be constructed in the field to ensure a smooth flow line from all incoming lines to the outgoing. All channels must provide a smooth transition to the outgoing line with the maximum possible radius on all curves.
7. *Inverted Siphons:* Inverted siphons shall be avoided whenever possible; however, if used, shall have not less than 2 barrels, with a minimum pipe size of 6 inches and shall be provided with necessary appurtenances for convenient flushing and maintenance. The manholes shall have adequate clearance for rodding and provide sufficient head and pipe sizes to secure velocities of at least 3.0 feet per second for average flows. The inlet and outlet details shall be arranged so that the normal flow is diverted to one barrel, and either barrel may be taken out of service for cleaning.
- D. Lift Stations: All components of a lift stations shall be designed to operate effectively at existing flows as well as all future projected flows. Stations shall contain a minimum of 2 pumps with each pump capable of pumping at the ultimate peak hour flow. Peak hour flows shall be determined using a peaking factor of 4.
1. *Wet wells:* Wet wells shall be fiberglass (preferred) or concrete with Spectra-Shield corrosion resistant coating. Wet well volume shall be calculated based on the

ultimate peak flow with consideration for initial peak flow and meet the following requirements:

- a. Minimum liquid level in the well shall be 2 feet above the bottom or in accordance with the manufacture's requirements for the pumps specified, whichever is greater.
 - b. Cycle time, to pump down and refill, shall be not less than 10 minutes nor more than 15 minutes at $\frac{1}{2}$ peak flow.
 - c. The spacing between 'lead pump on' and 'lag pump on' shall be a minimum of 1 foot.
 - d. The high-level alarm shall be set not less than 1 foot above the 'lag pump on' and at a sufficient depth to provide a minimum of 30 minutes storage calculated at the average flow, below the lowest influent line.
2. *Bypass*: Lift stations shall have the necessary apparatuses to accommodate the City's emergency pumping equipment to operate a bypass of the station pumps and transmit the flow through the station force main downstream.
 3. *Standby Emergency Power*: All stations shall be equipped with a manual transfer switch for connecting a portable generator. Larger stations require an on-site emergency generator suitably located and wired for automatic transfer as follows:
 - a. Lift stations which serve as "Master Lift Stations", i.e. stations that receive pumped flow from one or more other lift stations.
 - b. Lift stations with a design peak flow over 100 gpm.
 - c. Lift stations with a large design head such that the pump power requirements are 7.5 HP are greater.

Generators will be of sufficient size and power to run all the station equipment.

- E. Wastewater Force Mains: Wastewater force mains shall meet the following:
 1. Force mains shall not be less than 4 inches in diameter except for private force mains which can be smaller.
 2. Force main flow velocity at the initial pumping rate shall not be less than 2.0 fps using the Hazen-Williams equation for pressure lines. The velocity at the design pumping rate shall not exceed 6 fps
 3. There shall be an air relief valve installed at each intermediate high point, if that high point could collect air/gases sufficient to block the line.
 4. Force mains shall never enter a gravity manhole from a direction contrary to the direction of flow out of the manhole. Entry shall be made to ensure a good flow transition.
 5. When a force main will manifold into an existing force main the impact on that line and all pump stations that utilize that line must be evaluated.
 6. All private force mains entering public rights-of-way shall be built to City standards past that point, and a valve shall be placed there to delineate the change in maintenance responsibility and to enable flow control. Any private force main running parallel down a public right-of-way that doesn't serve any other properties

- other than the development shall remain private and be maintained by the development.
- F. Wastewater Service Lines: Customer service lines shall be provided to all lots within a subdivision in accordance with City regulations. Customer service connections to industrial or commercial lots may be omitted provided approval of the City is obtained prior to plan approval.
1. *Pipe Material*: PVC pipe SDR35 will be utilized for gravity service lines.
 2. *Cleanouts*: A sewer cleanout shall be installed on all gravity service lines at the right-of-way or easement line, defining the limit of City maintenance. Cleanouts shall be constructed to provide access at finished grade.
 3. *Cover*: A 30-inch minimum cover is required on all services and gravity services must meet the minimum slope requirements of the Plumbing Code. If gravity service is not feasible a privately maintained lift station and force main will be required.
 4. *Street Crossings*: When services must cross under existing City paved streets, boring will be required and complete details must be provided. If the street is in poor condition, open cut may be approved by the City.
 5. *Flow Measurement*: The City may require flow measuring devices where flows in excess of 50,000 gpd can be expected. This includes apartment complexes, trailer or mobile home parks, shopping centers, etc. The City must approve the method and location of flow measurements. Acceptable methods will include partial flume with totalizer, pipe meters, and hour meters on private lift stations.
- G. Large Developments: Developments the city deems to produce a significant amount of wastewater flow that could potentially exceed the capacity of downstream components of the City's wastewater collection system shall be subject to the following:
1. The engineer of record shall provide an analysis of all downstream wastewater components and design upgrades to any components that exceed capacity.
 2. The Developer will construct and pay for all required upgrades.

10.0 CLOSEOUT & FINAL ACCEPTANCE

10.1 General Requirements

In order for a development to be accepted by the Public Services Department the following criteria must be met:

- A. The engineer of record shall provide a signed & sealed letter certifying that **all** development improvements are complete and constructed per plans, that all required local, state & federal permits were obtained, and notes any deviations from the approved plans with explanations. All deviations shall be shown on the as-built drawings and may require backup calculations and documentation.
- B. All infrastructure improvements (streets, water, sewer, stormwater, etc.) to be accepted by the City for perpetual maintenance shall meet the testing requirements called for in

this manual, the City's Standard Utility Specifications, and any other specifications and standards referenced in the manual.

- C. Roadway test results are required for both public and private streets.
- D. All underground utilities to be accepted by the City for perpetual maintenance shall be inspected by the City prior to burial.
- E. Water and sewer lines must be cleared for use by the Florida Department of Environmental Protection.
- F. Gravity sewer lines to be accepted by the City for perpetual maintenance shall be inspected by Video camera and one copy of the video record provided to the Public Services Department. Any problems revealed by the video shall be corrected by the Contractor/Developer, to the satisfaction of the Public Services Department.

10.2 As-Built Record Drawings

Upon completion of a development, the Contractor shall produce and submit a signed and sealed set of as-built record drawings prepared by a Florida Registered Land Surveyor or Engineer of Record. The amount of detail on the record drawings shall include but is not limited to graphic scale, building footprints, grades and contours, streets and parking lots, stormwater management systems, underground and overhead utilities, appurtenances, and any other information deemed necessary by the City. The acceptance of the record drawings by the City does not release the Contractor from the liability of the construction. The City reserves the right to verify the record drawings prior to acceptance.

- A. One hard copy and one electronic copy in the latest AutoCAD format of the as-built drawings shall be provided to the Public Services Department.
- B. As-built drawings for utilities (stormwater, water and sewer) to be accepted by the City for perpetual maintenance shall contain the following:
 - 1. Pipe sizes, materials, locations, slopes and inverts.
 - 2. Manholes and drainage structures (inlets, risers, junction boxes, MES's, etc.) locations along with top and invert elevations.
 - 3. Water and sewer service line locations with a measurement for each off a known location.
 - 4. Locations of fire hydrants, valves, meters, backflow preventers, and any other appurtenances.

An ESRI comparable Shapefile is also required for the above-mentioned utilities. Shapefiles should include horizontal and vertical datum information.

10.3 Closeout Checklist

Before any Certificate of Occupancy (C.O.) can be issued or Final Plat recorded the City must receive the following items (if applicable):

- 1. Engineer of Record's Certification of Improvements and Permits.
- 2. As-Built Record Drawings.

3. Roadway Test Results.
4. Video Record of Sewer Lines.
5. FDEP Clearance Letters for both Water & Sewer.
6. Written Acknowledgement from FDOT that all Permit Conditions (Driveway, Drainage, Utility) have been met and accepted.
7. Copy of the ERP Certification and Request for Conversion to Operation to NFWFMD.
8. Written Acknowledgement from all Jurisdictional Agencies that all Wetland Permit Conditions have been met and accepted.
9. Signed 2-Year Warranty Agreement.

Written explanations are required for the above items that are not applicable. Items 1 through 4 must be received prior to requesting a final inspection. Upon request the City will conduct a final inspection and any deficiencies must be corrected before acceptance.

10.4 2-Year Warranty Period

All streets, water and sewer facilities, and drainage systems to be accepted by the City for perpetual maintenance are subject to a 2-Year Warranty Period.

- A. During this period the Owner/Developer warrants that it shall, for a period of 2 years from the date of acceptance, perform all necessary work and repair to correct any defective condition arising by reasons of workmanship, materials, labor, or damage which may be discovered during the Warranty Period.
- B. If in the judgement of the City, repairs to the Improvements become necessary, then upon notice from the City, at any time during the Warranty Period, said repairs shall be promptly made, at the sole expense of the Owner/Developer, who shall correct and repair all unacceptable conditions as may be necessary to bring the warranted improvements into compliance.

APPENDIX A

CITY OF CRESTVIEW DEPARTMENT OF PUBLIC SERVICES STANDARD UTILITY SPECIFICATIONS

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SECTION 12 TRENCH EXCAVATION, BACKFILL & COMPACTION

12.01 PURPOSE

The following terms and conditions reflected within this Section provide guidance for the completion of trench excavation, backfill and compaction.

12.02 GENERAL (General Description of Work)

A. Excavation, shoring, dewatering, pipe bedding, trench backfill, compaction, grading and cleanup of all pipeline trenching for the project.

B. All work must be done in accordance with these specifications and the safety requirements of the State and OSHA standards.

C. Trench backfill and compaction shall proceed along with the trench excavation and pipe laying operations and shall not lag behind them for more than a distance of 300 feet; on utility projects, finish grading and grassing of all trench and adjacent disturbed areas shall be completed within one week of the trench backfilling.

12.03 JOB CONDITIONS

A. Contractor to accept site in the condition existing during the contract time frame.

B. Groundwater/surface water found during construction are conditions of the contract and responsibility of the Contractor.

12.04 PRODUCTS (Pipe Bedding and Backfill)

A. Determination of source of materials for bedding and backfill shall be responsibility of Contractor, but use of such materials shall be subject to approval of Engineer.

B. Pipe bedding shall be angular material.

C. Materials and construction shall meet the requirements of ASTM D2321 when PVC pipe is utilized.

12.05 SELECT BACKFILL

Where specified on plans or when called for, use clean sand or fine aggregate with less than 5% passing the #200 sieve and with a maximum dry density of at least 100 pounds per cubic foot, according to the Standard Proctor test. Source of material shall be subject to approval of the Engineer.

12.06 SELECT BEDDING MATERIAL

Use crushed rock or stone with 70-100% passing the 1" sieve and no more than 50% passing the 3/4" sieve. Crushed oyster shells are acceptable. Source of material shall be subject to approval of the Engineer.

12.07 CONTROLLED DENSITY FILL

A. Use high slump mixture of Portland Cement, fly ash and fine aggregate formulated, licensed and marketed as K-Krete or equal.

B. Provide mixture with minimum 28-day compressive strength of 70 psi with no measurable shrinkage or surface settlement.

12.08 SHEETING, SHORING AND BRACING

A. Use sound timber or structural steel.

B. Use shapes and sizes as required.

12.09 EXECUTION

A. Dewatering:

1. Prevent surface water from flowing into excavation.

2. Provide equipment for handling water encountered as required. Obtain approval of proposed method of dewatering.

3. No sanitary sewer shall be used for disposal of trench water.

4. Contractor shall obtain a Northwest Florida Water Management District permit for the dewatering.

B. Protection of Existing Utilities:

1. Notify all utilities of location and schedule of work.

2. Locations and elevations of utilities shown on plans are to be considered approximate only. Notify Public Services and Engineer of conflicts between existing and proposed facilities.

3. Repair, relay or replace existing utilities damaged, destroyed or disrupted during work. Unless specified otherwise, replacement will be at the Contractor's expense.

C. Sheeting, Shoring and Bracing:

1. Provide as necessary, to hold walls of excavation, prevent damage to adjacent structures and to protect workmen and property.

2. Leave sheeting and shoring in place where removal might cause damage to work or as otherwise indicated on drawings.

3. When moveable trench shield is used below spring line of pipe, it shall be lifted prior to any forward movement to avoid pipe displacement.

D. Changes in Grade:

1. Minor adjustments to grades may be made from plan grades to suit unforeseen construction conflicts or conditions with approval from Engineer.

2. No additional compensation will be made for such minor changes.

12.10 EXCAVATION AND TRENCHING

A. General:

1. Method of excavation at Contractor's option.

2. The Contractor will use caution when excavating under tree roots and under and around structures and utilities. Excavate by hand when necessary.

3. Stockpile and replace topsoil equal to preexisting depth for surface restoration in grassed or agricultural areas where specified or shown on plans.

B. Trench Characteristics:

1. Depth: As indicated for pipe installation to lines and grades required with proper allowance for thickness of pipe and type of bedding specified or indicated.

2. Width:

a. Keep width of trench as narrow as possible and yet provide adequate room for backfilling and jointing.

b. Maximum trench width of 30 inches or pipe O.D. plus 18 inches where soil conditions permit.

3. Provide bell holes for each pipe joint where pipe bears on undisturbed earth.

4. Trench bottom shall be free of large stones and other foreign material.

12.11 ORGANIC OR UNSTABLE/UNSUITABLE MATERIALS

A. Stop work and notify the Engineer.

B. Perform remedial work as directed.

C. If material is judged unsuitable and removal is authorized, remove and replace with other material as directed by the Engineer.

12.12 ROCK EXCAVATION

A. Excavate any rock to maintain minimum 6-inch clearance around pipe.

B. Dispose of rock material not suitable for backfill as directed by Engineer.

C. Use of explosives not permitted without prior written authorization from owner and Engineer.

D. Provide Special Hazard Insurance covering liability for blasting operations.

12.13 BEDDING

A. Place after bottom of trench has been excavated to proper depth and grade.

B. Place, compact and shape bedding material to conform to barrel of pipe to insure continuous firm bedding for full length of pipe.

C. Provide bedding as described in following table unless indicated otherwise in Plans or in the Special Conditions.

<u>Pipe Material</u>	<u>Minimum Bedding Class</u>
1. Ductile Iron Pipe	Class D *
2. Flexible (PVC) Pipe	Class C * (Type I in Plans)

*Refers to standard bedding classifications as described in ASTM C12-09.

D. In the event that unsuitable material is encountered at the trench bottom, a Class B (Type II in Plans) bedding shall be provided upon approval of the Engineer.

12.14 TRENCH BACKFILL

- A. Use excavated material backfill unless otherwise specified or directed.
- B. Use suitable backfill for all trenches within 5 feet of buildings and beneath walks, parking areas, paved streets or existing exposed utilities.
- C. Initial Backfill:
 - 1. Place after pipe has been bedded and checked for alignment, grade and internal obstructions.
 - 2. Carry out in an orderly fashion after authorization to cover pipe has been given.
 - 3. Allow no more than 300 feet of trench to be open at one time.
 - 4. Do not backfill until concrete or mortar has sufficiently cured.
 - 5. Record location of connections and appurtenances before backfilling.
 - 6. Place by hand and hand tamp to not less than 12 inches above top of pipe, in approximately 4-inch layers.
 - 7. Backfill simultaneously on both sides of pipe to prevent displacement.
 - 8. Place cushion of 4 feet above pipe envelope before using heavy compacting equipment.
- D. Subsequent Backfill:
 - 1. Place backfill into trench at an angle so that impact on installed pipe is minimized.
 - 2. Compaction of all backfill material shall be performed in a manner that shall not crack, crush, and/or cause the installed pipe to be moved from the established grade and/or alignment.
 - 3. Areas under pavement and walks or within building areas shall be mechanically compacted to the top of the subgrade in 6-inch lifts to a minimum of 95 percent of the Standard Proctor Density.
 - 4. Areas not subject to vehicular traffic shall be backfilled and compacted in layers not more than 12 inches in depth and to a minimum of 90 percent of the Standard Proctor Density.
 - 5. Compaction method at discretion of Contractor with following exceptions:
 - a. If in Engineer's opinion compaction method presents potential damage to pipe, it will not be allowed.
 - b. Compaction of any backfill material by flooding or jetting will require prior written authorization of Engineer.
 - 6. Mound excavated materials no greater than 6 inches in open areas only.
 - 7. Fill upper portion of trench with topsoil as specified herein before.
 - 8. No trench shall be open over night without proper notice to the Department.
- E. Controlled Density Fill:
 - 1. Use where shown on plans or directed by the Engineer.
 - 2. Provide suitable forms to limit volume of controlled density fill material.
 - 3. Protect exposed utility lines during placement.

4. Place material in accordance with suppliers' written recommendations unless directed otherwise by Engineer.

12.15 EXCESS MATERIAL

Dispose of waste excess excavated material as directed by Engineer.

12.16 TESTING

A. Payment for all tests will be the responsibility of Contractor.

B. Standard Proctor Density:

1. ASTM D698.

2. One (1) proctor required for each type of material encountered.

C. In Place Density:

1. ASTMD1556 (Sand Cone)

2. ASTMD2167 (Balloon)

3. ASTMD3017 (Nuclear)

D. Frequency of Density Testing: Field density tests of the trench backfill shall be performed every 400 feet of sewer line trench, or on every run of pipe (manhole to manhole), and shall be performed on each lift of backfill, at the discretion of the Engineer.

12.17 PAYMENT FOR TRENCH EXCAVATION

A. Trench excavation shall be considered incidental to pipeline installation.

B. Payment shall be made at the contract unit price per cubic yard only if a bid item is established in the contract.

12.18 PAYMENT FOR BACKFILL

A. Payment for backfill shall be considered incidental to pipeline installation; payment for special backfill materials will be made at the contract unit price per cubic yard only if a separate bid item is established in the contract.

B. No allowance shall be made for waste.

C. If the Contractor fails to compact the backfill to the density requirements, the Engineer may order the material removed and replaced as no cost to the Owner.

**SECTION 13
PIPE BORING, DRILLING & JACKING**

13.01 GENERAL

This work shall consist of boring, drilling or jacking operations related to the installation of water pipe and sanitary sewer pipe, in areas where trenching is not feasible or permitted, or as designated on the plans. A permit shall be obtained from the City prior to commencement of any boring, drilling, or jacking operations under a City street.

13.02 PRODUCTS (Steel Casing)

A. The steel casing shall be seamless or electric resistance-welded tubing for sizes under 24-inch O.D.

B. Steel pipe shall be A-139, Grade B with one beveled end (to 37 degrees) and other end square cut.

C. The following table shall be used for determining minimum casing size:

CASING SIZE vs. CARRIER SIZE

Steel Casing Diameter	MINIMUM WALL THICKNESS		Carrier Pipe I.D.	
	Highway	Railroad	Gravity	Pressure*
10"	0.188"	0.188"	NA	4"
12"	0.250"	0.250"	4"	6"
14"	0.250"	0.250"	6"	8"
16"	0.281"	0.281"	8"	10"
18"	0.312"	0.312"	10"	10"
20"	0.344"	0.344"	12"	12"
24"	0.375"	0.375"	15"	16"

*Use next larger casing size for mechanical joint pipe.

D. Casing size and specifications shall meet FDOT approval when boring under a State Road.

13.03 EXECUTION

A. Boring shall be performed to alignment and grade as shown on the construction drawings.

B. The earth and/or rock augers shall not exceed the O.D. (outside diameter) of the steel casing by more than one fourth (1/4) of an inch. The boring and insertion of the steel casing shall be performed with equipment capable of simultaneous operations.

C. The feed rate of augers and hydraulic pushing of the casing shall be the same. Under no circumstances will boring be allowed unless operations are simultaneous.

- D. Every effort shall be made to avoid loss of earth.
- E. Excavated material shall be removed from the casing as excavation progresses and no accumulation of such material within the casing shall be permitted.
- F. Upon completion of the boring operations, all voids around the outside face of the casing shall be filled by grouting. Grouting equipment and material shall be on the job site before boring operations are started in order that grouting around the bored casing may be started immediately after the boring operations have finished.
- G. The allowable tolerance as to grade and alignment of the installed casing shall not exceed one tenth (1/10) of a foot per hundred feet of casing length.
- H. The Contractor shall be responsible for protecting any underground utilities and for any damage resulting to located utilities.
- I. The Contractor shall be fully responsible for producing a sound, tight installation, true to line and grade. Gravity pipe shall be skidded through the casing on redwood or pressure treated, stainless-steel tied skids. Ductile iron pipe may be used instead of skids.
- J. The Contractor shall be fully responsible for obtaining FDOT approval when applicable.

13.04 INSTALLATION DETAILS

- A. The minimum depth of casing under roads shall be 24" from bottom of base to top of casing pipe; greater depth may be required depending on site and project specifics.
- B. Length of casing shall extend beyond the edge of pavement a minimum of five (5) feet on either side; additional length may be required depending on depth of bore and site conditions.
- C. Prior to the start of the boring operations, the Contractor shall submit the following details to the Engineer for review:
 - 1. Boring pit bracing.
 - 2. Casing boring head.
- D. Only workmen experienced in boring operation shall perform the work.

13.05 DRILLING AND JACKING FOR CONDUIT

- A. Metallic conduit shall be installed under existing pavement by approved jacking or drilling methods.
- B. Nonmetallic conduit shall not be installed by jacking. Nonmetallic conduit may be installed by drilling if a hole larger than the conduit is pre-drilled and the conduit is hand-installed.
- C. Jacking or drilling pits shall be at least two (2) feet from the edge of any type of any pavement, measured from the side of the pit nearest to the pavement.

13.06 JACKING

- A. If the grade of the pipe at the jacking end is below the ground surface, suitable pits or trenches shall be excavated for the purpose of conducting the jacking operations and for placing end joints of the pipe. Such work shall be sheeted securely

and braced in a manner to prevent earth cave ins and to provide a safe, stable work area.

B. Heavy duty jacks suitable for forcing the pipe through the embankment shall be provided. In operating jacks, even pressure shall be applied to all jacks used so that pressure will be applied to the pipe uniformly around the ring of the pipe.

C. A suitable jacking frame or back stop shall be provided. The pipe to be jacked shall be set on guides properly braced together, to support the section of the pipe and to direct it in the proper line and grade.

D. The whole jacking assembly shall be placed so as to line up with the direction and grade of the pipe. In general, embankment material shall be excavated just ahead of the pipe and material removed through the pipe and the pipe forced through the embankment with jacks, into the space thus provided.

E. The excavation for the underside of the pipe, for at least one third (1/3) of the circumference of the pipe, shall conform to the contour and grade of the pipe. A clearance of not more than two (2) inches may be provided for the upper half of the pipe. This clearance is to be tapered off to zero (0) at the point where the excavation conforms to the contour of the pipe.

F. The distance that the excavation shall extend beyond the end of the pipe depends on the character of the material, but it shall not exceed two (2) feet in any case. This distance shall be decreased if the character of the material being excavated makes it desirable to keep the advance closer to the end of the pipe.

G. The pipe, preferably, shall be jacked from the low or downstream end. Lateral or vertical variation in the final position of the pipe from the line and grade established by the Engineer will be permitted only to the extent of 1 inch in 10 feet, provided that such variation shall be regular and only in one direction and that the final grade or flow line shall be in the direction indicated.

H. If the Contractor desires, he may use a cutting edge of steel plate around the head end of the pipe extending a short distance beyond the end of the pipe with inside angles or lugs to keep the cutting edge from slipping onto the pipe.

I. When jacking of pipe is once begun, the operation shall be carried on without interruption, insofar as practical, to prevent the pipe from becoming firmly set in the embankment.

J. Any pipe damaged in jacking operations shall be removed and replaced by the Contractor at his entire expense.

K. Immediately after jacking is complete and the carrier or encasement pipe is accurately positioned and approved for line and grade, the clearance space between the pipe and soil shall be completely filled by pressure grouting for the entire length of the installation.

13.07 TRENCH BACKFILL

A. Use excavated material backfill unless otherwise specified or directed.

B. Use suitable backfill for all trenches within five (5) feet of buildings and beneath walks, parking areas, paved streets or existing exposed utilities.

C. Initial Backfill:

1. Place after pipe has been bedded and checked for alignment, grade and internal obstructions.
 2. Carry out in an orderly fashion after authorization to cover pipe has been given.
 3. Allow no more than 300 feet of trench to be open at one time.
 4. Do not backfill until concrete or mortar has sufficiently cured.
 5. Record location of connections and appurtenances before backfilling.
 6. Place by hand and hand tamp to not less than 12 inches above top of pipe, in approximately 4-inch layers.
 7. Backfill simultaneously on both sides of pipe to prevent displacement.
 8. Place cushion of 4 feet above pipe envelope before using heavy compacting equipment.
- D. Subsequent Backfill:
1. Place backfill into trench at an angle so that impact on installed pipe is minimized.
 2. Compaction of all backfill material shall be performed in a manner that shall not crack, crush, and, or cause the installed pipe to be moved from the established (grade and/or alignment).
 3. Area under pavement and walks or within buildings shall be mechanically compacted to the top of the subgrade in 6 inch lifts to a minimum of 95 percent Standard Proctor Density.
 4. Areas not subject to vehicular traffic shall be backfilled and compacted in layers not more than 12 inches in depth.
 5. Compaction method at discretion of Contractor with following exceptions:
 - a. If in Engineer's opinion compaction method presents potential damage to pipe, it will not be allowed.
 - b. Compaction of any backfill material by flooding or jetting will require prior written authorization of Engineer.
 6. Mound excavated materials no greater than 6 inches in open areas only.
 7. Fill upper portion of trench with topsoil as specified hereinbefore.
 8. No trench shall be open over night.
- E. Controlled Density Fill:
1. Use where shown on plans.
 2. Provide suitable forms to limit volume of controlled density fill material.
 3. Protect exposed utility lines during placement.
 4. Place material in accordance with suppliers' written recommendations unless directed otherwise by Engineer.

13.08 EXCESS MATERIAL

Dispose of waste excess excavated material as directed by Engineer.

13.09 TESTING

- A. Payment of failed tests will be the responsibility of the Contractor.
- B. Standard Proctor Density:
 - 1. ASTM D698.
 - 2. One (1) required for each type of material encountered.

13.10 PAYMENT

- A. Boring:
 - 1. The accepted quantities for boring will be paid at the unit bid price per diameter of casing per linear foot.
 - 2. Payment for carrier pipe will be paid in accordance with negotiated prices.
- B. Drilling and Jacking of Conduit:
 - 1. The accepted quantities for drilling and jacking of conduit will be paid at the unit bid price per diameter per linear foot.
 - 2. The accepted quantities for jacking will be paid at the unit bid price per linear foot of the type, size, and class indicated.
- C. When not listed as a separate contract pay item, boring, drilling and jacking conduit or jacking shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as provided in the contract proposal.
- D. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

SECTION 14 WATER MAINS & WASTEWATER FORCE MAINS

14.01 GENERAL (Related Requirements Specified Elsewhere)

- A. Trenching, Backfilling and Compacting (See Section 12).
- B. Pipe Boring and Jacking (See Section 13).

14.02 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Owner reserves the right to reject material left from another job.
- B. Store materials to prevent physical damage.
- C. Protect materials during transportation and installation to avoid physical damage.

14.03 GENERAL DESCRIPTION OF WORK COVERED

Furnish and install all pipe, fittings, structures and accessories required for water transmission line and/or pressure sewer lines.

14.04 QUALITY ASSURANCE

- A. Comply with the latest published edition of American Water Works Association (AWWA) Standards:

- AWWA C106 – Cast Iron Pipe Centrifugally Cast in Metal Molds for Water and Other Liquids.

- AWWA C108 – Cast Iron pipe Centrifugally Cast in Sand Lined Molds for Water or Other Liquids.

- AWWA C110, C1100a – Gray Iron and Ductile Iron Fittings, 2" through 48" for Water and Other Liquids.

- AWWA C111 – Rubber Gasket Joints for Cast Iron Pressure Pipe and Fittings.

- AWWA C150 – Thickness Design of Ductile Iron Pipe.

- AWWA C151 – Ductile Iron Pipe, Centrifugally Cast in Metal Mold or Sand Lined Molds, for Water or other Liquids.

- AWWA C153 – Ductile Iron Compact Fittings, 3" through 12" for Water and Other Liquids.

- AWWA C600 – Installation of Ductile Iron Water Main and Appurtenances.

- AWWA C605-05 – Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water

- AWWA C900-97 – Polyvinyl Chloride (PVC) Pressure Pipe, 4" through 12", for Water Distribution.

- B. Comply with the latest published editions of the American Society for Testing and Materials (ASTM) Standards.

14.05 PRODUCTS (General Requirements)

- A. Pipe furnished may be either PVC or ductile iron for water mains unless shown otherwise on the plans of bid documents.
- B. PVC or ductile iron pipe shall be used for all pressure sewer lines unless shown otherwise on the plans.

C. All pipe shall be marked in accordance with the applicable standard specification under which the pipe is manufactured unless otherwise specified.

14.06 POLYVINYL CHLORIDE PIPE (PVC)

A. Provide pipe meeting AWWA C900 PVC 1120 or ASTM D2241 Type 1 Grade 1 PVC 1120 Standards.

1. Minimum requirements:

	Std. Size	SDR/DR	Pressure Class (psi)	Pressure Rating (psi)
C900	4"-12"	25	165	165-350
D2241	2"-3"	26	160	160-340

2. Use pipe meeting minimum requirements unless shown otherwise on plans.

B. Provide push-on joints with bell integrally cast into pipe or with coupling of same material as pipe.

C. Use elastomeric gaskets, as provided in AWWA C900 or ASTM D3139.

D. Provide cast-iron or ductile-iron fittings.

E. Provide fittings with materials and pressure class equal to or greater than that specified for pipe.

F. Provide sleeve type or anchored coupling where indicated or required to join pipe or provide restraint to offset internal or hydrostatic test pressures.

G. Provide pipe marked to indicate the following:

1. Nominal Pipe Size.
2. Material Code Designation.
3. Standard Dimension Ratio.
4. Pressure Rating.
5. Manufacturer's Name or Trademark.
6. National Sanitation Foundation Seal.
7. Appropriate ASTM Designation Number.

H. Provide one of the following methods of color-coding the pipe:

1. 3 color stripes (1/2-inch high) with permanent ink along the entire length of pipe as follows:
 - a. Water Main Pipe - Blue in color with the word "WATER" in 3/4-inch letters every 21 inches along each stripe.
 - b. Sewage Force Main Pipe - Green in color with the word "FORCE MAIN" in 3/4-inch letters every 21 inches along each stripe.
2. Use pipe pigment to color code pipe: a. Water – Blue; b. Sewer (Force Main) – Green.

14.07 DUCTILE IRON PIPE (D.I.P.)

A. Use pipe complying with AWWA C151 except as otherwise specified.

B. Provide thickness class based on AWWA C151 and as follows:

1. 3" to 4" Diameter - Class 51, minimum.
2. 6" to 18" Diameter - Class 50, minimum.

- C. Provide cement mortar lined pipe complying with AWWA C104 and coated with manufacturer's standard coating for all pipe and fittings.
- D. Provide 401 Ceramic Epoxy Lining on all pipe and fittings used for sanitary sewer.
- E. Provide mechanical or push-on joints for all buried pipe in accordance with AWWA C111.
- F. Provide flanged joints for all interior and exterior exposed pipe.
- G. Provide mechanical sleeve type couplings where specified or indicated.
- H. Provide anchored couplings where indicated to withstand specified operating or hydrostatic test pressure.
- I. Provide Fittings:
 - 1. In accordance with AWWA C110 with pressure rating of not less than that specified for adjacent pipe.
 - 2. Use mechanical joints on all fittings.
 - 3. With all specials, taps, plugs, flanges and wall fittings as required.
 - 4. With cement mortar lining in accordance with AWWA C104.
 - 5. Coated with manufacturer 's standard coating.

14.08 VALVES, HYDRANTS AND APPURTENANCES

A. Gate Valves:

- 1. Design: Latest edition of AWWA C509, Compression Resilient-Seated Valves.
 - a. American Darling - CRS-80.
 - b. Mueller .
 - c. Clow - Style 2830 .
 - d. Kennedy .
 - e. AVK
 - f. Others as approved by the City in writing.
- 2. Material: Cast-iron body with epoxy coated interior.
- 3. Rating: 200 psi working pressure class.
- 4. Stem: "O" ring above and below thrust collar.
- 5. Operators: Open counterclockwise (left turn) with 2" square operating nut.
- 6. Jointing: Mechanical joint.

B. Butterfly Valves:

- 1. Design: AWWA C504, Class 150 B.
 - a. Dresser "450"
 - b. American Darling Class 150.
 - c. Others as approved by City in writing.
- 2. Body: Heavy-duty cast iron.
- 3. Shafts: One-piece, ANSI 304 Stainless Steel.
- 4. Seat: Full Circle 360° Seat, Not Penetrated by Valve Shaft, Mechanically Secured.
- 5. Bearings: Sleeve-type, Self-lubricated.
- 6. Operators: Traveling Nut-type, Fully Enclosed, Permanently Lubricated, Open Counterclockwise (left turn).
- 7. Connections: Mechanical Joints.
- 8. Actuators: Manual, with Handwheel.

C. Valve Boxes:

1. Provide for all buried valves.
 2. Use nominal 6-inch cast-iron sliding or screw type pipe shaft with cover and base casting.
 3. Set box top at finished grade.
 4. Furnish drop cover appropriately marked "WATER" or "SEWER".
- D. Corporation Stops:
1. Conform with AWWA C800.
 2. Use 1-inch unless indicated otherwise.
- E. Hydrants:
1. Design: Latest edition of AWWA C502, traffic model with breakaway flange.
 - a. Mueller Centurion - A423.
 - b. American-Darling - B-84-B.
 - c. Kennedy Guardian - K-81A.
 - d. AVK
 - e. Others as approved by the City in writing.
 2. Provide 6-inch inlet, 2 – 2 ½-inch hose nozzles, 1 – 4 ½-inch pumper.
 3. Nozzles shall be field replaceable utilizing straight threads or quarter-turn seal by an "O" ring.
 4. Provide compression type main valve, minimum size 5 1/4 inches.
 5. Pentagon operating nut, 1 1/2 inch in size.
 6. Design to open counterclockwise (turn left).
 7. Provide mechanical joint bell on foot piece.
 8. Finish depth as noted on plans.
 9. Furnish National (American) Standard Fire Hose Coupling Screw Thread (NH).
- F. Post Hydrant:
1. Only for use as a flush stand.
 - a. Mueller Post Hydrant No. 411.
 - b. Others as approved by the City in writing.
 2. Provide 2-inch inlet, one 12-inch hose nozzle.
 3. Nozzles shall be field replaceable utilizing straight threads or quarter-turn seal by an "O" ring.
 4. Design to open counterclockwise (turn left).
 5. Finish depth as noted on plans.
- G. Blow-off Valves:
1. Flush-mounted hydrants as manufactured by Kupferle Foundry, St. Louis, Mo., Model No. 85B, or approved equal.
 2. 2-inch or 3-inch FIP inlet.
 3. 2 1/2-inch NST bronze, male nozzle.
 4. Removable bronze seat, which seals against a seat rubber of no less diameter than 85.
 5. All operating parts shall be removable from above grade with no digging.
 6. Installed per Drawings D-40 and D-41.
- H. Air Vacuum Release Valves:
1. For potable water mains:

- a. The air vent (release) valve shall be float operated and shall incorporate a simple lever mechanism to enable the valve to automatically release accumulated air while the system is pressurized and operating.
 - b. The air vent valve shall close drop-tight, incorporating a renewable vitron seat, suitable for hot or cold-water service.
 - c. All internal metal parts shall be of stainless steel.
 - d. The float shall be stainless steel and capable of withstanding a test pressure of 750 psi.
 - e. The linkage/lever mechanism shall be designed to prevent jamming.
 - f. The body and cover shall be of cast iron conforming to ASTM A48, Class 35.
 - g. The air vent valve shall be able to operate at pressure of 200 psi and to withstand a 300-psi test pressure.
 - h. The air release valve shall be as manufactured by Empire Specialty Co., Inc., Mars, PA (figure 905), or approved equal.
2. For sewage force mains:
- a. The air release valve shall automatically function at full line pressure to release to atmosphere small amounts of entrained air that may accumulate in a pipeline, chamber or tank.
 - b. The valve shall shut tightly to prevent wastewater leakage.
 - c. The valve body and cover shall be of semi-steel, with vitron resilient seat, and stainless-steel float and linkage.
 - d. Flush-out accessories shall be furnished and assembled to the valve consisting of an inlet shutoff valve, blowoff valve, clear water inlet valve, rubber hose and quick disconnect couplings.
 - e. The body and cover shall be of cast iron conforming to ASTM A48 class 3S.
 - f. The air vent valve shall be able to operate at a pressure of up to 150 psi and be designed to withstand a 200-psi test pressure. The air vent (release) valve shall be as manufactured by Empire Specialty Co., Inc., Mars, PA, their Figure No. 905 "Minimatic" or approved equal.
- I. Polyethylene Wrapping:
1. Material: AWWA C105.
 2. Thickness: 8 mils.
- J. Polyethylene Plastic Pipe (PE):
1. Material: ASTM D2737.
 2. Fittings: ASTM D2683.
 3. Size: 3/4 inch unless shown otherwise on plans.
 4. Rated for 200 psi working pressure.

14.09 EXECUTION

A. General: Provide all labor, equipment and materials and install all pipe fittings, special and appurtenances as indicated or specified.

B. Pipe Installation:

1. Handling:
 - a. Handle in a manner to ensure installation in a sound and undamaged condition.
 - (1) Do not drop or bump.
 - (2) Use slings, lifting lugs, hooks and other devices designed to protect pipe, joint elements, and coatings.
 - b. Ship move and store with provisions to prevent movement or shock contact with adjacent units.
 - c. Handle with equipment capable of work with adequate factor of safety against overturning or other unsafe procedures.
2. Installation:
 - a. Utilize equipment, methods, and materials ensuring installation to lines and grades as indicated.
 - (1) Do not lay on blocks unless pipe is to receive total concrete encasement.
 - (2) Accomplish horizontal and vertical curve alignments of pipe with bends, bevels or deflection joints.
 - (a) Limit joint deflection with ductile iron pipe to conform with AWWA C600.
 - (b) Use short specials preceding curves as required.
 - (3) Obtain approval of Engineer of method proposed for transfer of line and grade from control to the work.
 - b. Install pipe of size, material, strength class, and joint type with embedment as shown on plans or specified herein.
 - c. Clean interior of all pipe, fittings, and joints prior to installation. Prevent entrance of foreign matter during discontinuance of work.
 - (1) Close open ends of pipe with snug fitting closures.
 - (2) Do not let water fill trench. Include provisions to prevent flotation should water control measures prove inadequate.
 - (3) Remove water, sand, mud and other undesirable materials from trench before removal of end cap.
 - d. Pipe shall be inspected prior to installation to determine if any pipe defects are present.
 - e. Brace or anchor as required to prevent displacement after establishing final position.
 - f. Perform only when weather and trench conditions are suitable. Do not lay in water.
 - g. Observe extra precaution when hazardous atmospheres might be encountered.
 - h. Sanitary sewer relation to water mains:
 - (1) Horizontal separation:
 - (a) Maintain 10 feet horizontal separation whenever possible.
 - (b) When a 10-foot separation distance cannot be maintained, the sewer pipe shall be encased in steel casing or in concrete.

(2) Crossing Sewer Pipes:

(a) Sewers crossing under water mains shall be laid to provide a minimum vertical distance of 18 inches between the invert of the water main and the crown of the sewer pipe.

(b) Where the 18-inch separation cannot be maintained or when the sewer pipe passes over the water main, the crossing shall be arranged so that the sewer pipe joints and water main joints are equal distance from the 10 feet between any two (2) joints, or the sewer pipe may be placed in a sleeve or encased in concrete for a distance of 10 feet from the point of crossing.

i. No water pipe shall pass through or come in contact with any part of a sewer manhole.

j. Encase water pipe in steel casing when crossing under pipe, conduit, or structure of 24 inches in diameter or greater when a 6-inch separation distance cannot be maintained. This protection shall extend a minimum of 5 feet beyond crossed structure.

k. Construct service lines where shown on plans in accordance with Standard Detail Drawing. Use pipe material specified on plans or in contract documents.

l. Wrap pipe, fittings and tie rods with polyethylene where shown on plans in accordance with AWWA C105.

m. Maintain minimum of 30 inches of cover unless otherwise directed by Engineer.

3. Jointing:

a. General Requirements:

(1) Perform in accordance with manufacturer's recommendations.

(2) Clean and lubricate all joint and gasket surfaces with lubricant recommended.

(3) Utilize methods and equipment capable of fully homing or making up joints without damage.

(4) Check joint opening and deflection for specification limits.

b. Special provisions for jointing ductile iron to cast-iron pipe:

(1) Conform to AWWA C600.

(2) Visually examine while suspended and before lowering into trench.

(a) Paint bell, spigot, or other suspected portions with turpentine and dust with cement to check for cracks invisible to the eye.

(b) Remove turpentine and cement by washing when test is satisfactorily completed.

(c) Reject all defective pipe.

c. Conform to AWWA C600 and ASTM D2321 for jointing and laying PVC pipe.

4. Cutting:

a. Cut in neat workman-like manner without damage to pipe.

- b. Cut cast-iron with Carborundrum saw or other approved method.
 - (1) Smooth cut by power grinding to remove burrs and sharp edges.
 - (2) Repair lining as required and approved by Engineer.
- 5. Closure Pieces:
 - a. Connect two (2) segments of pipelines or a pipeline segment and existing structure with short sections of pipe fabricated for the purpose.
 - b. Observe specifications regarding location of joints, type of joints and pipe materials and strength classifications.
 - c. May be accomplished with sleeve coupling for water pipe.
 - (1) Of length such that gaskets are not less than 3 inches from pipe ends.
 - (2) Include spacer ring identical to pipe end such that clear space does not exceed 1/4 inch.
- 6. Temporary Plugs:
 - a. Install whenever installed pipe is left unattended.
 - b. Use water-tight plug.
- 7. Tracer Wire:
 - a. Use on all water mains and wastewater force mains to locate buried non-conductive pipe.
 - b. Detection wire shall be insulated single strand, solid copper with a minimum of 12 AWG. A continuous length of tracer wire shall be wrapped around the length of all nonmetallic pipes.
 - c. Provide TriView Flex marking posts, 66" green, internal test stations by Rhino at 500-foot intervals and all turns.
- 8. Thrust Blocks:
 - a. Provide for all horizontal or vertical turns utilizing fittings.
 - b. Use on all dead-end and tee (T) fittings and all bends.
 - c. Install as indicated on Standard Detail Drawings.
 - d. Construct to undisturbed edge of trench for bearing.
 - e. Provide minimum bearing area in S.F. as follows based on 150 psi test pressure and 2,000 psf soil bearing:

Pipe Size	Tee Dead-ends	11.25° Bend	22.5° Bend	45° Bend	90° Bend
4"	1.0	0.5	0.5	0.8	1.3
6"	2.2	0.5	0.9	1.6	3.0
8"	3.8	0.8	1.5	2.9	5.3
10"	6.0	1.2	2.3	4.5	8.4
12"	8.5	1.7	3.3	6.5	12.1
14"	11.6	2.3	4.5	8.9	16.4
16"	15.2	3.0	5.9	11.6	21.4

14.10 VALVE AND APPURTENANCE INSTALLATION

A. Valves:

- 1. Install with stems vertical when installation is horizontal.

2. Set valves on concrete thrust block having four (4) square feet of bearing area on undisturbed earth. Bag of Sak-crete or equal is acceptable.
- B. Valve Boxes:
1. Center on valves.
 2. Carefully tamp earth around each valve box to a distance of 4 feet on all sides of box or to undisturbed trench face, if less than 4 feet.
- C. Hydrants:
1. Set hydrants where shown on plans in accordance with Standard Detail Drawings.
 2. Install blocks and anchors in accordance with Standard Detail Drawings.
 3. Set reference elevation 3 inches above existing grade or to elevation established by Engineer (not to exceed 6 inches).
 4. Break-away flange to be either ground level where applicable or between 3 inches and 6 inches above curb as established by Engineer.

14.11 ACCEPTANCE TESTS FOR PRESSURE MAINS

- A. Perform hydrostatic-pressure and leakage test.
1. Conform to AWWA C600 procedures.
 - a. As modified herein.
 - b. Shall apply to all pipe materials specified.
 2. Perform after backfilling.
- B. Test separately in segments between sectionalizing valves, between a sectionalizing valve and a test plug, or between test plugs.
1. Contractor to furnish and install test plugs, including all anchors, braces and other temporary or permanent devices to withstand hydrostatic pressure on plugs, at no additional cost to the Owner.
 2. Contractor responsible for any damage to public or private property caused by failure of plugs.
- C. Limit fill rate of line to available venting capacity. Fill rate shall be regulated to limit velocity in lines when flowing full to not more than 1 fps.
- D. The City will make water for testing available to Contractor at nearest source.
- E. Pressure Test:
1. Conduct at pressure at least 1.5 times the normal working pressure but not less than 150 psi.
 2. Maintain pressure for a minimum of two (2) hours.
 3. Test pressure shall not vary by more than 15 psi.
- F. Leakage Test:
1. Conduct concurrently with the pressure test.
 2. Maintain pressure for a minimum of one (1) hour.
 3. Acceptable when leakage does not exceed that determined by the following formula:

$$L = \frac{ND\sqrt{P}}{7400}$$

L = Maximum permissible leakage in gallons per hour.
 N = Number of pipe joints in segment under test.

D = Nominal internal diameter of pipe being tested in inches.

P = Average actual leakage test pressure, psi.

4. Repeat leakage test as necessary.
 - a. After location of leaks and repair or replacement of defective joints, pipe or fittings.
 - b. Until satisfactory performance of test.
 - c. At no increase in cost to the Owner.
- G. Refit and replace all pipe not meeting the leakage or pressure requirements. Repair clamp is not permitted.
- H. Repair all visible leaks regardless of the amount of leakage.
- I. The City or Engineer will observe all tests.

14.12 DISINFECTION OF PIPELINES FOR CONVEYING POTABLE WATER

A. Contractor to provide all equipment and materials and perform in accordance with AWWA C601:

1. As modified herein.
 2. Include chlorination and final flushing.
- B. Add chlorine to attain an initial concentration of 50mg/l chlorine with 10 mg/l remaining after 24 hours.
- C. Flush main until concentration is 2 mg/l or less prior to placing main in service.
- D. Obtain approval of materials and methods proposed for use.
- E. May be conducted in conjunction with acceptance tests.
- F. Dispose of flushing water without damage to public or private property.
- G. Repeat disinfection procedure should initial treatment fail to yield satisfactory results.
 1. At no additional cost to the Owner.
 2. Owner will provide water under terms specified for acceptance tests.
- H. Flush at rate sufficient to remove deposits and silt from pipe.
- I. Provide safe bacterial sample results before placing main into service.
(Contractor/Developer responsibility)

14.13 WATER MAINS & WASTEWATER FORCE MAINS MEASUREMENT

- A. Measure in linear feet by specified pipe size along the centerline of the pipe with no deduction for fittings and connections.
- B. Includes furnishing, handling, laying pipe materials and polyethylene wrapping as indicated; trench excavation, backfill and compaction; dewatering; sheeting, shoring and bracing; testing; disinfection as required; utilities repair and relocation; providing all labor, tools, equipment and miscellaneous associated work necessary to complete item.
- C. Payment: unit price per linear foot (unless otherwise specified).

14.14 GATE VALVES

- A. Includes furnishing and placing valve, valve box; excavation, backfill and compaction; special blocking; providing all labor, equipment, tools and miscellaneous associated work needed to complete item.
- B. Payment: unit price for each valve per size indicated (unless otherwise specified).

14.15 HYDRANTS

A. Includes furnishing and placing hydrant, hydrant gate valve; special anchored fittings; valve box; excavation, backfill, drainage fill, and compacting; providing all labor, equipment, tools and miscellaneous associated needed to complete item.

B. Hydrant runs are measured from the centerline of the hydrant to the water main and will be measured and paid as water transmission lines.

C. Payment: unit price for each hydrant (unless otherwise specified).

14.16 BLOW-OFF VALVES

A. Includes furnishing and placing valve, valve box; excavation, backfill and compaction; special blocking; providing all labor, equipment, tools and miscellaneous associated work needed to complete item.

B. Payment: unit price for each valve per size indicated (unless otherwise specified).

14.17 AIR RELEASE VALVES

A. Includes furnishing and placing valve, valve box; excavation, backfill and compaction; special blocking; providing all labor, equipment, tools and miscellaneous associated work needed to complete item.

B. Payment: unit price for each valve per size indicated (unless otherwise specified).

14.18 PRESSURE REDUCING VALVES

A. Includes furnishing and placing valve, valve box; excavation, backfill and compaction; special blocking; providing all labor, equipment, tools and miscellaneous associated work needed to complete item.

B. Payment: unit price for each valve per size indicated (unless otherwise specified).

14.19 CORPORATION STOPS

A. Includes furnishing and placing all materials; tapping the main; clamp saddles as required; excavation, backfill and compaction; providing all labor, equipment, tools and miscellaneous associated work needed to complete item.

B. Payment: unit price for each corporation stop by specified size (unless otherwise specified).

14.20 CURB STOP AND BOX

A. Includes furnishing and placing the curb stop and box; excavation, backfill and compaction; providing all labor, equipment, tools and miscellaneous associated work needed to complete item.

B. Payment: unit price for each curb stop by specified size (unless otherwise specified).

14.21 WATER SERVICE LINES

A. Measure in lineal feet by specified pipe size along centerline of pipe.

B. Includes furnishing, handling, laying pipe materials; trench excavation, backfill and compaction; dewatering; testing; disinfection; utilities repair and relocation; fittings; providing all labor, tools, equipment and miscellaneous associated work necessary to complete item.

C. Payment: unit price per lineal foot or as specified (unless otherwise specified).

14.21 CUTTING INTO EXISTING MAINS

A. Includes cutting existing mains; providing and installing required cutting in sleeves; trench excavation; backfill and compaction; dewatering; sheeting, shoring and bracing; testing; disinfection; providing all labor, tools, equipment and miscellaneous associated work necessary to complete item.

B. Payment: unit price for each cutting-in operation (unless otherwise specified).

SECTION 15 SANITARY SEWER SPECIFICATIONS

15.01 GENERAL (Related Requirements Specified Elsewhere)

- A. Trenching, Backfilling and Compacting: Section 12.
- B. Pipe Boring and Jacking: Section 13.

15.02 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Store materials to prevent physical damage.
- B. Protect materials during transportation and installation to avoid physical damage.

15.03 GENERAL DESCRIPTION OF WORK COVERED

Furnish and install all sewer pipe, fittings and structures, and accessories required for sanitary sewer construction as indicated.

15.04 QUALITY ASSURANCE

- A. Comply with latest published editions of American Society of Testing and Materials (ASTM) Standards:
 - 1. ASTM C478 - Concrete Pipe Manholes.
 - 2. ASTM D1784 - Rigid Poly (vinyl chloride) (PVC) Compounds and Chlorinated Poly (vinyl chloride) (CPVC) Compounds.
 - 3. ASTM D2321 - Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.
 - 4. ASTM D2564 - Solvent Cements for Poly Plastic Pipe and Fittings.
 - 5. ASTM D3212 - Joints for Drain and Sewer Plastic Pipes using Flexible Elastomeric Seals.
 - 6. ASTM D3034 Type PSM - PVC Sewer Pipe and Fittings.

15.05 PRODUCTS (General Requirements)

- A. Pipe furnished shall be PVC for sanitary sewer construction unless shown otherwise on plans or bid forms.
- B. All pipe shall be marked in accordance with applicable standard specification under which pipe is manufactured unless otherwise specified.

15.06 POLYVINYL CHLORIDE PLASTIC PIPE (PVC)

- A. Comply with ASTM D3034 for pipe using material conforming to ASTM D1784 for pipe and fittings.
- B. Use single elastomeric gasket push-on joints complying with ASTM D3212.
- C. Provide pipe and fittings with minimum SDR-35-dimension ratio.
- D. SDR 35 shall be used for service laterals.
- E. Pipe shall be color coded by one of the following methods:
 - 1. 3 green stripes (1/2-inch-high) with permanent ink along the entire length with 3/4-inch letters every 21 inches along each stripe designating "Sewer".
 - 2. Use pipe pigment to color code pipe Green.

15.07 STRUCTURES AND PIPE ACCESSORIES**A. Fittings:**

1. Fittings allowed only on service laterals and drop manholes.
2. Fittings shall equal or exceed quality of pipe.
3. All ductile iron pipe and fittings shall be lined with 401 Ceramic Epoxy.

B. Manholes & Sections:

1. Construction shall be pre-cast reinforced concrete capable of sustaining an H-20 loading.

2. Manholes shall be constructed in accordance with ASTM C-478, using Type II or Type III Portland Cement.

3. Leakage shall not exceed one (1) gallon per day per vertical foot of manhole.

4. Manholes shall have a minimum I.D. of 48 inches, unless otherwise noted on plans.

5. Base section shall be monolithic to a point 6" above the crown of the incoming pipe with minimum 6" thick bottom section and 5" wall section and made in accordance with ASTM C-478.

6. Pipe holes shall be properly located and either cast in place with appropriate boot or required shape, or core drilled after concrete has set. Minor field adjustments may be made with approval of City. The invert of the lowest pipe shall be a minimum of 4" above the inside floor of the base section.

7. Cone (top) sections shall be eccentric narrowing from 48" to 24" I.D., unless otherwise noted on plans.

8. Flat top sections shall be used in place of cone sections for manholes less than 5 feet deep. The 24" access hole shall be offset to allow easy access to steps (if used) and shall be reinforced to support an H-20 loading.

9. Shallow manholes less than 3 feet deep shall be constructed according to City requirements.

10. The joints between sections shall be one of the following:

a. Lap joint design with the upper lip inside and suitably shaped to accommodate a bitumastic joint sealer.

b. "O" Ring.

11. Pipe to manhole seals shall be made utilizing one of the following or approved equal.

a. Kore-N-Seal or, Lock-Joint, with stainless steel bands and screws.

b. A-LOK.

12. Brick manholes shall only be used with consent of Engineer and the City.

C. Manhole Accessories:

1. Manhole Lid and Cover:

a. Gray cast iron, with nominal opening of 24 inches.

b. Cover shall be embossed with "SANITARY SEWER" as shown on detail drawings.

c. The lifting holes shall not extend through cover.

d. Use US Foundry 170 Ring and E Cover or approved equal.

2. Manhole Coating:

- a. Apply two coats of a foundation coating or approved equal to the exterior.
- b. Apply corrosion resistant (Spectra-Shield) coating to the interior.
- c. Apply coatings according to manufacturer's recommendation.
3. Steps:
 - a. Shall be embedded in the concrete by the manufacturer.
 - b. Steps shall be reinforced ABS plastic, guaranteed for use in sewers.
4. Invert Channels shall be provided in the bottom.

15.08 EXECUTION (General)

Provide all labor, equipment and materials and install all pipe, fitting, specials and appurtenances as indicated or specified.

15.09 PIPE INSTALLATION

A. Handling:

1. Handle in a manner to insure installation in sound and undamaged condition.
 - a. Do not drop or bump.
 - b. Use slings, lifting lugs, hooks and other devices designed to protect pipe, joint elements, and coatings.
2. Ship, move and store with provisions to prevent movement or shock contact with adjacent units.
3. Handle with equipment capable of work with adequate factor of safety against overturning or other unsafe procedures.

B. Installation:

1. Utilize equipment, methods, and materials ensuring installation to lines and grades as indicated.
 - a. Do not lay on blocks unless pipe is to receive total concrete encasement.
 - b. Use laser or minimum of three (3) batter boards for control of line and grade.
2. Install pipe of size, material, strength class, and joint type with embedment shown for plan location.
3. In so far as possible, commence laying at downstream end of line and install pipe with bell ends in direction of laying. Sewer pipe shall have spigot ends in direction of flow. Obtain approval for deviations therefrom.
4. Clean interior of all pipe, fittings and joints prior to installation. Exclude entrance of foreign matter during discontinuance of installation.
 - a. Close open ends of pipe with snug fitting closures.
 - b. Do not let water fill trench. Include provisions to prevent flotation should water control measures prove inadequate.
 - c. Remove water, sand, mud, and other undesirable materials from trench before removal of end cap.
5. Inspect pipe prior to installation to determine if any pipe defects are present.

6. Brace or anchor as required to prevent displacement after establishing final position.
7. Perform only when weather and trench conditions are suitable.
8. Observe extra precaution when hazardous atmospheres might be encountered.
9. Sanitary sewer relation to water mains:
 - a. Horizontal Separation:
 - (1) Maintain 10 feet horizontal separation whenever possible.
 - (2) When a 10-foot separation distance cannot be maintained, the sewer pipe shall be encased in a sleeve or in concrete.
 - b. Crossing Water Pipes:
 - (1) Sewers crossing under water mains shall be laid to provide a minimum vertical distance of 18 inches between the invert of the water main and the crown of the sewer pipe.
 - (2) Where the 18-inch separation cannot be maintained or when the sewer pipe passes over the water main, the crossing shall be arranged so that the sewer pipe joints and water main joints are equal distance from and 10 feet between any two joints, or the sewer pipe may be placed in a sleeve or encased in concrete for a distance of 10 feet from the point of crossing.
10. Auger or jack casing in place where shown on plans.
11. Maintain minimum of 30 inches of cover unless directed by Engineer.
12. Encase sewer pipe in steel casing when crossing under pipe, conduit, or structure of 24 inches in diameter or greater when a 6-inch separation distance cannot be maintained. This protection shall extend a minimum of 5 feet beyond crossed structure.
- C. Jointing:
 1. General Requirements:
 - a. Perform in accordance with manufacturer's recommendations.
 - b. Clean and lubricate all joint and gasket surfaces with lubricant recommended.
 - c. Utilize methods and equipment capable of fully homing or making up joints without damage.
 - d. Check joint opening and deflection for specification limits.
- D. Closure Pieces:
 1. Connect two (2) segments of pipelines or a pipeline segment and existing structure with short sections of pipe fabricated for the purpose.
 2. Observe specifications regarding location of joints, type of joints and pipe materials and strength classifications.
- E. Temporary Plugs:
 1. Furnish and install temporary plugs at each end of work for removal by others when completed ahead of adjacent contract or where indicated.
 2. Remove from pipe laid under adjacent contract in order to complete pipe connection when work by other contractor is finished prior to work at connection point under this contract.
 3. Plugs:
 - a. Use test plugs as manufactured by pipe supplier, or

- b. Fabricated by Contractor of substantially same construction.
- c. Must be watertight against heads up to 20 feet of water.
- d. Secure in place in a manner to facilitate removal when required to connect pipe.

15.10 MANHOLE INSTALLATION

- A. Pre-cast Bases:
 - 1. Place on 6-inch layer of compacted sand, gravel or sandy material as approved by Engineer.
 - 2. Base shall be leveled prior to installation of manhole sections.
- B. Cast in Place Bases:
 - 1. Cast on 6-inch layer of compacted sand, gravel or sandy material as approved by Engineer.
 - 2. Manhole bases and channel inverts may be constructed integrally.
- C. Manhole Sections:
 - 1. Use pre-cast sections unless cast-in-place manholes approved by Engineer.
 - 2. Pre-cast sections may be installed after base concrete has attained 75% of design strength.
 - 3. Seals between manhole sections shall use one of the following or approved equal.
 - a. Bitumastic Seal (Kent No. 2, Ram Neck)
- D. Invert Channels:
 - 1. Form invert channel as indicated.
 - 2. Alternate invert and shelf may be constructed of mortar over concrete fill with approval of Engineer.
 - 3. Make changes in direction of flow with smooth curves of as large a radius as size of manhole permits.
 - 4. Make changes in size and grade smoothly and uniformly.
 - 5. Slope floor of manhole adjacent to channels, toward the channels.
 - 6. Finish channel bottom smoothly without roughness, irregularity, or pockets.
 - 7. On straight through single pipe manholes, half sections of same pipe may be used with mortar and concrete with approval of Engineer.
 - 8. Precast inverts in base sections are acceptable.
- E. Pipe Connection to Manholes:
 - 1. Make watertight.
 - 2. Use rubber gasket or other as approved by the City.
- F. Field applied coatings shall be applied after Engineer's approval of structure.

15.11 ACCEPTANCE TESTS FOR SEWER PIPELINES AND MANHOLES

- A. Infiltration Testing:
 - 1. General:
 - a. Maximum infiltration for each section of sewer pipe shall not exceed 100 gal/mile/day/ inch of pipe diameter.

- b. Infiltration, exfiltration or air test may be used to prove compliance with infiltration requirement.
 - c. Acceptance of air test or exfiltration results will not preclude rejection of work if infiltration is measured and exceeds limitation.
 - d. Maximum infiltration for each manhole shall not exceed 1 gallon per vertical foot per 24 hours.
 - e. All tests to be witnessed by the City.
2. Air Test:
- a. Furnish all facilities required including:
 - (1) Necessary piping connections.
 - (2) Test pumping equipment.
 - (3) Pressure gauges or manometers.
 - (4) Bulkheads .
 - (5) All miscellaneous items required.
 - b. Obtain approval from Engineer for equipment and methods proposed for use.
 - c. Test pipe in sections determined by Contractor and approved by Engineer.
 - d. Plug ends of line and cap or plug all connections to withstand internal test pressures.
 - e. Introduce low pressure air until internal air pressure is 4.0 psi greater than the average back pressure of ground water above the pipe. (Add 0.43 psi for each vertical foot of ground water over the top of pipe.)
 - f. Allow two (2) minutes for air pressure to stabilize.
 - g. Time required for pressure to decrease from 3.5 to 2.5 psi greater than average back pressure of any ground water above pipe shall not be less than time in the following table for given diameters.

Pipe Diameter	
<u>Inches</u>	<u>Minutes</u>
6	3.0
8	4.0
10	5.0
12	5.5
15	7.0
18	8.5
21	10.0
24	11.5
27	12.75
30	14.0
36	17.0

- h. Repeat test as necessary after all leaks and defects have been repaired.

B. Exfiltration Test:

1. Furnish all facilities required to plug pipe sections and fill with water to attain a minimum elevation of water in upstream manhole two (2) feet higher than top of pipe in line being tested, or two (2) feet above existing ground water in trench, whichever is higher elevation.
2. Maintain water level in manhole at start of test period for one (1) hour.
3. Water added to maintain level (water lost) shall not exceed the following amounts:

a.	8"	pipe	-	0.63	gallon	per	100	feet.
b.	10"	pipe	-	0.79	gallon	per	100	feet.
c.	12"	pipe	-	0.95	gallon	per	100	feet.
d.	15"	pipe	-	1.19	gallon	per	100	feet.
e.	18"	pipe	-	1.42	gallon	per	100	feet.
f.	21"	pipe	-	1.66	gallon	per	100	feet.
g.	24"	pipe	-	1.90	gallon	per	100	feet.

Note: Allowable leakage may be increased by 5% for each foot of head above water elevation indicated above.

C. Infiltration Test:

1. May be used in lieu of air test or exfiltration test if Contractor can prove that ground water conditions are such that crown of pipe is covered with not less than two (2) feet of water at highest point in section being tested. The test head shall be maintained for not less than 24 hours before a weir measurement is made.
2. Infiltration shall be measured with weir at manhole and shall not exceed amounts stated in paragraph B, Exfiltration Test above.
3. Engineer will require exfiltration or air test if Contractor cannot prove to satisfaction of Engineer that ground water conditions are satisfactory.

15.12 SERVICE CONNECTIONS

- A. Install service connections at each dwelling or business place, or as directed by Engineer.
- B. Services wyes: install wyes, 4-inch branch diameter unless shown otherwise on plans. See standard detail, "Typical Service Connection".
- C. Risers: may be used with wyes for service connections where invert of sewer is seven (7) feet or more below ground surface or where shown on plans. Terminate each connection as shown on plans or as directed by Engineer.
- D. Place suitable stopper in end of connection.
- E. Backfill trench only after recording exact location and depth of service connection.
- F. Street crossings shall have a minimum of two (2) feet of cover to subgrade unless approved by Engineer.
- G. Drive a 1/2-inch metal rebar adjacent to each service connection, with top of post one (1) foot below ground surface.

15.13 CONNECTIONS TO EXISTING DRAINS AND SEWER SYSTEM

- A. Connect existing sanitary service drains which cross new sewer line through equal sized wye.
- B. Connect no storm drains to new sewers.
- C. Connections to Existing Manholes:
 - 1. Insert new sewer pipe flush with inside of manhole.
 - 2. Seal new pipe in place to be watertight.
 - 3. Reconstruct manhole bottom to suit new connection.
 - 4. All debris to be removed.
- D. Connections to Existing Sewer:
 - 1. Build new manhole around existing sewer.
 - 2. Break out existing sewer inside of manhole and construct bottom to suit new connection.

15.14 SEWER PIPE MEASUREMENT & PAYMENT

- A. Measure in linear feet by specified pipe size along centerline of pipe with no deduction for manholes, wye connections or riser connections.
- B. Includes furnishing handling, laying pipe materials and specified bedding materials; trench excavation, backfill and compaction; dewatering; sheeting, shoring and bracing; testing; utilities repair and relocation; providing all labor, tools, equipment and miscellaneous associated work necessary to complete item.
- C. Payment: unit price per linear foot (unless otherwise specified).

15.15 MANHOLES MEASUREMENT & PAYMENT

- A. Includes furnishing and placing all pre-cast and cast in place materials; excavation, backfill and compaction; frame and lid; stub pipes; providing all labor, equipment, tools and miscellaneous associated work needed to complete item.
- B. Payment: unit price for each manhole (unless otherwise specified).

15.16 WYE CONNECTIONS PAYMENT

- A. Measure each as installed by nominal pipe size.
- B. Includes additional cost of wye over straight pipe, joints, stoppers and one 1/8 bend sweep.
- C. Payment: unit price per each clean out (unless otherwise specified).

15.17 RISER CONNECTIONS PAYMENT

- A. Measure each connection installed by nominal pipe size.
- B. Includes furnishing and installing wye or tee connection, elbows, concrete work, extra excavation, backfilling and compaction, stoppers and providing labor, equipment and miscellaneous associated work needed to complete item. Does not include straight pipe used for riser.
- C. Payment: unit price per each (unless otherwise specified).

15.18 RISER PIPE PAYMENT

- A. Measure in lineal feet of straight pipe from fitting joints at upper and lower extreme of riser.

- B. Includes furnishing and installing pipe materials, bracing; supports; excavation, backfill and compaction; providing labor, equipment and miscellaneous associated work needed to complete item.
- C. Payment: unit price per lineal foot (unless otherwise specified).

15.19 SERVICE CONNECTION LATERAL PIPE PAYMENT

- A. Measure in lineal feet by nominal pipe size as installed.
- B. Includes furnishing, handling, laying pipe materials; trench excavation, backfill and compaction; dewatering; utilities repair; providing all labor, equipment and miscellaneous associated work needed to complete item.
- C. Payment: unit price per lineal foot (unless otherwise specified).

15.20 CLEANOUTS/ LAMPHOLES PAYMENT

- A. Includes furnishing and placing all cleanouts/lampholes; excavation, backfill and compaction; stub pipe; frame and lid; providing all labor, equipment, tools and miscellaneous associated work needed to complete item.
- B. Payment: unit price per each (unless otherwise specified).

15.21 AS-BUILT RECORDS

A complete set of as-built records shall be kept by the Contractor. These records shall show all items of construction and equipment which differ in size, shape or location from those shown on the contract drawings, also any additional work, existing features or utilities revealed by construction work which are not shown on the contract drawings. These reports shall be kept up-to-date daily. They may be kept on a marked set of contract drawings to be furnished by the Contractor for this purpose, or in any other form which is approved prior to the beginning of the work. They shall be available at all times during construction for reference by the Engineer and Owner and shall be delivered to the Engineer upon completion of the work.

SECTION 16 LIFT STATION SPECIFICATIONS

16.01 Scope/General

1. The work included in this section consists of furnishing and installing all pumps, guide rail systems, float level controls, and necessary piping and fittings and other appurtenances necessary to complete the lift station wet well and pumps/controls installation as shown on the plans and specified herein.

2. The excavation and backfilling for pipelines and concrete structures shall be performed in accordance with Section 12 of the Specifications, except as may be modified herein. Excavation and backfilling for pipe trenches and wet well and valve box structures will be considered as an incidental part of the work and no specific payment will be allowed therefor.

3. The lift station shall be located on property which shall be dedicated to the City of Crestview for perpetual ownership and maintenance. The minimum property size shall be 20' x 20' and shall be fenced, as described below. Larger properties may be required, depending on the size of the necessary wet well, valve box, and other facilities.

4. The City of Crestview requires that all structures (wet well and valve box) be fabricated of fiberglass or concrete with (Spectra-Shield) corrosion resistant coating. Both structures shall carry a written 20-year warranty.

16.02 Valve Housing Box

1. The exterior of the valve housing box shall be waterproofed to prevent ground water infiltration.

2. The interior of the valve housing box shall have a smooth finish.

3. There shall be a 2" drainpipe with swing check valve, from the valve housing box into the wet well.

4. There shall be a minimum of 12" clearance on all sides of valves and fittings.

5. The check valves shall be swing-check, of the external spring and lever type; gate valves shall be standard resilient-seat wedge type.

6. All exposed hardware shall be of corrosion resistant, stainless steel.

7. The access hatches shall be of aluminum double-door type. A minimum of 4'x 4' overall, centered on the box.

8. All valve housing boxes shall have a solid bottom.

9. There shall be no type of plug valve used.

10. On emergency by-pass valve, an Ever-Tite, Quick Coupling, Part "F", male adaptor with dust cap, 6" aluminum, shall be used. Dust cap shall be tapped with 1/4" pet cock so as to allow bleed-off of any accumulated pressure prior to removing cap

16.03 Wet Well

1. There shall be 1/4" stainless steel pull chain fastened with stainless fittings to the lift rings on each pump. The top end of the chain shall have a minimum of 4" loop fastened with stainless steel fittings.
2. All lift eyes within the interior of wet well shall be cut off flush with the interior surface.
3. Stainless steel pipe with a flange on each end shall be used in the wet well for discharge piping.
4. Stainless steel pipe with a welded flange on each end shall be used from the wet well into the valve box, and out of the valve box.
5. Kicker board brackets shall be made of aluminum and secured to wall of wet well with stainless steel hardware; Kicker board shall be made of aluminum or stainless steel – no wood allowed.
6. Discharge piping in wet well shall have air-release valves (Waterman or equal) ; stainless ball valves are to be located in the upper discharge 90° elbows and connected with stainless steel hardware or a stainless steel nipple must be welded to the elbow to accept the valve.
7. Hatch to wet well shall have double doors, 4'x4' minimum in size and have fall protection.
8. Wet well shall be 6' in diameter or larger, or 6'x 6' square or larger.
9. Wet well shall be either Pre-cast Reinforced Concrete with inside corrosion resistant (Spectra-Shield) coating, or Fiberglass construction.
10. Bottom perimeter of wet well must have 12" fillet to direct solids toward suction pumps. grouted all around).
11. All concrete shall be 3,000 psi strength and reinforcing steel shall be Grade 60.
12. Steps are not required inside the wet well.
13. The low water level shall be designed to cover the entire pump and motor assembly, to protect it from corrosion and help keep the motor cool.

16.04 Plates, Sheets and Shapes

1. Aluminum Plates, Sheets and Shapes:
 - a. All aluminum plates and shapes shall be of Type AA 5052 alloy conforming to applicable requirements of ATM Designation B 209-67, (Latest Revision).
 - b. Aluminum extended shapes shall be 6061 or 6062 alloy conforming to ATM B 221-67, (Latest Revision).
 - c. All surfaces in contact with concrete shall be coated with Bitumastic (Koppers 50 or equal).
2. Stainless Steel Plates, Sheets and Shapes:
 - a. All stainless steel plates and sheets shall be Type 304 alloy conforming to the applicable requirements of ASTM Designation A-182, (Latest Revision).

- b. Stainless steel pipe shall be schedule 40, Type 304 alloy conforming to the applicable requirements of ASTM-312, (Latest Revision).
 3. Fastenings:
 - a. Fasteners, insofar as practicable, shall be concealed. Where exposed, fastening shall be of the same material, color and finish as associated metal, where not indicated otherwise and countersunk wherever possible.
 - b. All hardware used to assemble cast iron fittings shall be stainless steel.
 - c. All fastenings coming into contact with aluminum and/or submerged shall be of stainless steel.

16.05 Other Requirements

The below items shall be used with 3", 4", 6", 8" and 12" submersible non-clog sewage pumps, including the Hydromatic S4F:

1. Hydraulic Sealing Flange: A hydraulically operated sealing flange, complete with Buna N rubber diaphragm type sealing gasket, shall be mounted on each pump discharge. The diaphragm shall be held in place by a 300 series stainless steel ring with stainless steel fasteners.

2. Guide Rail: The guide rails used to direct the pump in proper alignment with the stationary discharge piping shall be of a dual rail design. The rail shall be a 2" stainless steel pipe and positioned on the centerline of the pump to each side so that no weight of the pump bears on either of the two guide rails at any time. The guide rails shall serve truly as a guide rail. Units which do not have the guide rails positioned on the centerline of the pump with off-centered weight distribution shall not be considered as equal nor acceptable as a binding action on the guide rails is possible, making removal and/or reinstallation much more difficult.

3. Carrier Guide Bracket: A sliding guide bracket shall be attached to the pump. The sliding carrier guide bracket shall be stainless steel. The carrier shall be mounted on the pump so lifting is done from the carrier and no strain is placed on the pump or guide rails. Fasteners shall be 300 series stainless steel. Carrier shall be designed to lift from centered loop.

4. Discharge Base Elbow with Base Plate: A discharge elbow shall be furnished for each pump. The discharge base elbow shall be attached to a flat steel fabricated base plate which rests squarely on the wet well floor. The flat base plate shall assure the pump has a smooth surface on which to rest when lowered into position. The base plate shall include a leveling bolt adjustment as well as adjustable guide rail supports which hold the guide rail pipes at the bottom. The pump discharge with hydraulic sealing flange shall align with the base elbow of the base plate assembly. The sealing face of the base discharge elbow shall be smooth and shall be heavily coated with zinc spray to provide a smooth corrosion resistant and abrasion resistant surface. All fasteners shall be 300 series stainless steel.

5. Access Frame and Hatch: An access frame assembly shall be supplied with separate hinged cover for removal of each pump. Access frame and hatch shall be either corrosion resistant or coated with a corrosion resistant coating. Upper rail guide brackets shall be attached to the access frame as well as the float switch holding bracket. Cover shall be provided with lifting handle, safety latch to hold cover in open position and locking hasp.

6. Float-operated Mercury Switches: Float-operated mercury switches shall be provided to operate duplex submersible pumps with a minimum of fifty (50) feet of cable shall be provided.

7. Float Mounting Bracket: A float mounting bracket shall be provided. Float mounting bracket shall provide cord grips to hold the level control cords and allow adjustment of level controls to desired pumping alarm levels. Continuous cords are to run from pump(s) and level controls to control panel. No splices shall be made in wiring. Float mounting bracket shall be fabricated from stainless steel for corrosion resistance. Float mounting bracket shall attach to access frame with 300 series stainless steel fasteners.

8. Lifting Chain: Each pumping unit shall be provided with a lifting chain. The lifting chain shall be of sufficient length to extend from the pumping unit at one end to the top of the wet well at the other end. The access frame shall provide a hook to attach the lifting chain (minimum 1/4" stainless steel) when not in use. The lifting chain shall be sized according to the pump weight.

9. Piping: Piping shall include two (2) swing check valves with outside lever and spring, and three (3) gate valves. Piping shall include all necessary elbows and tees. All piping through lift station shall be stainless steel for corrosion resistance. Where piping passes through a wall, a stainless steel sleeve large enough for the flange of the discharge piping to pass through shall be installed and shall be water-tight. Coordinate with Public Services Department for specific piping arrangement and details.

10. Pump/Motor Power Cords: Cord shall be flexible and serviceable under heavy use conditions and shall meet NEC standards for the installation; ground fault interruption protection shall be provided for the cable; cord terminal fittings shall be corrosion-resistant and provide moisture protection for the cable, shall have strain-relief appurtenances, and shall be constructed to facilitate field-connecting.

16.06 Submersible Pumping Equipment

1. Pumps:

- a. Pumps shall be submersible, non-clog, centrifugal, heavy duty, vortex chopper, recessed impeller type units, with a chromium iron hard metal impeller suitable for sewage application.
- b. Totally submersible design, with all electrical parts housed in an oil-filled cast-iron, watertight enclosure. Thrust and radial bearings shall be of the ball type. The motor shaft shall be stainless steel and designed for extremely difficult sewage pumping service. The motor shall be designed to operate on 3-phase, 60-cycle, 240-volt

- or 480-volt alternating current and shall be non-overloading at all points on the pump curve.
2. Manufacturing: The duplex submersible pumps shall be as manufactured by Barns, Flygt, Hydromatic, KSB, Wilo-EMU (formerly Davis-EMU).
 3. Submittal Data: The Contractor shall provide three (3) copies of the following submittal data for each item of equipment to the Engineer:
 - a. Certified Dimensional Drawing of Pump/Motor Units.
 - b. Typical Performance Curve of Pumps.
 - c. Pictorial and Schematic Wiring Diagram.
 - d. Parts List and Instructional Prints.
 4. Pump Characteristics: Pumps shall meet the following:
 - a. Delivery at guarantee point; TDH at guarantee point; maximum rotation speed; (see plans for specific information)
 - b. Pump to pass minimum sphere of 3"; minimum motor size is 5 Hp.
 - c. Minimum pump efficiency shall be 50%.
 5. Warranty: The pump manufacturer shall warrant to the City of Crestview, for permanent installation in municipal sewage service, the submersible pump and motor against defects in materials and workmanship for a period of 5 years, including normal wear and tear to the following parts: mechanical seals, bearings, shafts, motor electrical cables, and motor stators. Impellers must have a 10-year abrasion warranty.

16.07 Controls

1. Certifications:
 - a. Panel shall be designed to meet UL508A Industrial Control Panel Standards.
 - b. Panel builder must be a UL certified organization. Panels must include UL labels affixed to inside of outer cabinet door(s) as required by UL.
 - c. All wires will be color coded. Adhesive numbers or labels will not be allowed.
2. Warranty:
 - a. Danfoss Variable Frequency Drives shall have 10 Year on-site warranty.
 - b. Cox Research Fiber Optic Floats four (4) Off/Lead/Lag/High Level Alarms. All parts shall have 5-year warranty.
 - c. Control Panel shall have 5-year limited warranty on defects in material and workmanship under normal use and service.
3. Power Control:
 - a. The lift station control panel's main circuit breaker shall be fed from a 240-volt or 480-volt AC, 3 phase (3 wire plus ground) power source.
 - b. Optional Generator Receptacle per site requirement. Please provide Part Number if required.

- c. Main and emergency circuit breakers shall be 3 pole and must be rated a minimum of 125 percent of maximum panel load. (If required) Emergency power circuit breaker.
- d. There shall be two pumps protected by thermal-magnetic circuit breakers. Circuit breakers shall be sized a minimum of 150% of the full load amps of the pump motors.
- e. Control of pumps shall be achieved by variable frequency drives (VFD's). Danfoss Variable Frequency Drives, Model FC-202XXXXXXXX, for primary starting of the pumps with "Heat Sink thru the back" of Enclosure with exterior louvered covers with fine mesh SST bug screen to fit over the heat sinks and Danfoss VFD. The CFD's must have 10-year on-site warranty that covers lighting, power surges, corrosion and heat damage. The VFD fuses will be integral to the drives and will also be covered by the warranty. 10-year Warranty provides for on-site Danfoss certified Technician to perform repairs or replacement when required.
- f. Back-up RVSS (Soft Starters) shall be Danfoss Model MCD6XXXXXX, The RVSS shall have a separate power Circuit Breaker / Isolation Contactor with mechanical interlock a Bypass switch for VFD / Soft Starter operation. 10-year Warranty provides for on-site Danfoss certified Technician to perform repairs or replacement when required.
- g. Mixer will be powered by thermal-magnetic circuit breaker. Circuit breakers shall be sized a minimum of 150% of the full load amps of the pump motors. Shall use a NEMA rated Starter rated for 3.4HP KSB Mixer and 24 timer circuit to control on and off times/ Hand-Off-Auto switch and Run Lights.
- h. Blower circuit with Danfoss Micro Variable Frequency Drive Model FC-051PXXXXXX with 24-hour time clock and Hand/Off/Auto switch.
- i. 120VAC control power shall be achieved by connecting to phase "A" on the load side of the Main (MCB) and Emergency (ECB) circuit breakers, and to the incoming power neutral.
- j. Provide a 20-amp, 1 pole control circuit breakers for "GFI Receptacle" power.
- k. Provide a 15-amp, 1 pole control circuit breakers for "Control" power.
- l. All circuit breakers must be mounted on a raised hat section, with operators accessible without opening the inner door.

- m. 3 phase power will be monitored by a 3-phase monitor relay. Phases must be balanced, have correct rotation, and voltage within tolerance. Otherwise, the phase monitor relay will disable the pump controls, preventing the pumps from running.
 - n. Provide an LED work light and mount to the inside top of the enclosure. Work light to be controlled by a switch located on the dead front.
4. Pump Controls:
- a. The pump control system consists of a pump controller with cellular RTU functionality for primary operation, and back-up float control with relay logic for automatic operation, and door mounted controller keypad and 3 position switches for manual control.
 - b. The Omni Site Crystal Ball for primary Control/Telemetry with Relay Logic with lead – lag selector switched alternator relay as backup to primary control. Omni Site unit must include (3) years of monitoring service and unit must be warranted for the lifetime of the panel and include repair/software upgrades/hardware upgrades/repair and replacement when required. Omni Site shall read the wet well level via (4) Mini Opti Floats and shall start pumps by relay output contact closures. Controller shall run pumps according to field adjusted wet well level set-points,
 - c. including necessary alternation and simultaneous pump run conditions.
 - d. Under normal operation (Omni Site), the wet well fluids will rise to the “start lead” level. If one pump is insufficient to keep up with the inflow and the fluids continue to rise to the “start lag” level, then the lag pump will turn on. Regardless of the number of pumps running at a time, those pumps will all continue to run until the fluids are lowered to below the “pumps off” level, at which point all pumps will stop.
 - e. The Relay Logic system shall be activated using a 2-position switch on the inner door Crystal Ball / Relay Logic. In the “Crystal Ball” mode the floats will be controlled by the Omni Site Crystal Ball. When switch is positioned in the “relay Logic” mode the Omni Site Crystal Ball will be disabled for float inputs but will monitor alarms. While in “Relay Logic” the control circuit will utilize the alternator and float relays to control pump operation.
 - f. In the event of Omni Site Crystal Ball power loss, the control panel shall automatically switch to the “Relay Logic” circuit.

- g. Manual pump operation shall be achieved via 3-position, “Hand-Off-Auto” switches on the control panel inner door.
 - h. Pumps will be disabled in the event of a phase failure (as previously mentioned), upon a VFD fault condition, or upon a pump housing over-temperature condition.
5. Alarm Circuitry:
- a. Control panel alarm system shall be 120VAC.
 - b. Alarm condition shall be triggered by tipping of the back-up high level float.
 - c. A flashing alarm beacon shall be mounted on left side using Myers Hub on the control panel, and an audible alarm horn (and silence button) shall be mounted on the exterior (left side) of the control panel enclosure.
 - d. The alarm will activate and remain activated until the high-level condition is no longer present. The alarm horn may be silenced with the silence button. The silence command shall reset upon clearing the alarm condition. Thus, a new alarm condition will sound the horn again.
6. Control Devices and Indication:
- a. Selector switches shall be provided for the following:
 - i. 3-position “Hand-Off-Auto” switches for each pump.
 - ii. 2-position “Control Mode” mode switch.
 - b. Pushbuttons shall be provided for the following:
 - i. Alarm horn silence – located external on left had side of enclosure
 - c. Pilot light indication shall be provided for the following:
 - i. Green “Run” indication for each pump.
 - ii. Yellow pump “Seal Failure” fault indication for each pump.
 - iii. Yellow motor “Overtemp” fault indication for each pump.
 - iv. Red “VFD Fault” indication for each pump.
 - v. Green control mode in “Crystal Ball” indication.
 - vi. Yellow control mode in “Relay Logic” indication.
 - d. Elapsed run time meters shall be provided for each pump.
7. Telemetry:
- a. Lift station conditions shall be monitored by an Omni Site Crystal Ball cellular remote telemetry unit (RTU).

- b. A Panhandle Alarm System must be connected to the control panel. The unit can be mounted within the panel or mounted in a separator enclosure.
 - c. The standard operating program of the RTU monitors up to (14) digital inputs and the alarm limits on up to (4) analog inputs. This information is immediately displayed on the RTU's web site, and user selectable alarm notifications for critical events can be sent via pager, e-mail, telephone call, or any combination thereof.
 - d. RTU digital inputs include:
 - i. Pin – 1 DI1 - Float high level
 - ii. Pin – 2 DI2 – Pump 1 fault
 - iii. Pin – 3 DI3 – Pump 2 fault
 - iv. Pin – 4 DI4 – Crystal Ball Power
 - v. Pin – 5 DI5 – Phase loss
 - vi. Pin – 6 DI6 – Pump 1 seal fail
 - vii. Pin – 7 DI7 – Pump 2 seal fail
 - viii. Pin – 8 DI8 – (if required -Triplex) Lag-Lag level
 - ix. Pin – 9 DI9 – Lag level
 - x. Pin – 10 DI10 – Lead level
 - xi. Pin – 11 DI11 – Off level
 - xii. Pin – 12 DI12 – Pump 1 runtime
 - xiii. Pin – 13 DI13 – Pump 2 runtime
 - xiv. Pin – 14 DI14 – Pump 3 runtime
 - e. RTU relay outputs include:
 - i. RO1 - Pump 1 start
 - ii. RO2 - Pump 2 start
 - f. RTU analog inputs include:
 - i. 2+ / 2- (return) Pump 1 Amps from VFD1 (4-20 mA)
 - ii. 3+ / 3- (return) Pump 2 Amps from VFD2 (4-20 mA)
8. Control Panel Enclosure:
- a. Control panel enclosure shall be of type 4X, constructed of 304 stainless steel, and be powder-coated white or green (over cleaned phosphatized surfaces) inside and out.
 - b. The enclosure shall be of seam-welded construction and be equipped with a drip shield to prevent water penetration around the outer doors.
 - c. Control panel includes (304 SS or Aluminum) – please choose option - Air Brake Pedestal 24” high with hinged pedestal base doors/quarter turn latches/ bug screen and lift off hinge, powder coated white or green.

- d. Enclosure outer door(s) must be equipped with 3-point (316SS) pad-lockable handles. Door stop mechanisms are to be provided to hold doors open during maintenance. Doorstops must be at least 90 degrees.
 - e. Hinged inner door swing panels shall be provided to allow for lift station operation without exposure to hazardous voltages. Inner doors shall be fabricated of a minimum thickness 0.125", type 5052 marine-grade aluminum with a black matte powder coated finish (both sides). All component labels and markings shall be engraved. Inner doors shall have quarter-turn latches and must also include minimum 90-degree door stop mechanisms.
 - f. Removable, back mounted subpanels shall be provided for mounting control and power devices (excluding pump VFD's). Enclosure shall be construction with cutouts in the rear to allow for the pump VFD's to be mounted with the heat-sinks protruded through the rear of the enclosure.
 - g. VFD heat-sinks shall be cover by a removable (bolt-on), vented hood.
 - h. (2) vertical stainless steel uni-struts shall be provided and tack welded to the back of the enclosure. An aluminum 3/16" plate with White powder coat finish shall be bolted to the welded uni-strut.
9. Junction Box Enclosure:
- a. Junction box enclosure shall be of type 4X, constructed of Aluminum, and be powder-coated white or green (over cleaned phosphatized surfaces) inside and out.
 - b. The enclosure shall be of seam-welded construction and be equipped with a drip shield to prevent water penetration around the outer doors.
 - c. Enclosure door must be equipped with 3-point (316SS) pad-lockable handle.
 - d. Provide a removable, back-mounted subpanel and a vertical divider panel to separate intrinsically safe control wires from non-intrinsically safe power and control wires. Float connections must be kept separated from pump connections. A .125 aluminum powder coated black back panel shall have labels for each wire termination engraved into the back panel.
 - e. Junction box shall be mounted on a vented, air-break pedestal constructed of Aluminum. Pedestal height shall be 32". Hinged access doors must be provided to allow access to the conduit/cable stub-up area beneath the junction box. The air brake expanded metal must include SST fine mesh bug screen to prevent

wasp/bees/yellow jackets from entering Pedestal area and building nest/hives.

- f. Pedestal shall be powder-coated forest green or white to match enclosure.

10. Variable Frequency Drives (Pumps):

- a. Manufacture and type shall be Danfoss VLT Aqua series, FC202P.
- b. Operator interface shall be graphical LCP.
- c. Must include conformal coated PCB.
- d. Enclosure must be IP21 / NEMA type 1.
- e. Shall include internal mains fuses.
- f. VFD's are required as primary starters and soft starters as emergency back-up. Mode shall be via switch panel.
- g. VFD's must include the panel through mount accessory kit to allow for heat sinks to be external of the control panel enclosure.
- h. Across the line starters can be used in lieu of soft starters only upon approval by The City of Crestview.

11. Pump Controller / RTU:

- a. Manufacturer and type shall be OmniSite Crystal Ball.
- b. The OmniSite Crystal Ball is a multi-channel monitoring and control device that has been optimized for use by the water and wastewater utilities. It is designed for indoor or outdoor environments and operates from 120VAC or +15-20 VDC solar panels and power supplies.
- c. The module's internal cellular modem module provides two-way communications through the fully automated OmniSite operations center to the www.omnisite.com web site.
- d. The standard operating program of the RTU monitors all (14) digital inputs and the alarm limits on (4) analog inputs and reports any changes. This information is immediately displayed on the web site, and user selectable alarm notifications for critical events can be sent via pager, e-mail, telephone call or any combination thereof.
- e. Equipment status reports can be time scheduled in advance or requested at any time.
- f. The Crystal Ball also has pump controller functionality.

12. Liquid Level Float System:

- a. Manufacture and type shall Cox Research, Opti-Float (mini).
- b. Two-float systems require input power of 12VDC, which is provided by the OPTI-PS2 12vdc power supply, fed to the OPTI-TR3 transceiver modules.
- c. Opti-Float liquid level detectors/floats are mercury and lead free and are "inherently safe" as viewed by UL. The floats use no electrical wires to connect to the control system.
- d. If the fiber-optic power supply and transceivers shall be installed in the junction box.

- e. Pressure transducers, when required will be by “Blue Ribbon” and must have the lifetime warranty.

16.08 Electrical Equipment

1. General: All electrical equipment shall be installed in accordance with NEC, as last revised. All materials used shall be new and unused, of the highest quality, and of proper type for the use intended. Where applicable, all material shall carry the approval of the Underwriters' Laboratory. Substitutes which tend to lower the quality of the work will not be permitted. The project is to result in a complete and operable Lift Station. Any items not specified, but normally included in such installations shall be furnished and installed regardless of omissions from specifications. However, specified omissions are not affected by this requirement. The electrical service and starting gear shall be mounted on a suitably sized panel board constructed as detailed on the construction plans. All details of service characteristics shall be verified with the local utility.

2. Materials:

- a. Conduit and conduit fittings shall be either aluminum or PVC; Electrical connectors and couplings shall be of the approved water-tight type.
- b. Wire and cable shall be properly sized to carry the anticipated loading. Insulation, unless otherwise noted, shall be type RHW neoprene jacket for all sizes.
- c. Conduit into wet well shall be large enough for easy removal of pump leads. There shall be one conduit for each pump, plus one for float switch cables, and one extra.

3. Installation:

- a. All wires entering the control panel from the wet well shall have a liquid/gas tight cord connector.
- b. Outlets, switches, boxes, etc., shall be rigidly secured and located properly with respect to easy accessibility.
- c. No electrical splices allowed except in control panel.
- d. All work shall be tested and subject to final approval of the Engineer.

4. Stand-by Facilities: A double throw safety switch with attached emergency generator receptacle shall be installed between the main disconnect and the controller. The unit shall be housed in a NEMA rated steel enclosure. The receptacle shall be a Crouse-Hinds Model #5, Type AR-1048, rated for 100 Amp Service.

5. Lightning Arrestor: The lightning arrestor for the main service entrance shall be Joshlan or approved equal.

6. Main Disconnect: The main disconnect safety switch shall be an enclosed service entrance, weather-proof enclosure, 4 wire S/N, 240 Volt AC of sufficient size to carry both pumps operating simultaneously.

16.09 Emergency Station Requirements

1. General: Lift stations shall be provided with the necessary facilities for the City's emergency pumping equipment to operate to bypass the station pumps and transmit the flow through the station force main to downstream and with facilities for portable generator connection. Larger stations shall provide stand-by power on the site, as follows:

- a. Lift stations which serve as Master Lift Stations, i.e. stations which receive the pumped flow from one or more other lift stations, shall provide stand-by power equipment (generator) on the site.
- b. Lift stations serving developments with over 100 gpm design peak flow shall provide stand-by power equipment (generator) on the site.
- c. Lift stations with a large design head such that the horsepower requirements are greater than 7.5 Hp per pump shall provide stand-by power equipment (generator) on the site.

The City will review the plans for each lift station and determine if the above requirements have been met. Generators shall be shown on a Lift Station Site Plan at a scale of 1"= 20' for review by the City to ensure coordination of all elements on the lift station site. The L.S. Site Plan shall show contours – existing and proposed.

2. Foundation: Generators shall be mounted on a concrete pad of sufficient thickness and shall be protected against vibration; details of the concrete shall be shown in the plans.

3. Generators provided shall have sufficient capacity to start up and maintain the total rated running capacity of the lift station; generator and transfer switch to be housed in NEMA 3X enclosures; fuel tank to be adequate for 24 hour run time.

4. All station emergency facilities shall be compatible with the City's temporary-service power generating and pumping equipment.

16.10 General Finishing Requirements

1. As-Built Records: A complete set of as-built records shall be kept by the contractor. These records shall show all items of construction and equipment which differ in size, shape or location from those shown on the contract drawings, also any additional work, existing features or utilities revealed by construction work which are not shown on the contract drawings. These reports shall be kept up-to-date daily. They may be kept on a marked set of contract drawings to be furnished by the contractor for this purpose, or in any other form which is approved prior to the beginning of the work. They shall be available at all times during construction for reference by the engineer and owner, and shall be delivered to the engineer upon completion of the work.

2. Nameplate: Each piece of mechanical equipment and motors shall be provided with a substantial nameplate of non-corrodible metal, securely fastened in place, and clearly and permanently inscribed with the manufacturer's name, model, or type designation, serial number, rated capacity, electrical or other power characteristics, and other appropriate nameplate data. Spare nameplates shall be provided for each lift station and placed inside each control panel (one nameplate for each model pump).

3. Lubricants: All the equipment shall be delivered fully lubricated with oil and/or grease insofar as possible. If any point cannot be so serviced, it shall be clearly marked to the effect that it is not lubricated and requires servicing prior to operation. An adequate supply of the proper lubricant, with the instructions for its application shall be supplied with the equipment for each point not lubricated prior to shipment. The contractor shall also provide the owner with a sufficient amount of proper lubricants for one complete change of lubricant for all equipment furnished.

4. Operating Manuals and Parts List: The contractor shall furnish four (4) complete bound sets of literature giving the following information to the City:

- a. Clear and concise instructions for operations, adjustment and lubrication and other maintenance of the equipment. These instructions shall include a complete lubrication chart.
- b. A list of all parts of the equipment with catalog number and other data necessary for ordering replacement parts.
- c. Such instructions and parts listed shall have been prepared specifically for the model and type of equipment furnished and shall not refer to other models and types of similar equipment.

5. Fencing: The lift station site shall be fully enclosed by fencing, 6 feet in height, with a 10' wide gate (clear opening = 10') for vehicular access. Fence specifications may vary, subject to the requirements of the developer and the Public Services Department.

6. Alarms:

- a. One high-level red alarm light, to be "off" at all times except under alarm conditions (High Level Alarm) - when light shall glow bright red and flash; battery back-up shall be provided for the light.
- b. Telemetry Alarm System shall be provided at the station; provide Bosch/Radionics D7212 system with digital dialer (if no phone line available); the system shall engage under the following conditions:

Power failure	Lag pump On
Pump failure	High level alarm
Unauthorized entry	

7. Site Stabilization: The lift station site shall be grassed, except for vehicle movement areas – which shall be stabilized via gravel surfacing (3" thickness minimum, angular stone).

8. Property Survey: A survey will be required on the lift station site, after construction is complete, to ensure the site is properly located in the development.

9. Water Service: A ¾" water service with RPZ backflow preventer and ¾" brass hose bibb shall be provided, with fiberglass enclosure for freeze protection.

10. Concrete Pad: A concrete pad 8" thick with ½" rebar shall be poured adjacent to the wet well top which is large enough to support the control panel and contain the backflow preventer facility.

16.11 Start-up & Testing

1. Upon completion of all station equipment installation, Contractor shall contact the Engineer and schedule a pump station start-up event. This event shall be attended by the following parties:

Owner (City)

Engineer

Contractor

Pump Manufacturer/ Supplier

2. Start-up shall be in accordance with the pump manufacturer's instructions.

3. A standard pump test shall be performed using the timed drawdown method on both pumps separately to verify pumping rates; results shall be recorded and provided to the Owner and Engineer.

4. As part of the start-up activities, the force main discharge shall be verified by observation at the discharge end of the line.

5. During start-up, pressure gauges shall be installed on the pump discharge lines (in the valve pit) to monitor the line pressures for initial pump evaluation. It shall be the responsibility of the Contractor to provide these gauges and their installation.

6. Operation & Maintenance manuals for the pumps, float controls, and control panel equipment shall be submitted to the Engineer immediately following start-up (4 copies), as stated in 16.10 above. These shall contain also the above listed items which were submitted prior to the station installation, updated as required during the installation process.