

SPECIFICATIONS, PROPOSAL AND CONTRACT

Craven County



**CRAVEN COUNTY
CREEKSIDE PARK PLAYGROUND**

CRAVEN COUNTY, NORTH CAROLINA

January 2016

Project No. : 2015189

Drawing No. W-3646

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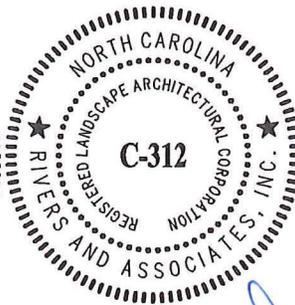
January 2016

Project No. : 2015189
Drawing No. W-3646



Sharon K. Rhue
Sharon K. Rhue, PLA

1.05.16
Date



James D. Withers
James "Dan" Withers, P.E.

1/5/2016
Date



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**ADVERTISEMENT FOR BIDS
CRAVEN COUNTY
CREEKSIDE PARK PLAYGROUND
CRAVEN COUNTY, NORTH CAROLINA**

Sealed bids will be received by Craven County in the Commissioners' Meeting Room located on the second floor of 406 Craven Street, New Bern, NC 28560 on Thursday, January 28, 2016 until 2:00 p.m. local time and immediately thereafter publicly opened and read, for constructing the following facilities:

Craven County
Creekside Park Playground

Bids must be submitted on the complete project. Bids must be enclosed in a sealed envelope, addressed to the Craven County, 406 Craven Street, New Bern, NC 28560 and the outside of the envelope must be marked "Bid for Creekside Park Playground". All bids must be made on blank forms provided and included in the bound document. The name, address, and license number with limitation and classification of the Bidder must be plainly marked thereon.

Each bid must be accompanied by cash or a certified check, drawn on a bank or trust company authorized to do business in North Carolina, payable to Craven County in an amount at least equal to five percent (5%) of the total amount of the bid, as a guarantee that a contract will be entered into. In lieu of cash or a certified check, the Bidder may submit a bid bond in the form prescribed in G.S. 143-129 as amended by Chapter 1104 of the Public Laws of 1951.

Contractors are notified that North Carolina G.S. 87 relating to licensing of contractors will be observed in receiving bids and awarding contracts.

In accordance with the Minority Participation Goals, potential prime Contractors should attend the Pre-Bid Conference to be held in the Commissioners' Meeting Room located on the second floor of 406 Craven Street, New Bern, NC 28560 on Thursday, January 14, 2016 at 2:00 p.m. local time.

The major items of work include:

The construction of a playground and appurtenant facilities at the existing Creekside Park.

Plans and specifications are on file and may be examined at the office of the Engineer, Rivers and Associates, Inc., Greenville, North Carolina and at iSqFt Plan Room www.isqft.com. Plans and specifications may be obtained upon application to the Engineer, accompanied with a plan deposit check in the amount of \$100.00. Deposit will be refunded in full to all bona fide bidders provided plans and specifications are returned in good condition within ten (10) days after opening of bid.

With request for Bidding Documents supply the following information: Company name, contact person, street address, email address, and phone and fax numbers for Bidding office; N.C. contractor's license with limitation and classification; indicate if the firm will be a Bidder, Supplier or Subcontractor.

The right is reserved to reject any or all bids, to waive informalities, and to award contract or contracts which, in the opinion of the Owner, appear to be in its best interest.

Craven County
Owner

Gene Hodges, Assistant County Manager
Authorized Representative

January 5, 2016
Date

Rivers and Associates, Inc.
Engineers - Planners - Surveyors
Post Office Box 929
107 East Second Street
Greenville, North Carolina 27835 (P.O. Box) **OR** 27858 (Street Address)
Phone: (252) 752-4135
Fax: (252) 752-3974

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 and where the bidding procedures are to be administered.
 - B. *Bid Schedule* – **The Bid Schedule includes the Bidder’s prices and is part of Article 5 – Basis of Bid in the Bid Form.**
 - C. *Successful BIDDER* – **The lowest Responsible and Responsive BIDDER to whom OWNER (on the basis of OWNER’s evaluation is hereinafter provided) makes an award.**
 - D. *Responsible BIDDER* – **The entity who possesses the skill, ability and integrity necessary to faithfully perform the work called for by this contract, based upon a determination of competent workmanship, financial soundness, and other requirements outlined in these Bidding Documents.**
 - E. *Responsive BIDDER* – **The entity who accurately and completely delivers to the OWNER the required documentation and certifications outlined in these Bidding Documents.**

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

- 2.01 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the advertisement or invitation to bid may be obtained from the Issuing Office. The deposit will be refunded **in accordance with the conditions indicated in the Advertisement for Bids.** ~~to each document holder of record who returns a complete set of Bidding Documents in good condition within 30 days after opening of Bids~~
- 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, within five days of Owner's request, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other data as may be called for below.

- A. Official name of Bidder and length of time the organization has been in business under present name.**
- B. Address and phone numbers of company office that will manage the Project if different than that provided in the Bid.**
- C. Officers of the company. Name and resume of designated project manager and field superintendent. Number of regular employees of the organization.**
- D. Financial statements of the Bidder's company for the last three years including assets, liabilities, and other information requested by Owner to establish the Bidder's financial capability to complete the Project. The Bidder must also provide the names, addresses, and telephone numbers for at least two (2) major equipment suppliers, two (2) major material suppliers, and two (2) major subcontractors that the Owner may contact as financial references of the Bidder.**

Record of failure to honor contractual commitments, consistent non-payment or payment not completed in a timely manner, and/or unfavorable references will be grounds for the Owner to disqualify the Bidder.

- E. Name and home office address of the Surety proposed and the name and address of the responsible local claim agent.**
- F. Past experience on similar type and size projects within the past five (5) years, in the state for which this Project is to be constructed. Information shall include the list of similar projects, contact names and phone numbers of owners and engineers familiar with the listed projects, scheduled contract time and actual completion time, original and final contract price (include brief explanation of cost overruns and change orders), and subcontractors used on the projects.**

Evidence of the lack of experience on similar type and size projects, consistently unfavorable interviews with owners and engineers for the projects, a consistent record of not completing the work on schedule, a record of substantial claims for change orders (all evaluations based upon interviews with the listed contact names), will be grounds for the Owner to disqualify the Bidder.

- G. A list of all projects the Bidder will have under construction and/or commitment to at the time of the anticipated Notice to Proceed (assume 60 days from the Bid date). This list shall include a complete description of each project including the type, size, structures, major equipment items, and contract amount. This list shall identify the office(s) from which these projects are being coordinated, managed, and staffed. The list shall also identify the number of personnel staffed for each project, along with the total number of personnel for the Bidder's corporation. Evidence that the Bidder is or will be "over-extended" during the Contract Time for this Project will be considered grounds for the Owner to disqualify the Bidder.
- H. A list of all subcontractors and suppliers expected to be utilized on this Project. The list shall include past project experience of the subcontractors and suppliers for similar type and size projects. Include contact names and telephone numbers of the subcontractors and suppliers listed for the Project.
- A record of poor financial history with the listed subcontractors and suppliers (as outlined in Item "D" above), failure of the Bidder to provide the proper Contract Documents to the subcontractors and/or suppliers for their bidding purposes, and/or lack of experience on similar type and size projects will be considered grounds for the Owner to disqualify the Bidder. (Electrical subcontractors shall meet Subcontractor Qualifications outlined in Specification Section 16050 – Basic Electrical Materials and Methods)
- I. Statement that bidder is capable of completing the project within the stated time.
- J. The Bidder shall list any and all construction related claims or legal actions by the Contractor against Owners or Engineers in the last five years. Provide a list of any and all construction related claims or legal actions by the Owners, Engineers, or Subcontractors in the last five years.

Evidence of a pattern of claims and/or legal action either by the Bidder or against the Bidder will be considered grounds for the Owner to disqualify the Bidder.

- K. The above listed items shall be accompanied by the Contractor's Qualification Statement – 00420, CQS-1, located after the Bid Form. The Statement must be dated, executed, and notarized to be considered as complete.

Failure to include the Contractor's Qualification Statement – 00420, CQS-1, will be considered as grounds for the Owner to disqualify the Bidder.

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

Bidders are notified that Chapter 87, Article(s) 1, 2, & 4 of the General Statutes of North Carolina, will be observed in receiving and awarding contracts. Bidders for this Project must be licensed in the following classifications and limitations:

- A. **General**: Must have a General Contractors license with one of the following classifications with a limitation appropriate to the bid amount.
1. **Classifications**:
 - a. **Unclassified**
 - b. **Building**
 2. **Limitations**:
 - a. **"Limited"**: Up to \$500,000
 - b. **"Intermediate"**: Up to \$1,000,000
 - c. **"Unlimited"**: No limit on contract value
- B. **Electrical**: Must have a minimum of an unlimited classification license.

ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

4.01 *Subsurface and Physical Conditions*

- A. The Supplementary Conditions identify:
1. Those reports known to Owner of explorations and tests of subsurface conditions at or contiguous 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).
- B. Copies of reports and drawings referenced in Paragraph 4.01.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions has been identified and established in Paragraph 4.02 of 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. **The Bidder will be responsible for the cost associated with making the copies available.**

4.02 *Underground Facilities*

- A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

4.03 *Hazardous Environmental Condition*

- A. The Supplementary Conditions identify any reports and drawings known to Owner relating to a Hazardous Environmental Condition identified at the Site.
- B. Copies of reports and drawings referenced in Paragraph 4.03.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.06 of the General Conditions has been identified and established in Paragraph 4.06 of 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. **The Bidder will be responsible for the cost associated with making the copies available.**

4.04 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 4.02, 4.03, and 4.04 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 4.06 of the General Conditions.

4.05 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. 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. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.

- 4.06 A. Reference is made to Article 7 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.
- B. Paragraph 6.13.C of the General Conditions indicates that if an Owner safety program exists, it will be noted in the Supplementary Conditions.
- 4.07 It is the responsibility of each Bidder before submitting a Bid to:
- A. examine and carefully study the Bidding Documents, and the other related data identified in the Bidding Documents;
- B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in Paragraph 4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in the Paragraph 4.06 of the Supplementary Conditions as containing reliable "technical data";
- E. consider the information known to Bidder; 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, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs;

- F. agree at the time of submitting its Bid that 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(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;
- G. 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;
- H. 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; and
- I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.
- J. correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;**

4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 – PRE-BID CONFERENCE

5.01 A pre-Bid conference will be held **as indicated in the Advertisement or by Addendum.** at _____ [a.m.][p.m.] local time on _____ at _____. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are [required] [encouraged] to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 6 – SITE AND OTHER AREAS

6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. **Questions may be faxed. Engineer's fax number is 252-752-3974. Submittal with questions shall include the project name, the person's name submitting the question, firm, telephone number, fax number and e-mail when available.** Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than ten 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.

7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's maximum Bid price and in the form of a certified check, bank money order, or a Bid bond (on the form attached) issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the General Conditions.

8.02 The Bid security of the Successful Bidder will be retained until 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 returned. 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. The Bid security of other Bidders whom 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 Agreement or **to the end of the Bid holding period as indicated in the Bid, Article 2, 61 days after the Bid opening**, whereupon Bid security furnished by such Bidders will be returned.

- 8.03 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

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

ARTICLE 10 – LIQUIDATED DAMAGES

- 10.01 Provisions for liquidated damages, if any, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS

- 11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, or those substitute or “or-equal” materials and equipment approved by Engineer and identified by Addendum. The materials and equipment described in the Bidding Documents establish a standard of required type, function and quality to be met by any proposed substitute or “or-equal” item. No item of material or equipment will be considered by Engineer as a substitute or “or-equal” 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 conform to the requirements of Paragraph 6.05 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 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.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS AND OTHERS

- 12.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. 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, individual, or entity if requested by Owner. 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 a substitute, without an increase in the Bid.

- 12.02 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, individuals, or entities. Declining to make requested substitutions will not 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 revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06 of the General Conditions.
- 12.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.
- 12.04 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SC 6.06.**

ARTICLE 13 – PREPARATION OF BID

- 13.01 The Bid Form is included with the Bidding Documents. Additional copies may be obtained from Engineer.
- 13.02 All blanks on the Bid Form shall be completed in ink, **by typewriter or printer** 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, alternative, adjustment unit price item, and unit price item] listed therein. In the case of optional alternatives the words “No Bid,” “No Change,” or “Not Applicable” may be entered.
- 13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown.
- 13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown.
- 13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member 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.
- 13.06 A Bid by an individual shall show the Bidder’s name and official address.

- 13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.08 All names shall be printed in ink below the signatures.
- 13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.10 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.11 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 14 – BASIS OF BID; COMPARISON OF BIDS

14.01 *Lump Sum*

- A. Bidders shall submit a Bid on a lump sum basis for the base Bid **items** and include a separate price for each alternate described in the Bidding Documents as provided for in the Bid Form. The price for each alternate will be the amount ~~added to or deleted from~~ **to replace** the base Bid if Owner selects the alternate. **Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.**

14.02 *Unit Price*

- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.
- B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 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.
- D. Alternates to the Base Bid for unit price items shall replace the corresponding item in the Base Bid.**

14.03 *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 11.02.B of the General Conditions.

14.04 *Completion Time Comparisons*

- A. **Not Applicable.** ~~Bid prices will be compared after adjusting for differences in the time designated by Bidders for Substantial Completion. The adjusting amount will be determined at the rate set forth in the Contract Documents for liquidated damages for failing to achieve Substantial Completion for each day before or after the desired date appearing in Article 9 above.~~

ARTICLE 15 – SUBMITTAL OF BID

15.01 With each copy of the Bidding Documents, a Bidder is furnished one bound copy of the Bid Form, and all the attachments outlined in Article 7 of the Bid Form to be submitted. If provided by Addendum, an unbound copy of the Bid Form is to be completed and submitted with all the attachments outlined in Article 7 of the Bid Form. ~~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 following documents:~~

- A. *[See BF-7.01 for a list of documents typically required to be submitted with the Bid.]*

15.02 A Bid shall be submitted 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 as indicated in the Advertisement.** ~~A mailed Bid shall be addressed to _____.~~

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be modified or 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.

16.02 ~~If, within seventy-two hours after Bids are opened, not including weekends and holidays legally recognized by the OWNER, 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 in accordance with North Carolina G.S. 143-129.1. Thereafter, that BIDDER will be disqualified from further bidding on the Work to be provided under the Contract Documents. 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 17 – OPENING OF BIDS

17.01 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 18 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 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 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

- 19.03 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.
- 19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work in accordance with the Contract Documents.
- 19.06 If the Contract is to be awarded, Owner will award the Contract to the Bidder whose Bid is in the best interests of the Project.
- 19.07 In determining the lowest responsible Bidder, Owner shall take into consideration the past performance of Bidder on construction contracts with particular concern given to completion times, quality of work, cooperation with other Contractors, and cooperation with Owner.**
- 19.08 In determining the lowest responsive Bidder, Owner shall take into consideration bidder's compliance with the requirements of G.S. 143-128.2(c). Failure of the low bidder to furnish affidavit(s) and documentation as required by the Bid Form for compliance with G.S. 143-128.2(c) may constitute a basis for disqualification of the Bid.**
- 19.09 Owner reserves the right to reject Bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy Owner that such Bidder is properly qualified to carry out the obligations of the Agreement and to complete the Work described therein.**
- 19.10 Should the Owner adjudge that the apparent low Bidder is not the lowest responsible Bidder by virtue of the above information, said apparent low Bidder will be so notified and his Bid security shall be returned.**
- 19.11 Bid award will be evaluated on the total of the base bid and the alternates as selected by the Owner to the extent that project funds are available.**
- 19.12 The Owner reserves the right to award any or all parts of a Contract but separate parts of the same Contract will not be awarded to different contractors.**

ARTICLE 20 – CONTRACT SECURITY AND INSURANCE

20.01 Article 5 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 executed Agreement to Owner, it shall be accompanied by such bonds.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement along with the other Contract Documents which are identified in the Agreement as attached thereto. Within 15 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within ten days thereafter, Owner shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

ARTICLE 22 – SALES AND USE TAXES

22.01 **Refer to paragraph SC 6.10 of the Supplementary Conditions for Owner's requirements on sales tax reports.** ~~Owner is exempt from ___ state sales and use taxes on materials and equipment to be incorporated in the Work. (Exemption No. ___). Said taxes shall not be included in the Bid. Refer to Paragraph 6.10 of the Supplementary Conditions for additional information.~~

ARTICLE 23 – RETAINAGE

23.01 **Refer to Agreement 00520.** ~~Provisions concerning Contractor's rights to deposit securities in lieu of retainage are set forth in the Agreement.~~

ARTICLE 24 – CONTRACTS TO BE ASSIGNED - OMITTED

ARTICLE 25 – PARTNERING - OMITTED

END OF INSTRUCTIONS TO BIDDERS

BID FORM

PROJECT IDENTIFICATION:

Creekside Park Playground

TABLE OF CONTENTS

Article 1 – Bid Recipient

Article 2 – Bidder's Acknowledgements

Article 3 – Bidder's Representations

Article 4 – Bidder's Certification

Article 5 – Basis of Bid

Article 6 – Time of Completion

Article 7 – Attachments to This Bid

Article 8 – Defined Terms

Article 9 – Bid Submittal

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Craven County

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, other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

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

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

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in SC-4.02 as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in SC-4.06 as containing reliable "technical data."

E. Bidder has considered the information known to Bidder; 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, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder’s safety precautions and programs.

- F. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. 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.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.
- J. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with 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) **on the Bid Schedule**.
- A. All specified cash allowances are included in the price(s) set forth **above in the Bid Schedule** and have been computed in accordance with Paragraph 11.02 of the General Conditions.
 - B. Unit Prices have been computed in accordance with Paragraph 11.03.B of the General Conditions.
 - C. Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

BID SCHEDULE

<u>Item</u>	<u>Qty.</u>	<u>Unit</u>	<u>Description</u>	<u>Cost</u>
BASE BID ITEMS:				
1.	1	LS	Mobilization and Bonding (not to exceed 3% of Bid)	\$ _____
2.	1	LS	Creekside Park Playground	\$ _____
3.	1	LS	Testing Allowance	\$ <u>5,000.00</u>
TOTAL BASE BID				\$ _____
ADD ALTERNATE ITEMS:				
1.	1	LS	Plants	\$ _____
2.	1	LS	Colored Concrete & Special Pavers at 3 Seating Nodes	\$ _____
3.	1	LS	Bonded Rubber instead of Poured- in-Place Play Surface	\$ _____
4.	1	LS	Colored Concrete, Special Pavers and Play Surfacing	\$ _____
5.	1	LS	"Cloud" Entry Signage and Seat Bench	\$ _____
6.	1	LS	Site Lighting	\$ _____
TOTAL ADD ALTERNATES				\$ _____
TOTAL BASE BID PLUS ADD ALTERNATES				\$ _____

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 14.07 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 **in the event of failure to complete the Work within the Contract Times.**
- 6.03 **Refer to the Agreement for Milestones that must be met and liquidated damages in the event of failure to complete the Work within the Contract Times for the Milestones.**

ARTICLE 7 – ATTACHMENTS TO THIS BID

- 7.01 The following documents are submitted with and made a condition of this Bid. **Failure to provide the documentation with the Bid may be grounds for rejection of the Bid.**

A. Required Bid security in the form of a **Bid Bond (EJCDC No. C-430) or Certified Check (circle type of security provided).**

B-H in original EJCDC document deleted.

I. Add required MBE documentation:

In accordance with GS 143-128.2(c), Bidder shall identify on its bid the minority businesses that it will use on the project and the total dollar value of the bid that will be performed by the minority businesses.

Bidder shall list the good faith efforts made to solicit participation in Affidavit A.

A Bidder that will perform all of the work with its own workforce may submit an Affidavit B to that effect in lieu of the Affidavit A required above.

- 1. Identification of Minority Business Participation (MB-1)**
- 2. Affidavit A, Listing of Good Faith Efforts (MB-2)**
- 3. Affidavit B, Intent to Perform Contract with Own Workforce (MB-3)**

- 7.02 **In accordance with GS 143-128 the Single Prime Contractor must identify the Subcontractors, if any, selected for the following subdivision of work:**

A. General Construction

Name: _____

Address: _____

N.C. License No.: _____

B. Electrical Construction

Name: _____

Address: _____

N.C. License No.: _____

Bidder understands that if this Bid is accepted by the Owner, Bidder shall not substitute for the subcontractors named in the Bid Documents except as allowed in the Supplementary Conditions.

7.03 After the bid opening the Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low Bidder, the Bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:

A. Affidavit C (MB-4) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the goal established by the Owner and indicated in the Minority Business Guidelines, paragraph Minority Business Subcontract Goals. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort; or

B. Affidavit D (MB-5) of its good faith effort to meet the goal. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

7.04 After the Bid opening, the Bidder will supply the information for Qualification of Bidders, as required in Article 3 of the Instructions to Bidders, within 5 days of the Owner's request.

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.

Bid Schedule – The Bid Schedule includes the Bidder’s prices and is part of Article 5 – Basis of Bid in the Bid Form.

ARTICLE 9 – BID SUBMITTAL

9.01 This Bid is submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual’s signature)

Doing business as: _____

A Partnership

Partnership Name: _____

By: _____
(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed): _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____
Type (General Business, Professional, Service, Limited Liability): _____

By: _____
(Signature -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____
(CORPORATE SEAL)

Attest _____

Date of Qualification to do business in [State where Project is located]
is ____ / ____ / ____.

A Joint Venture

Name of Joint Venture: _____

First Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of first joint venture partner--attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of second joint venture partner--attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Bidder's Business Address _____

Phone No. _____ Fax No. _____

E-mail _____

SUBMITTED on _____, 20____.

State Contractor License No. _____

Contractor's Classification: _____

Contractor's Limitation: _____

Employer's Tax ID No.: _____

CONTRACTOR'S QUALIFICATION STATEMENT

The undersigned hereby authorizes any person, firm, or corporation to furnish any information requested by the OWNER and/or ENGINEER in verification of the information stated in the attached qualifications.

I, the undersigned, affirm that the information provided is true and correct to the best of my knowledge and belief.

Dated this _____ day of _____, 20__.

BIDDER: _____

By: _____
(Signed)

Name: _____
(Please print or type)

Title: _____

NORTH CAROLINA
_____ County

I, _____, a Notary Public for _____ County, North Carolina, do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal, this the _____ day of _____, 20__.

(Official Seal)

Notary Public

My commission expires _____, 20__.

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):*

BID

Bid Due Date:

Description *(Project Name and Include Location):*

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

Bidder'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

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

PENAL SUM FORM

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2 All Bids are rejected by Owner, or
 - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

Attach to Bid Attach to Bid

State of North Carolina AFFIDAVIT A – Listing of Good Faith Efforts

County of _____

(Name of Bidder)

Affidavit of _____

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- 1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- 2 – (10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- 3 – (15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- 4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- 5 – (10 pts)** Attended prebid meetings scheduled by the public owner.
- 6 – (20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- 7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- 8 – (25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- 9 – (20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- 10 – (20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

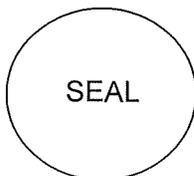
The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of North Carolina, County of _____
Subscribed and sworn to before me this _____ day of _____ 20____
Notary Public _____
My commission expires _____

Attach to Bid Attach to Bid

**State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract
with Own Workforce.**

County of _____

Affidavit of _____
(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____
_____ contract.
(Name of Project)

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

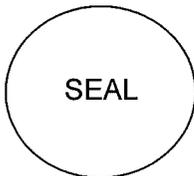
The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of North Carolina, County of _____

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

Notary Public _____

My commission expires _____

Do not submit with bid Do not submit with bid Do not submit with bid Do not submit with bid

State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by Minority Firms

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by minority businesses as defined in GS143-128.2(g) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit. This affidavit shall be provided by the apparent lowest responsible, responsive bidder within 72 hours after notification of being low bidder.

Affidavit of _____ I do hereby certify that on the _____
(Name of Bidder)

Project ID# _____ (Project Name) Amount of Bid \$ _____

I will expend a minimum of _____% of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. Attach additional sheets if required

Name and Phone Number	*Minority Category	Work description	Dollar Value

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (D)

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of North Carolina, County of _____

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

Notary Public _____

My commission expires _____

State of North Carolina

AFFIDAVIT D – Good Faith Efforts

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

(Name of Bidder)

Affidavit of: _____

I do certify the attached documentation as true and accurate representation of my good faith efforts.

(Attach additional sheets if required)

Name and Phone Number	*Minority Category	Work description	Dollar Value

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (D)

Documentation of the Bidder's good faith efforts to meet the goals set forth in these provisions.

Examples of documentation include, but are not limited to, the following evidence:

- A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
- B. Copies of quotes or responses received from each firm responding to the solicitation.
- C. A telephone log of follow-up calls to each firm sent a solicitation.
- D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
- E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.
- F. Copy of pre-bid roster.
- G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.
- H. Letter detailing reasons for rejection of minority business due to lack of qualification.
- I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____

State of North Carolina, County of _____

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

Notary Public _____

My commission expires _____



MINORITY BUSINESS GUIDELINES

MINORITY BUSINESS SUBCONTRACT GOALS

The goals for participation by minority firms as subcontractors on this project have been set at 10%.

The bidder must identify on its bid, the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit (Affidavit A) listing good faith efforts or affidavit (Affidavit B) of self-performance of work, if the bidder will perform work under contract by its own workforce as required by G.S. 143-128.2(c) and G.S. 143-128.2(f).

The lowest responsible, responsive bidder must provide Affidavit C, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal.

OR

Provide Affidavit D, that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, with documentation of Good Faith Effort, if the percentage is not equal to the applicable goal.

OR

Provide Affidavit B, which includes sufficient information for the Owner to determine that the bidder does not customarily subcontract work on this type project.

The above information must be provided as required. Failure to submit these documents is grounds for rejection of the bid.

MINIMUM COMPLIANCE REQUIREMENTS:

All written statements, affidavits or intentions made by the Bidder shall become a part of the agreement between the Contractor and the Owner for performance of this contract. Failure to comply with any of these statements, affidavits or intentions, or with the minority business guidelines shall constitute a breach of the contract. A finding by the Owner that any information submitted either prior to award of the contract or during the performance of the contract is inaccurate, false or incomplete, shall also constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. It shall be solely at the option of the Owner whether to terminate the contract for breach or not.

In determining whether a contractor has made Good Faith Efforts, the Owner will evaluate all efforts made by the Contractor and will determine compliance in regard to quantity, intensity, and results of these efforts. Good Faith Efforts include:

- (1) Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed.
- (2) Making the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bid or proposals are due.
- (3) Breaking down or combining elements of work into economically feasible units to facilitate minority participation.
- (4) Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- (5) Attending any prebid meetings scheduled by the public owner.
- (6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors.
- (7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- (8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- (9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- (10) Providing quick pay agreements and policies to enable minority contractors and supplies to meet cash-flow demands.

Notice of Award

Date: _____

Project: _____

Owner: _____

Owner's Contract No.: _____

Contract: _____

Engineer's Project No.: _____

Bidder: _____

Bidder's Address: *[send Notice of Award Certified Mail, Return Receipt Requested]*

You are notified that your Bid dated _____ for the above Contract has been considered. You are the Successful Bidder and are awarded a Contract for _____

[Indicate total Work, alternates, or sections of Work awarded.]

The Contract Price of your Contract is _____ Dollars (\$_____).

[Insert appropriate data if unit prices are used. Change language for cost-plus contracts.]

_____ copies of the proposed Contract Documents (except Drawings) accompany this Notice of Award. _____ sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within [15] days of the date you receive this Notice of Award.

1. Deliver to the Owner [_____] fully executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents the Contract security [Bonds] as specified in the Instructions to Bidders (Article 20), General Conditions (Paragraph 5.01), and Supplementary Conditions (Paragraph SC-5.01).
3. Other conditions precedent: _____

SPECIFIER: INCLUDE INFORMATION IF AWARD IS CONDITIONAL BASED ON GRANT/LOAN APPROVAL OR SUCCESSFUL CLOSING OF LOAN OR OTHER CONDITIONS ON AWARD. NOTE WHEN CONDITIONS WILL BE SATISFIED.

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 Contract Documents.

Accepted by:

Owner

Contractor

By:

Authorized Signature

Authorized Signature

Title

Title

Copy to Engineer



AGREEMENT

THIS AGREEMENT is by and between Craven County (“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:

The construction of a playground and appurtenant facilities at the existing Creekside Park.

ARTICLE 2 – THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

Craven County
Creekside Park Playground

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by **Rivers and Associates, Inc.** (Engineer), which is to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

3.02 Once the Notice of Award has been issued, the Owner may assume all or part of the responsibilities of the Engineer and Resident Project Representative.

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 *Days to Achieve Substantial Completion and Final Payment*

- A. The Work will be substantially completed within 120 days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within 150 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 loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. 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), Contractor shall pay Owner \$1,000 for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$1,000 for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

- 5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraphs 5.01.A, 5.01.B, and 5.01.C below:

- C. 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 14 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 **25th** day of each month during performance of the Work as provided in Paragraphs 6.02.A.1 and 6.02.A.2 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of 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 in the General Requirements.

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 Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions. **(a. and b. revised per North Carolina Statutes)**

a. **95% of Work completed (with the balance being retainage). If the Work has been 50% completed as determined by ENGINEER, and if the character and progress of the Work have been satisfactory to OWNER and ENGINEER, and CONTRACTOR has provided written consent of surety, OWNER, on recommendation of ENGINEER, may determine that as long as the character and progress of the Work remain satisfactory to them, there will be no retainage on account of Work subsequently completed. The 50% of work completed shall be based on CONTRACTOR's pay request with off-site materials excluded and a maximum of 20% of on-site stored materials included.**

b. **95% of cost of materials and equipment not incorporated in the Work (with the balance being retainage) but delivered and suitably stored in a location and manner agreed to in writing and pursuant to paragraph 14.02.A.1 of the General Conditions.**

~~a. ___ percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and~~

~~b. ___ 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 as Engineer shall determine in accordance with Paragraph 14.02.B.5 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 tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07, **less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages.**

ARTICLE 7 – INTEREST

- 7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the **maximum legal rate** rate of _____ percent per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:
- A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
- B. Contractor has visited the Site 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 federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC-4.06 of the Supplementary Conditions as containing reliable "technical data."
- E. Contractor has considered the information known to Contractor; 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, including any specific means, methods, techniques, sequences, and procedures of

construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.

- F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that 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 Documents.
- G. 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.
- H. 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.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.**

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

- A. The Contract Documents consist of the following:
 - 1. This Agreement (pages 1 to __, inclusive).
 - 2. Performance bond (pages _____ to _____, inclusive).
 - 3. Payment bond (pages _____ to _____, inclusive).
 - 4. Other bonds (pages _____ to _____, inclusive).
 - a. _____ (pages _____ to _____, inclusive).
 - b. _____ (pages _____ to _____, inclusive).

- c. _____ (pages _____ to _____, inclusive).
 5. General Conditions (pages _____ to _____, inclusive).
 6. Supplementary Conditions (pages _____ to _____, inclusive).
 7. Specifications as listed in the table of contents of the Project Manual.
 8. Drawings consisting of _____ sheets with each sheet bearing the following general title: _____ [or] the Drawings listed on attached sheet index.
 9. Addenda (numbers _____ to _____, inclusive).
 10. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages _____ to _____, inclusive).
 - b. Documentation submitted by Contractor prior to Notice of Award (pages _____ to _____, inclusive).
 11. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Notice to Proceed (pages _____ to _____, inclusive).
 - b. Work Change Directives.
 - c. Change 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 Paragraph 3.04 of 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. 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, moneys that may become due and moneys that are 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 partners, successors, assigns, and legal representatives to the other party hereto, its partners, 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*

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

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

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.)

Agent for service of process:



Notice to Proceed

Date: _____

Project:	
Owner:	Owner's Contract No.:
Contract:	Engineer's Project No.:
Contractor:	
Contractor's Address: <i>[send Certified Mail, Return Receipt Requested]</i>	

You are notified that the Contract Times under the above Contract will commence to run on _____. On or before that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 4 of 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 you may start any Work at the Site, Paragraph 2.01.B of the General Conditions provides that you and Owner must each deliver to the other (with copies to Engineer and other identified additional insureds and loss payees) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must:
 _____ *[add other requirements].*

Accepted by:

Owner

Contractor

Given by:

Authorized Signature

Authorized Signature

Title

Title

Date

Copy to 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
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

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.

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:



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

PRODUCER ABC Insurance Agency Street City, State, Zip	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.	
	INSURERS AFFORDING COVERAGE	NAIC #
INSURED XYZ Contractor Street City, State, Zip	INSURER A: Name of Insurance Co	
	INSURER B: Name of Insurance Co	
	INSURER C: Name of Insurance Co	
	INSURER D: Name of Insurance Co	
	INSURER E:	

COVERAGES

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

INSR LTR	ADPL INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
A	A	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> Explosion, Collapse Hazard <input checked="" type="checkbox"/> Underground Hazard GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC				EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 50,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
B		AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
		GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN EA ACC \$ AUTO ONLY: AGG \$
C		EXCESS/UMBRELLA LIABILITY <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> DEDUCTIBLE <input type="checkbox"/> RETENTION \$				EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000 \$ \$ \$
D		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below				<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ 500,000 E.L. DISEASE - EA EMPLOYEE \$ 500,000 E.L. DISEASE - POLICY LIMIT \$ 500,000
		OTHER				

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Coverage applies to (Project Name and Contract No.). Certificate holder is named as Additional Insured, per attached ISO Form CG 20 10 11-85 or equivalent. Waiver of Subrogation is added by endorsement.

CERTIFICATE HOLDER

Contractor/Owner/Engineer
 Street
 City, State, Zip

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL _____ DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE



CERTIFICATE OF FINANCE OFFICER

Provisions for the payment of the monies to fall due under this agreement has been made by appropriation duly made or by bonds or notes duly authorized, as required by the "Local Government Budget and Fiscal Control Act".

Finance Officer

Date



CERTIFICATE OF OWNER'S ATTORNEY

I, the undersigned, _____,
the duly authorized and acting legal representative of _____,
_____, do hereby certify as follows:

I have examined the attached Contract(s) and Performance and Payment Bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements is adequate and has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions, and provisions thereof.

Date _____





Contractor's Application for Payment No.

	Application Period:	Application Date:
To (Owner):	From (Contractor):	Via (Engineer):
Project:	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.:

**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 on Progress Estimate)..... \$ _____
			5. RETAINAGE:
			a. X _____ Work Completed..... \$ _____
			b. X _____ Stored Material..... \$ _____
			c. Total Retainage (Line 5a + Line 5b)..... \$ _____
			6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5c)..... \$ _____
			7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)..... \$ _____
			8. AMOUNT DUE THIS APPLICATION..... \$ _____
			9. BALANCE TO FINISH, PLUS RETAINAGE (Column G on Progress Estimate + Line 5 above)..... \$ _____
TOTALS			
NET CHANGE BY CHANGE ORDERS			

<p>Contractor's Certification</p> <p>The undersigned Contractor certifies that to the best of its knowledge: (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 Work covered by prior Applications for Payment; (2) title of 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 Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.</p>	
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 Agency (if applicable)

Certificate of Substantial Completion

Project:

Owner:

Owner's Contract No.:

Contract:

Engineer's Project No.:

This [tentative] [definitive] Certificate of Substantial Completion applies to:

- All Work under the Contract Documents:
- 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 Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [definitive] list of items to be completed or corrected is attached hereto. 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 Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

- Amended Responsibilities
- Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

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

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 Documents.

_____ Executed by Engineer	_____ Date
_____ Accepted by Contractor	_____ Date
_____ Accepted by Owner	_____ Date

**CONTRACTOR'S
FINAL WAIVER OF LIEN,
RELEASE, AFFIDAVIT, AND INDEMNIFICATION AGREEMENT**

FROM: _____

(hereinafter "Undersigned" as Contractor)

TO: _____

(hereinafter "Owner")

RE: _____

The Undersigned, in consideration of any and all previous payments made to it, (including the full and final payment) and other good and valuable considerations, hereby waives and releases all actions, debts, claims and demands against the Engineer, Owner, and its lender, title insurer, if any, their officers agents and representatives, on account of any and all work, including but not limited to: Labor; professional design or surveying services; materials; appliances; equipment; machinery; fixtures; or furnishings ("Work") performed and furnished by it, in connection with the making of improvements on or beneath the Real Property and for the Project of the Owner as referenced above; and

Hereby waives any and all right to have a mechanic's, laborer's, materialman's or other liens by virtue of the laws of North Carolina or any amendment of said laws, and all right to file any such liens or assert claims presently or in the future against bonds, funds, the Project or said Real Property relating to the Work; and

Hereby agrees to promptly: withdraw any claim against bonds; pay and release of record any and all mechanic's, laborers, materialman's and other liens filed or claimed by others in connection with the Undersigned's Work on the Project, which may now or in the future affect said Real Property: and to defend, indemnify and save Owner harmless from any claim, liability or expense (including attorney's fees) because of any such claims or liens or the enforcement thereof.

The Undersigned, on oath, states: that no UCC Financing Statement, security interest, conditional bill of sale or retention of title agreement, has been given or executed by the Undersigned for or in connection with any material, appliances, machinery, fixtures or furnishings placed upon or installed in the Real Property and Project:

It is further understood that this document is submitted to the Owner for its reliance and assurance to others that all liens and claims relating to the Work furnished by the Undersigned are paid or resolved.

It is further understood and agreed that this document also constitutes an "instrument of satisfaction" which the Owner may exhibit, whereupon the Clerk of Superior Court shall cancel of record any and all liens by or through the Undersigned in connection with the Real Property and Project, all as provided by N.C.G.S. §44A-16(2) and as may be amended.

(Name of First Tier Contractor)

By: _____

(Print) _____

Dated: _____

Title: _____

Authorized Representative

STATE OF NORTH CAROLINA
COUNTY OF _____

Subscribed and sworn to before me this _____ day of _____, 20__.

NOTARY PUBLIC

My Commission Expires:

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

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by

ACEC

AMERICAN COUNCIL OF ENGINEERING COMPANIES



ASCE American Society
of Civil Engineers

P/E National Society of
Professional Engineers
Professional Engineers in Private Practice

AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

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A Practice Division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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**STANDARD GENERAL CONDITIONS OF THE
CONSTRUCTION CONTRACT**

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *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.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *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.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *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 Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F 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 Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

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

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

- F. Unless stated otherwise in the Contract Documents, words or phrases 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. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 Copies of Documents

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

2.03 Commencement of Contract Times; Notice to Proceed

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

2.04 *Starting the Work*

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

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference; 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 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, 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 instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on

Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

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

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) any standard, specification, manual, or code, or (c) 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 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

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

3.04 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;
2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or
3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier 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
 2. 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.
- 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.

3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

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

4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their 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.

4.03 *Differing Subsurface or Physical Conditions*

- A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:
1. is of such a nature as to establish that any “technical data” on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
 2. is of such a nature as to require a change in the Contract Documents; or
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

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

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

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and

contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

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

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data 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 such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

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

consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

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

4.05 *Reference Points*

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

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their 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 any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. 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 4.06.E.
- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, 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: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, 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 created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent 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 each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 Licensed Sureties and Insurers

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also

meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

- a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:
1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective 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;
 2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
 3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
 4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
 5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
 6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

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

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
 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, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, 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.
 3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 5. allow for partial utilization of the Work by Owner;
 6. include testing and startup; and
 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors,

members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.
- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their 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 Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (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 as trustee 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 utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

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

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

interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

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

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

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

6.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

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

- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
 - 1. "*Or-Equal*" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
 - 3) it has a proven record of performance and availability of responsive service.
- b. Contractor certifies that, if approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

- c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and
 - 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute 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.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

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

required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.
- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner,

Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (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 such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

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

6.08 *Permits*

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

6.09 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

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

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

- 1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
- 2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
- 3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, 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 claim or action, legal or equitable, brought

by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

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

6.12 *Record Documents*

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

6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. 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, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and

shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

- C. 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 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or 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 for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

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

6.15 *Hazard Communication Programs*

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

6.16 *Emergencies*

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

required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

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

1. *Shop Drawings:*

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

2. *Samples:*

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

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

C. *Submittal Procedures:*

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

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

D. *Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

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

6.18 *Continuing the Work*

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

6.19 *Contractor's General Warranty and Guarantee*

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

6.20 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, 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 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, 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.

6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

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

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering 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. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
 - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 - 3. the extent of such authority and responsibilities will be provided.

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

7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

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

8.02 *Replacement of Engineer*

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

8.03 *Furnish Data*

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

8.04 *Pay When Due*

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

8.05 *Lands and Easements; Reports and Tests*

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

8.06 *Insurance*

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

8.07 *Change Orders*

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

8.08 *Inspections, Tests, and Approvals*

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

8.09 *Limitations on Owner's Responsibilities*

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

8.10 *Undisclosed Hazardous Environmental Condition*

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

8.11 *Evidence of Financial Arrangements*

- A. 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.

8.12 *Compliance with Safety Program*

- 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 pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

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

9.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or

continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

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

9.03 *Project Representative*

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

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

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

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

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

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

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not

exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

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

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
 - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 - 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
 - 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

- A. If 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.

10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data

shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part;
 2. approve the Claim; or
 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

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

11.01 *Cost of the Work*

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, 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, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
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 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

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

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, 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 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not

limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.
- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

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

11.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to

the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

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

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
 - 1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 - 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

- C. *Contractor's Fee*: The Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or

neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

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

13.01 Notice of Defects

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

13.02 Access to Work

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, 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.

13.03 *Tests and Inspections*

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

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

13.05 *Owner May Stop the Work*

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

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

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

1. repair such defective land or areas; or
 2. correct such defective Work; or
 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

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

13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

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

14.02 *Progress Payments*

A. *Applications for Payments:*

- 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an

Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations 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 9.07, 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 Documents; 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 moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
 5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
 - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

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

D. *Reduction in Payment:*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
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 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

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

14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before

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

- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.
 - 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

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

14.06 *Final Inspection*

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

14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner 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.

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

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying

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

C. *Payment Becomes Due:*

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

14.08 *Final Completion Delayed*

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

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

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

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:
 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 3. Contractor's repeated disregard of the authority of Engineer; or
 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
 1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when

so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
 - 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 - 4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days

to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

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

ARTICLE 16 – DISPUTE RESOLUTION

16.01 Methods and Procedures

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 - 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
 - 2. agrees with the other party to submit the Claim to another dispute resolution process; or
 - 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 Giving Notice

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

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

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

17.03 *Cumulative Remedies*

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

17.04 *Survival of Obligations*

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

17.05 *Controlling Law*

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

17.06 *Headings*

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

SUPPLEMENTARY CONDITIONS

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract EJCDC C-700 (2007 Edition). All provisions which are not so amended or supplemented remain in full force and effect.

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

SC-1.01.A.3. Application for Payment. Add the following language to the end of paragraph 1.01.A.3:

The Application for Payment form to be used on this Project is attached.

SC-1.01.A.9. Change Order. Add the following language to the end of paragraph 1.01.A.9:

The Change Order form to be used on this Project is attached.

SC-1.01.A.19. Engineer. Add the following at the end of paragraph 1.01.A.19:

The ENGINEER's consultant(s) are:

Dibble and Pledger for Electrical Engineering

Refer to the Agreement, Article 3 – Engineer, for conditions, if any, when the Owner will assume all or part of the duties of the Engineer.

SC-1.01.A.46. Supplementary Conditions. Add the following to the end of paragraph-1.01.A.46:

The words "Special Provisions," "Special Conditions," and "Supplementary Conditions," wherever they may appear in these Contract Documents and Specifications, are used interchangeably and shall be interpreted to mean either "Special Conditions" or "Supplementary Conditions" which ever may be applicable.

SC-1.01.A.52. Abnormal Weather. Add the following new paragraph after 1.01.A.51:

Abnormal weather conditions as mentioned in the General Conditions Article 12.03.A shall be defined as weather more severe than the average of the last ten (10) years. Rainfall measurement shall be considered at 0.1 inch or greater. Normal rainfall for each month shall be the average number of rain days for the last ten (10) years. Time extensions will be considered when the actual number rain days exceeds the ten (10) year monthly average. Impact days, as a result of abnormal weather conditions, will not be considered for time extensions.

SC-2.02. Copies of Documents. SC-2.02.A. Revise the first sentence to read as follows:

A. The OWNER shall furnish CONTRACTOR three (3) copies of the Drawings & Project Manual.

SC-2.03.A. Commencement of Contract Times; Notice to Proceed. Delete paragraph 2.03.A in its entirety and insert the following in its place:

A. The Contract Times will commence to run on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement.

SC-3.03.B. Resolving Discrepancies. Add the following after paragraph 3.03.B.1.

2. In resolving conflicts, errors and discrepancies, the documents shall be given precedence in the following order: Agreement, Modifications, Addenda, Supplementary Conditions, Special Conditions, General Conditions, Specifications and Drawings. Figure dimensions on Drawings shall govern over scale dimensions, and detailed Drawings shall govern over general Drawings. Any Work that may reasonably be inferred from the Specifications or Drawings as being required to produce the intended result shall be supplied whether or not it is specifically called for. Work, materials or equipment described in words which so applied have a well-known technical or trade meaning shall be deemed to refer to such recognized standards.

SC-4.02. Subsurface and Physical Conditions. Delete paragraph 4.02 in its entirety and insert the following in its place:

4.02 No reports or explorations or tests of subsurface conditions at or contiguous to the site are known to the Owner or Engineer. Contractor shall have full responsibility with respect to subsurface conditions at the site as provided in the Contract Documents.

SC-4.04. Underground Facilities. Add the following to 4.04.A.2:

- e. locating existing service connections which are not indicated on the drawings,
- f. discovering existing underground installations in advance of excavating or trenching, by contacting all local utilities and by prospecting. The CONTRACTOR shall notify North Carolina ONE-CALL at 1-800-632-4949 at least 48 hours prior to commencing construction in order that existing utilities in the area may be flagged or staked, protecting and maintaining all existing utilities in an operational manner. CONTRACTOR shall note that not all utility owners/operators are members of North Carolina ONE-CALL, and that notifying North Carolina ONE-CALL will not assure that all applicable utilities are located.

SC-4.06. Hazardous Environmental Conditions at Site.

Delete paragraphs 4.06.A and 4.06.B in their entirety and insert the following:

- A. No reports or explorations or tests of subsurface conditions at or contiguous to the site are known to the Owner or Engineer.
- B. Not used.

Add the following after the end of paragraph 4.06.C:

This paragraph does not apply to asbestos cement (AC) waterline pipe within the project site.

The CONTRACTOR is responsible for handling asbestos cement pipe which the OWNER has identified on the project site. If any act or failure to act on the part of the CONTRACTOR causes this material to become a classified, hazardous or toxic material, the CONTRACTOR shall be responsible for handling and disposal of the material in accordance with all applicable laws at no cost to the OWNER.

The CONTRACTOR and Subcontractors shall comply with all applicable federal, state and local rules and regulations relating to regulated asbestos or hazardous or toxic materials. The CONTRACTOR and Subcontractors shall indemnify and hold harmless OWNER and ENGINEER, their officers, partners, employees, agents and consultants from and against any and all claims, suits, demands, liabilities, losses, or costs, including reasonable attorneys' fees and defense costs, resulting or accruing to any and all persons, firms and any other legal entity, caused by, arising out of or in any way connected with the detection, presence, handling, removal, abatement, or disposal of any asbestos or hazardous or toxic material, products or materials that exist on, about or adjacent to the job site, whether the liability arises under breach of contract or warranty, tort, including negligence, strict liability or statutory liability or any other cause of action. The CONTRACTOR shall include the above provisions in the contracts for subcontractors performing work at the site.

Add the following after the end of paragraph 4.06.I:

Paragraph 4.02, 4.03 and 4.04 shall apply to "asbestos cement waterline pipe within the project site".

SC-5.03 . Certificates of Insurance.

Add the following at the end of paragraph 5.03.A.

SPECIFIER. ADD OR DELETE SUBCONSULTANTS.

The following are to be included as additional insured on the policy:

Owner
Rivers and Associates, Inc.
Dibble & Pledger

SC-5.04. Contractors Liability Insurance. Add the following new paragraph immediately after paragraph 5.04.B:

C. The limits of liability for the insurance required by paragraph 5.04 of the General Conditions shall provide the following coverages for not less than the following amounts or greater where required by Laws and Regulations:

1. Worker's Compensation, etc. under paragraphs 5.04.A.1 and A.2 of the General Conditions:
 - a. State: Statutory
 - b. Applicable Federal (e.g., Longshoreman's): Statutory
 - c. Employer's Liability: \$500,000.00

d. Waiver of Subrogation with all required endorsements

The CONTRACTOR will provide an endorsement to the Contractor's Workers Compensation and Employer's Liability Insurance waiving all rights of subrogation by the CONTRACTOR's insurance carrier against the OWNER and ENGINEER.

2. Contractor's Liability Insurance under paragraphs 5.04.A.3 through A.6 of the General Conditions which shall also include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of CONTRACTOR:

(a)	General Aggregate – Limit applies on a per Project Basis	<u>\$2,000,000.00</u>
(b)	Products - Completed Operations Aggregate	<u>\$2,000,000.00</u>
(c)	Personal and Advertising Injury (Per Person/Organization)	<u>\$1,000,000.00</u>
(d)	Each Occurrence (Bodily Injury and Property Damage)	<u>\$1,000,000.00</u>
(e)	Property Damage liability insurance will provide Explosion, Collapse and Underground coverages.	
(f)	Excess or Umbrella Liability to cover Commercial/General Liability/Auto/Worker's Comp/ Employer's Liability.	
	1. General Aggregate	<u>\$5,000,000.00</u>
	2. Each Occurrence	<u>\$5,000,000.00</u>
	3. Retention not to exceed	<u>\$ 10,000.00</u>

3. Automobile Liability under paragraph 5.04.A.6 of the General Conditions:

a.	Bodily Injury:	
	Each Person	<u>\$1,000,000.00</u>
	Each Accident	<u>\$1,000,000.00</u>
b.	Property Damage:	
	Each Accident	<u>\$1,000,000.00</u>
c.	Combined Single Limit of	<u>\$1,000,000.00</u>

d. Include hired and non-owned auto

4. The Contractual Liability coverage required by paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts.

a.	Bodily Injury:	
	Each Person	<u>\$2,000,000.00</u>
	Each Accident	<u>\$2,000,000.00</u>

b. Property Damage:	
Each Accident	<u>\$2,000,000.00</u>
Annual Aggregate	<u>\$2,000,000.00</u>

5. Additional Insured: OWNER and ENGINEER. Provide certificates for Contractor, Owner and Engineer with required endorsements.

6. Agent that fills out the Insurance Certificate shall state that they have read specification pages GC-17, 18, 19, 20, 21 and 22, as well as SC-5.03 and SC-5.06 in regards to insurance, and that the policy issued complies with the requirements stated in these conditions.

SC-5.11. Hold Harmless. Add the following paragraph after 5.10.

A. Contractor agrees to protect, defend, indemnify and hold the Owner, its officer, employees and agents free, including the Engineer, harmless from and against any and all losses, penalties, damages, settlement costs, charges, professional fees or other expenses or liabilities of every kind and arising out of or relating to any and all claims, liens, demands, obligations, actions, proceedings, or causes of action of every kind in connection with or arising out of this agreement and/or the performance hereof that are due to the negligence of the Contractor, its officer, employees, or agents. The Contractor further agrees to investigate, handle, respond to, provide defense for and defend the same at its sole expense and agrees to bear all other costs and expenses related thereto.

SC-6.02.B Labor; Working Hours. Add the following to 6.02.B.

Regular working hours shall be between 8:00 a.m. and 5:00 p.m., except as approved by the Owner and Engineer.

SC-6.05.C. Engineer's Evaluations.

Amend the paragraph by making two subparagraphs under the title C. Engineer's Evaluation: Replace with the following:

1. During Bidding. The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, or "or-equal" materials and equipment as defined in paragraph 6.05 of the General Conditions, or those substitute or materials and equipment approved by the ENGINEER and identified by Addendum. The materials and equipment described in the Bidding Documents establish a standard of required type, function, and quality to be met by any proposed substitute or "or-equal" item. Request for ENGINEER's clarification of materials and equipment considered "or-equal" prior to the Effective Date of the Agreement must be received by the ENGINEER at least 15 days prior to the date for receipt of Bids. No item of material or equipment will be considered by ENGINEER as a 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 request shall conform to the requirements of paragraph 6.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon the Bidder. ENGINEER's decision of approval or disapproval of a proposed item will be final. If ENGINEER approves any proposed substitute 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.

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

SC-6.06. Concerning Subcontractors, Suppliers, and Others. Add the following to the end of paragraph 6.06.A.

The CONTRACTOR shall not award WORK to Subcontractor(s), in excess of 50 percent of the Contract Price, without prior written approval of the OWNER. Justification must be submitted by the CONTRACTOR to the ENGINEER for recommendations and forwarding to OWNER. The OWNER's refusal to allow an increase in the percent subcontracted will not be grounds for increasing the Contract Price.

SC-6.06 Concerning Subcontractors, Suppliers, and Others. Add the following after the paragraph 6.06A.

The Contractor shall submit a list of all subcontractors and suppliers within 5 days of being notified that he is the Apparent Low Bidder.

SC-6.06. Concerning Subcontractors, Suppliers, and Others. Add a new paragraph immediately after Paragraph 6.06.G:

H. 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 a particular Subcontractor or Supplier.

SC-6.10. Taxes. Add the following new paragraph after paragraph 6.10.A:

B. Contractor and his Subcontractors shall maintain accurate records of payment of N.C. State Sales Tax on materials, supplies, fixtures, and equipment, which become a part of the Work. Contractor shall submit with the Application for Payment a certified statement showing sales tax paid by Contractor and Subcontractors. Certified statement shall list suppliers' invoices showing invoice number, amount paid, tax paid, date and county paid. Sales tax records and certified statements shall be in such form and substance as to meet the requirements of the N.C. State Department of Revenue in the matter of the Owner obtaining a refund from the State of North Carolina of sales taxes paid by Contractor and his Subcontractors.

SC-6.17. Shop Drawings and Samples. Add the following new paragraphs immediately after Paragraph 6.17.E:

F. Contractor may furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing subsequent submittals of Shop Drawings,

samples, or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time.

- G. In the event that Contractor requests a change of a previously approved item, Contractor shall reimburse Owner for Engineer's charges for its review time unless the need for such change is beyond the control of Contractor.

SC-7.01. Related Work at Site. Add the following to paragraph 7.01.A:

Refer to the Section 01010 General Requirement for Work at the Site by CONTRACTORS, OWNER, and others.

SC-7.02. Coordination. 7.02.A.1. Delete paragraphs 7.02.A.1-3 in their entirety and insert the following:

1. The CONTRACTOR shall have the authority and be responsible for coordination of the activities among the other prime contractors and subcontractors on the Site to ensure a safe, efficient working environment. This authority covers scheduling delivery of materials, storage of materials, sequencing of construction involving different crafts, resolving interface issues between crafts, scheduling testing, and all other aspects of the Work that do not impact the design or function of the Work.

SC-9.03. Project Representative. 9.03.A. Add the following new paragraph after paragraph 9.03.A:

The Duties, Responsibilities, and Limitations of Authority of the Resident Project Representative will be as stated in Exhibit D of the OWNER-ENGINEER Agreement, E-500 2008 Edition, as amended and executed for this specific Project. Refer to the attached EXHIBIT 1 following this section.

SC-14.02.A. Applications for Payments. Add the following to paragraph 14.02.A.1.

Payment for stored materials and equipment will only be made for major items of materials or equipment. Payment for such materials and equipment shall be based only upon the actual cost of the materials and equipment to CONTRACTOR and shall not include any overhead or profit to CONTRACTOR. The CONTRACTOR shall include a cumulative monthly summary of all materials stored on site in the form shown below. As materials are entered into construction, the last column will be reduced correspondingly. The total of the last column will be paid as materials stored on site, less retainage.

Item No. From Schedule of <u>Amounts</u>	Description of Material	Vendor & Invoice No.	Amount of Invoice	Amount Stored, Not Entered Into Const.
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The CONTRACTOR shall provide sales tax reports in the form required by the OWNER with each Application for Payment.

The CONTRACTOR shall note the requirements for record drawings with each application for payment listed in the Specification section entitled SUBMITTALS.

SC-14.02.A.2. CONTRACTOR Affidavit. Add the following at the end of paragraph 14.02.A.2:

The affidavit on each request for payments shall include the following:

The undersigned CONTRACTOR certifies that (1) all previous progress payments received from OWNER on account of Work done under the Contract referred to above have been applied on account to discharge CONTRACTOR's legitimate obligations incurred in connection with Work covered by prior Applications for Payment numbered 1 through ____ inclusive; (2) title of 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 Lien, security interest or encumbrance); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and not defective.

SC-14.05. Partial Utilization.

Add the following new paragraph 5 after 14.05.A.4.:

5. Such taking possession or use will not be deemed an acceptance of any Work not completed in accordance with the Contract Documents. OWNER's use of any facilities so identified in the Contract Documents will not be grounds for extension of the Contract Time or change in the Contract Price. OWNER's use of any facilities not specifically identified in the Contract Documents will be in accordance with conditions agreed to prior to such use, and any extra costs or delays in completion incurred and properly claimed by CONTRACTOR will be equitably adjusted with a Change Order.

END OF SUPPLEMENTARY CONDITIONS

EXHIBIT 1 (to SUPPLEMENTARY CONDITIONS)

This is EXHIBIT D, consisting of _____ pages, referred to in and part of the Agreement between OWNER and ENGINEER for Professional Services dated _____, ____.

Duties, Responsibilities and Limitations of Authority of Resident Project Representative

Article 1 of the Agreement is supplemented to include the following agreement of the parties:

D1.01 Resident Project Representative

- A. Engineer shall furnish a Resident Project Representative (“RPR”) to assist Engineer in observing progress and quality of the Work. The RPR may provide full time representation or may provide representation to a lesser degree.
- B. Through RPR's observations of Contractor's work in progress and field checks of materials and equipment, Engineer shall endeavor to provide further protection for Owner against defects and deficiencies in the Work. However, Engineer shall not, during such RPR field checks or as a result of such RPR observations of Contractor's work in progress, supervise, direct, or have control over Contractor's Work, nor shall Engineer (including the RPR) have authority over or responsibility for the means, methods, techniques, sequences, or procedures of construction selected or used by any contractor, for security or safety at the Site, for safety precautions and programs incident to any contractor's work in progress, or for any failure of a contractor to comply with Laws and Regulations applicable to such contractor's performing and furnishing of its work. The Engineer (including RPR) neither guarantee the performances of any contractor nor assumes responsibility for Contractor's failure to furnish and perform the Work in accordance with the Contract Documents. In addition, the specific terms set forth in Paragraph A1.05 of Exhibit A of the Agreement are applicable.
- C. The duties and responsibilities of the RPR are as follows:
 1. *General:* RPR is 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. RPR's dealings in matters pertaining to the Contractor's work in progress shall in general 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 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 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, 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 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. Consult with Engineer in advance of scheduled inspections, tests, and systems start-ups.
- b. 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.
- c. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.
- d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections, and report to Engineer.

10. *Records:*

- a. Maintain at the Site orderly files for correspondence, reports of job conferences, reproductions of original Contract Documents including all change orders, field orders, work change directives, addenda, additional Drawings issued subsequent to the execution of the Construction Contract, Engineer's clarifications and interpretations of the Contract Documents, progress reports, Shop Drawing and Sample submittals received from and delivered to Contractor, and other Project-related documents.
- b. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, weather conditions, data relative to questions of change orders, field orders, work change directives, or changed conditions, Site visitors, 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.
- c. 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.
- d. Maintain records for use in preparing Project documentation.
- e. Upon completion of the Work, furnish original set of all RPR Project documentation to Engineer.

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. Furnish to Engineer and Owner copies of all inspection, test, and system start-up reports.

- d. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Constituent of Concern.
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 visits to the Project to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of lists of items to be completed or corrected.
 - b. Participate in a final visit to the Project in the company of Engineer, Owner, and Contractor, and prepare a final 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 (Exhibit E).

D. Resident Project Representative 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 this Agreement.
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.

Change Order

No. _____

Date of Issuance: _____ Effective Date: _____

Project:	Owner:	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.:

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

Description:

Attachments (list documents supporting change):

CHANGE IN CONTRACT PRICE:	CHANGE IN CONTRACT TIMES:
Original Contract Price: \$ _____	Original Contract Times: <input type="checkbox"/> Working days <input type="checkbox"/> Calendar days Substantial completion (days or date): _____ Ready for final payment (days or date): _____
[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____: \$ _____	[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____: Substantial completion (days): _____ Ready for final payment (days): _____
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial completion (days or date): _____ Ready for final payment (days or date): _____
[Increase] [Decrease] of this Change Order: \$ _____	[Increase] [Decrease] of this Change Order: Substantial completion (days or date): _____ Ready for final payment (days or date): _____
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial completion (days or date): _____ Ready for final payment (days or date): _____

RECOMMENDED: By: _____ Engineer (Authorized Signature)	ACCEPTED: By: _____ Owner (Authorized Signature)	ACCEPTED: By: _____ Contractor (Authorized Signature)
Date: _____	Date: _____	Date: _____
Approved by Funding Agency (if applicable): _____		Date: _____



Field Order

No. _____

Date of Issuance: _____ Effective Date: _____

Project:	Owner:	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.:

Attention:

You are hereby directed to promptly execute this Field Order issued in accordance with General Conditions Paragraph 9.04.A, for minor changes in the Work without changes in Contract Price or Contract Times. If you consider that a change in Contract Price or Contract Times is required, please notify the Engineer immediately and before proceeding with this Work.

Reference: _____
(Specification Section(s)) (Drawing(s) / Detail(s))

Description:

Attachments:

Engineer:

Receipt Acknowledged by Contractor: _____ Date: _____

Copy to Owner



SECTION 01010 - PROJECT REQUIREMENTS

RELATED DOCUMENTS:

The general provisions of the Contract, including the General and Special Conditions and Division-1 Specification sections apply to work of this section.

GENERAL DESCRIPTION OF WORK:

The Work to be performed under these Contract Documents consists of the construction of a playground and appurtenant facilities at the existing Creekside Park.

RESPONSIBILITY FOR MATERIALS AND EQUIPMENT:

Items Furnished by CONTRACTOR: CONTRACTOR shall be fully responsible for all materials and equipment which he has furnished, and shall furnish necessary replacements at any time prior to expiration of the Guaranty Period.

OFF SITE STORAGE:

Off-site storage arrangements shall be acceptable to OWNER for all materials and equipment not incorporated into the work but included in Applications for Payment. Such off-site storage arrangements shall be presented in writing, and shall afford adequate and satisfactory security and protection. Off-site storage facilities shall be accessible to ENGINEER.

EQUIVALENT MATERIALS AND EQUIPMENT:

It is the intent of these specifications to insure that materials and equipment of the highest reliability are supplied. The design of the overall product and selection of materials and equipment included in these specifications have been based upon dimensions, structures, connection wiring, etc. required for the first manufacturer listed in every reference to a quality standard. If material or equipment of another manufacturer (including alternatives specifically referenced) is offered, the cost of any changes in structures, building, piping, wiring, etc., as well as any detailed drawings necessary to show such required changes, shall be borne by the CONTRACTOR with no additional cost to the Owner.

PREPARATION FOR SHIPMENT:

All materials shall be suitably packaged to facilitate handling and protection against damage during transit and storage. Painted surfaces shall be protected against impact, abrasion, discoloration and

other damage. All painted surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of ENGINEER.

Each item, package or bundle of material shall be tagged or marked as identified in the delivery schedule or on the Shop Drawings. Complete packing lists and bills of material shall be included with each shipment.

SALVAGE OF MATERIALS AND EQUIPMENT:

Existing materials and equipment removed, and not reused, as a part of the Work shall become CONTRACTOR's property unless otherwise noted on the project drawings. These items shall remain OWNER's property.

Salvaged items not to be reused in the Work, but to remain OWNER's property, shall be delivered by CONTRACTOR in good condition to OWNER.

CONTRACTOR shall carefully remove in a manner to prevent damage all materials and equipment specified or indicated to be salvaged and reused or to remain property of OWNER. He shall store and protect salvaged items specified or indicated to be reused in the Work.

Any items damaged in removal, storage or handling through carelessness or improper procedures shall be replaced by CONTRACTOR in kind or with new items.

CONTRACTOR may at his option furnish and install new items in lieu of those specified or indicated to be salvaged and reused, in which case such removed items will become CONTRACTOR's property.

Existing materials and equipment removed by CONTRACTOR shall not be reused in the Work except where so specified or indicated.

LAND FOR CONSTRUCTION PURPOSES:

CONTRACTOR will be permitted to use available land belonging to OWNER, on or near the site of the Work, for construction purposes and for the storage of materials and equipment. The location and extent of the areas so used shall be as indicated on the drawings or will be as follows:

CONTRACTOR shall immediately move stored material or equipment if any occasion arises, as determined by OWNER, requiring access to the storage area. Materials or equipment shall not be placed on the property of OWNER until OWNER has agreed to the location to be used for storage.

OPERATION OF EXISTING FACILITIES:

The existing park facilities outside of the project limits indicated must be kept in continuous operation throughout the construction period. No interruption will be permitted which adversely affects the degree of service provided. Provided permission is obtained from OWNER in advance, portions of the existing facilities may be taken out of service for short periods corresponding with periods of minimum service demands.

CONTRACTOR shall provide temporary facilities and make temporary modifications as necessary to keep the existing facilities in operation during the construction period.

NOTICES TO OWNERS AND AUTHORITIES:

CONTRACTOR shall, as provided in General Conditions, notify owners of adjacent property and utilities when prosecution of the Work may affect them.

When it is necessary to temporarily deny access by owners or tenants to their property, or when any utility service connection must be interrupted, CONTRACTOR shall give notices sufficiently in advance to enable the affected persons to provide for their needs. Notices shall conform to any applicable local ordinance and, whether delivered orally or in writing, shall include appropriate information concerning the interruption and instructions on how to limit their inconvenience.

Utilities and other concerned agencies shall be contacted at least 48 hours prior to cutting or closing streets or other traffic areas or excavating near underground utilities or pole lines.

CONTRACTOR shall contact N.C. ONE-CALL 48 hours prior to any excavation. Locations of existing utilities by N.C. ONE-CALL are good for only ten (10) days after the date of location.

LINES AND GRADES:

All Work shall be done to the lines, grades, and elevations shown on the drawings.

Basic horizontal and vertical control points have been or will be established or designated by ENGINEER on the Drawings. These points shall be used as datum for the Work. All additional field survey, layout and measurement Work shall be performed by CONTRACTOR as a part of the Work.

CONTRACTOR shall provide an experienced surveyor, instrument man, competent assistants and such instruments, tools, stakes and other materials required to complete the survey, layout and measurement Work. In addition, CONTRACTOR shall furnish, without charge, competent surveyors from his force and such tools, stakes and other materials as ENGINEER may require in establishing or designating control points, in establishing construction easement boundaries or in checking survey, layout and measurement Work performed by CONTRACTOR.

CONTRACTOR shall keep ENGINEER informed, a reasonable time in advance, of the times and places at which he wishes to do Work, so that any checking deemed necessary by ENGINEER may be done with minimum inconvenience to ENGINEER and minimum delay to CONTRACTOR.

CONTRACTOR shall remove and reconstruct Work which is improperly located.

ALLOWANCES:

The Contract Price includes cash allowances for certain materials, equipment and portions of the Work as follows:

Allowances are shown in the Bid Form.

OWNER, in consultation with ENGINEER, shall select from supplies, samples, information or alternatives submitted by CONTRACTOR. Testing agency shall be selected by and work for the OWNER, but be paid by the CONTRACTOR out of the above allowance.

CONTRACTOR shall cause the Work to be done by materialmen, suppliers or Subcontractors and for amounts satisfactory to ENGINEER. The Contract Price will be adjusted by Change Order for any difference between CONTRACTOR's direct cost for the selected alternative and the cash allowance included in such price adjustments. The cost shall be the actual invoice cost including tax and shipping of items covered by the allowance. The CONTRACTOR shall include any costs for labor overhead and profit in other portions of his bid.

CONNECTIONS TO EXISTING FACILITIES:

Unless otherwise specified or indicated, CONTRACTOR shall make all necessary connections to existing facilities including structures, drain lines and utilities such as water, sewer, gas, telephone and electric. In each case, CONTRACTOR shall receive permission from OWNER or the owning utility prior to undertaking connections. CONTRACTOR shall protect facilities against deleterious substances and damage.

Connections to existing facilities which are in service shall be thoroughly planned in advance, and all required equipment, materials and labor shall be on hand at the time of undertaking the connections. Work shall proceed continuously (around the clock) if necessary to complete connections in the minimum time. Operation of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of the owning utility.

UNFAVORABLE CONSTRUCTION CONDITIONS:

During unfavorable weather, wet ground or other unsuitable construction conditions, the CONTRACTOR shall confine his operations to work which will not be affected adversely by such conditions. No portion of the Work shall be constructed under conditions which would affect

adversely the quality or efficiency thereof, unless special means or precautions are taken by CONTRACTOR to perform the Work in a proper and satisfactory manner.

CUTTING AND PATCHING:

As provided in General Conditions, CONTRACTOR shall perform all cutting and patching required for the Work, and as may be necessary in connection with uncovering Work for inspection or for the correction of defective Work.

CONTRACTOR shall perform all cutting and patching required for the installation of improperly timed Work, to remove samples of installed materials for testing and to provide for alteration of existing facilities or the installation of new Work in existing construction.

Except when the cutting or removal of existing construction is specified or indicated, CONTRACTOR shall not undertake any cutting or demolition which may affect the structural stability of the Work or existing facilities without ENGINEER's concurrence.

CONTRACTOR shall provide all shoring, bracing, supports and protective devices necessary to safeguard all Work and existing facilities during cutting and patching operations.

Materials shall be cut and removed to the extent indicated on the drawings or as required to complete the Work. Materials shall be removed in a careful manner with no damage to adjacent facilities or materials. Materials which are not salvable shall be removed from the site by CONTRACTOR.

All Work and existing facilities affected by cutting operations shall be restored with new materials, or with salvaged materials acceptable to ENGINEER, to obtain a finished installation with the strength, appearance and functional capacity required. If necessary, entire surfaces shall be patched and refinished.

CLEANING UP:

CONTRACTOR shall keep the premises free at all times from accumulations of waste materials and rubbish. CONTRACTOR shall provide adequate trash receptacles about the site, and shall promptly empty the containers when filled.

Construction materials stored on the site shall be kept off the ground, neatly stacked, protected from rain and sun when required by the ENGINEER, and the area around the stored materials shall be kept free of trash, weeds and brush.

Construction materials, such as concrete forms and scaffolding shall be neatly stacked by CONTRACTOR when not in use. CONTRACTOR shall promptly remove splattered concrete, asphalt, oil, paint, corrosive liquids and cleaning solutions from surfaces to prevent marring or other damage.

Volatile wastes shall be properly stored in covered metal containers and removed daily.

Wastes shall not be buried or burned on the site or disposed of into storm drains, sanitary sewers, streams or waterways. All wastes shall be removed from the site and disposed of in a manner complying with local ordinances and antipollution laws.

Adequate cleanup shall be a condition for recommendation of progress payment applications.

APPLICABLE CODES:

References in the Contract Documents to local codes mean the North Carolina State Building Code and any applicable County or municipal codes.

Other standard codes which apply to the Work are designated in the specifications.

REFERENCE STANDARDS:

Reference to the standards of any technical society, organization or association, or to codes of local or state authorities, shall mean the latest standard, code, specification or tentative standard adopted and published at the date of receipt of bids, unless specifically stated otherwise.

ABBREVIATIONS AND SYMBOLS:

Abbreviations used in the Contract Documents are defined as follows:

AAMA	Architectural Aluminum Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AFBMA	Antifriction Bearing Manufacturers Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineer
ASSE	American Society of Sanitary Engineering
ASTM	American Society for Testing and Materials

AWG	American Wire Gauge
AWPA	American Wood Products Association
AWS	American Welding Society
AWWA	American Water Works Association
CGA	Compressed Gas Association, Inc.
CISPI	Cast Iron Soil Pipe Institute
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard
DEQ	Department of Environmental Quality
DHI	Door and Hardware Institute
Fed Spec	Federal Specifications
FGMA	Flat Glass Marketing Association
IBBM	Iron Body, Bronze Mounted
IEEE	Institute Electrical and Electronics Engineers
IFI	Industrial Fasteners Institute
IPS	Iron Pipe Size
MIL	Military Specification
NAAMM	National Association of Architectural Metals Manufacturers
NCDOT	North Carolina Department of Transportation
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NPT	National Pipe Thread
NSPC	National Standard Plumbing Code
OSHA	Occupational Safety and Health Administration
PCI	Prestressed Concrete Institute
PS	Product Standard
SAE	Society of Automotive Engineers
SCPRF	Structural Clay Products Research Foundation
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPI	Society of the Plastics Industry
SSPC	Steel Structures Painting Council
UL	Underwriters' Laboratories
US	U. S. Bureau of Standards
USBR	U. S. Bureau of Reclamation

ALTERNATIVES:

The Work required under the base Bid is indicated in the specifications and on the drawings. All requirements specified or indicated also apply to each alternative selected by OWNER except as otherwise provided. The following alternatives are provided for on the Bid Form.

Alternate 1: All plantings, including groundcovers, shrubs, and trees as shown in the Planting Plan, are included in Alternate 1. This alternate does not include seeding, sod, or mulch, which are required in the Base Bid.

Alternate 2: Alternate 2 includes providing colored concrete and special pavers at the three seating nodes indicated on the park layout. The Base Bid should include standard concrete in these three locations.

Alternate 3: Alternate 3 shall be for providing a bonded rubber play surface in lieu of a poured-in-place playground surface.

Alternate 4: Alternate 4 includes providing colored concrete, special pavers, and playground surfacing in lieu of the standard concrete and turf layout shown in the Base Bid layout.

Alternate 5: Alternate 5 includes a “cloud” entry sign and bench near the entrance of the playground.

Alternate 6: Site lighting and related electrical work shall be included in Alternate 6.

The manner in which various portions of the Work must be changed to accommodate each alternative and its related Work is indicated on the drawings.

PRECONSTRUCTION CONFERENCE:

Prior to the commencement of Work at the site, a preconstruction conference will be held at a mutually agreed time and place. The conference shall be attended by:

CONTRACTOR and his superintendent

Principal Subcontractors

Representatives of principal suppliers and manufacturers as appropriate

Representatives of OWNER

Governmental representatives as appropriate

Others as requested by CONTRACTOR, OWNER, or ENGINEER

Unless previously submitted to ENGINEER, CONTRACTOR shall bring to the conference a tentative schedule for each of the following:

Progress

Procurement

Values for progress payment purposes

Shop Drawings and other submittals

The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda will include:

CONTRACTOR's tentative construction schedules

Transmittal, review, and distribution of CONTRACTOR's submittals

Processing applications for payment

Maintaining record documents

Critical Work sequencing

Processing of Field Orders, Work Change Directives, and Change Orders

Use of premises, office and storage areas, security, housekeeping, working hours, and OWNER's needs

Major equipment deliveries and priorities

CONTRACTOR'S assignments for safety and first aid

ENGINEER will preside at the conference and will arrange for keeping the minutes and distributing the minutes to all persons in attendance.

PROGRESS MEETINGS:

CONTRACTORS shall attend regular progress meetings at least monthly and at other times as requested by ENGINEER or required by progress of the Work.

CONTRACTOR, ENGINEER, OWNER, and all subcontractors active on the site shall be represented at each meeting. CONTRACTORS may at their discretion request attendance by

representatives of their suppliers, manufacturers and other subcontractors. Representatives at the progress meeting must be authorized to make decisions and to act on behalf of the organization they represent.

ENGINEER shall preside at the meetings and provide for keeping and distribution of the minutes. The purpose of the meetings will be to review the progress of the Work, maintain coordination of efforts, discuss changes in scheduling and resolve other problems which may develop.

The CONTRACTOR shall generate documentation to list and/or illustrate work/tasks begun or completed since the previous progress meeting, and work/tasks expected to begin or be completed in the next 30 days following the current progress meeting. Preliminary or draft versions of this documentation should be circulated among critical subcontractors, the ENGINEER, and the OWNER, at least two (2) days prior to the scheduled progress meeting, such that schedule conflicts and other scheduling issues can be discussed during the progress meeting. CONTRACTOR shall provide sufficient copies of the documentation for distribution at the progress meeting.

OTHER MEETINGS AND CONFERENCES:

The OWNER and ENGINEER reserve the right to conduct other site meetings and conferences as necessary to monitor and facilitate the quality of the work and operation of the existing facility. Specific meetings and conferences have been outlined in individual specification sections. Other meetings and/or conferences may include, but not be limited to, pre-installation and pre-startup. These meetings and/or conferences shall be attended by the CONTRACTOR, the ENGINEER, the OWNER, critical subcontractors, regulatory officials (if necessary), and representatives of manufacturers and suppliers as deemed necessary.

SITE ADMINISTRATION:

The General Contractor shall be responsible for all areas of the site used by him, by other contractors, and all subcontractors in the performance of the Work. He will exert full control over the actions of all employees and other persons with respect to the use and preservation of property and existing facilities, except such controls as may be specifically reserved to OWNER or others. CONTRACTOR has the right to exclude from the site all persons who have no purpose related to the Work or its inspection, and may require all persons on the site (except OWNER's employees and ENGINEER) to observe the same regulations as he requires of his employees.

END OF SECTION 01010

SECTION 01150 - PAYMENTRELATED DOCUMENTS:

The general provisions of the Contract, including the General, Special Conditions and Division-1 Specification sections apply to work of this section.

SCOPE:

This section covers methods of payment for items of Work under this Contract.

GENERAL:

The total Bid Price for each part of the Project shall cover all Work required by the Contract Documents. All costs in connection with the proper and successful completion of the Work, including furnishing all materials, equipment, supplies and appurtenances; providing all construction plant, equipment and tools; and performing all necessary labor and supervision to fully complete the Work shall be included in the unit and lump sum prices bid. All Work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of CONTRACTOR and all costs in connection therewith shall be included in the prices bid.

ESTIMATED QUANTITIES:

All estimated quantities stipulated in the Bid Form or other Contract Documents are approximate and are to be used only (a) as a basis for estimating the probable cost of the Work and (b) for the purpose of comparing the bids submitted for the Work. The actual amounts of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and materials furnished. CONTRACTOR agrees that he will make no claim for damages, anticipated profits or otherwise on account of any difference between the amounts of work actually performed and materials actually furnished and the estimated amounts therefore. Payment will be made or lump sum prices adjusted according to unit prices bid and as described below.

MOBILIZATION AND BONDING:

Lump sum payment for initial moving of equipment and supplies to the job site, providing bonds, insurance and permits. One half the total amount will be paid with first partial payment after construction begins, and the remaining one half with the second partial payment. The total amount for mobilization and bonding shall not exceed 3 percent of the total bid price for each part. If the Contractor's bid cost for this item on the Bid Schedule exceeds 3% of the Contractor's Total Bid Price, then the bid cost for this item shall be corrected to equal 3% of the Contractor's Total Bid.

CREEKSIDE PARK PLAYGROUND:

This item shall include, but is not necessarily limited to the construction of the park/playground facilities indicated on the project drawings, including all appurtenant site work and utilities. Payment shall be lump sum as indicated in the Bid.

TESTING ALLOWANCE:

The Testing Allowance is for testing of soils as specified in Division 2, testing of concrete specified in Division 3, etc. Payment will be made for actual amount invoiced by the Testing Company when authorized by the OWNER.

ALTERNATE 1 – PLANTS:

This item shall include the addition of all plantings, including groundcovers, shrubs, and trees as shown in the Planting Plan. This alternate does not include seeding, sod, or mulch, which are included in the Base Bid. Payment shall be lump sum for the net change in price from the Base Bid.

ALTERNATE 2 – COLORED CONCRETE & SPECIAL PAVERS AT 3 SEATING NODES:

This item shall include providing colored concrete and special pavers at the three seating nodes indicated on the park layout. Payment shall be lump sum for the net change in price from the Base Bid.

ALTERNATE 3 – BONDED RUBBER INSTEAD OF POURED-IN-PLACE PLAY SURFACE:

This item shall include providing a bonded rubber play surface in lieu of a poured-in-place playground surface. Payment shall be lump sum for the net change in price from the Base Bid.

ALTERNATE 4 – COLORED CONCRETE, SPECIAL PAVERS AND PLAY SURFACING:

This item shall include providing colored concrete, special pavers, and playground surfacing in lieu of the standard concrete and turf layout shown in the Base Bid layout. Payment shall be lump sum for the net change in price from the Base Bid.

ALTERNATE 5 – “CLOUD” ENTRY SIGNAGE AND SEAT BENCH:

This item shall include a “cloud” entry sign and bench near the entrance of the playground. Payment shall be lump sum for the net change in price from the Base Bid.

ALTERNATE 6 – SITE LIGHTING:

This item shall include site lighting and related electrical work. Payment shall be lump sum for the net change in price from the Base Bid.

TRAFFIC CONTROL:

Traffic control measures as required are considered a subsidiary obligation and all costs shall be included in the price bid for water pipeline or sewer pipeline as appropriate.

EARTH EXCAVATION:

Earth excavation is considered a subsidiary obligation and all costs shall be included in the appropriate bid items.

REMOVAL AND REPLACEMENT OF EXISTING FEATURES:

Removal and replacement of existing features such as mailboxes, paper boxes, signs, fences, sidewalks, grass, lawns, ornamental shrubs such as azaleas, dogwoods, crepe myrtles, etc., stone in front of mailboxes, removal and replacement of driveway pipe and replacement with new pipe if damaged, parallel pavement replacement along the length of the pavement, etc. is considered a subsidiary obligation and all costs shall be included in the base bid.

END OF SECTION 01150

SECTION 01300 - SUBMITTALSPART 1 - GENERALRELATED DOCUMENTS:

The general provisions of the Contract, including the General and Special Conditions and Division-1 Specification sections apply to work of this section.

CONSTRUCTION SCHEDULE:

Before Work is started, CONTRACTOR shall submit to ENGINEER for review a minimum of five copies of the schedule of the proposed construction operations. OWNER shall cooperate with CONTRACTOR in arrangements for continuity of service and operation of valves and other control facilities. The construction schedule shall indicate the sequence of the Work, the time of starting and completion of each part for the general contractor and all subcontractors, the installation date for each major item of equipment, and the time for making connections to existing piping, structures, or facilities, for water testing of below grade structures prior to backfilling operations, and time for testing and start of each part or piece of equipment.

The construction schedule shall be a comprehensive, fully developed, horizontal Gantt-Chart or bar-chart type schedule, and shall include sufficient detail to communicate and/or illustrate the construction progress for such items/tasks as listed above. At least one copy of the construction schedule shall be submitted on one sheet, large enough to show the entire schedule for the entire construction period.

At least every 90 days the schedule shall be revised as necessary to reflect changes in the progress of the Work. Reviewed and approved construction schedules which indicate one or more tasks more than 30 days behind schedule shall also be revised and submitted to review. These revised schedules shall include a progress report as described in this section.

Failure of the CONTRACTOR to provide acceptable, updated/revised construction schedules and required progress reports will be grounds for the ENGINEER to recommend the OWNER withhold a portion of requested partial payment.

OWNER may require CONTRACTOR to add to his plant, equipment, or construction forces, as well as increase the working hours, if operations fall behind schedule at any time during the construction period.

In preparation of the construction schedule, the CONTRACTOR shall coordinate the schedule with his subcontractors schedules, the schedule of values, submittals schedule, progress reports, schedule of payments, and other required schedules and reports.

PROGRESS REPORTS:

A progress report shall be furnished to ENGINEER with each copy of the application for progress payment. If the Work falls behind schedule, CONTRACTOR shall submit additional progress reports at such intervals as ENGINEER may request.

Each progress report shall include sufficient narrative to describe current and anticipated delaying factors, their effect on the construction schedule, and proposed corrective actions. Any Work reported complete, but which is not readily apparent to ENGINEER, must be substantiated with satisfactory evidence.

Each progress report shall also include a minimum of three prints of the accepted graphic schedule marked to indicate actual progress.

SCHEDULE OF VALUES:

After review of the tentative schedule at the preconstruction conference, and before submission of the first application for payment, CONTRACTOR shall prepare and submit to ENGINEER three copies of the schedule of values covering each lump sum item. The schedule of values, showing the value of each kind of work, shall be acceptable to ENGINEER before any application for payment is prepared. The schedule of values shall be detailed by structures and types of work to allow the ENGINEER and OWNER to verify the value of work completed monthly for progress payments.

The sum of the items listed in the schedule of values shall equal the Contract price. Such items as Bond premium, temporary construction facilities, and plant may be listed separately in the schedule of values, provided the amounts can be substantiated. Overhead and profit shall not be listed as separate items.

An unbalanced schedule of values providing for overpayment of CONTRACTOR on items of Work which would be performed first will not be accepted. The schedule of values shall be revised and resubmitted until acceptable to ENGINEER. Final acceptance by ENGINEER shall indicate only consent to the schedule of values as a basis for preparation of applications for progress payments, and shall not constitute an agreement as to the value of each indicated item.

SCHEDULE OF PAYMENTS:

Within 30 days after award of Contract, CONTRACTOR shall furnish to ENGINEER three copies of schedule of estimated monthly payments. The schedule shall be revised and resubmitted each time an application for payment varies more than 10 percent from the estimated payment schedule.

SURVEY DATA:

All field books, notes, and other data developed by CONTRACTOR in performing surveys required as part of the Work shall be available to ENGINEER for examination throughout the construction period. All such data shall be submitted to ENGINEER with the other documentation required for final acceptance of the Work.

SHOP DRAWINGS, MATERIAL CERTIFICATES AND PRODUCT DATA:

Engineering data covering all equipment and fabricated materials which will become a permanent part of the Work under this contract shall be submitted to ENGINEER for review prior to installation.

Shop drawings are technical drawings and data that have been specially prepared for this project.

Material Certificates are notarized statements by an official of the supplier certifying that the materials meet the specifications and are used in lieu of or in addition to shop drawings and product data.

Product data includes standard printed information on manufactured products that has not been specially-prepared for this project.

These data shall include drawings and descriptive information in sufficient detail to show the kind, size, arrangement and operation of component materials and devices; the external connections, anchorages and supports required; performance characteristics; and dimensions needed for installation and correlation with other materials and equipment.

All submittals, regardless of origin, shall be stamped with the approval of CONTRACTOR and identified with the name and number of the Contract, CONTRACTOR's name, and references to applicable specification paragraphs and Contract Drawings. Each submittal shall indicate the intended use of the item in the Work. When catalog pages are submitted, applicable items shall be clearly identified. The current revision, issue number, and date shall be indicated on all drawings and other descriptive data.

CONTRACTOR's stamp of approval is a representation to OWNER and ENGINEER that CONTRACTOR accepts full responsibility for determining and verifying all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, and that he has reviewed or coordinated each submittal with the requirements of the Work and the Contract Documents.

Where indicated in the Specifications, each submittal shall include a statement prepared by the originator of the drawings and data, certifying compliance with the Contract Documents except for deviations which are specifically identified.

All deviations from the Contract Documents shall be identified on each submittal and shall be tabulated in CONTRACTOR's letter of transmittal. Such submittals shall, as pertinent to the

deviation, indicate essential details of all changes proposed by CONTRACTOR (including modifications to other facilities that may be a result of the deviation) and all required piping and wiring diagrams.

CONTRACTOR shall accept full responsibility for the completeness of each submission, and, in the case of a resubmission, shall verify that all exceptions previously noted by ENGINEER have been taken into account. In the event that more than one resubmission is required because of failure of CONTRACTOR to account for exceptions previously noted, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER for review of the additional resubmissions.

Any need for more than one resubmission, or any other delay in obtaining ENGINEER's review of submittals, will not entitle CONTRACTOR to extension of the Contract Time unless delay of the Work is directly caused by a change in the Work authorized by a Change Order or by failure of ENGINEER to return any submittal within 21 days after its receipt in ENGINEER's office.

ENGINEER's review of drawings and data submitted by CONTRACTOR will cover only general conformity to the drawings and specifications, external connections, and dimensions which affect the layout. ENGINEER's review does not indicate a thorough review of all dimensions, quantities, and details of the material, equipment, device, or item shown. ENGINEER's review of submittals shall not relieve CONTRACTOR from responsibility for errors, omissions, or deviations, nor responsibility for compliance with the Contract Documents.

Five copies of each drawing and necessary data shall be submitted to ENGINEER. ENGINEER will not accept submittals from anyone but CONTRACTOR. Submittals shall be consecutively numbered in direct sequence of submittal and without division by subcontracts or trades. Resubmittals shall bear the number of the first submittal followed by a letter (A, B, etc.) to indicate the sequence of the resubmittal.

When the drawings and data are returned marked DISAPPROVED or RESUBMIT, the corrections shall be made as noted thereon and as instructed by ENGINEER and five corrected copies resubmitted.

When corrected copies are resubmitted, CONTRACTOR shall in writing direct specific attention to all revisions and shall list separately any revisions made other than those called for by ENGINEER on previous submissions.

When the drawings and data are returned marked APPROVED AS NOTED, APPROVED, or RECORD COPY, no additional copies need be furnished.

OPERATION AND MAINTENANCE DATA AND MANUALS:

Adequate operation and maintenance information shall be supplied for all equipment requiring maintenance or other attention.

Operation and maintenance manuals are specially prepared for this project.

Operation and maintenance instructions and parts lists include standard printed information on manufactured products.

The equipment supplier shall prepare an operation and maintenance manual for each type of equipment indicated in the Technical Specifications. Parts lists and operating and maintenance instructions shall be furnished for other equipment not specifically listed.

The operation and maintenance manuals shall be in addition to any instructions or parts lists packed with or attached to the equipment when delivered, or which may be required by CONTRACTOR.

Manuals and other data shall be printed on heavy, first quality paper, 8-1/2 by 11 inch size with standard 3-hole punching. Drawings and diagrams shall be reduced to 8-1/2 by 11 inches or 11 by 17 inches. Where reduction is not practicable, larger drawings shall be folded separately and placed in envelopes which are bound into the manuals. Each envelope shall bear suitable identification on the outside.

Three preliminary copies of each manual shall be submitted to ENGINEER prior to the date of shipment of the equipment. After review by ENGINEER, four final copies of each operation and maintenance manual shall be prepared and delivered to ENGINEER not later than 30 days prior to placing the equipment in operation. Preliminary and final manuals, and all other parts lists and information, shall be temporarily bound in heavy paper covers bearing suitable identification. A table of contents and index tabs shall be furnished for all volumes containing data for three or more items of equipment.

Three preliminary copies of each manual, temporarily bound in heavy paper covers bearing suitable identification, shall be submitted to ENGINEER prior to the date of shipment of the equipment. After review by ENGINEER, three final copies of each operation and maintenance manual shall be prepared and delivered to ENGINEER not later than 30 days prior to placing the equipment in operation. Final manuals and all parts lists and information shall be assembled in substantial, permanent, three-ring or three-post binders. As much as possible, material shall be assembled and bound in the same order as specified, and each volume shall have a table of contents and suitable index tabs.

LAYOUT DATA:

CONTRACTOR shall keep neat and legible notes of measurements and calculations made by him in connection with the layout of the Work. Copies of such data shall be furnished to the Resident Project Representative for use in checking CONTRACTOR's layout as provided under Lines and Grades. All such data considered of value to OWNER will be transmitted to OWNER by ENGINEER with other records upon completion of the Work.

RECORD DRAWING:

CONTRACTOR shall keep one record copy of all specifications, drawings, addenda, modifications, and shop drawings at the site in good order and annotated to show all changes made during the construction process. These shall be available to the ENGINEER and shall be delivered to the ENGINEER upon completion of the project. Complete record drawings shall be submitted to the ENGINEER and then approved by the ENGINEER before final payment is approved.

Updated record drawings shall be submitted for all work that is covered up including piping and electrical work within 30 days of the installation.

An updated record drawing shall be prepared by the CONTRACTOR and submitted to the ENGINEER as a condition for approval for any pay request which includes pay items for sanitary sewer or water items.

Annotations on the drawings shall include the exact location of each service stub in relation to the next lowest manhole and centerline of street. Lengths, sizes and types of materials for mains and services shall also be shown.

MATERIAL LOCATION REPORTS:

The CONTRACTOR'S Site Superintendent shall prepare and submit to the Resident Project Representative prior to review of the monthly pay request, a comprehensive list of materials delivered to and stored at the Project site. The list shall be cumulative, with item numbers corresponding to the Schedule of Values and the Stored Materials as outlined in the Supplementary Conditions, showing materials previously reported plus items recently delivered. Include with the list, items which are stored away from the Project site. Items stored at locations away from the site have to be approved by the Owner, as outlined in Section 01010 - Project Requirements. The CONTRACTOR shall prepare a maintenance schedule and log of maintenance activities for the individual stored materials. This schedule and log should be kept up-to-date for review by the RPR and OWNER.

The Contractor shall also submit to the RPR, a site map of the storage area, indicating the location of the stored materials, for confirmation of storage by the RPR during review of the Pay Request. The site map should be neat, legible, and of sufficient size to illustrate the location of the individual stored materials.

CLARIFICATION/INFORMATION REQUEST REPORTS:

The CONTRACTOR, in requesting clarification, information, and/or deviation, shall prepare and submit to the ENGINEER a Request for Information (RFI). The RFI should include a detailed description of the request, and in the case of a clarification or deviation, any proposed changes requested to complete the Work. Multiple RFI's should be sequentially numbered and dated to logically track the submittals.

END OF SECTION 01300

SECTION 01400 - QUALITY CONTROL

PART 1 - GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract; including the General and Special Conditions and Division-1 Specification sections apply to work of this section.

TESTING LABORATORY SERVICES:

All tests which require the services of a laboratory to determine compliance with the Contract Documents shall be performed by an independent commercial testing laboratory acceptable to ENGINEER. The laboratory shall be staffed with experienced technicians, properly equipped, and fully qualified to perform the tests in accordance with the specified standards.

Testing Laboratory Services for Materials Qualification: CONTRACTOR shall be responsible for all testing laboratory services in connection with concrete materials and mix designs, the design of asphalt mixtures, gradation tests for embedment, fill, and backfill materials, and all other tests and engineering data required for ENGINEER's review of materials and equipment proposed to be used in the Work. CONTRACTOR shall pay all costs for services for materials qualifications.

Testing Laboratory Services for Field Quality Control: The testing laboratory for field quality control shall be selected by and work for the OWNER but be paid for by the CONTRACTOR from the testing allowance. A copy of the Testing Laboratory's monthly invoices shall be submitted to the Engineer for review prior to being included in the Contractor's monthly pay request. All charges of testing laboratories for field quality control tests made in the field or laboratory on concrete, asphalt mixtures, moisture-density (Proctor) and relative density tests on embedment, fill, and backfill materials, in-place field density tests on embedments and fills, and other materials and equipment, during and after their incorporation in the Work shall be paid by CONTRACTOR out of the testing allowance as discussed in SECTION 01010. The CONTRACTOR shall be responsible for scheduling of testing agency for field quality control. To verify that equipment, materials, and installations conform to the requirements outlined in the contract documents, the CONTRACTOR shall also schedule such additional testing as deemed necessary by the ENGINEER. Testing due to failed tests and wasted time due to improper scheduling by the CONTRACTOR will be paid for by the CONTRACTOR, not out of the testing allowance. Field sampling and testing will be performed by the testing laboratory personnel, in the general manner indicated in the specifications, with minimum interference with construction operations. ENGINEER shall determine the exact time and location of field sampling and testing, and may require such additional sampling and testing as necessary to determine that materials and equipment conform with data previously furnished by CONTRACTOR and with the Contract Documents.

Arrangements for delivery of samples and test specimens to the testing laboratory will be made by CONTRACTOR. The testing laboratory shall perform all laboratory tests within a reasonable time consistent with the specified standards and shall furnish a written report of each test.

CONTRACTOR shall furnish all sample materials and cooperate in the sampling and field testing activities, interrupting the Work when necessary. When sampling or testing activities are performed in the field by testing laboratory personnel, CONTRACTOR shall furnish personnel and facilities to assist in the activities.

OWNER shall not require the CONTRACTOR to retain any testing laboratory against which CONTRACTOR has reasonable objection, and if at any time during the construction process the services become unacceptable to CONTRACTOR, he may request in writing that such services be terminated. The request must be supported with evidence of improper testing. If ENGINEER and OWNER determine that sufficient cause exists, CONTRACTOR may terminate the services and engage a different testing laboratory.

Transmittal of Test Reports: Written reports of tests and engineering data furnished by CONTRACTOR for ENGINEER's review of materials and equipment proposed to be used in the Work shall be submitted as specified for Shop Drawings in Section 01300.

The testing laboratory will furnish four copies of a written report of each test performed by laboratory personnel in the field or laboratory. Three copies of each test report will be transmitted to the ENGINEER and one copy to CONTRACTOR within three days after each test is completed. Testing laboratory will provide Resident Inspector and CONTRACTOR copies of field reports and test results on a daily basis prior to leaving the site. Notify ENGINEER and CONTRACTOR immediately of failing test results.

END OF SECTION 01400

SECTION 01500 - TEMPORARY FACILITIES

RELATED DOCUMENTS:

The general provisions of the Contract, including the General and Special Conditions and Division-1 Specification sections apply to work of this section.

OFFICE AT SITE OF WORK:

During the performance of this Contract, CONTRACTOR shall maintain a suitable office at or near the site of the Work which shall be the headquarters of his representative authorized to receive drawings, instructions, or other communication or articles. Any communication given to the said representative or delivered at CONTRACTOR's office at the site of the Work in his absence shall be deemed to have been delivered to CONTRACTOR.

Copies of the drawings, specifications, and other contract documents shall be kept at CONTRACTOR's office at the site of the Work and available for use at all times.

WATER:

All water required for and in connection with the Work to be performed and for any specified tests of piping, equipment, devices, etc., or for any other use as may be required for proper completion of the Work shall be provided by and at the expense of CONTRACTOR. No separate payment for water used or required will be made and all costs in connection therewith shall be included in the Bid.

POWER:

CONTRACTOR shall provide all power for heating, lighting, operation of CONTRACTOR's plant or equipment, or for any other use by CONTRACTOR. Temporary heat and lighting shall be maintained until the work is accepted.

SANITARY FACILITIES:

CONTRACTOR shall furnish temporary sanitary facilities at the site, as provided herein, for the needs of all construction workers and others performing work or furnishing services on the Project.

Sanitary facilities shall be of reasonable capacity, properly maintained throughout the construction period, and obscured from public view to the greatest practical extent. If toilets of the chemically treated type are used, at least one toilet will be furnished for each 20 men. CONTRACTOR shall enforce the use of such sanitary facilities by all personnel at the site.

MAINTENANCE OF TRAFFIC:

CONTRACTOR shall conduct his work to interfere as little as possible with public travel, whether vehicular or pedestrian. Whenever it is necessary to cross, obstruct, or close roads, driveways and walks, whether public or private, CONTRACTOR shall provide and maintain suitable and safe bridges, detours, or other temporary expedients for the accommodation of public and private travel, and shall give reasonable notice to owners of private drives before interfering with them. Such maintenance of traffic will not be required when CONTRACTOR has obtained permission from the owner and tenant of private property, or from the authority having jurisdiction over public property involved, to obstruct traffic at the designated point.

In making open cut street crossings, CONTRACTOR shall not block more than one-half of the street at a time. Whenever possible, CONTRACTOR shall widen the shoulder on the opposite side to facilitate traffic flow. Temporary surfacing shall be provided as necessary on shoulders.

Temporary Bridges: CONTRACTOR shall construct substantial bridges at all points where it is necessary to maintain traffic across pipeline construction. Bridges in public streets, roads, and highways shall be acceptable to the authority having jurisdiction thereover. Bridges erected in private roads and driveways shall be adequate for the service to which they will be subjected. Bridges shall be provided with substantial guard rails and with suitably protected approaches. Foot bridges shall be not less than 4 feet wide, provided with handrails and uprights of dressed lumber. Bridges shall be maintained in place as long as the conditions of the Work require their use for safety of the public, except that when necessary for the proper prosecution of the Work in the immediate vicinity of a bridge, the bridge may be relocated or temporarily removed for such period as ENGINEER may permit.

Detours: Where required by the authority having jurisdiction thereover that traffic be maintained over any construction work in a public street, road, or highway, and the traffic cannot be maintained on the alignment of the original roadbed or pavement, CONTRACTOR shall, at his own expense, construct and maintain a detour around the construction work. Each detour shall include a bridge across the pipe trench and all necessary barricades, guard rails, approaches, lights, signals, signs, and other devices and precautions necessary for protection of the Work and safety of the public.

BARRICADES AND LIGHTS:

All streets, roads, highways, and other public thoroughfares which are closed to traffic shall be protected by effective barricades on which shall be placed acceptable warning signs. Barricades shall be located at the nearest intersecting public highway or street on each side of the blocked section.

All open trenches and other excavations shall have suitable barricades, signs, and lights to provide adequate protection to the public. Obstructions such as material piles and equipment shall be provided with similar warning signs and lights.

All barricades and obstructions shall be illuminated with warning lights from sunset to sunrise. Material storage and conduct of the Work on or alongside public streets and highways shall cause the minimum obstruction and inconvenience to the traveling public.

All barricades, signs, lights and other protective devices shall be installed and maintained in conformity with applicable statutory requirements and, where within railroad and highway rights-of-way, as required by the authority having jurisdiction thereover.

FENCES:

All existing fences affected by the Work shall be maintained by CONTRACTOR until completion of the Work. Fences which interfere with construction operations shall not be relocated or dismantled until written permission is obtained from the owner of the fence, and the period the fence may be left relocated or dismantled has been agreed upon. Where fences must be maintained across the construction easement, adequate gates shall be installed. Gates shall be kept closed and locked at all times when not in use.

On completion of the Work across any tract of land, CONTRACTOR shall restore all fences to their original or to a better condition and to their original location.

PROTECTION OF PUBLIC AND PRIVATE PROPERTY:

CONTRACTOR shall protect, shore, brace, support, and maintain all underground pipes, conduits, drains, and other underground construction uncovered or otherwise affected by his construction operations. All pavement, surfacing, driveways, curbs, walks, buildings, utility poles, guy wires, fences, and other surface structures affected by construction operations, together with all sod and shrubs in yards and parkings, shall be restored to their original condition, whether within or outside the easement. All replacements shall be made with new materials.

No trees shall be removed outside of the permanent easement, except where authorized by ENGINEER. Whenever practicable CONTRACTOR shall tunnel beneath trees in yards and parkings when on or near the line of trench. Hand excavation shall be employed as necessary to prevent injury to trees. Trees left standing shall be adequately protected against damage by construction operations.

CONTRACTOR shall be responsible for all damage to streets, roads, highways, shoulders, ditches, embankments, culverts, bridges, and other public or private property, regardless of location or character, which may be caused by transporting equipment, materials, or men to or from the Work or any part or site thereof, whether by him or his Subcontractors. CONTRACTOR shall make satisfactory and acceptable arrangements with the owner of, or the agency or authority having jurisdiction over, the damaged property concerning its repair or replacement or payment of costs incurred in connection with the damage.

All fire hydrants and water control valves shall be kept free from obstruction and available for use at all times.

DAMAGE TO EXISTING PROPERTY:

CONTRACTOR will be held responsible for any damage to existing structures, Work, materials or equipment because of his operations and shall repair or replace any damaged structures, Work, materials, or equipment to the satisfaction of, and at no additional cost to, OWNER.

CONTRACTOR shall protect all existing structures and property from damage and shall provide bracing, shoring, or other work necessary for such protection.

CONTRACTOR shall be responsible for all damage to streets, roads, curbs, sidewalks, highways, shoulders, ditches, embankments, culverts, bridges, or other public or private property, which may be caused by transporting equipment, materials, or men to or from the Work. CONTRACTOR shall make satisfactory and acceptable arrangements with the agency having jurisdiction over the damaged property concerning its repair or replacement.

TREE AND PLANT PROTECTION:

All trees and other vegetation which must be removed to perform the Work shall be removed and disposed of by CONTRACTOR; however, no trees or cultured plants shall be unnecessarily removed unless their removal is indicated on the drawings. All trees and plants not removed shall be protected against injury from construction operations.

Trees considered by ENGINEER to have any significant effect on construction operations are indicated on the drawings and those which are to be preserved are so indicated.

CONTRACTOR shall take extra measures to protect trees designated to be preserved, such as erecting barricades, trimming to prevent damage from construction equipment, and installing pipe and other Work by means of hand excavation or tunneling methods. Such trees shall not be endangered by stockpiling excavated material or storing equipment against the trunk.

When the injury or removal of trees designated to be preserved cannot be avoided, or when removal and replacement is indicated on the drawings, each tree injured beyond repair or removed shall be replaced with a similar tree of the nearest size possible.

All trimming, repair, and replacement of trees and plants shall be performed by qualified nurserymen or horticulturists.

SECURITY:

CONTRACTOR shall be responsible for protection of the site, and all work, materials, equipment and existing facilities thereon, against vandals and other unauthorized persons.

No claim shall be made against OWNER by reason of any act of an employee or trespasser, and CONTRACTOR shall make good all damage to OWNER's property resulting from his failure to provide security measures as specified.

Security measures shall be at least equal to those usually provided by OWNER to protect his existing facilities during normal operation, but shall also include such additional security fencing, barricades, lighting, watchman services and other measures as required to protect the site.

PARKING:

CONTRACTOR shall provide and maintain suitable parking areas for the use of all construction workers and others performing work or furnishing services in connection with the Project as required to avoid any need for parking personal vehicles where they may interfere with public traffic, OWNER's operations or construction activities.

TEMPORARY DRAINAGE PROVISIONS:

CONTRACTOR shall provide for the drainage of stormwater and such water as may be applied or discharged on the site in performance of the Work. Drainage facilities shall be adequate to prevent damage to the Work, the site, and adjacent property.

Existing drainage channels and conduits shall be cleaned, enlarged or supplemented as necessary to carry all increased runoff attributable to CONTRACTOR's operations. Dikes shall be constructed as necessary to divert increased runoff from entering adjacent property (except in natural channels), to protect OWNER's facilities and the Work, and to direct water to drainage channels or conduits. Ponding shall be provided as necessary to prevent downstream flooding.

END OF SECTION 01500



SECTION 02220 - TRENCHING, BACKFILLING AND COMPACTION

PART 1 - GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including the General and Special Conditions and Division-1 Specification sections apply to work of this section.

DESCRIPTION OF WORK:

This section covers excavation and trenching work and shall include the necessary clearing, grubbing, and preparation of the site; removal and disposal of all debris; excavation and trenching as required; the handling, storage, transportation, and disposal of all excavated material; all necessary sheeting, shoring, and protection work; preparation of subgrades; pumping and dewatering as necessary or required; protection of adjacent property; backfilling; pipe embedment; and other appurtenant work.

RELATED WORK SPECIFIED ELSEWHERE:

Storm Sewer and Sanitary Sewer Systems: Division-2

Pipe and Pipe Fittings: Division-15

QUALITY ASSURANCE:

Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction and the Occupational Safety and Health Administration.

JOB CONDITIONS:

Classification of Excavated Materials: No classification of excavated materials will be made. Excavation and trenching work shall include the removal and subsequent handling of all materials excavated or otherwise removed in performance of the contract work, regardless of the type, character, composition, or condition thereof.

Site Information: Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that OWNER will not be responsible for interpretations or conclusions drawn therefrom by CONTRACTOR. Data are made available for convenience of CONTRACTOR and are not a part of this specification.

Additional test borings and other exploratory operations may be made by CONTRACTOR at no cost to OWNER.

Existing Utilities: Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations.

Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility OWNER immediately for directions. Cooperate with OWNER and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility OWNER.

Do not interrupt existing utilities serving facilities occupied and used by OWNER or others, during occupied hours, except when permitted in writing by ENGINEER and then only after acceptable temporary utility services have been provided.

Provide minimum of 48-hour notice to ENGINEER, and receive written notice to proceed before interrupting any utility.

Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility OWNER for shut-off of services if lines are active.

Use of Explosives: The use of explosives is not permitted.

Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning lights.

Operate warning lights as recommended by authorities having jurisdiction.

Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

PART 2 - PRODUCTS

DEFINITIONS:

Satisfactory soil materials are defined as those complying with ASTM D 2487 soil classification groups GW, GP, GM, GC, SM, SW and SP.

Provisionally satisfactory soil materials are defined as those complying with ASTM D 2487 soil classification group SC. Provisionally satisfactory soil materials are moisture sensitive soils which are expected to require moisture conditioning, particularly in wetter times of the year, in order to be considered satisfactory. If proper densities cannot be achieved by moisture conditioning prior to

backfill, the soils shall be deemed unsatisfactory and replaced with satisfactory materials at no additional cost to the OWNER.

Unsatisfactory soil materials are defined as those complying with ASTM D 2487 soil classification groups ML, MH, CL, CH, SC, OL, OH and PT.

GENERAL MATERIALS:

Clean Sand: Washed or natural sand with less than 10 percent by weight passing the No. 200 sieve.

Engineering Fabric: For use in soil stabilization use, provide synthetic fabric as specified in NCDOT Standard Specifications for Road and Structure Section 1056 Type 2.

Granular Fill (Granular Embedment and Stabilization Material): Granular fill or embedment material shall be crushed rock or gravel, shall be free from dust, clay, or trash, and shall be #67 or #57 stone as defined in ASTM C 33 except that larger stone may be used for stabilization if approved by the ENGINEER.

Aggregate Base Course Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, crushed slag, natural or crushed sand as specified in NC DOT Standard Specifications for Roads and Structures Section 1010 Type A.

Fill Material (Backfill): All material deposited in trenches shall be satisfactory soils free from rocks or stones larger than 2 inches, brush, stumps, logs, roots, debris, and organic or other objectionable materials, and shall be wetted or dried as required and thoroughly mixed to ensure uniform moisture content.

Select Backfill: Job excavation or borrow material consisting of coarse sands and fine sands with not more than 15% by weight passing the no. 200 sieve. This does not include clays, silts, organic soils or any materials not acceptable as fill material. Select backfill must receive prior approval from the ENGINEER before use. (ASTM D2321 Class II)

Groundwater Barrier: Barrier material shall meet ASTM D2487 soil classification GC, SC, CL, or ML-CL and shall be compacted to 95 percent of maximum density. Material may be finely divided suitable job excavated material, free from stones, organic matter and debris.

PIPE EMBEDMENT:

Embedment materials both below and above the bottom of the pipe, classes of embedment to be used, and placement and compaction of embedment materials shall conform to the requirements shown on the drawings and to the following supplementary requirements.

Embedment materials shall contain no cinders or other material which may cause pipe corrosion.

PART 3 - EXECUTION

GENERAL REQUIREMENTS:

Excavation shall provide adequate working space and clearances for the work to be performed therein and for installation and removal of concrete forms. In no case shall excavation faces be undercut for extended footings.

Subgrade surfaces shall be clean and free of loose material of any kind when concrete is placed thereon.

Backfilling and construction of fills and embankments during freezing weather shall not be done except by permission of the ENGINEER. No backfill, fill, or embankment materials shall be installed on frozen surfaces, nor shall frozen materials, snow or ice be placed in any backfill, fill or embankment.

PRESERVATION OF TREES:

No trees shall be removed outside of excavated or filled areas, unless their removal is authorized by the OWNER. Trees left standing shall be adequately protected from permanent damage by construction operations.

UNAUTHORIZED EXCAVATION:

Except where otherwise authorized, shown or specified, all materials excavated below the bottom of concrete walls, footings, slabs on grade and foundations shall be replaced by, and at the expense of, the CONTRACTOR, with concrete placed at the same time and monolithic with the concrete above.

DEWATERING:

Dewatering equipment shall be provided to remove and dispose of all surface and ground water entering excavations, trenches, or other parts of the work. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the structure to be built, or the pipe to be installed therein, is completed to the extent that no damage from hydrostatic pressure, flotation, or other cause will result.

All excavations for concrete structures or trenches which extend down to or below ground water shall be dewatered by lowering and keeping the ground water level beneath such excavations 12 inches or more below the bottom of the excavation. Well pointing will be required for dewatering pipe trenches ahead of trenching and pipe laying, so that excavations are free from ground water.

Surface water shall be diverted or otherwise prevented from entering excavated areas or trenches to the greatest extent practicable without causing damage to adjacent property.

The CONTRACTOR shall be responsible for the condition of any pipe or conduit which he may use for drainage purposes, and all such pipe or conduit shall be left clean and free of sediment.

SHEETING AND SHORING:

Except where banks are cut back on a stable slope, excavation for structures and trenches shall be sheeted, braced, and shored as necessary to prevent caving or sliding.

Trench sheeting shall not be pulled before backfilling unless the pipe strength is sufficient to carry trench loads based on trench width to the back of sheeting. Where trench sheeting is left in place, such sheeting shall not be braced against the pipe, but shall be supported in a manner which will preclude concentrated loads or horizontal thrusts on the pipe. Cross braces installed above the pipe to support sheeting may be removed after pipe embedment has been completed.

STABILIZATION:

Subgrades for concrete structures and trench bottoms shall be firm, dense, and thoroughly compacted and consolidated; shall be free from mud and muck; and shall be sufficiently stable to remain firm and intact under the feet of the workmen.

Subgrades for concrete structures or trench bottoms which are otherwise solid, but which become mucky on top due to construction operations, shall be reinforced with crushed rock or gravel. The stabilizing material shall be as specified for granular fills. Not more than 1/2 inch depth of mud or muck shall be allowed to remain on stabilized trench bottoms when the pipe bedding material is placed thereon. The finished elevation of stabilizing subgrades shall not be above subgrade elevations indicated on the drawings.

EXCAVATION FOR STRUCTURES:

Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.

In excavation for footings and foundations, take care not to disturb bottom of excavation. Trim bottoms to required lines and grades to leave solid base to receive other work.

Except where exterior surfaces are specified to be dampproofed, monolithic concrete manholes and other concrete structures, or parts thereof, which do not have footings that extend beyond the outside face of exterior walls, may be placed directly against excavation faces without the use of outer forms, provided that such faces are stable.

Excavations for manholes and similar structures constructed of masonry units shall have such horizontal dimensions that not less than 6 inches clearance is provided for outside plastering.

TRENCH EXCAVATION:

General: No more trench shall be opened in advance of pipe laying than is necessary to expedite the work. One block or 400 feet (whichever is the shorter) shall be the maximum length of open trench on any line under construction.

Except where tunneling or boring is indicated on the drawings, is specified, or is permitted by the ENGINEER, all trench excavation shall be open cut from the surface.

Alignment, Grade, and Minimum Cover: Vertical and horizontal alignment of pipes, and the maximum joint deflection used in connection therewith, shall be in conformity with requirements of the section covering installation of pipe.

Where pipe grades or elevations are not definitely fixed on the contract drawings or shown in profile, trenches shall be excavated with an absolute a minimum depth of backfill cover over the top of the pipe of 36 inches, but no more than five (5) feet, unless otherwise indicated. Greater than minimum pipe cover depths may be necessary on vertical curves or to provide necessary clearance beneath existing pipes, conduits, drains, drainage structures, or other obstructions encountered at normal pipe grades. Measurement of pipe cover depth shall be made vertically from the outside top of pipe to finished ground or pavement surface elevation except where future surface elevations are indicated on the drawings. Where this requirement cannot be met due to unavoidable conflicts in grade, the ENGINEER shall be consulted so that a solution acceptable to the ENGINEER and OWNER may be determined.

Limiting Trench Widths: Trenches shall be excavated to a width which will provide adequate working space and sidewall clearances for proper pipe installations, jointing, and embedment. However, the limiting trench widths from the bottom of the trench to an elevation one foot above the top of installed pipe, and the minimum permissible sidewall clearances between the installed pipe and each trench wall shall be as follows:

<u>Nominal Pipe Size</u> (inches)	<u>Minimum Trench Width</u> (inches)	<u>Maximum Trench Width</u> (inches)
Less than 18	Pipe O.D. Plus 18	Pipe O.D. Plus 24
18 through 27	Pipe O.D. Plus 24	Pipe O.D. Plus 30
28 through 42	Pipe O.D. Plus 24	Pipe O.D. Plus 36
43 through 60	Pipe O.D. Plus 30	Pipe O.D. Plus 36

Stipulated minimum sidewall clearances are not minimum average clearances but are minimum clear distances which will be required.

Cutting trench banks on slopes to reduce earth load to prevent sliding and caving shall be used in areas where the increased trench width will not interfere with surface features or encroach on right-of-way limits. Slopes shall not extend lower than one foot above the top of the pipe.

Unauthorized Trench Widths: Where, for any reason, the width of the lower portion of the trench, as excavated at any point, exceeds the maximum permitted in the foregoing tables, either pipe of adequate strength, special pipe embedment, or arch concrete encasement, as required by loading conditions and with the concurrence of the ENGINEER, shall be furnished and installed by and at the expense of the CONTRACTOR.

Mechanical Excavation: The use of mechanical equipment will not be permitted in locations where its operation would cause damage to trees, buildings, culverts, or other existing property, utilities, or structures above or below ground. In all such locations, hand excavating methods shall be used.

Only rubber-tired equipment will be permitted on paved streets unless specifically allowed by the owner and engineer on a case-by-case basis.

Mechanical equipment used for trench excavation shall be of a type, design, and construction, and shall be so operated that the rough trench excavation bottom elevation can be controlled, that uniform trench widths and vertical sidewalls are obtained at least from an elevation one foot above the top of the installed pipe to the bottom of the trench, and that trench alignment is such that pipe when accurately laid to specified alignment will be centered in the trench with adequate clearance between the pipe and sidewalls of the trench. Undercutting the trench sidewall to obtain clearance will not be permitted.

Cutting Concrete and Asphalt Surface Construction: Cuts in concrete and asphalt pavements shall be no larger than necessary to provide adequate working space for proper installation of pipe and appurtenances. Cutting shall be started with a concrete saw in a manner which will provide a clean groove at least 2 inches deep along each side of the trench and along the perimeter of cuts for structures.

Concrete and asphalt pavement over trenches excavated for pipelines shall be removed so that the width at any point is not greater than the top edge of the trench. Trench width at the bottom shall not be greater than at the top and no undercutting will be permitted. Pavement cuts shall be made to and between straight or accurately marked curved lines which, unless otherwise required, shall be parallel to the centerline of the trench.

Pavement removed for connections to existing lines or structures shall not be of greater extent than necessary for the installation.

Where the trench parallels the length of concrete walks and the trench location is all or partially under the walk, the entire walk shall be removed and replaced. Where the trench crosses drives,

walks, curbs, or other surface construction, the surface construction shall be removed and replaced between existing joints or between saw cuts as specified for pavement.

Bell Holes: Bell holes shall provide adequate clearance for tools and methods used in installing pipe. No part of any bell or coupling shall be in contact with the trench bottom, trench walls, or granular embedment when the pipe is jointed.

PIPE EMBEDMENT:

Placement and Compaction: Granular embedment material shall be spread and the surface graded to provide a uniform and continuous support beneath the pipe at all points between bell holes or pipe joints. It will be permissible to slightly disturb the finished subgrade surface by withdrawal of pipe slings or other lifting tackle.

After each pipe has been graded, aligned, and placed in final position on the bedding material or trench bottom and shoved home, sufficient pipe embedment material shall be deposited and compacted under and around each side of the pipe and back of the bell or end thereof to hold the pipe in proper position and alignment during subsequent pipe jointing and embedment operations.

Embedment material shall be deposited and compacted uniformly and simultaneously on each side of the pipe to prevent lateral displacement.

Hand placed embedment shall be compacted to the top of the pipe in all areas where compacted backfill is specified.

Whenever crushed rock is used as embedment for 36 inch and larger pipe, the portion above the bottom of the pipe shall be vibrated with a mechanical probe type vibrator during placement to ensure that all spaces beneath the pipe are filled.

TRENCH BACKFILL:

A layer of backfill material not more than 8 inches deep may be placed over concrete arch encasement or concrete reaction blocking after the concrete has reached its initial set, to aid curing. No additional backfill shall be placed over arch encasement or blocking until the concrete has been in place for at least 3 days.

Backfill compacted to 95 percent of maximum density at optimum moisture content as determined by ASTM D698 will be required for the full depth of the trench above the embedment in the following locations:

Where beneath pavements, surfacings, driveways, curbs, gutters, walks or other surface construction or structures.

Where in street, road, or highway shoulders.

Where beneath fills or embankments.

In established lawn areas.

In other areas the backfill shall be compacted to 90 percent or equal to existing.

Where the trench for one pipe passes beneath the trench for another pipe, backfill for the lower trench shall be compacted to the level of the bottom of the upper trench.

The ENGINEER may require select backfill in upper portion or all portions of trenches in roadways. Refer to payment section.

Job excavation material may be used for compacted backfill when the job excavated material is finely divided and free from debris, organic material, cinders or other corrosive material, and stones larger than 3 inches in greatest dimension. Masses of moist, stiff clay shall not be used. Each layer of material shall have the best practicable moisture content for satisfactory compaction. The material in each layer shall be wetted or dried as required and thoroughly mixed to ensure uniform moisture content and adequate compaction. Backfill materials shall be placed in uniform layers not exceeding 8 inches in uncompacted thickness. Increased layer thickness may be permitted for noncohesive material if the CONTRACTOR demonstrates to the satisfaction of the ENGINEER that the specified compacted density will be obtained.

The method of compaction and the equipment used shall be appropriate for the material to be compacted and shall not transmit damaging shocks to the pipe.

The top portion of backfill beneath established lawn areas shall be finished with not less than 4 inches of topsoil corresponding to, or better than, that underlying adjoining lawn areas.

STRUCTURE BACKFILL:

The quality and moisture content of materials for backfill around and outside of structures shall conform to the requirements for fill materials. Backfill materials shall be deposited in layers not to exceed 8 inches in uncompacted thickness and compacted to at least 95 percent of maximum density at optimum moisture content as determined by ASTM D 698. Compaction of structure backfill by rolling will be permitted provided the desired compaction is obtained and damage to the structure is prevented. Compaction of structure backfill by inundation with water will not be permitted.

No backfill shall be deposited or compacted in water. Particular care shall be taken to compact structure backfill which will be beneath pipes, drives, roads, parking areas, walks, curbs, gutters, or other surface construction or structures. In addition, wherever a trench is to pass through structure backfill, the structure backfill shall be placed and compacted to an elevation not less than 12 inches above the top of pipe elevation before the trench is excavated. Compacted areas, in each case, shall be adequate to support the item to be constructed or placed thereon.

DRAINAGE MAINTENANCE:

Trenches across roadways, driveways, walks, or other trafficways adjacent to drainage ditches or water courses shall not be backfilled prior to completion of backfilling the trench on the upstream side of the trafficway, to prevent impounding water after the pipe has been laid. Bridges and other temporary structures required to maintain traffic across such unfilled trenches shall be constructed and maintained by the CONTRACTOR. Backfilling shall be done so that water will not accumulate in unfilled or partially filled trenches. All material deposited in roadway ditches or other water courses by the line of trench shall be removed immediately after backfilling is completed and the original section, grades, and contours of ditches or water courses shall be restored. Surface drainage shall not be obstructed longer than necessary.

PROTECTION OF TRENCH BACKFILL IN DRAINAGE COURSES:

Where trenches are constructed in ditches or other water courses, backfill shall be protected from surface erosion. Where the grade of the ditch exceeds one percent, ditch checks shall be installed.

DISPOSAL OF EXCESS EXCAVATED MATERIALS:

Except as otherwise permitted, all excess excavated materials shall be disposed of away from the site of the work by the CONTRACTOR.

Broken concrete and other debris resulting from pavement or sidewalk removal, excavated rock, debris encountered in excavation work, and other similar waste materials shall be properly disposed of away from the site of the work.

Excess earth from excavations located in unimproved property may be distributed directly over the pipe trench and within the pipeline right-of-way to a maximum depth of 6 inches above the original ground surface elevation at and across the trench and sloping uniformly each way. Material thus wasted shall be carefully finished with a drag, blade machine, or other suitable tool to a smooth, uniform surface without obstructing drainage at any point. Wasting of excess excavated material in the above manner will not be permitted where the line of trench crosses or is within proposed or existing railroad, public road, or highway right-of-way. The disposal of waste and excess excavated materials, including hauling, handling, grading, and surfacing shall be a subsidiary obligation of the CONTRACTOR and no separate payment will be made therefore. Disposal shall be onto property of the OWNER unless otherwise directed.

SETTLEMENT:

The CONTRACTOR shall be responsible for all settlement of backfill, fills, and embankments which may occur within the correction period stipulated in the General Conditions.

The CONTRACTOR shall also save the OWNER and ENGINEER harmless of any and all claims that might arise out of the dewatering operation.

TESTS:

As stipulated in the quality control section, all tests required for preliminary review of materials shall be made by an acceptable independent testing laboratory at the expense of the CONTRACTOR. Two initial gradation tests shall be made for each type of embedment, fill or backfill material and one additional gradation test shall be made for each additional 500 tons of each material.

Moisture-density (Proctor) tests and relative density tests on the materials, and all in-place field density tests, shall be paid for out of the testing allowance.

END OF SECTION 02220



SECTION 02510 - ROADWAYS, DRIVES, SIDEWALKS, CURB AND GUTTER PATCHING

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Restoration of streets, roadways, highways, drives and shoulders, whether asphalt, concrete, gravel or soil shall be required to the extent necessary to restore and replace same which are disturbed or removed during construction operations. Similarly, sidewalks, and curb and gutter disturbed or removed during construction operations shall also be restored.

RELATED WORK SPECIFIED ELSEWHERE:

Trenching, Backfilling and Compaction: Section 02220

Concrete: Division 3.

SUBMITTALS:

Provide materials' certificates which certify that each material item, asphalt, prime coat, tack coat, concrete and stone complies with or exceeds specified requirements.

JOB CONDITIONS:

Grade Control: Establish and maintain required lines and elevations as required to match existing grades.

PART 2 - PRODUCTS

BITUMINOUS CONCRETE PAVEMENT:

Bituminous Concrete Intermediate Course, Type I-19.0B: Materials meeting the requirements of Section 10 of "Standard Specifications for Roads and Structures" as issued by N.C.D.O.T.

Bituminous Surface Course, Type S-9.5B: Materials meeting the requirements of Section 10 of "Standard Specifications for Roads and Structures" as issued by N.C.D.O.T.

Sand Asphalt Surface Course, Type S-4.75A: Materials meeting the requirements of Section 10 of "Standard Specifications for Roads and Structures" as issued by N.C.D.O.T.

Prime Coat: Material meeting the requirements of Section 600-2 of "Standard Specifications for Roads and Structures" as issued by N.C.D.O.T.

Tack Coat: Material meeting the requirements of Section 605-2 of "Standard Specifications for Roads and Structures" as issued by N.C.D.O.T.

Aggregate Base Course: ABC in conformance with N.C.D.O.T. Standard Specifications, Section 520 Type A.

CONCRETE:

Concrete Walks, Drives, Curb and Gutter: See appropriate Division 3 sections.

PART 3 - EXECUTION

GENERAL:

Pavement Cut: In all pavement removal operations (roads, drives, walks, curb and gutter, etc.) utmost care shall be exercised to control the width of pavement removed. Edges of pavement shall not be permitted to slough off into the excavation. Where pavement is to be removed, the Contractor shall provide a neat edge along the pavement being retained by sawing the pavement a minimum of two (2) inches deep before breaking the adjacent pavement away. The width of pavement cut shall be only that necessary for installation of the pipe line. The time between pavement removal and replacement shall not exceed thirty (30) days.

Backfill: As required in appropriate Division 2 Sections.

Subgrade: Verify that subgrade material and compaction comply with specifications prior to placing base course materials. Grade the subgrade evenly at the level required below finished surface of existing pavement and conforming with the existing pavement surface grade.

Concrete Walks and Drives: Use 3,000 psi concrete of thickness to equal existing but in no case less than 6 inches thick for drives and 4 inches thick for walks.

AGGREGATE BASE COURSE:

Place aggregate base course in uniform layers not exceeding 6 inches in uncompacted thickness. Compacted thickness shall be equal to existing but in no case less than the following (Percent compaction specified is Standard Proctor maximum dry density, ASTM D698):

Asphalt Roadways: 8 inches at 98%.

Gravel Roads: 6 inches at 98%.

Concrete and Asphalt Drives: 6 inches at 98%.

Concrete Curb and Gutter: 4 inches at 98%.

Concrete and Asphalt Walks: 4 inches at 95%.

Gravel Walks: 4 inches at 95%.

The base course material shall be graded level with the existing pavement surface and maintained level and in good condition until the placement of the pavement surface is complete. Base course material shall be removed as necessary just prior to placement of pavement surface.

BITUMINOUS SURFACE COURSE:

Adjust tops of all manholes, valve boxes, etc. in the pavement as necessary prior to paving.

Apply prime coat at the rate of 0.20 to 0.50 gal. per sq. yd. over compacted base course.

Apply tack coat at the rate of 0.05 to 0.15 gal. per sq. yd. to in-place asphalt or concrete contact surfaces and other surfaces which will contact paving.

Place bituminous concrete mixture at not less than 225 degrees F., spread and strike off. Place each bituminous concrete course to required grade, cross-section and compacted thickness, equal to existing, but in no case less than 2 inches for roadways and one inch for drives and sidewalks.

Place sand asphalt only where approved by ENGINEER.

Provide joints between old and new pavements and between successive days' work for continuous bond between adjoining work. Clean contact surfaces and apply tack coat.

Rolling: Begin rolling when bituminous concrete mixture will bear roller weight without excessive displacement. Repair surface defects with hot bituminous concrete material as rolling progresses. Cut out and patch defective areas and roll to blend with adjacent satisfactory paving. Continue rolling until maximum density is attained and roller marks eliminated.

Protect paving from damage and vehicular traffic until bituminous concrete mixture has cooled and attained its maximum degree of hardness.

CONCRETE PAVEMENT:

Concrete Curb and Gutter: Replace with a section matching the section removed. Use 3,000 psi concrete. Saw cut the curb section and provide tooled joint.

Concrete placement shall be in accordance with appropriate Division 3 sections.

END OF SECTION 02510

SECTION 02520- PAVEMENT MARKING

PART 1 - GENERAL

RELATED DOCUMENTS:

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

DESCRIPTION OF WORK:

Pavement marking work includes parking space striping, traffic lane striping, traffic directional arrows, crosswalks and curb painting where indicated by plans and specifications that repairs and/or resurfacing are required.

RELATED ITEMS SPECIFIED ELSEWHERE:

Roadways, Drives, Sidewalks, Curb & Gutter Patching: Section 02510

QUALITY ASSURANCE:

Standards: Materials, patterns, dimensions and quality of workmanship shall conform to Division 12 of the 2002 NCDOT Standard Specifications for roads and structures and the 2002 NCDOT Roadway Standard Drawings or latest editions.

PART 2 - PRODUCTS

PAINT:

General: White pavement marking paint shall be retroreflective.

Pavement marking paint shall be a ready mixed type paint product conforming to U.S. Federal Specification Number (TT-P-115E) with spraying consistency suitable for use as retroreflective pavement markings on portland cement concrete or bituminous pavement material. The paint may be either one of the following two types:

1. A type in which glass beads are dropped by suitable pressurized means into the wet paint as it is applied to the pavement (hereinafter designated as the drop-on type), or

2. A type which combines the characteristics of premix and drop-on paints, i.e., having beads mixed in the paint and also requiring some beads to be dropped on the paint at the time of application by suitable pressurized means (hereinafter designated as the combination type).

After application to the pavement and proper drying, the marking paint under traffic shall have a uniform cross section.

The paint shall be suited to application by means of spray-type pavement marking equipment, and when used with such equipment shall be capable of producing a solid, uniform width marking of the required thickness.

Color Requirements:

The yellow and white paint shall visually match the color chips that correspond to the Federal Test Standard Number 595a for the following colors. The paint when subjected to accelerated weathering as described in U.S. Federal Specification No. (TT-P-115F) shall be within the tolerance limits of the color chip listed below:

WHITE: (Color 17886)

The pavement marking shall display the same color both day and night.

GLASS BEADS:

Glass beads used in marking paint shall be a minimum of 80% true spheres and shall meet the following gradation requirements:

For beads premixed in paint:

<u>U.S. Standard Sieve Size</u>	<u>% Passing</u>
No. 40	100
No. 60	80-100
No. 100	30-50
No. 200	0-5

For drop-on beads:

<u>U.S. Standard Sieve Size</u>	<u>% Passing</u>
Passing #20	100
Retained on #30	5-10
Retained on #50	40-80
Retained on #80	15-40
Passing #80	0-5

The glass beads shall be capable of flowing freely through the pressurized dispensing equipment in any weather suitable for marking the pavement.

PART 3 - EXECUTION

GENERAL:

All marking paint shall be applied in accordance with the manufacturer's instructions, unless otherwise specified herein. Pavement marking material shall be applied only to pavements which are free of glaze, oil, dirt, grease, and other foreign contaminants. All surface preparation, including surface cleaning and surface pretreatment, shall be done by the Contractor in accordance with the manufacturer's recommendations, subject to the approval of the Engineer. All lines and symbols shall be placed in accordance with the plans, specifications, and the NCDOT Manual on Uniform Traffic Control Devices (and supplement).

Application equipment shall be so constructed as to assure continuous uniformity in the thickness and width of the stripe and shall be equipped with a mechanical cut-off device to provide clean square stripe ends.

PAINT APPLICATION:

General:

Beads applied to the surface of the marking paint shall be applied by an automatic pressurized bead dispenser attached to the marking equipment in such manner that the beads are dispensed almost instantly upon the wet painted marking. The pressurized bead dispenser shall be equipped with an automatic cut-off control synchronized with the cut-off of the paint. The beads shall be spread uniformly over the entire surface of the paint.

The Contractor shall protect the marking until dry by placing guarding or warning devices as necessary. In the event any vehicle should cross the wet marking, such marking shall be reapplied and paint tracks made by the moving vehicles shall be removed at no cost to the Owner.

All longitudinal pavement marking lines 8 inches or less in width shall be applied with one pass of the pavement marking equipment. Pavement marking lines greater than 8 inches in width and pavement marking symbols may be applied with multiple passes of the pavement marking equipment.

All pavement marking lines and symbols installed by multiple passes of the application equipment shall exhibit no gaps separating the application passes.

Application:

The paint and beads shall be applied at the rate necessary to produce a minimum wet film thickness of 15 mils.

The combination type paint shall have 3-1/2 pounds of glass beads per gallon of paint premixed into the paint prior to application.

Drop-on beads shall be applied to drop-on type paint at the minimum rate of 3 pounds per gallon of paint.

Paint shall be applied only when the ambient air temperature and pavement surface temperature is between 40°F and 160°F.

The paint, when applied with its complement of glass beads to pavement surface under normal field conditions at the required rate and relative humidity, shall dry sufficiently hard within 30 minutes after application so that there will be no pick-up, displacement, or discoloration under traffic.

Premarkings:

The Contractor shall lay out and install all premarkings to serve as guides for actual placement of the pavement markings. No pavement markings shall be installed until premarkings have been approved by the Engineer.

Lateral Deviation:

Pavement markings shall be of the length or shape, and longitudinal placement, as shown in the plans. The marking lines shall be straight or of uniform curvature and shall conform with the tangents, curves, and transitions as shown in the plans or directed by the Engineer. The finished lines and symbols shall be free from waviness. In judging waviness, the lateral deviation of the finished lines and symbols shall not exceed 1/2 inch from the proposed alignment at any point. Any greater deviation may be sufficient cause for requiring the Contractor to remove and correct such markings at no cost to the Owner.

DIMENSIONS:

Parking Space	-	4 inches wide	(white)
Pavement Marking Arrows & Symbols	-		(white)

END OF SECTION 02520

SECTION 02550 – PLAYGROUND PROTECTIVE SURFACING

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM C136/C136M	(2014) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D1557	(2012; E 2015) Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ³) (2700 kN-m/m ³)
ASTM D2047	(2011) Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
ASTM D2261	(2013) Tearing Strength of Fabrics by the Tongue (Single Rip) Procedure (Constant Rate-of-Extension Tensile Testing Machine)
ASTM D412	(2006a; R 2013) Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension
ASTM D6112	(2013) Compressive and Flexural Creep and Creep-Rupture of Plastic Lumber and Shapes
ASTM D648	(2007) Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
ASTM F1015	(2003; R 2009) Relative Abrasiveness of Synthetic Turf Playing Surfaces
ASTM F1292	(2013) Impact Attenuation of Surface Systems Under and Around Playground Equipment
ASTM F1487	(2011) Playground Equipment for Public Use
ASTM F1951	(2014) Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment

CONSUMER PRODUCT SAFETY COMMISSION (CPSC)

CPSC Pub No 325

(2010) Handbook for Public Playground Safety

1.2 DEFINITIONS

1.2.1 Critical Height

The fall height at which the protective surfacing meets the requirements of ASTM F1292.

1.2.2 Designated Play Surface

Any elevated surface for standing, walking, sitting, or climbing; or a flat surface a minimum 2 inches wide having up to a maximum 30 degree angle from horizontal. In some play events the platform surface will be the same as the designated play surface. However, the terms should not be interchanged as they do not define the same point of measurement according to ASTM F1487.

1.2.3 Head Injury Criteria (HIC)

A measure of impact severity that considers the duration over which the most critical section of the deceleration pulse persists as well as the peak level of that deceleration. Head impact injuries are not believed to be life threatening if the HIC does not exceed a value of 1,000.

1.2.4 Impact Attenuation

The ability of protective surfacing to reduce and dissipate the energy of an impacting body.

1.2.5 Loose Fill

Consisting of small independent movable components such as sand, gravel, or wood chip. The percent of fine material in the loose fill affects its compression properties from rainfall.

1.2.6 Maximum Equipment Height

The highest point on the equipment (i.e.: roof ridge, top of support pole).

1.2.7 Play Event

A piece of manufactured playground equipment that supports one or more play activities.

1.3 SYSTEM DESCRIPTION

Measure the perimeters of the play event use zone in accordance with the requirements of Section 11680 – Playground Equipment.

1.3.1 Child Safety

Meet or exceed the impact attenuating performance requirements of synthetic surfacing and loose-fill surfacing systems, installed in the use zones, as follows. The surfacing critical height value shall yield up to both a maximum 200 G's peak deceleration, and a maximum 1,000 Head Injury Criteria (HIC) value for a head-first fall from the play event in accordance with CPSC Pub No 325 and ASTM F1292. The protective surfacing should have a minimum critical height value equal to the height of the highest designated play surface. Measuring fall heights for play events is defined in paragraph FALL HEIGHT. Sand, gravel, and wood products shall not be installed over a concrete or bituminous subsurface in accordance with CPSC Pub No 325.

1.3.2 Child Accessibility

The accessibility requirement in accordance with ASTM F1487 includes the following: When the play event use zone consists of a protective surfacing rated as inaccessible, at least one accessible route shall be provided from the use zone perimeter to the play event. When there is more than one of the same play activity provided, only one shall meet accessibility requirements (i.e.: one swing seat or one spring rocking play event). When the access and egress points are not the same for a play event, an accessible route shall be provided to both. The accessible route shall access all accessible play events and elements. The protective surfacing materials that meet accessibility are synthetic surfacing and engineered wood fiber in accordance with ASTM F1951. When the accessible surface is within the use zone, it shall meet the requirements of paragraph CHILD SAFETY

1.4 SUBMITTALS

Submit the following in accordance with Section 01300 SUBMITTALS:

Shop Drawings:

- Shop Drawings.
- Finished Grade and Underground Utilities

Product Data:

- Synthetic Surfacing
- Loose Fill Surfacing
- Geotextile Fabric
- Manufacturer's Qualification
- Wood
- Site Preparation
- Temperature Limitation
- Wood By-Products
- Wood Treatment

Adhesive
Color

Samples:

Synthetic Surfacing
Loose Fill Surfacing System

Test Reports:

Percolation Test
Recycled Plastic
Synthetic Surfacing
Sand
Gravel

Certificates:

Materials
Manufacturer's Qualification
Manufacturer's Representative
Installer's Qualification
Substitution
Protective Surfacing Acceptance

Operation and Maintenance Data

Maintenance Instructions

1.5 QUALITY ASSURANCE

1.5.1 Manufacturer's Qualification

Submit name of the owner or user; service or preventive maintenance provider; date of the installation; point of contact and telephone number; and address for 10 sites. Protective surfacing should have been installed in a minimum 10 sites and been in successful service for a minimum 5 year calendar period. The manufacturer shall provide a Certificate of Insurance AA rated for a minimum one million dollars covering both product and general liability.

1.5.2 Manufacturer's Representative

Submit the individual's name, company name and address, and playground safety training certificate. The manufacturer's certified playground safety inspector or the manufacturer's designated certified playground safety representative shall supervise the installation and adjustment of the protective surfacing to verify the installation meets the requirements of the

manufacturer, this specification, and paragraphs CHILD SAFETY and CHILD ACCESSIBILITY.

1.5.3 Installer's Qualification

Submit the installer's company name and address, training and experience certification. The installer shall be certified by the manufacturer for training and experience installing the protective surfacing.

1.5.4 Shop Drawings

When the use zone perimeter and play event configuration conflict with the requirements and paragraphs CHILD SAFETY and CHILD ACCESSIBILITY, submit scale drawings defining corrective measures to include the following: Adjustment to the play event with the use zone perimeter; use zone perimeter overlaps; fall height and critical height value.

1.6 DELIVERY, STORAGE, AND HANDLING

Provide a delivery schedule at least 10 calendar days prior to the first day of delivery. Deliver, handle, and store protective surfacing material in accordance with the manufacturer's recommendations. The storage area shall be as designated. Store the materials in a dry, covered area until installed. Inspect protective surfacing material, upon arrival at the job site, for meeting specified quality. Unacceptable materials shall be removed from the job site.

1.7 WARRANTY

Furnish protective surfacing with a minimum 1 year calendar period warranty.

1.8 MAINTENANCE INSTRUCTIONS

Submit 2 bound copies of the manufacturer's operation and maintenance manual describing the recommended preventive maintenance, inspection frequency and techniques, periodic adjustments, lubricants, and cleaning requirements. Furnish protective surfacing spare parts provided by the manufacturer.

PART 2 PRODUCTS

2.1 MATERIALS

Prior to the delivery of materials, submit certificates of compliance attesting that materials meet the specified requirements. Certified copies of the material certificates shall include composition and tests to which the material has been subjected. Submit manufacturer's descriptive data; catalogue cuts; and the latest edition of ASTM F1487 and CPSC Pub No 325. Provide materials which are the standard products of a manufacturer regularly engaged in the manufacture of protective surfacing and that are similar to surfacing in satisfactory use a

minimum 5 year calendar period. Protective surfacing consists of two systems; synthetic surfacing and loose fill surfacing.

2.2 SYNTHETIC SURFACING

Submit a minimum 2 by 2 inch sample. Submit impact attenuation and critical height performance for each thickness of synthetic surfacing and loose fill surfacing provided. Submit delivery schedule and manufacturer's name for synthetic surfacing and loose fill surfacing plus delivery, storage and handling information. Furnish a list to include part numbers of furnished protective surfacing materials and components for synthetic surfacing and loose fill surfacing and manufacturer's specifications, handling and storage requirements, installation procedures, and safety data sheets to include warnings and critical height performance standards for synthetic surfacing and loose fill surfacing. Synthetic surfacing includes the following: poured-in-place system; tile system; and combination system. The synthetic surfacing consists of either impact attenuating substrate covered by a wear surface bonded to produce a unified system; a shredded rubber or aggregate substrate covered by a polyethylene plastic woven sheet wear surface; or a uniform material manufactured in such a way that the top portion meets the requirements specified for wear surface. Submit chemical composition, color granule percentage, and test results to which material has been subjected, identifying each material and component containing recycled materials and showing the estimated percentage of recovered material content. Furnish freezing temperature life-cycle durability.

2.2.1 Subbase

The subbase for synthetic surfacing may be either concrete, aggregate, or bituminous material.

2.2.2 Impact Attenuating Substrate

Provide a substrate compatible with the wear surface, and consisting of modular units; poured-in-place; or loose fill.

2.2.2.1 Poured-In-Place Substrate

Poured-in-place substrate shall consist of a recycled, shredded, styrene butadiene rubber (SBR) adhered with a 100 percent solid polyurethane binder to form a resilient, porous material or shredded rubber. Strands of SBR may vary from a minimum 1/50 inch to a maximum 2/25 inch thickness; by a minimum 1/8 inch to a maximum 4/5 inch length. Binder shall be between a minimum 12 percent and a maximum 16 percent of the total weight of the mixture of rubber and urethane; and shall provide 100 percent coating of the particles. Foam rubber will not be accepted in the substrate.

2.2.2.2 Loose Fill Substrate

The loose fill substrate shall consist of recycled shredded rubber produced from recycled vehicle tires without non-steel belts. Loose-fill strands may vary from a minimum 1/8 inch to

a maximum 1/4 inch thickness; a minimum 1/8 inch to a maximum 1/2 inch width; and a minimum 1/2 inch to a maximum 2 inch length.

2.2.3 Wear Surface

Wear surfaces consist of the following: a poured-in-place durable, weather-resistant, ultraviolet stable, water permeable material top-coat; synthetic turf wear surface. The wear surface shall meet requirements of ASTM D2047 for a minimum 0.8 coefficient of friction.

2.2.3.1 Poured-in-Place Wear Surface

Poured-in-place wear surface consists of ethylene propylene diene monomer (EPDM) particles adhered with a polyurethane binder formulated to produce an even, uniform surface. Particles of EPDM shall meet ASTM D412 for tensile strength and elongation, and contain a minimum 25 percent of rubber hydrocarbons. Particles of EPDM shall be peroxide or sulfur cured in accordance with the manufacturer. Size of rubber particles shall be between a minimum 1/32 inch, and a maximum 1/8 inch diameter. Binder shall be between a minimum 16 percent and a maximum 21 percent total weight of rubber used in the wear surface, and shall provide 100 percent coating of the particles. Wear surface shall be a minimum 3/8 inch thick. The wear surface shall be porous.

2.2.3.2 Synthetic Turf Wear Surface

Synthetic turf wear surface shall consist of nylon fibers a minimum 500 denier, or heavy face weight polypropylene fiber a minimum 5,000 denier; and tufted construction conforming to ASTM F1015. Fibers in each roll shall be from the same dye lot.

2.2.4 Color

Submit a minimum of 2 color charts displaying surfacing colors, color granule percentages and finishes. The Owner shall be allowed to select colors from the Manufacturer's full range of standard color options. An EPDM wear surface is preferred for color retention. Black or the following dark colored SBR wear surfaces retain heat and are not acceptable: color combinations containing more than 10 percent black; or color combinations averaging more than 10 percent dark colors.

2.2.6 Sealant

Sealant for tile or combined protective surface systems shall be compatible with the protective surfacing, and shall match the color of the wear surface.

2.2.7 Hardware

Hardware, anchors or fasteners shall be corrosion resistant stainless steel or galvanized steel to anchor the surfacing system securely, in accordance with manufacturer's instructions.

Hardware shall provide or be recessed to provide a flat surface and shall be covered by the required depth of protective surfacing.

2.2.8 Binder

Binder for synthetic surfacing shall be nontoxic, weather-resistant, ultraviolet stable, non-hardening, and retaining impact-attenuating performance. It shall be 100 percent solids containing polyurethane, methylene diphenyl isocyanate (MDI), or as recommended by the manufacturer. A maximum 2 percent of toluene diphenyl isocyanate (TDI) shall be used. Weight of polyurethane shall be between a minimum 8.5 lbs/gal and a maximum 9.5 lbs/gal. Coloring pigments shall be inorganic oxides.

2.2.9 Adhesive

Adhesive shall be a two component polyurethane providing extremely high impact resistant bond and shall be installed as recommended by the manufacturer. The adhesive shall be non-toxic, resistant to ultraviolet light, and safe for children. Adhesive shall conform to EPA registered uses, toxicity levels, and application hazards.

2.2.10 Containment Curbs

Containment curbs include the following: treated wood, concrete, recycled plastic, or recycled plastic molded as lumber. Containment curbs shall provide a smooth and hazard-free transition from the protective surfacing to the adjacent surface. Curbs shall be free of sharp vertical edges, protruding elements and trip hazards. Curbs shall be as recommended by the manufacturer. All edges should be provided with a minimum 1/2 inch radius.

2.2.11 Transition Edge

The transition edge shall be designed to maintain the protective surfacing performance, support the surfacing between changes of material, and shall be concrete in accordance with paragraph CONCRETE CURB. The face of the edge to the subgrade shall be covered with the impact attenuating surface and meet the requirements of paragraph CHILD SAFETY.

2.2.12 Combination System

Combination systems shall consist of combined protective surfacing materials specified. Each component is a part of a manufactured surfacing system. Wear surface shall be of the materials specified.

2.3 LOOSE-FILL SURFACING

Loose-fill surfacing installed in the use zone shall consist of sand, gravel or wood by-products.

2.3.1 Sand

Submit sieve test results. Sand shall be uniformly graded, washed, free of dust, clay, dirt, hazardous substances, or foreign objects. Sand particles shall be rounded naturally or by mechanical means and sieved in accordance with ASTM C136/C136M to be in the following gradation range.

SIEVE SIZE	PERCENT PASSING
No. 8	100
No. 16	80-100
No. 30	40-75
No. 50	0-25
No. 100	less than 2

2.3.2 Wood By-Products

Wood by-products include wood mulch and engineered wood fiber. Wood by-products shall be free of sharp or foreign objects or toxic chemicals; poisonous plant material; protrusions; or hazardous material; provide information regarding composition, source, and particle size. Wood by-products manufactured from recycled pallets or lumber containing nails or metal fasteners shall be rejected.

2.3.2.1 Engineered Wood Fiber

Engineered wood fiber manufactured for the purpose of protective surfacing shall consist of particles varying from a minimum 1/8 inch wide to a maximum 1/2 inch thick; and a minimum 1 inch wide to a maximum 3 inches long.

2.4 GEOTEXTILE FABRIC

Geotextile fabric consists of the following: nonwoven polypropylene sheet; nonwoven 100 percent polyester sheet; or nonwoven needle punched polyester sheet composed of recycled polyester resins.

2.5 RECYCLED PLASTIC

Provide the estimated percentage of recovered material content in the material and components; and life-cycle durability. Submit individual component and assembled unit structural integrity test; creep tolerance; deflection tolerance; and vertical load test results.

2.5.1 High Density Polyethylene

The material shall be molded of ultraviolet (UV) and color stabilized polyethylene; and consist of a minimum 75 percent plastic profile of high-density polyethylene, low-density polyethylene, and polypropylene raw material. The material shall be non-toxic and have no discernible contaminants such as paper, foil, or wood. The material shall contain a maximum 3 percent air voids. The material shall be free of splinters, chips, peels, buckling, and cracks. Material shall be resistant to deformation from solar heat gain. Material shall have factory-drilled holes. Components with extra holes not filled by hardware or covered by other components shall be rejected. The material shall not be painted.

2.5.2 Structural Component

Recycled plastic materials will not be used as load bearing structural members.

2.5.3 Recycled Plastic Molded As Lumber

The component shall deflect a maximum 1/360 of the span of the frame when exposed to a uniform live load of 40 lbs/ft, ASTM D648. The product shall meet the structural integrity test requirements set forth in ASTM F1487 and ASTM D6112.

2.6 CURBS

2.6.1 Concrete Curb

Concrete curbs shall conform to Division 2 and 3 requirements.

2.6.2 Wood

2.6.2.1 Wood Components

Wood components shall be from managed forests exterior premium grade and free of knots. Identify wood components obtained from managed forests. Wood components shall have factory-drilled holes. Components with extra holes not filled by hardware or covered by other components shall be rejected.

2.6.2.2 Wood Treatment

Wood components that are not naturally rot and insect resistant shall be treated to resist rot and insect attack by using standard treatment procedures. Provide wood treatment chemical content, toxicity level, and life-cycle durability. Any wood placed up to a maximum 6 inches above, or any portion below the top elevation of the protective surfacing, shall be treated after fabrication. Creosote, pentachlorophenol, and tributyl tin oxide are prohibited according to ASTM F1487.

PART 3 EXECUTION

3.1 SITE PREPARATION

Prior to installing the protective surfacing, verify the playground equipment and site furnishings are installed in accordance with Section 11680 – Playground Equipment.

3.1.1 Finished Grade and Underground Utilities

Submit finished grade, underground utilities, storm-drainage system and irrigation system status; and location of underground utilities and facilities. Verify that finished grades are as indicated; the smooth grading has been completed; installation of the underground utilities through the area has been completed; installation of the storm-drainage system through the area has been completed; and the installation of underground sprinklers through the area has been completed. The location of underground utilities and facilities in the area of the operation shall be verified. Damage to underground utilities and facilities shall be repaired at the Contractor's expense.

3.1.2 Layout

The layout of the entire use zone perimeter shall be staked before excavation begins. The location of all elements shall be staked to include the following: All play event configuration access and egress points; and use zone perimeters. The use zone is defined as the area beneath and immediately adjacent to a play structure or equipment that is designated for unrestricted circulation around equipment; and on whose surface it is predicted that a user would land when falling from or exiting the equipment. Also, the use zone is associated with the following terms; "Clear Area," and "Fall Zone". The use zone shall be free of hard surfaces, objects or obstacles that a child could run into or fall on top of and be injured. Use zone perimeters shall not overlap hard surfaces. The use zone perimeter shall meet or exceed the requirements of paragraphs CHILD SAFETY and CHILD ACCESSIBILITY. Use zone perimeters shall not overlap except for certain play events as defined in ASTM F1487.

3.1.3 Obstructions Below Ground

When obstructions below ground affect the work, shop drawings showing proposed adjustments shall be provided.

3.1.4 Percolation Test

Submit a certified report of inspection, test method used and compliance with recognized test standard shall be described. A test for percolation shall be done to determine positive drainage, to include the lowest elevation of the subgrade in the areas containing the following: sand; gravel; wood by-products; or synthetic surfacing installed over a pervious base. A positive percolation shall consist of a minimum 1 inch per 3 hour period. When a negative percolation test occurs, a shop drawing shall be provided to indicate the corrective measures.

3.1.5 Substitution

Under no circumstances are substitutions to be allowed or protective surfacing to be selected without written approval from the technical representative. Evaluate manufacturer substitutions for the critical height value with meeting the site conditions and paragraph FALL HEIGHT.

3.1.6 Subgrade

Correct subgrade irregularities to ensure the required depth of protective surfacing is provided. The subgrade elevation shall be as required by the manufacturer.

3.1.7 Subsurface

Install the subsurface in a true, even plane, and sloped to provide positive drainage as indicated.

3.1.8 Subbase

Tolerance of the concrete or bituminous subbase shall be within a maximum 1/4 inch in 10 feet. Tolerance of aggregate subbase shall be within a maximum similar to 1/4 inch in 10 feet. Compact aggregate subbase to a maximum 95 percent, ASTM D1557. Sand, gravel, and wood products shall not be installed over a concrete, aggregate, or bituminous subbase, in accordance with paragraph CHILD SAFETY.

3.1.9 Concrete or Bituminous Curing

Bituminous or concrete subbase shall be cured in accordance with the manufacturer's requirements. Curing compounds and other deleterious substances that adversely affect adhesion shall be removed. Surface shall be clean and dry.

3.1.10 Fall Height

3.1.10.1 General Requirements

The fall height is defined as the vertical distance between the finished elevation of the designated play surface and the finished elevation of the protective surfacing beneath it. For some play events the fall height and platform height are the same, while for other play events the fall height and maximum equipment height are the same, Section 11680 – Playground Equipment. When the furnished play event fall height varies from the play event shown, shop drawings shall be provided defining the revised depth or type of protective surfacing to meet or exceed the requirements of paragraphs CHILD SAFETY and CHILD ACCESSIBILITY.

3.1.10.2 Measuring Fall Height

EQUIPMENT	MEASURING FALL HEIGHT
Composite Equipment Structure	For a platform surrounded by protective barriers, measure from the platform finished elevation.
	For a platform surrounded by guardrails, measure from the guardrail top elevation.
Infant Crawl Area	A maximum 24 inches height, measured from the crawl wall or barrier finished elevation.
Playhouse, Nonclimbable	Measure from the designated play surface finished elevation.
Spring Rocking Equipment	Measure from the seat top elevation.
Stationary Equipment, Climbable	Measure from the maximum equipment height finished elevation.
Stationary Equipment, Nonclimbable	Measure from the designated play surface finished elevation.
Swing	Measure from the bottom of the pivot point.

3.2 INSTALLING SYNTHETIC SURFACING SYSTEM

Surfacing edges shall fully adhere to the subsurface. Fully cover the subsurface to ensure no hard surfaces are exposed through displacement of loose fill. Rolled or beveled containment curb or transition edges shall maintain the full thickness required to meet paragraphs CHILD SAFETY and CHILD ACCESSIBILITY. Material shall cover foundation and cutouts around elements penetrating the surface. Seams shall be the minimum necessary and shall be tight.

3.2.1 Temperature Limitation

Provide temperature limitations for applying adhesive.

3.2.2 Poured-in-Place System

Components of the poured-in-place system shall be mixed mechanically on site in accordance with manufacturer's recommendations. Hand-mixing is prohibited. Installation of poured-in-place surfacing shall be seamless and completely bonded to subsurface. Material shall cover foundations and shall be tight around elements penetrating the surface. Add a minimum 1/16 inch depth to the required surfacing depth to ensure the full depth of material is installed to meet paragraph CHILD SAFETY.

3.2.2.1 Geotextile Fabric for Poured-In-Place

Install geotextile fabric over a compacted aggregate base as indicated. Fabric shall cover the entire area and shall be lapped a minimum 4 inch width at the seams. Seams shall be adhered in accordance with manufacturer's recommendations. The aggregate base shall be free of ruts or protruding objects. The fabric shall be installed smooth; and free of tensile stresses, folds, and wrinkles. The fabric shall be protected from clogging, tears, or other damage. Damaged fabric shall be repaired or replaced as directed.

3.2.2.2 Poured-in-Place Substrate

The substrate layer of the poured-in-place system shall be installed in one continuous pour on the same day. When a second pour is required, the edge of the previous work shall be fully coated with polyurethane binder to ensure 100 percent bond with new work. Adhesive shall be applied in small quantities so that new substrate can be placed before the adhesive dries.

3.2.2.3 Poured-in-Place Wear Surface

Wear surface shall be bonded to substrate. Adhesive shall be applied to substrate in small quantities so that wear surface can be applied before adhesive dries. Surface shall be hand troweled to a smooth, even finish. When wear surface is composed of different color patterns, pour shall be continuous and seamless. When seams are required due to color change or field conditions, the adjacent wear surface shall be placed as soon as possible, before initial pour has cured. The edge of initial pour shall be coated with adhesive and wear surface mixture shall be immediately applied.

3.3 LOOSE FILL SURFACING SYSTEM

Submit a minimum 0.125 cubic foot sample.

3.3.1 Sand Surfacing System

Sand shall be installed over a compacted subgrade at a minimum 18 inches depth throughout the use zone. The finished elevation of sand shall be determined after sand has been settled by saturating with water and percolating. The sand depth in high play activity areas shall be as indicated. Sand shall meet the requirements of paragraph CHILD SAFETY.

3.3.2 Wood By-Product Surfacing System

Engineered wood fiber protective surfacing shall be installed according to manufacturer's instructions. Wood products shall meet the requirements of paragraph CHILD SAFETY.

3.3.2.1 Engineered Wood Fiber Surfacing System

Engineered wood fiber protective surfacing shall be installed according to manufacturer's instructions. The surfacing shall meet the requirements of paragraphs CHILD SAFETY and CHILD ACCESSIBILITY.

3.3.2.2 Geotextile Fabric for Wood By-Product

Geotextile fabric shall cover the entire area and shall be lapped a minimum 4 inch width at the seams. Seams shall be adhered in accordance with manufacturer's recommendations. Folds, wrinkles, or loose fabric shall be smoothed. Fabric shall be protected from damage during wood product placement.

3.3.3.4 Minimum Depth for Wood By-Product

Wood by-product shall be installed at a minimum 12 inch depth throughout the use zone. The depth of wood products in high play activity areas shall be as indicated.

3.4 RESTORATION AND CLEAN UP

When the operation has been completed, clean up and protect the site. Existing areas that have been damaged from the operation shall be restored to original condition at the Contractor's expense.

3.4.1 Clean Up

The site and play events shall be cleaned of all materials associated with the operation. Play events and surfaces shall be cleaned of dirt, stains, filings, and other blemishes occurring from shipment and installation. Cleaning methods and agents shall be as recommended by the manufacturer.

3.4.2 Protection

The area shall be protected as required or directed by providing barricades and signage. Signage shall be in accordance with Section 10 14 00.10 EXTERIOR SIGNAGE

3.4.3 Disposal of Materials

Excess and waste material shall be removed and disposed of off Government property.

3.5 PROTECTIVE SURFACING ACCEPTANCE

Submit record of measurements and findings by the certified playground safety inspector. When the protective surfacing is installed, the play events and protective surfacing shall be thoroughly inspected and measured to verify the playground meets manufacturer's recommendations, paragraphs CHILD SAFETY and CHILD ACCESSIBILITY, and

paragraph FALL HEIGHT as follows: 1) secure anchoring; 2) all hardware and connectors are tight and below the wear surface; 3) sharp points, edges, and protrusions; 4) entanglement; and 5) pinch, crush, and shear points.

- a. Measure use zone distances to determine the area is free of hard surfaces, objects or obstacles. Determine exceptions to use zone overlaps occur in accordance with ASTM F1487. Measure play event fall height and compare to critical height value for the thickness of installed synthetic surfacing. Measure play event fall height and depth of loose fill protective surfacing.
- b. Ensure installed chopped tire material is free from steel belts. Ensure the slide exit region has the required clear zone. Swing seat clearances are measured while occupied by a maximum user for the age group using the equipment.
- c. The finished installation shall have the appearance of a single covering. Protective surfacing that does not comply shall be reinstalled. Hardware that does not comply shall be replaced. Ensure positive drainage for the area and the lowest elevation of protective surfacing subgrade has been provided.
- d. A written report describing the results of the evaluation shall be provided.

3.6 RE-INSTALLATION

When re-installation is required, the following shall be accomplished. Re-install the product as specified. Provide new replacement materials supplied by the manufacturer (material acquisition of replacement parts is the responsibility of the Contractor). Damage caused by the failed installation shall be repaired at the Contractor's expense.

END OF SECTION 02550

SECTION 02735 - STORM SEWER SYSTEM

PART 1 - GENERAL

RELATED DOCUMENTS:

The plans and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

The extent of storm sewer system work is shown on the drawings.

Storm sewer system work includes, but is not limited to, all of the following, 5' beyond the building lines unless otherwise noted:

Storm sewer conduits

Manholes, frames and covers

Yard inlets, frames and gratings

Related Work Specified Elsewhere:

Clearing, Excavation, and Trenching: See Division-2 sections.

Concrete: See Division-3 sections.

All other Piping: See Division-15 sections.

Comply with the requirements of applicable Division-2 sections for excavation and backfilling required in connection with storm sewer system work.

Comply with requirements of applicable Division-3 sections for concrete work required in connection with storm and sanitary sewer system work.

SUBMITTALS:

Shop Drawings: Submit shop drawings, product data or material certificates for the materials including details of underground structures, metal accessories, fittings, connections and any variations from those details shown on the drawings.

PART 2 - PRODUCTS

CONDUIT MATERIALS:

General: Furnish fittings, transitions and end caps of the same type and class of material as the conduit, or of material having equal or superior physical and chemical properties as acceptable to the Engineer.

Ductile Iron Pipe (DIP): Pipe shall be Class 50 conforming to the most recent revision of AWWA Standard C151 (ANSI A21.51). Pipe shall be mechanical joint in accordance with AWWA Standard C111 (ANSI A21.11) or rubber ring gasket, compression type joint in accordance with AWWA C151 (ANSI A21.51). Above ground installation shall be mechanical joints. Standard length shall be 18 feet.

Pipe shall be cement lined, in accordance with ANSI A21.4, coated interior and exterior with bituminous coating approximately 1 mil thick. The outside coating shall be a minimum of 1 mil bituminous paint according to ANSI/AWWA C151/A21.51 Section 51-8.1.

Non-reinforced Concrete Pipe (CP): ASTM C 14, Class 3 unless otherwise noted, with "O" ring joints complying with ASTM C 443. ConSeal, Henry, Sealing Systems or approved equal Preformed Plastic for Pipe Joint ASTM C990 may be used with approval of the Engineer.

Reinforced Concrete Pipe (RCP): ASTM C 76, Class III unless otherwise noted, with "O" ring compression gasket joints complying with ASTM C 443. ConSeal, Henry, Sealing Systems or approved equal Preformed Plastic for Pipe Joint ASTM C990 may be used with approval of the Engineer.

High Density Polyethylene Pipe (HDPE): HDPE storm sewer pipe and fittings shall be manufactured and tested in accordance with AASHTO M252, M294 and MP7. Pipe and pipe fittings shall be made from virgin PE compounds which conform with the applicable current edition of the AASHTO Material Specifications for cell classification as defined and described in ASTM D3350. Joints shall be soil tight for perforated HDPE and water tight for non-perforated HDPE. HDPE storm sewer pipe shall be manufactured by Advanced Drainage Systems (ADS) or approved equal.

PVC Pipe (PVC): ASTM D 3034, SDR 35 with push-on type elastomeric gasket joints ASTM D 3212.

Corrugated Metal Pipe (CMP): Federal Specification WW-P-405, '8p5 Class I or II, Shape one, coating "E", with standard coupling band joints. The gauge shall be determined by the manufacturer.

Couplings: For connection to other pipe materials, furnish Can- Tex "C-T Adapters"; Fernco "PVC Donuts" or "Flexible Couplings"; or equal.

CONCRETE MANHOLES:

Concrete Base: Cast-in-place where shown on the drawings. Use concrete which will attain a 28-day compressive strength of not less than 3000 psi as specified in Division-3.

Precast Concrete Manholes: ASTM C 478, sized as indicated, with an eccentric, concentric cone, precast top, precast bottom as indicated on the drawings and O-Ring joint conforming to ASTM C 493, or butyl mastic flexible rope joint sealant meeting ASTM C990.

Interior diameter of precast manholes shall be based upon pipe size as follows unless otherwise indicated:

<u>Pipe Size</u>	<u>Interior Diameter</u>
Less than 24"	4 ft.
24" - 30"	5 ft.
Larger than 30"	6 ft.

Manhole Pipe Connection: Flexible rubber sleeve with stainless steel straps for watertight pipe entrances to manholes. For pipe above 18" diameter furnish compression type rubber connectors, A- Lock or equal. Sleeves or compression connectors shall conform to ASTM C 923.

PRECAST STRUCTURES:

Drop Inlets, Catch Basins, Junction Boxes, etc. must meet ASTM C913 – Precast Concrete Water/Wastewater Structure Spec; conforming to NCDOT Standards H-20 loading in traffic areas. ASTM C443 – Joints for Concrete Sewer and Culvert Pipe or ASTM C990 – Joints for Concrete Pipe, Manholes and Precast Boxes – using Preformed Flexible Joint Sealant for Precast Joint Material. No knockout boxes will be accepted.

MASONRY MATERIALS:

Concrete Masonry Units (Manhole Block): ASTM C 139

Manhole Brick: ASTM C 32, Grade MS

Concrete Brick: ASTM C 55, Grade N1

Masonry Mortar: ASTM C 270, Type M, approximately 1:1/4:2 Portland cement, lime, sand

For minor amounts of mortar, packaged materials complying with ASTM C 387, Type M, will be acceptable.

Plasticizing Agent - Use in accordance with manufacturer's instructions.

METAL ACCESSORIES:

General: All metal accessories for manholes, catch basins and drop inlets shall be gray cast iron, ASTM A 48, Class 30B. Frames, grates and covers shall be factory coated with an asphalt base paint. Install metal accessories as shown on the drawings and as follows:

Manhole frames and covers shall be V-1384 by East Jordan Iron Works , USF 669 ring and KL cover by US Foundry, NEENAH Foundry or equal. Furnish covers with cast-in legend "Storm" or "Sanitary" as applicable on roadway face.

Curb inlet frames and grates shall be V-4066-2 by East Jordan Iron Works, USF, NEENAH or approved equal.

Yard inlet frames and grates shall be V5660 by East Jordan Iron Works or approved equal by U.S. Foundry or NEENAH Foundry.

Manhole steps shall be steel reinforcing bar encased in rubber plastic coating resistant to deterioration and chemical action, spaced a maximum of 16" on center. Plastic encapsulated reinforcing bars shall be ½ inch or larger equal to Federal Specification RR-F-621C.

PART 3 - EXECUTION

INSPECTION:

CONTRACTOR must examine the areas and conditions under which storm sewer and sanitary sewer system work is to be installed and notify the ENGINEER in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the ENGINEER.

INSTALLATION OF CONDUIT (PIPE):

General: Perform excavation, trenching and backfilling as specified in appropriate Division-2 sections. Conduct backfill operations of open-cut trenches closely following laying, jointing and bedding of pipe, and after initial inspection and testing are completed.

Inspect conduit before installation to detect any apparent defects. Mark defective materials with white paint and promptly remove from the site.

Particular care shall be taken to prevent damage to pipe and fitting linings and coatings. Pipe shall be protected during handling against impact shocks and free fall. Proper facilities shall be provided for lowering sections of pipe into trenches.

Installation: Lay conduit beginning at the low point of a system, true to the grades and alignment indicated with unbroken continuity of invert. The line and invert grade of each pipe shall be checked from top line carried on batter boards not over 24' apart or by a laser and target. The pipe shall be laid true to line and grade on a bed which is uniformly firm throughout its entire length and carefully shaped to fit the outside of the pipe for at least 10% of its outside diameter. Place bell ends of conduit or the groove end of concrete facing upstream.

Cross above or below other pipe a minimum of 6" unless otherwise directed by the Engineer. Bell holes shall be excavated for each joint to assure bedding supports the barrel of the pipe and to facilitate making a perfect joint. Preparatory to making pipe joints, all surfaces of the portion of the pipe to be jointed or of the factory-made jointing materials shall be clean and dry.

Joints shall be filled with Preformed Plastic Gaskets. Install gaskets in accordance with manufacturer's recommendations for the use of lubricants, cements and other special installation requirements.

Gasket Application: Clean and dry all surfaces of tongue and groove to be joined. Remove paper wrapper from one side only of the two-piece wrapper. The outside paper will protect the gasket and assure against stretching. Remove the outside paper prior to forcing pipe home. The application of plastic gasket strips to the joint of tongue-and-groove concrete pipe can be achieved by two different methods. For small pipe 12" diameter up to and including 24" diameter, place the plastic gasket on the outer edge of the tongue. For larger pipe, 30" diameter up to and including 72" diameter, place the plastic gasket on the outer edge of the top half of the tongue and the lower half of the groove so that the gasket will overlap at the springline. The same procedure for small diameter pipe is acceptable for large diameter pipe if the gasket adheres to the tongue and there is no sagging or separation of the gasket. Pipe handling after the plastic gasket has been affixed shall be carefully controlled to avoid bumping the gasket and thus displacing it or covering it with dirt or other foreign material. Any gasket so disturbed shall be removed and replaced if damaged or repositioned if displaced. Care shall be taken to properly align the pipe before joints are forced home. During insertion of the tongue, the pipe shall be partially supported by the crane to maintain concentricity until the plastic gasket is properly compressed in the joint space. Sufficient pressure shall be applied in making the joint to assure that the joint is home and evidence of a slight squeeze-out of the plastic gasket occurs at the outside or inside of the pipe joint. Backfilling can proceed as soon as jointing has been completed.

NOTE: For maximum adhesion, or in cold or wet weather, it is recommended that both the gasket strip and the joint surfaces to be sealed be slightly heated immediately prior to application.

Embedment: Comply with Section 02210 or 02220 requirements for embedment.

Backfilling: Comply with Section 02210 or 02220 requirements for backfill.

Cast Iron Soil Pipe: After inspection and at least 48 hours before installation, apply a high-build bituminous coating to external surfaces. Apply in a single coat in accordance with manufacturer's recommendations to attain a dry-film thickness of not less than 12 mils.

Joint Adaptors: Make joints between cast iron pipe and other types of pipe with standard manufactured cast iron adaptors and fittings.

Concrete Pipe: Install in accordance with applicable provisions of the American Concrete Pipe Association "Concrete Pipe Field Manual", unless otherwise indicated.

Place circular concrete pipe with elliptical reinforcing so that the reference lines indicating the top of the pipe are not more than 5 degrees from the vertical plane through the longitudinal axis of the pipe.

PVC Pipe: All joint preparation and jointing operations shall comply with the instructions and recommendations of the pipe manufacturer. Immediately before joints are pushed together, all joint surfaces shall be coated with the lubricant furnished with the pipe. The position and condition of each rubber gasket (unbonded gaskets) shall be checked with a feeler after the joint is completed.

Roof Drain Connections: Connect roof drains to storm drain. Grout joints between roof leaders and storm pipe thoroughly with cement mortar to make watertight joint.

Corrugated Metal Pipe: Corrugated metal pipe shall be butted to form a smooth joint; the space between the pipe and coupling bands shall be kept free from dirt and grit so that the corrugations fit snugly. The coupling band while being tightened shall be tapped with a softhead mallet of wood, rubber, or plastic to take up slack and insure a tight joint. The annular space between abutting sections of paved invert pipe in sizes 30" and larger shall be filled with bituminous material after jointing. Coupling band bolts and damaged areas of the coupling bands and pipe shall be given a coating of asphalt cement. Pipe on which the asphalt coating has been damaged to such extent that satisfactory field repairs cannot be made will be rejected.

Cleaning Conduit: Clear the interior of conduit of dirt and other superfluous material as the work progresses. Maintain a swab or drag in the line and pull past each joint as it is completed. In large, accessible conduit, brushes and brooms may be used for cleaning. Place plugs in the ends of uncompleted conduit at the end of the day or whenever work stops. Flush lines between manholes if required to remove collected debris.

Interior Inspection: Inspect conduit to determine whether line displacement or other damage has occurred. A light held in a manhole shall show a full circle of light when viewed from the adjoining end of the line. Make inspections after lines between manholes, or manhole locations, have been installed and approximately two feet of backfill is in place and at completion of the project. If the inspection indicates poor alignment, debris, displaced pipe, infiltration or other defects, take whatever steps are necessary to correct such defects to the satisfaction of the Engineer.

Connection to Existing Structures: Pipe connections to existing structures shall be made in such manner that the finished work will conform as nearly as practicable to the essential applicable

requirements specified for new structures, including all necessary concrete work, cutting and shaping.

UNDERGROUND STRUCTURES:

General: Manholes may be precast manhole sections or constructed with concrete masonry units (manhole block), manhole brick or concrete brick masonry as specified under Part 2 - Products unless otherwise noted.

Yard inlets or curb inlets may be precast sections or constructed with concrete brick or manhole brick masonry as specified under Part 2 - Products. Construct all drainage structures with a grouted invert to channel flow through structure from inlet pipes to outlet pipe. Where pipes are skewed, the grouted channel shall form a smooth radius. Structures shall not be backfilled until inspected by the Engineer or his representative unless otherwise directed.

Construct all structures in accordance with all authorities having jurisdiction and as hereinafter specified.

Precast Manholes: Construct cast in place concrete bases where shown on the drawings, otherwise use precast bases. Place precast concrete sections plumb with steps in vertical alignment.

Joints between precast manhole sections shall be made with O-ring gasket or flexible mastic rope. Joint shall be grouted interior and exterior and then coated with a bituminous material interior and exterior. Allow proper curing time between grouting and bituminous coating.

Where manholes occur in pavements, set frame and cover flush with finish surface. Elsewhere, set top elevation 9" above finish surface grade, unless otherwise indicated. Frame and cover shall be perforated, unless shown on the plans as solid or watertight.

The invert channels for sanitary manholes shall be smooth and semi-circular in shape conforming to the inside of the adjacent sewer section. Changes in direction of flow shall be made with a smooth curve of as large a radius as the size of the manhole will permit. Changes in size and grade of the channels shall be made gradually and evenly. The invert channels shall be formed directly in the concrete of the manhole base, or shall be built up with brick and mortar. The floor of the manhole outside the channels shall be smooth and shall slope toward the channels not less than 1 inch per foot nor more than 2 inches per foot.

Free drop inside the manhole shall not exceed 2.0 feet measured from the invert of the inlet pipe to the top of the floor of the manhole outside the channels, and drop manholes shall be constructed whenever the free drop would otherwise be greater than 2.0 feet.

Manhole steps shall be spaced uniformly approximately 16 inches apart. Use epoxy bonding compound where steps are mortared into manhole walls.

Where indicated on the plans, manholes shall have vents as shown on the plans.

One foot compacted stone base under manholes is required for suitable foundation. Installation shall be as directed by the Engineer.

Masonry Construction Manholes: At Contractor's option, use either manhole brick, concrete brick or concrete masonry (manhole block) units to construct masonry manholes.

Mix mortar with only enough water for workability. Retempering of mortar will not be permitted. Keep mortar mixing and conveying equipment clean. Do not deposit mortar upon, or permit contact with, the ground.

Lay masonry in mortar so as to form full bed with ends and side joints in one operation, and with full bed and vertical joints, not more than 3/8" wide on the inside. Protect fresh masonry from freezing and from too rapid drying.

Apply a 1/2" thick mortar coating on interior walls and 1" thick on exterior wall surfaces.

Curb Inlet and Yard Inlets: Construct curb inlet or yard inlet to the sizes and shapes as shown on the drawings and as specified for masonry manholes.

Use concrete which will attain a 28-day compressive strength of not less than 4,000 psi.

Set cast iron frames and gratings to the elevations indicated.

TESTING:

Notify the Engineer in writing two days prior to the day conduits or structures will be ready for testing and/or inspection.

Large Pipe (12" and over): Lines shall be tested for infiltration by means of a suitable weir or other device as directed. When determination of infiltration is not practicable because of dry trench conditions, an exfiltration test shall be applied by filling with water so that the hydraulic head will be at least 4' above the crown of the upper end of the section being tested. The amount of leakage (infiltration or exfiltration) shall not exceed 100 gallons per inch of diameter per day per mile of pipe. Water for testing shall be furnished by the Contractor.

Testing may be waived by the Engineer if impractical for lines installed under water or air testing may be required.

END OF SECTION 02735

SECTION 02870 – SITE FURNISHINGS AND STRUCTURES

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this section.

The following related items of work are included under other Sections:

Trenching, Backfilling, and Compaction: Section 02220
Roadways, Drives, Sidewalks, Curb and Gutter Patching: Section 02510
Concrete: Section 03300

SUMMARY:

The work required under this section consists of furnishing all labor, materials, equipment, services and related items necessary to supply and install Site Furnishings, and all related work, complete, as indicated on the drawings or specified herein.

Major items of work include, but are not limited to, supplying and installing:

Gazebo Shade Structure
Tensile Shade Structure
Decorative fence

QUALITY ASSURANCE:

Manufacturer Qualifications: Manufacturer with 10-years experience in production of specified products.

Installer Qualifications: Installer shall be a firm having a minimum of five (5) years successful experience in the installation of Site Furnishings and Structures similar to the size, scope and complexity of this project as shown and specified and who can demonstrate said experience through documented references.

SUBMITTALS:

Manufacturer's Data & Shop Drawings

Submit fabrication data, shop drawings and/or catalogue cuts for each manufactured site furnishing specified.

Submit paint color samples and material sample of fabric.

Shop drawings shall include, but not be limited to, depicting all materials and fastening methods in sizes and relationships as shown. All elevations shall be prepared at not less than 1/2" = 1'-0" and all details at not less than 3" = 1'-0".

Submit shop drawings for all custom site furnishings specified or illustrated on the drawings, for approval prior to fabrication.

For prefabricated gazebos and other shade structures, submit a shop drawing of structural details, including footing detail, sealed by a Structural Engineer licensed in the State of North Carolina.

COORDINATION:

Coordinate and cooperate with other Contractors to enable the work to proceed as rapidly and efficiently as possible.

Before any work is started, a conference shall be held between the Contractor and the Owner concerning the work under this Contract.

SUBSTITUTION AND REJECTION:

The Owner reserves the right to reject material or work which does not conform to the Contract Documents. Rejected work shall be removed or corrected at the earliest possible time.

PROTECTION:

The Contractor shall be responsible for work until finally inspected and accepted. After delivery and before and after installation, protect work against theft, injury or damage.

The Contractor shall protect work, equipment and material of all other trades from damage that might be caused by this work or workmen and shall pay for all such damage, should it occur.

PART 2 - PRODUCTS

GENERAL:

All Site Furnishings shall be new and in perfect condition. After award of the Contract, and prior to beginning the work, the Contractor shall submit for approval, two copies of the complete list of materials which he proposes to install. Quantities of materials and equipment need not be included. Deviations from the specifications shall not be allowed.

MATERIALS:

Octagonal Gazebo Structure (1): Octagonal Gazebo Structure to be provided by Poligon, 4240 136th Ave, Holland, MI 49424, Phone: (616) 399-9123, or approved equal.

Model: Carmel (OTC-28MR)

Finish: To be decided. Sample colors shall be provided

Description: Shelter shall be tubular steel construction and have multi-rib metal roof of 24-gauge galvanized steel. All exposed parts and fixtures shall have Powder Coat Institute (PCI) 4000 certified powder coated finish with epoxy primer. Shall conform to ASTM 03359-02, ASTM G154-04 2000 hours exposure with no chalking and at least 75% color retention. Scratch resistance indicating no substrate appearance with 1000 gram load.

Shelter dimensions shall be 28'-0" in diameter, Minimum clearance height of 7'-5" to the lowest height of a member from finish grade.

Decorative features include a clearstory opening.

Tensile Shade Structure (3): "Kite" Structure to be provided by Poligon, 4240 136th Ave, Holland, MI 49424, Phone: (616) 399-9123, or approved equal.

Model: Kite (IKTE-12)

Finish: To be decided. Sample colors shall be provided

Description: Supports shall be tubular steel construction. All exposed parts and fixtures shall have Powder Coat Institute (PCI) 4000 certified powder coated finish with epoxy primer. Shall conform to ASTM 03359-02, ASTM G154-04 2000 hours exposure with no chalking and at least 75% color retention. Scratch resistance indicating no substrate appearance with 1000 gram load.

Fabric shall be heavy duty, professional grade architectural shade fabric, made from UV stabilized HPDE monofilament and tape yarns, conforming to NFPA 701-1999, & ASTM E84 Class A.

Structures dimensions shall be minimum 12'-0" wide, Minimum clearance height of 7'-0" to the lowest height of a member from finish grade.

Decorative fence: Fence shall be provided by Ameristar Fence Products, 1555 N. Mingo Rd., Tulsa, OK 74116, or approved equal.

Model: Montage Plus System, Majestic (flush picket) style.

Finish: Black with electro-deposition coating on inside and outside.

Description: Welded steel fence shall be 3' height decorative fence as illustrated in the plans.

Pickets shall be $\frac{3}{4}$ ".

Fence shall have 3 horizontal rails with a flush bottom rail.
Fence shall have all terrain flexibility.

Post shall be 2-1/2" sq. x 16 gauge installed 8'=11-1/2" O.C.

"Cloud" Entry Signage and Bench: Conceptual design as shown on plan to include sculpted seating "bench" for at least two adults, the name of the playground (as decided by Craven County) and logos for Craven County and Trillium Health Resources. Design development and manufacturing shall be provided by vendor with at least five (5) years of experience on at least ten (10) similar projects, custom sculpting, texturing, and hand painting Glass Fiber Reinforced Concrete (GFRC).

Description: Size, text, materials as shown on plans.

PART 3 - EXECUTION

INSPECTION:

Examine the subgrade, finished surfaces and installation conditions. Do not commence work until all unsatisfactory conditions are corrected.

LAYING OUT THE WORK:

The trade performing the work of this section assumes full and sole responsibility for the accuracy and correctness of all layouts, lines, levels, grades and other aspects of the work under this section. Layout all work in accordance with the requirements, therefore, as indicated in the drawings.

INSTALLATION:

Locate all site furnishings where indicated on the drawings and attach as detailed on the drawings and as elaborated upon in the specifications and in conformance with manufacturer's

recommendation.

Any item locations not specifically detailed in the Contract Documents shall be located at the direction of the Landscape Architect.

Clean and touch-up paint all abraded, welded and scratched surfaces with matching paint provided by each site furnishing and structure manufacturer.

CLEANING:

Perform cleaning during installation of the work and upon completion of the work.

Remove from the project site and excess material and equipment at the completion of the work of this section.

Repair damage resulting from Site Furnishing and Structure installation work.

END OF SECTION 02870



SECTION 02900 - PLANTING

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY:

This Section includes provisions for the following items:

- Trees
- Shrubs
- Soil amendments
- Tree stabilization
- Initial maintenance of landscape materials

Related Sections: The following sections contain requirements that relate to this Section.

Fertilizing, Seeding, Mulching & Sodding: Section 02920

DEFINITIONS:

Balled and Burlapped Stock: Exterior plants dug with firm, natural balls of earth in which they are grown, with ball size not less than sizes indicated, diameter and depth recommended by ANSI Z60.1 for type and size of tree or shrub required; wrapped, tied, rigidly supported, and drum laced as recommended by ANSI Z60.1.

Container-Grown Stock: Healthy, vigorous, well-rooted exterior plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of exterior plant required.

Multi-Stem: Where three or more main stems arise from the ground from a single root crown or at a point right above the root crown.

QUALITY ASSURANCE:

Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and

that specializes in types of tests to be performed.

Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material, pH; and mineral and plant-nutrient content of topsoil.

Report suitability of topsoil for plant growth. State-recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory topsoil.

Landscape contractor shall be actively registered with the North Carolina Landscape Contractors registration board.

Source Quality Control:

General: Ship landscape materials with certificates of inspection required by governing authorities. Comply with regulations applicable to landscape materials.

Do not make substitutions. If specified landscape material is not obtainable, submit proof of non-availability to Landscape Architect, together with proposal for use of equivalent material.

Analysis and Standards: Package standard products with manufacturer's certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.

Trees and Shrubs: Provide plants of quantity, size, genus, species, and variety shown and scheduled for landscape work and complying with recommendations and requirements of ANSI Z60.1 "American Standard for Nursery Stock". Provide healthy, vigorous stock, grown in recognized nursery in accordance with good horticultural practice and free of disease, insects, eggs, larvae, and defects such as knots, sun-scald, injuries, abrasions, or disfigurement.

Tree and Shrub Measurements: Measure according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches (150 mm) above the ground for trees up to 4-inch (100-mm) caliper size, and 12 inches (300 mm) above the ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.

Label each plant with securely attached waterproof tag bearing legible designation of botanical and common name.

Inspection: The Engineer may inspect trees and shrubs either at place of growth or at site before planting, for compliance with requirements for genus, species, variety, size, and quality. Engineer retains right to further inspect shrubs for size and condition of balls and root systems, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected shrubs immediately from project site.

DELIVERY, STORAGE AND HANDLING:

Packaged Materials: Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery, and while stored at site.

Trees and Shrubs: Provide freshly dug shrubs. Do not prune prior to delivery unless otherwise approved by Engineer. Do not bend or bind-tie shrubs in such manner as to damage bark, break branches, or destroy natural shape. Provide protective covering during delivery. Do not drop balled and burlapped stock during delivery.

Deliver trees and shrubs after preparations for planting have been completed and plant immediately. If planting is delayed more than 6 hours after delivery, set shrubs in shade, protect from weather and mechanical damage, and keep roots moist by covering with mulch, burlap or other acceptable means of retaining moisture.

Do not remove container-grown stock from containers until planting time.

JOB CONDITIONS:

Utilities: Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned.

Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed according to manufacturer's written instructions and warranty requirements.

Coordination with Lawns: Plant trees and shrubs after finish grades are established and before planting lawns unless otherwise acceptable to ENGINEER. When planting trees and shrubs after lawn, protect lawn areas and promptly repair damage caused by planting operations.

Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Engineer before planting.

PART 2 - PRODUCTS

SOIL AMENDMENTS:

Lime: Natural dolomitic limestone containing not less than 85 percent of total carbonates with a minimum of 30 percent magnesium carbonates, ground so that not less than 90 percent passes a 10-mesh sieve and not less than 50 percent passes a 100-mesh sieve.

Aluminum Sulfate: Commercial grade.

Peat Humus: Finely divided peat, so completely decomposed and free of fibers that its biological identity is lost. Provide in granular form, free of hard lumps and with pH range suitable for intended use.

Bonemeal: Commercial, raw, finely ground; 4 percent nitrogen and 20 percent phosphoric acid.

Superphosphate: Soluble mixture of treated minerals; 20 percent available phosphoric acid.

Sand: Clean, washed sand, free of toxic materials.

Perlite: Conforming to National Bureau of Standards PS 23.

Vermiculite: Horticultural grade, free of toxic substances.

Sawdust: Rotted sawdust, free of chips, stones, sticks, soil, or toxic substances and with 7.5 pounds of nitrogen uniformly mixed into each cubic yard of sawdust.

Manure: Well rotted, unleached stable or cattle manure containing no more than 25 percent by volume of straw, sawdust, or other bedding materials and containing no chemicals or ingredients harmful to plants.

Mulch: At all planting areas, mulch shall be triple shredded hardwood bark mulch (non-dyed). Material shall be mulching grade, uniform in size, and free of foreign matter. Submit sample for approval.

Commercial Fertilizer: Complete fertilizer of neutral character, with some elements derived from organic sources and containing following percentages of available plant nutrients:

For trees and shrubs, provide fertilizer with not less than 5 percent total nitrogen, 10 percent available phosphoric acid and 5 percent soluble potash.

TREE AND SHRUB MATERIAL:

General: Furnished nursery-grown trees and shrubs complying with ANSI Z60.1 "American Standard for Nursery Stock", with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

Provide trees and shrubs of sizes, grades, and ball or container sizes complying with ANSI Z60.1 "American Standard for Nursery Stock", for types and form of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to ENGINEER, with a proportionate increase in size of roots or balls.

Label each tree and shrub with securely attached, waterproof tag bearing legible designation of botanical and common name.

Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1 "American Standard for Nursery Stock"; stem form as follows:

Provide single trunk or multi-trunk clump stems as required.

Provide balled and burlapped or container-grown trees as required.

Shrubs:

Form and Size: Shrubs with not less than the minimum number of canes required by and measured according to ANSI Z60.1 "American Standard for Nursery Stock", for type, shape, and height of shrub.

Shrub sizes indicated are sizes after pruning.

Provide balled and burlapped or container-grown shrubs as required.

MISCELLANEOUS LANDSCAPE PRODUCTS:

Weed Control Barriers:

Nonwoven Fabric: Water permeable polypropylene or polyester fabric, 3 oz./sq. yd. (101 g/sq. m) minimum.

Composite Fabric: Water permeable woven, needle-punched polypropylene substrate bonded to a nonwoven polypropylene fabric, 4.8 oz./sq. yd. (162 g/sq. m).

Anti-desiccant: shall be an emulsion specifically manufactured for agricultural use, which provides a protective film over plant surfaces. Anti-desiccants shall be delivered in containers of the manufacturer and shall be mixed according to the manufacturer's directions. Submit manufacturer literature for approval.

PART 3 - EXECUTION

PREPARATION OF PLANTING SOIL:

Test soil samples to determine required amendments.

Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful or toxic to plant growth.

Mix specified soil amendments and fertilizers as required with topsoil at rates specified. Delay mixing of fertilizer if planting will not follow placing of planting soil within a few days.

EXCAVATION FOR TREES AND SHRUBS:

Excavate pits, beds, and trenches with vertical sides and with bottom of excavation slightly raised at center to provide proper drainage. Loosen hard subsoil in bottom of excavation.

For container grown plants, make excavations at least 12 inches wider than root spread and deep enough to allow for setting of roots on a layer of compacted backfill and with collar set at same grade level as in nursery, but 1 inch below finished grade at site.

Allow for 9 inch setting layer of planting soil mixture.

For balled and burlapped (B&B) plants, make excavations three times as wide as the ball diameter and equal to the ball depth, plus following allowance for setting of ball on a layer of compacted backfill:

Allow for 3 inch thick setting layer of planting soil mixture.

For container grown stock, excavate as specified for balled and burlapped stock, adjusted to size of container width and depth.

Dispose of subsoil removed from planting excavations. Do not mix with planting soil or use as backfill.

Fill excavations for shrubs with water and allow water to percolate out prior to planting.

PLANTING TREES AND SHRUBS:

Set balled and burlapped (B&B) stock on layer of compacted planting soil mixture, plumb and in center of pit or trench with top of ball at same elevation as adjacent finished landscape grades. Remove burlap from sides of balls; retain on bottoms. when set, place additional backfill around base and sides of ball, and work each layer to settle backfill and eliminate voids and air pockets. When excavation is approximately 2/3 full, water thoroughly before placing remainder of backfill. Repeat watering until no more is absorbed. Water again after placing final layer of backfill.

Set container grown stock, as specified, for balled burlapped stock, except cut cans on 2 sides with an approved can cutter; remove bottoms of wooden boxes after partial backfilling so as not to damage root balls.

Dish top of backfill to allow for mulching.

Mulch pits, trenches, and planted areas. Provide not less than following thickness of mulch, and

work into top of backfill and finish level with adjacent finish grades.

Provide 3 inches thickness of mulch.

Apply anti-desiccant, using power spray, to provide an adequate film over trunks, branches, stems, twigs and foliage.

Prune, thin out, and shape shrubs in accordance with standard horticultural practice. Prune shrubs to retain natural character.

Remove and replace excessively pruned or misformed stock resulting from improper pruning.

MISCELLANEOUS LANDSCAPE WORK:

Install wood stakes as indicated.

Lay filtration fabric continuously over compacted subgrade prior to placing gravel. Overlap edges 4 inches at joints between sheets.

MAINTENANCE:

Begin maintenance immediately after planting.

Maintain shrubs until final acceptance, but in no case, less than following period:

30 days after substantial completion of planting.

Maintain shrubs and trees by pruning, cultivating, and weeding as required for healthy growth. Restore planting saucers. Tighten and repair stake and guy supports and reset shrubs and trees to proper grades or vertical position as required. Restore or replace damaged wrappings. Spray as required to keep shrubs free of insects and disease.

CLEANUP AND PROTECTION:

During landscape work, keep pavements clean and work area in an orderly condition.

Protect landscape work and materials from damage due to landscape operations, operations by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged landscape work as directed.

INSPECTION AND ACCEPTANCE:

When landscape work is completed, including maintenance, Landscape Architect will, upon request, make an inspection to determine acceptability.

When inspected landscape work does not comply with requirements, replace rejected work and continue specified maintenance until reinspected by Engineer and found to be acceptable. Remove rejected plants and materials promptly from project site.

END OF SECTION 02900

SECTION 02910 - EROSION AND POLLUTION CONTROL

PART 1 - GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including the General and Special Conditions and Division-1 Specification sections apply to work of this section.

DESCRIPTION OF WORK:

The extent of the work required under this section is that required to minimize water, air, and noise pollution and soil erosion and siltation.

Temporary erosion control measures which may be necessary include, but are not limited to, temporary berms, dikes, dams, drainage ditches, silt basins, silt ditches, perimeter swales, slope drains, structures, vegetation, mulches, mats, netting, gravel or any other methods or devices that are necessary to control or restrict erosion. Temporary erosion control measures may include work outside the right-of-way or construction limits where such work is necessary as a result of construction such as borrow pit operations, haul roads, plant sites, equipment storage sites and disposal of waste or debris. The CONTRACTOR shall be liable for all damages to public or private property caused by silting or slides originating in waste areas furnished by the CONTRACTOR.

RELATED WORK SPECIFIED ELSEWHERE:

Trenching, Backfilling and Compaction: Section 02220

Restoration of Roadways, Drives, Sidewalks, Curb and Gutter Patching: Section 02510

Fertilizing, Seeding and Mulching: Section 02920

QUALITY ASSURANCE:

Codes and Standards:

North Carolina Sedimentation Pollution Control Act of 1973 and the Rules and Regulations promulgated pursuant to the provisions of said act.

"Standard Specifications for Roads and Structures", North Carolina Department of Transportation (DOT).

In the event of conflict between the regulations listed above and the requirements of these specifications, the more restrictive requirement shall apply.

SANCTIONS:

Failure of the CONTRACTOR to fulfill any of the requirements of this section may result in the OWNER ordering the stopping of construction operations in accordance with the General Conditions until such failure has been corrected. Such suspension of operations will not justify an extension of Contract time nor additional compensation.

Failure on the part of the CONTRACTOR to perform the necessary measures to control erosion, siltations, and pollution will result in the ENGINEER notifying the CONTRACTOR to take such measures. In the event that the CONTRACTOR fails to perform such measures within 24 hours after receipt of such notice, the OWNER may suspend the work as provided above, or may proceed to have such measures performed with other forces and equipment, or both. The cost of such work performed by other forces will be deducted from monies due the CONTRACTOR on his contract.

PART 2 - PRODUCTS

SILT FENCES:

Posts: Wooden posts shall be a minimum of 4" in diameter and 6' in length. Posts shall be of creosote or pentachlorophenol treated southern pine.

Steel posts shall be 5' in height and be of the self-fastener angle steel type.

Posts shall be spaced at 10' max. when silt fence is backed with wire mesh, and 7' when no wire mesh is used or as required by the ENGINEER.

Woven Wire: Woven wire fencing shall conform to ASTM A116 for Class 3 galvanizing. Fabric shall be a minimum of 32" in width and shall have a minimum of 6 line wires with 12" stay spacing. The top and bottom wires shall be 10 gauge while the intermediate wires shall be 12-1/2 gauge. Wire fabric shall be fastened to wood posts with not less than #9 wire staples 1-1/2" long.

Fabric: Provide woven synthetic fiber designed specifically for silt fence conforming to NCDOT specifications.

DRAINAGE STONE:

Class I material NCDOT No. 57 or No. 5 as required.

RIP RAP:

Class I and Class II in accordance with NCDOT specifications.

Class B Erosion Control Stone may be used in lieu of Class I Rip Rap.

FILTER CLOTH:

For use under rip rap provide spun synthetic fiber; 10 oz/sy; burst strength of 500 psi, vertical water flow, 265 gpm/sy; Trivera 1135, MIRAFI 140 or approved equal.

MATTING FOR EROSION CONTROL:

Matting for erosion control shall be excelsior matting in accordance with NCDOT SPECIFICATIONS SECTION 1631, DITCH LINER AND EROSION CONTROL BLANKET. Other acceptable material manufactured especially for erosion control may be used when approved by the ENGINEER in writing before being used.

TEMPORARY SEEDING:

Temporary seeding, when required, shall be performed in accordance with the recommendations contained in "Guide for Sediment Control on Construction Sites in North Carolina", published by the Soil Conservation Service and Section 02920 of these specifications.

PART 3 - EXECUTION

GENERAL:

The CONTRACTOR shall take whatever measures are necessary to minimize soil erosion and siltation, and water, air, and noise pollution caused by his operations. The CONTRACTOR shall also comply with the applicable regulations of all legally constituted authorities relating to pollution prevention and control. The CONTRACTOR shall keep himself fully informed of all such regulations which in any way affect the conduct of the Work, and shall at all times observe and comply with all such regulations. In the event of conflict between such regulations and the requirements of the specifications, the more restrictive requirements shall apply.

EROSION AND SILTATION CONTROL:

The CONTRACTOR shall exercise every reasonable precaution throughout the life of the project to prevent the eroding of soil and the silting of rivers, streams, lakes, reservoirs, other water impoundments, ground surfaces or other property.

Prior to suspension of operations on the project or any portion thereof, the CONTRACTOR shall take all necessary measures to protect the construction area, including but not limited to borrow sources, soil type base course sources and waste areas from erosion during the period of suspension.

Provide diversion ditches and berms as necessary to prevent concentrated flow of water across disturbed areas.

Stockpile excavated material on the opposite side of the utility trenches from the watercourses to the extent that is possible.

In the event that stockpiles are placed on the watercourse side of the trench, provide silt fence or silt berms with stone filter outlets along the entire length of the stockpile that is on the watercourse side of the trench. Upon the completion of backfilling, the measures shall be removed and the site graded to its natural grade or as shown on plans.

Maintain natural buffer zones along all watercourses sufficient to retain all visible siltation within the first 25 percent of the buffer width.

Provide a settling basin with a gravel filter outlet for all water pumped from trenches or dewatering equipment. Pumping of that water directly into any stream, pond or watercourse is prohibited.

Tamp, fertilize, seed and mulch the disturbed areas as soon as practicable after line is installed and, in all cases, no later than 30 days after completion of the line segment or work at a particular site.

When construction operations are suspended for more than 30 days, provide temporary seeding and mulching of all disturbed areas including those areas in which further construction is necessary.

Erosion control measures installed by the CONTRACTOR shall be acceptably maintained by the CONTRACTOR.

Silt fences shall be provided where shown on the drawings and/or as necessary to prevent erosion.

Catch basins shall be protected from silt by placing straw bales or silt fence around the openings until vegetative cover is established.

Temporary rock check dams shall be constructed where shown on the drawings and/or as necessary.

Seeding for erosion control shall be performed in accordance with Section 02920. Matting shall be installed where shown on the drawings or where required for erosion control. Install matting in accordance with NCDOT SPECIFICATIONS SECTION 1631, DITCH LINER AND EROSION CONTROL BLANKETS.

STREAM OR DITCH CROSSINGS:

Perform in accordance with details shown on plans. Complete crossing in one working day. Carefully stabilize disturbed slopes by tamping with equipment buckets and mechanical or hand tamping. Distribute topsoil evenly on slopes and tamp.

Where matting is required for erosion control, cover the entire length of the channel disturbed by excavation. Install matting immediately after fertilizing and seeding of the disturbed channel lining.

Where rip rap is required, carefully place at least one foot thick over filter cloth.

Fertilize, seed, and mulch each crossing's slopes as soon as practicable after completing the crossing and in no case more than two weeks after disturbance of the slopes.

WATER AND AIR POLLUTION:

The CONTRACTOR shall exercise every reasonable precaution throughout the life of the project to prevent pollution of rivers, streams, and water impoundments. Pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage, and other harmful waste shall not be discharged into or alongside of rivers, streams, or impoundments, or into natural or manmade channels leading thereto.

The CONTRACTOR shall comply with all State or local air pollution regulations throughout the life of the project.

DUST CONTROL:

The CONTRACTOR shall control dust throughout the life of the project within the project area and at all other areas affected by the construction of the project, including, but not specifically limited to, unpaved secondary roads, haul roads, access roads, disposal sites, borrow and material sources and production sites. Dust control shall not be considered effective where the amount of dust creates a potential or actual unsafe condition, public nuisance, or condition endangering the value, utility or appearance of any property.

NOISE CONTROL:

The CONTRACTOR shall exercise every reasonable precaution throughout the life of the project to prevent excessive and unnecessary noise. The CONTRACTOR shall choose his methods so as to minimize the disturbance of area residents.

END OF SECTION 02910

SECTION 02920 - FERTILIZING, SEEDING, MULCHING AND SODDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The general provisions of the Contract, including the General and Special Conditions and Division-1 Specification sections apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. Sodding: Sodding is required to be installed in all disturbed lawn areas.
- B. Temporary Seeding: Temporary seeding of disturbed areas shall be performed whenever one or more of the following conditions exist.
 - 1. The Designer determines temporary seeding is necessary to prevent or stop erosion of disturbed areas.
 - 2. Work is suspended or delayed on any portion of the project for 30 days and the potential for erosion exists.

1.3 QUALITY ASSURANCE

- A. Codes and Standards: In general, follow procedures and guides published by the Soil Conservation Service, United States Department of Agriculture.

PART 2 - PRODUCTS

2.1 FERTILIZER

- A. Provide commercial fertilizer conforming to statutory requirements and all rules and regulations adopted by the North Carolina Board of Agriculture.

2.2 LIMESTONE

- A. Provide dolematic or hydrated limestone conforming to all statutory requirements and all rules and regulations adopted by the North Carolina Board of Agriculture.

2.3 MULCH

- A. Mulch for erosion control shall consist of grain straw or other acceptable material, and shall have been approved by the Designer before being used. All mulch shall be reasonably free from mature seedbearing stalks, roots, or bulblets of Johnson Grass, Nutgrass, Sandbur, Wild Garlic, Wild Onion, Bermuda Grass, Crotalaria and Witchweed, and free of excessive amount of restricted noxious weeds as defined by the North Carolina Board of Agriculture at the time of use of the mulch. Also there shall be compliance with all applicable State and Federal domestic plant quarantines. Straw mulch that is matted or lumpy shall be loosened and separated before being used.
- B. Material for holding mulch in place shall be asphalt or other approved binding material applied in accordance with this section.

2.4 JUTE MESH

- A. Use jute mesh on seeded areas where slope is steeper than 2 horizontal to one vertical (2:1 slope). Use woven jute yarn weighing approximately 90 lbs. per sq. yard and having $\frac{3}{4}$ " openings.

2.5 SOD

- A. The grass sod shall be Bermuda "Tifway 419" grass and shall come from a field that is very sandy with a maximum of 10% silt and clay combined. Sod from a field of heavy soil will not be accepted. The sod shall be free from foreign grasses, other Bermuda strains, weeds and noxious nematodes. The sod shall be mowed to a uniform height of $\frac{3}{4}$ inch for a minimum of two weeks prior to harvest. The sod shall be cut with a soil layer of approximately $\frac{1}{4}$ inch. The sod shall be harvested, delivered and transplanted within a period of 48 hours.

PART 3 - EXECUTION

3.1 GENERAL

- A. Follow procedures set forth in the publication "Guide for Sediment Control on Construction Sites in North Carolina" by the United States Department of Agriculture, Soil Conservation Service, and as specified herein.
- B. Scarify soil to a depth of three (3) inches and work into a satisfactory seed bed by discing, use of cultipackers, harrows, drags and other approved means.

- C. Preparation outlined above shall not be done when the soil is frozen, wet or otherwise in an unfavorable condition.
- D. Begin and complete seeding operations as outlined below as soon as possible after final grading is completed, but in no event later than 30 days after completion of final grading.
- E. Distribute lime and fertilizer uniformly over seed bed and harrow, rake or otherwise work same into seed bed.
- F. Distribute seed uniformly over seed bed. Cover seed lightly after seeding.
- G. No lime, fertilizer or seed shall be applied during a strong wind, when soil is wet or otherwise unworkable. Should rain follow seeding before rolling is begun, the bed shall not be rolled.

3.2 SODDING

- A. The soil shall be moistened immediately prior to laying the sod. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly against each other. Lateral joints shall be staggered to promote uniform growth and strength. Care shall be exercised to insure that sod is not stretched or overlapped and that all joints are butted tightly to prevent voids.
- B. The sod shall be watered immediately after installation so that the first laid sod does not dry out until the entire field has been completely sodded.
- C. After the sodding is completed, the entire sodded area shall be watered and rolled to insure good contact with the soil and to even up the surface.

3.3 TOP DRESSING

- A. One week after completion of sodding, the contractor shall topdress the sodded area with topsoil to eliminate unevenness in the field. The topsoil shall be uniformly distributed at a rate to provide ¼ inch depth of topdressing over the entire sodded area.

3.4 TEMPORARY SEEDING

- A. Seed in accordance with Soil Conservation Service recommendations with regard to seed type, rate of application, fertilizer, etc.

3.5 APPLICATION OF MULCH

- A. Apply mulch immediately after permanent seeding at a uniform rate sufficient to achieve approximately 80% coverage of ground surface. Care must be taken to prevent the mulch from being applied too thickly and smothering the seedlings. Mulch for temporary seeding should be applied based upon the recommendations of the Soil Conservation Service for the particular type of seed to be used.
- B. Mulch Anchoring:
1. On ground slopes less than 4%, anchor mulch with a straight blade disk or anchoring tool. Press mulch into soil about three inches. Operate equipment across slopes.
 2. On ground slopes greater than 4%, apply asphalt with suitable applicator at a rate of not less than 150 gallons per ton of mulch.
 3. Peg and twine anchoring may be used on steep slopes. Drive 8" wood stakes every 3 to 4 feet in all directions. Stretch in a crisscross and square in all directions. Secure twine around pegs and drive pegs flush with surface.

3.6 REPAIR AND MAINTENANCE

- A. Maintain the grass on the area for a period of 90 days after the grass growth appears. Reseed bare areas and repair all eroded areas during that period.
- B. Repairs: Inspect all seeded areas and make necessary repairs or reseedings within the planting season, if possible. If stand should be over 60% damaged, re-establish following original lime, fertilizer and seeding recommendations.
- C. All seeded areas that do not exhibit satisfactory ground cover within 45 days of seed application shall be replanted.
- D. For the first week after completion of the sodding operation, the Contractor shall be responsible for conducting a watering program to provide soil moisture conducive to the growth of the grass and relative to the prevailing weather conditions. One week after installation, the contractor shall fertilize the entire sodded area with 16-4-8 fertilizer. The fertilizer shall be uniformly spread at a rate of 5 pounds per 1,000 square feet.
- E. The Contractor shall provide a detailed maintenance schedule for maintenance by the owner. The schedule shall cover the period from after the first week maintenance to the end of the first growing season.

END OF SECTION 02920

SECTION 03305 - CONCRETE

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division - 1 Specification Sections apply to work of this section.

DESCRIPTION OF WORK:

Concrete work includes, but is not specifically limited to, concrete piers, pipe encasement, pipe blocking, manhole inverts, concrete slabs, concrete curbs and gutters, concrete drives, walks and other concrete items required in the project.

RELATED ITEMS SPECIFIED ELSEWHERE:

Trenching, Backfilling and Compaction: Section 02220

Roadways, Drives, Sidewalks, Curb and Gutter Patching: Section 02510

Storm Sewer System: Section 02735

Site Furnishings: Section 02870 (For Fiberglass Reinforced Concrete sculptural elements)

Concrete Staining: Section 09930

QUALITY ASSURANCE:

Codes and Standards: AC1 301 "Specifications for Structural Concrete for Buildings"; AC1 347 "Recommended Practice for Concrete Formwork", AC1 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete"; comply with applicable provisions except as otherwise indicated.

Workmanship: The CONTRACTOR is responsible for correction of concrete work which does not conform to the specified requirements, including strength, tolerances and finishes. Correct deficient concrete as directed by the ENGINEER.

Concrete Testing Service: Employ a testing laboratory acceptable to the ENGINEER to perform

material evaluation tests and to design concrete mixes at CONTRACTOR's expense.

Certificates of material properties and compliance with specified requirements may be submitted in lieu of testing. Certificates of compliance must be signed by the materials producer and the CONTRACTOR.

Quality Control: If required employ a separate testing laboratory to evaluate concrete delivered to and placed at the site. The cost of such testing shall be paid out of the testing allowance.

Testing laboratory will perform sampling and testing during concrete placement, which may include the following, as directed by the ENGINEER.

Sampling: ASTM C172.

Slump: ASTM C143, one test for each load at point of discharge.

Air Content: ASTM C173, one for each set of compressive strength specimens.

Compressive Strength: ASTM C39, one set for each 50 cu. yds. or fraction thereof of each class of concrete; 2 specimens tested at 7 days, 3 specimens tested at 28 days, and one retained for later testing if required.

When the total quantity of a given class of concrete is less than 50 cu. yds., the strength tests may be waived by the ENGINEER if field experience indicates evidence of satisfactory strength.

Materials and installed work may require testing and retesting as directed by the ENGINEER at any time during the progress of the work. Allow free access to material stockpiles and facilities at all times. Any retesting of rejected materials or testing of installed work for which laboratory specimens have failed shall be performed at the CONTRACTOR's expense. Similarly, the cost of any special tests requested by the ENGINEER which result in the identification of defective work or materials shall be borne by the CONTRACTOR.

Manufacturer's Data: Submit manufacturer's product data with installation instructions for proprietary materials including reinforcement and forming accessories, admixtures, joint materials, hardeners, curing materials and others as requested by the ENGINEER.

PART 2 - PRODUCTS

CONCRETE MATERIALS:

Portland Cement: ASTM C150, Type 1, unless otherwise acceptable to the ENGINEER.

Aggregates: ASTM C33, except local aggregates of proven durability may be used when

acceptable to the ENGINEER.

Water: Clean, potable.

Design strength: 4000 psi unless otherwise noted (Not less than 564 lbs. cement per yard); 3000 psi for sidewalks curb and gutter, drives, etc.; 3,000 PSI with 3/8" aggregate for masonry fill; 2500 psi for pipe blocking and encasement.

No admixtures containing calcium chloride may be used. Use Pozzolith by Master Builders, Plastiment or Plasticrete by Silka and Chemstrong A, R, or W by Castle Chemical Company or approved equal.

Air-Entraining Admixture: ASTM C260. Only use admixtures having neutralized vensol resins. Use MB-VR by Master Builders, SIKA AER by Sika Chemical Company, or CASTLE VR by Castle Chemical Company, or approved equal.

Use air-entraining admixture in all concrete, providing not less than 4% nor more than 8% entrained air.

Water-Reducing Admixture: ASTM C494, Type A, D, and E. Only use admixtures which have been tested and accepted in mix designs, unless otherwise acceptable.

FORM MATERIALS:

Provide form materials with sufficient stability to withstand pressure of placed concrete without bow or deflection.

Exposed Concrete Surfaces: Acceptable panel-type to provide continuous, straight, smooth, as-cast surfaces. Use largest practical sizes to minimize form joints.

Unexposed Concrete Surfaces: Suitable material to suit project conditions.

CURING COMPOUND:

Liquid membrane forming curing compound shall comply with ASTM C300, Type I Class A, minimum 22% solids.

No curing compounds shall be used in concrete mixtures which will receive concrete stain or dye.

REINFORCING MATERIALS:

Reinforcing Bars: ASTM A615, Grade 40

Welded Wire Fabric: ASTM A185.

JOINT MATERIALS:

Self-Expanding Cork Joint Filler: Provide resilient and non- extruding type premolded cork units complying with ASTM D1752, Type III.

Water Stop: PVC meeting Corps of Engineers CRD-C572 with center bulb.

PART 3 - EXECUTION

FORMING AND PLACING CONCRETE:

Ready-Mixed Concrete: ASTM C94. Furnish delivery tickets for each load showing amount of each material in the batch, time batched, date, job.

Formwork: Construct so that concrete members and structures are of correct size, shape, alignment, elevation and position, complying with ACI 347. Provide 3/4" chamfer on all exposed corners.

Provide openings in formwork to accommodate work of other trades. Accurately place and securely support items built into forms.

Clean and adjust forms prior to concrete placement. Apply form release agents or wet forms, as required. Retighten forms during and after concrete placement if required to eliminate mortar leaks.

Reinforcement: Position, support and secure reinforcement against displacement. Locate and support with metal chairs, runners, bolsters, spacers and hangers, as required. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

Install welded wire fabric in as long lengths as practicable, lapping at least one mesh.

Joints: Provide construction, expansion, weakened-plane (contraction), isolation, and control joints as indicated or required. Locate construction joints so as to not impair the strength and appearance of the structure. Place isolation and control joints in slabs-on-ground to stabilize differential settlement and random cracking.

Provide expansion and weakened-plane (contraction) joints where shown or required. Construct weakened-plane joints for a depth equal to at least 1/4 concrete thickness, either tooled, or with inserts unless otherwise shown. Tool edges of joints where slabs, walks, drives, curbs and gutters, etc. are constructed or replaced.

Place construction joints at the end of pours and at locations where placement operations are stopped for more than 1/2 hour, except where such pours terminate at expansion joints. Construct joints as shown or, if not shown, use standard metal keyway sections.

Provide premolded joint filler for expansion joints abutting curbs, manholes, and other fixed objects. Locate at 20' o.c. for pavement lanes unless otherwise specified.

Installation of Embedded Items: Set and build into the work anchorage devices and other embedded items required for other work that is attached to, or supported by cast-in-place concrete. Use setting diagrams, templates and instructions provided by others for locating and setting.

Concrete Placement: Comply with ACI 304, placing concrete in a continuous operation within planned joints or sections. Do not begin placement until work of other trades affecting concrete is completed.

Consolidate placed concrete using mechanical vibrating equipment with hand rodding and tamping, so that concrete is worked around reinforcement and other embedded items and into all parts of forms.

Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placement and curing.

In cold weather comply with ACI 306.

In hot weather comply with ACI 305.

CONCRETE FINISHES:

Exposed-to-view Surfaces: Provide a smooth rubbed finish for exposed formed concrete surfaces and surfaces that are to be covered with a coating or covering material applied directly to concrete. Remove fins and projects, patch defective areas with cement grout, and rub smooth.

Slab Trowel Finish: Apply trowel finish to interior monolithic slab surfaces that are exposed-to-view or are to be covered with resilient covering, paint or other thinfilm coating. Consolidate concrete surface by finish troweling, free of trowel marks, uniform in texture and appearance.

Drives, Walks, Curbs and Gutter Finishing: After striking-off and consolidating, smooth the concrete surface by screeding and floating. Work edges of slabs, gutters, and other formed joints with an edging tool to a 1/2" radius.

After floating and when excess moisture or surface sheen has disappeared, complete surface finishing as follows:

Broom finish, by drawing a fine-hair broom perpendicular to line of traffic, as acceptable to the ENGINEER.

Curing: Begin initial curing as soon as free water has disappeared from exposed surfaces. Where possible, keep continuously moist for not less than 72 hours. Cure formed surfaces by moist curing until forms are removed. Continue curing by use of moisture-retaining cover or membrane-forming curing compound. Apply curing compound according to manufacturer's instructions and Federal Specification TT-C-00800. Provide protections as required to prevent damage to exposed concrete surfaces.

END OF SECTION 03305

SECTION 06100 - CARPENTRY

PART 1 - GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract; including the General and Special Conditions and Division-1 Specification sections apply to work of this section.

SCOPE:

This section covers all items required by the drawings to be of wood construction. Carpentry shall include:

Board walks

DRAWINGS AND DATA:

Complete specifications, data, and catalog cuts or drawings covering the finish millwork, hardware, and shop fabricated items furnished under this section shall be submitted in accordance with the submittals section. Drawings and data for rough carpentry and field fabricated items will not be required.

PART 2 - MATERIALS

WOOD:

Lumber	American Standard Lumber conforming to PS 20, moisture content 19 percent or less; sized dry.
Structural Dressed	Southern pine or Douglas fir, S4S; structural light framing and structural joists and planks, No. 2; studs, stud grade.
Pressure Treated	Structural lumber, pressure treated with nonwatersoluble preservative in accordance with AWPAC 2, except that creosote treatment will be acceptable for buried members only. Roof nailers and cants shall be treated with pentachlorophenol by the L.P. gas process. Cut surfaces shall be given two heavy brush coats of preservative.

Plywood, Roof Deck	PSI, waterproof, resin-bonded, exterior type; APA Group 1 Grade Ext - BC or better.
Plywood, General Purpose	PS1, waterproof, resin-bonded, exterior type; APA Group 1, Grade Ext-BB or better unless otherwise specified.
Recycled Plastic As Lumber	For deck or platform construction, the span of the structural support members shall be a maximum 12 inches on center and recycled plastic decking shall connect to a minimum three joists. Material used for decking shall have a non-slip texture surface. The assembly shall deflect a maximum 1/360 of the span of the frame when exposed to a uniform live load of 40 lbs/ft, ASTM D648. The product shall meet the structural integrity test requirements, ASTM F1487 and ASTM D6112.

MISCELLANEOUS:

Polyethylene Film	Fed Spec L-P-378, Type I; 6 mil.
Bolts and Nuts	ASTM A 307, galvanized ASTM A 153, cadmium plated ASTM A 165 Type NS, or zinc plated ASTM B 633, SC-4.
Wood Screws	18-8 stainless steel or brass.
Nails	Galvanized or aluminum coated.
Rough Hardware	Galvanized steel, 18-8 stainless steel, brass, or aluminum.
Finish Hardware	As indicated on the drawings.

PART 3 - INSTALLATION

PROTECTION AND STORAGE:

Lumber and millwork shall be protected and kept under cover, both in transit and at job site. Lumber shall be carefully stacked on suitable supports in a manner which will insure proper

ventilation and drainage. Finish carpentry and millwork shall be stored in a dry weathertight building and protected from damage or soiling by cartons or other suitable means.

ROUGH CARPENTRY:

Rough carpentry shall include lumber work generally, except finish work.

Structural lumber in exterior locations, lumber in contact with concrete, masonry, earth, or water, and all wood nailers shall be pressure treated unless otherwise specified.

Roof edge nailers shall be kerfed on the underside as indicated on the drawings. The nailers shall be continuous and shall be installed level and straight. Each section of nailer shall be secured by at least two anchor bolts.

Washers shall be provided under all bolt heads and nuts in contact with lumber.

Installation: Masonry walls shall be thoroughly dry before furring and wall panels are installed. Nails shall be countersunk. Holes, cracks and joints shall be filled with plastic filler and sanded flush.

FINISH CARPENTRY AND MILLWORK:

Finish carpentry and millwork shall be shop made and assembled, and shall be delivered to the jobsite in clean undamaged condition. Workmanship in connection with finished carpentry shall conform to the best standards of the trade and shall be acceptable to the ENGINEER. Woodwork shall have a fine smooth finish and shall be free from machine or tool marks, abrasions, raised grain or knots on exposed surfaces.

Joints shall be tight and formed to conceal shrinkage. Shop miters 4 inches or more from heel to point shall be glued and feathered, locked, or splined. Tenons and dowels shall be made to a driving fit. Dowels shall be of hardwood and at least two shall be used in each joint. Shop joints shall be made with waterproof glue or hot-glued under pressure, avoiding the use of nails as much as possible. Where nails and screws are necessary, they shall be concealed.

Finish woodwork shall be installed plumb and level, straight and true, but shall not be installed until the areas are enclosed and dry. Woodwork shall be fitted and scribed to other finished work in a careful manner. Woodwork shall be blind-nailed wherever possible, but where not possible, the nailing shall be located, driven, and putty filled so as to be inconspicuous.

END OF SECTION 06100

SECTION 09930 - CONCRETE STAINING

PART 1 GENERAL

SUMMARY

- A. This Section specifies an applied stain and sealer for horizontal cast-in-place concrete surfaces.
- B. Related Sections: Refer to the following specification sections for coordination:
 - 1. Section 03305 - Concrete.

SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions.
- B. Mock-Up: Prepare a test area minimum 2 by 2 feet in size to verify suitability of the stain, sealer and final appearance.

QUALITY ASSURANCE

- A. Manufacturer: Minimum 10 years experience producing concrete coatings.
- B. Installer: Licensed installers, experienced and trained in the use of these products.
- C. Suitability of Substrate: Do not apply to concrete surfaces which may have insufficient chemical reaction, including older or weather concrete, concrete subject to runoff or weathered concrete, or heavily sandblasted concrete.
- C. Regulatory Requirements: Comply with requirements of authorities having jurisdiction and applicable codes at the location of the project.

DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products in unopened factory labeled packages. Protect from damage.
- B. Store in a safe place, out of direct sunlight. Keep containers tightly sealed. Do not allow product to freeze. Use within manufacturer's recommended shelf life, approximately 12 months.

PART 2 - PRODUCTS

MATERIALS

- A. Concrete Stain: The concrete stain shall be a penetrating chemical stain which chemically reacts with concrete, is UV stable, and is suitable for exterior use.

Manufacturers:

Ameripolish – Color Juice 3D

Color: Turquoise

800-592-9320

<http://www.ameripolish.com/color-juice.html#>

Brickform – Artesian Stain

Color: AS-1800 Caprias

800-624-0261

<http://www.brickform.com/Products/Stains-and-Dyes-/ARTesian-Stain/>

EZ Chem – 2X Concrete Stains

Color: Aqua Blue

(770) 479-1764

<http://ezchemusa.com/products/color-products>

Scofield Architectural Concrete Coloring – Lithochrome Tintura Stain

Color: 0289 Azure Blue

800-800-9900

<http://www.scofield.com/integral-concrete-color.html>

- B. Concrete Sealer:
As recommended by manufacturer.

PART 3 - EXECUTION

PREPARATION

- A. Inspection: Prior to start of application, inspect existing conditions to ensure surfaces are suitable for installation including the following:
1. Concrete has cured for a minimum of 28 days prior to application of stain.
 2. Surface is completely free of sealers, oils, dirt, paint, alkali, penetrating sealers and foreign materials that would prevent the stain from penetrating the concrete surface.
 3. Concrete has been swept clean.
 4. Test area has been approved.

APPLICATION

- A. Concrete Stain: Strictly comply with manufacturer's installation recommendations including the following:
1. Use experienced installers wearing protective clothing and breathing apparatus.
 2. Test surface for suitable reactivity.
 3. Protect adjacent areas from over-spray, runoff, spills and tracking prior to application.
 4. For areas requiring material from more than one container, mix together prior to

- application to avoid color variation.
 - 5. Apply at rate recommended by manufacturer.
 - 6. Clean, rinse and neutralize surface.
- B. Concrete Sealer: Strictly comply with manufacturer's installation recommendations. Apply after stain has dried at rate recommended by manufacturer. Clean surface as recommended by manufacturer.

CLEANING AND PROTECTION

- A. Protection: Do not cover, but pavement area from paint and other contaminants that could inhibit the stain.

END OF SECTION 09930



SECTION 11680 – PLAYGROUND EQUIPMENT

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM A123/A123M	(2013) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A135/A135M	(2009; R2014) Standard Specification for Electric-Resistance-Welded Steel Pipe
ASTM A153/A153M	(2009) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A500/A500M	(2013) Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A513/A513M	(2014) Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing
ASTM B108/B108M	(2014) Standard Specification for Aluminum-Alloy Permanent Mold Castings
ASTM B117	(2011) Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM B179	(2014) Standard Specification for Aluminum Alloys in Ingot and Molten Forms for Castings from All Casting Processes
ASTM B221	(2014) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B26/B26M	(2014; E 2015) Standard Specification for Aluminum-Alloy Sand Castings

ASTM D1248	(2012) Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
ASTM D173/D173M	(2003; R 2011; E 2012) Bitumen-Saturated Cotton Fabrics Used in Roofing and Waterproofing
ASTM D2454	(2014) Determining the Effect of Overbaking on Organic Coatings
ASTM D2794	(1993; R 2010) Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
ASTM D3359	(2009; E 2010; R 2010) Measuring Adhesion by Tape Test
ASTM D3363	(2005; E 2011; R 2011; E 2012) Film Hardness by Pencil Test
ASTM D6112	(2013) Compressive and Flexural Creep and Creep-Rupture of Plastic Lumber and Shapes
ASTM D648	(2007) Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
ASTM D822	(2001; R 2006) Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings
ASTM F1487	(2011) Playground Equipment for Public Use
ASTM F2373	(2011) Standard Consumer Safety Performance Specification for Public Use Play Equipment for Children 6 Months through 23 Months

CONSUMER PRODUCT SAFETY COMMISSION (CPSC)

CPSC Pub No 325	(2010) Handbook for Public Playground Safety
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1.2 DEFINITIONS

1.2.1 Age-Appropriate

A term that describes equipment scale to include platform height, fall height and maximum equipment height, that allows safe and successful use by children of a specific chronological age; mental and physical ability; and anthropometric measurement. Maximum equipment height and complexity will not exceed a child's ability in that age group.

1.2.2 Composite Structure

Also "Composite Play Structure; Linked Structure". Two or more play events attached, directly adjacent or functionally linked, to create one integral unit that provides more than one play activity.

1.2.3 Designated Play Surface

Any elevated surface for standing, walking, sitting, or climbing; or a flat surface a minimum 2 inches wide having up to a maximum 30 degree angle from horizontal. In some play events the platform surface will be the same as the designated play surface. However, the terms should not be interchanged as they do not define the same point of measurement in accordance with ASTM F1487.

1.2.4 Guardrail

A device around an elevated surface that prevents inadvertent falls from the elevated surface.

1.2.5 Maximum Equipment Height

The highest point on the equipment (i.e., roof ridge, top of support pole).

1.2.6 Play Event

A piece of manufactured playground equipment that supports one or more play activities.

1.2.7 Protective Barrier

An enclosing device around an elevated surface that prevents both inadvertent and deliberate attempts to pass through the device.

1.2.8 Protective Surfacing

Material to be used within the use zone that meets the fall attenuation requirements of the Playground Protective Surfacing specification section.

1.2.9 Suspended Hazard

Cable, wire, rope or similar devices suspended up to a maximum 7 feet high between play events; or installed up to a maximum 45 degree angle from the ground to the play event.

1.2.10 Tot

A child under 4 years of age in the pre-toddler and toddler age group.

1.2.11 Use Zone

The area beneath and immediately adjacent to a play structure or equipment that is designated for unrestricted circulation around equipment, and on whose surface it is predicted that a user would land when falling from or exiting the equipment.

1.3 SYSTEM DESCRIPTION

1.3.1 Child Safety

Provide play events that meet the child safety performance requirements described in CPSC Pub No 325 and ASTM F1487. The requirements include the following: Head and neck entrapment; sharp points, edges, and protrusions; entanglement; pinch, crush, and shear points; suspended hazards; play event access and egress points; play event use zone perimeter; and design criteria. Since ASTM F1487 criteria is defined for the minimum user through the maximum user (2 through 12 years of age), the requirements for the infant or pre-toddler age group are not prescribed. This specification and Playground Protective Surfacing specification section establish the requirements for the infant and pre-toddler age groups.

1.3.2 Child Accessibility

The accessibility requirement in accordance with ASTM F1487 includes the following: When the play event use zone consists of a protective surfacing rated as inaccessible, provide at least one accessible route from the use zone perimeter to the play event. When there is more than one of the same play activity provided, only one shall meet accessibility requirements (i.e., one swing seat or one spring rocking play event). When the access and egress points are not the same for a play event, provide an accessible route to both. The accessible route shall access all accessible play events and elements. The protective surfacing performance requirements shall be in accordance with Playground Protective Surfacing specification section.

1.3.3 Age Groups

Play areas are designed to provide challenging play activities by age group. Design playground equipment to be age appropriate for the age group designated to use it.

1.3.4 Equipment Identification

Identify playground equipment with attached and durable label stating the age group that the equipment is designed to accommodate. Provide permanent WARNING labels and manufacturer's identification labels, ASTM F1487. Submit a list to include part numbers of furnished play event and equipment materials and components.

1.4 SUBMITTALS

Submit the following in accordance with Section 01300 SUBMITTALS:

Shop Drawings:

- Configuration
- Shop Drawings
- Fall Height
- Finished Grade and Underground Utilities

Product Data:

- Equipment
- Equipment Identification
- Delivery, Storage and Handling
- Manufacturer Qualification
- Wood
- Spare Parts
- Materials

Samples:

- Color

Test Reports:

- Recycled Plastic
- Wood Finishes

Certificates:

- Materials
- Manufacturer Qualification
- Installer Qualification
- Manufacturer's Representative
- Wood Treatment
- Substitution
- Play Event Modification
- Child Safety and Accessibility Evaluation

Operation and Maintenance Data:

- Maintenance Instructions

1.5 QUALITY ASSURANCE

1.5.1 Manufacturer Qualification

Play events and equipment similar to those furnished shall have been installed in a minimum 10 sites and been in successful service for a minimum 5 year calendar period. The manufacturer shall provide a Certificate of Insurance AA rated for a minimum one million dollars covering both product and general liability. Submit name of the owner or user; service or preventive maintenance provider; date of the installation; point of contact and telephone number; and address for 10 sites.

1.5.2 Installer Qualification

The installer shall be certified by the manufacturer for training and experience installing the play events and equipment. Submit the installer's company name and address, and training and experience certification.

1.5.3 Manufacturer's Representative

The manufacturer's certified playground safety inspector or the manufacturer's designated certified playground safety representative shall supervise the installation and adjustment of the play events and equipment to verify the installation meets the requirements of the manufacturer, this specification, and paragraph CHILD SAFETY AND ACCESSIBILITY STANDARDS. Submit the individual's name, company name and address, and playground safety training certificate.

1.5.4 Prohibited Equipment

The following equipment may be prohibited: chain balance beams; rotating equipment, such as merry-go-rounds, log rolls, whirls and may poles; fulcrum seesaws (teeter totters); spring rocking equipment intended for standing; animal figure swings; rope swings; multiple occupancy swings; swinging exercise and trapeze bars; swinging platforms; tire climbers; swinging dual exercise rings; roller slides; trampolines; swinging gates or doors; and new or used vehicle tires. Also play houses or enclosures made of horizontal posts or bars with space between them; wood components treated with creosote, pentachlorophenol, and tributyl tin oxide; and wood components coated with a finish containing pesticide.

1.5.5 Shop Drawings

When the use zone perimeter and play event configuration conflict with the requirements and paragraph CHILD SAFETY AND ACCESSIBILITY STANDARDS, submit scale drawings defining the revised use zone perimeters and play event layout and corrective measures to include the following: Adjustment to the play event with the use zone perimeter; use zone perimeter overlaps; hard surface area and pathway widths; structures; exterior plant material and planters; walls and fences; and bare or painted metal platform and slide bed orientation to the direct sun.

1.6 DELIVERY, STORAGE, AND HANDLING

Submit a delivery schedule and manufacturer's name at least 10 calendar days prior to the first day of delivery. Inspect playground equipment, upon arrival at the job site, for meeting age-appropriate requirements for the age-group that the equipment is designated to accommodate, and specified quality in accordance with paragraphs MATERIALS and CONFIGURATION. Equipment shall be delivered, handled, and stored in accordance with the manufacturer's recommendations. Remove from the job site prohibited or unacceptable equipment. The storage area shall be as designated. Store the materials in a dry, covered area until installed.

1.7 WARRANTY

Furnished play events and equipment shall have a minimum 1 year calendar period warranty.

1.8 MAINTENANCE

Submit two bound copies of the manufacturer's operation and maintenance manuals containing the Maintenance Instructions and describing the recommended preventive maintenance, inspection frequency and techniques, periodic adjustments, lubricants, and cleaning requirements. Furnish play event and equipment spare parts provided by the manufacturer.

PART 2 PRODUCTS

2.1 MATERIALS

Provide materials which are the standard products of a manufacturer regularly engaged in the manufacture of play event products. Submit results of assembled play event structural integrity tests; vertical load tests; and the maximum number of users that can be on the play event. Prior to the delivery of materials, submit certificates of compliance attesting that materials meet the specified requirements. Certified copies of the material certificates shall include composition and tests to which the material has been subjected.

2.1.1 Metal

Metal components shall have factory-drilled holes and be corrosion resistant. The components shall be free of excess weld and spatter. Components with extra holes not filled by hardware or covered by components shall be rejected.

2.1.1.1 Steel

Steel components shall comply with ASTM A135/A135M, ASTM A500/A500M, or ASTM A513/A513M. Minimum tensile strength shall be 45,000 psi. Minimum yield point shall be 33,000 psi.

2.1.1.2 Aluminum

Extruded aluminum components shall be type 6061-T6, 6062-T6, or 6063-T6, and shall conform to ASTM B221. Minimum tensile strength of extruded aluminum components shall be 39,000 psi, and the minimum yield shall be 36,500 psi. Cast aluminum alloy shall conform to ASTM B179, ASTM B26/B26M, and ASTM B108/B108M.

2.1.1.3 Chain

Chain shall be a minimum size 4/0 and shall be corrosion resistant zinc plated. Polyvinyl chloride coating shall be as specified.

2.1.1.4 Rope Cable

Rope cable shall be composed of strands of steel cable with a polypropylene or Dacron synthetic covering that is UV stabilized. Cable ends shall be capped to prevent fraying.

2.1.1.5 Hardware

Hardware shall be corrosion resistant and consist of the following: aluminum, stainless steel, brass, zinc plated steel, zinc-chromate plated steel, or galvanized steel, ASTM A153/A153M. When secured, the hardware shall require a tool to prevent unauthorized loosening and removal.

2.1.1.6 Rails, Loops, and Hand bars

Rails, loops, and hand bars shall consist of corrosion resistant aluminum, powder-coated steel or galvanized steel. Polyvinyl chloride coating, if provided, shall be as specified.

2.1.1.7 Anchors

Anchors shall be in accordance with manufacturer's recommendations.

2.1.2 Wood

Wood components shall be exterior premium grade and free of knots, obtained from managed forests. Wood components shall have factory-drilled holes. Components with extra holes not filled by hardware or covered by other components will be rejected.

2.1.2.1 Wood Treatment

Treat wood components that are not naturally rot and insect resistant, by using standard treatment procedures. Any wood placed up to a maximum 6 inches above, or any portion below the top elevation of the protective surfacing, shall be treated after fabrication. Creosote, pentachlorophenol, and tributyl tin oxide are prohibited according to ASTM F1487. Submit wood treatment chemical content, toxicity level, and life-cycle durability.

2.1.2.2 Plywood

Provide plywood that is a minimum 3/4 inch thick exterior premium grade, and adhered with a waterproof glue that will not separate under conditions of prolonged freezing temperatures, extreme heat, or excessive moisture. Face layers shall be smooth, fine and tightly grained, free of knots, patches, or surface irregularities. Exposed surface shall consist of a material with high paint adhesion and retention characteristics. Edges shall be sanded smooth and eased to a minimum 1/8 inch radius. Fill voids at edges with epoxy prior to sanding.

2.1.3 Plastic Components

2.1.3.1 Panels

Plastic panels shall be molded of ultraviolet (UV) and color stabilized polyethylene or nylon with a minimum 3/16 inch thickness, ASTM F1487. Edges shall be a minimum 3/16 inch radius.

2.1.3.2 Window

Plastic windows shall be flat or molded into a bubble shape, consisting of clear polycarbonate plastic a minimum 3/16 inch thick before forming in accordance with ASTM D1248. Material shall be shatterproof and resistant to crazing, cracking, or fogging.

2.1.4 Recycled Plastic

Recycled plastic shall contain a minimum 85 percent of recycled post-consumer product. Construct or manufacture recycled material with a maximum 1/4 inch deflection or creep in any member, ASTM D648 and ASTM D6112. Submit results of individual component and assembled unit structural integrity test; creep tolerance; deflection tolerance; and vertical load test results.

2.1.4.1 High Density Polyethylene

Mold components of ultraviolet (UV) and color stabilized polyethylene consisting of a minimum 75 percent plastic profile of high-density polyethylene, low-density polyethylene, and polypropylene raw material. The material shall be non-toxic, have no discernible contaminants such as paper, foil, or wood, and contain a maximum 3 percent air voids. The material shall be free of splinters, chips, peels, buckling, and cracks and be resistant to deformation from solar heat gain. Material shall have factory-drilled holes. Components with extra holes not filled by hardware or covered by other components will be rejected. The material shall not be painted.

2.1.4.2 Panel

Panels shall be a minimum 1/4 inch thick; exposed edges shall be smoothed, rounded, and free of burrs and points; and the material shall be shatterproof and resistant to fading, cracking, or fogging.

2.1.4.3 Structural Component

Recycled plastic materials will not be used as load bearing structural members.

2.1.4.4 Recycled Plastic Molded As Lumber

For deck or platform construction, the span of the structural support members shall be a maximum 12 inches on center and recycled plastic decking shall connect to a minimum three joists. Material used for decking shall have a non-slip texture surface. The assembly shall deflect a maximum 1/360 of the span of the frame when exposed to a uniform live load of 40 lbs/ft, ASTM D648. The product shall meet the structural integrity test requirements, ASTM F1487 and ASTM D6112.

2.1.5 Coatings

2.1.5.1 Galvanized

Metal components shall be hot-dipped in zinc after fabrication according to ASTM A123/A123M. Remove tailings and sharp protrusions formed as a result of the hot-dip process; edges shall be burnished.

2.1.5.2 Polyester Powder

Powder-coated surfaces shall receive electrostatic zinc coating prior to painting. Powder coating shall be electrostatically applied and shall be oven cured. Polyester powder shall be in accordance with the following: ASTM D3359 for adhesion; ASTM D173/D173M for flexibility; ASTM D3363 for hardness; ASTM D2794 for impact; ASTM D2454 for overbake resistance; ASTM B117 for salt spray resistance; and ASTM D822 for weatherability.

2.1.5.3 Polyvinyl Chloride (PVC)

Prime PVC coating with a clear acrylic thermosetting solution. The primed parts shall be preheated prior to dipping. The liquid polyvinyl chloride shall be UV stabilized and mold-resistant. The coated parts shall be cured. The coating shall be a minimum 0.08 inch thick within a plus or minus 0.020 inch tolerance. The coating shall have an 85 durometer hardness, ASTM D3363. The finish shall be slip-resistant.

2.1.5.4 Concrete

Provide concrete conforming to Division 3 Specifications. For Fiberglass Reinforced Concrete sculptural elements refer to Section 02870 – Site Furnishings

2.1.6 Wood Sealants

Exposed wood surfaces shall have factory applied prime coat with a minimum 2 spray coats of two-component polyurethane or approved preservative that meets paragraph WOOD TREATMENT.

2.1.6.1 Paint

Paint shall be factory applied to a minimum of 2 coats. Paint shall be weather resistant, and resist cracking, peeling and fading.

2.1.6.2 Sealants

Seal all applied surfaces from air; sealants containing pesticide are prohibited.

2.1.7 Color

Colors shall be selected by the Owner from the Manufacturer's full range of color options. Submit a minimum of 2 color charts displaying the colors and finishes for Owner's selection.

2.2 EQUIPMENT

Submit manufacturer's descriptive data; catalog cuts; references; and the latest edition of ASTM F1487 and CPSC Pub No 325. Manufacturer's specifications, handling and storage requirements, installation procedures, and safety data sheets to include the following: bare or painted metal platform and slide bed orientation from the direct sun; warnings; and child safety performance standards.

2.2.1 Configuration

The general configuration of the playground equipment is indicated on the drawings. Contractor shall submit scale drawings of playground equipment configuration to include the following: equipment layout with the use zone perimeter; designated play surface spot elevations; maximum equipment height spot elevations; platform spot elevations; protective barriers; guardrails; bare or painted metal platform and slide bed orientation; and play events in relationship to the playground layout.

2.2.2 Substitution

Substitutions will not be allowed and play events will not be selected without written approval from the Owner.

2.2.3 Platform Height

Platform height is used to define the age group for age appropriate play events and composite structures. To be age appropriate, the platform height shall meet the finished elevations of the age groups in the following paragraphs. For some play events, platform height and paragraph FALL HEIGHT are the same.

2.2.3.1 Pre-Toddler Age Group

Platforms designed for children 12 through 24 months of age shall have a finished elevation a maximum 36 inches above the finished elevation of the protective surfacing.

2.2.3.2 Toddler Age Group

Platforms designed for children 2 through 3 years of age shall have a finished elevation a maximum 48 inches above the finished elevation of the protective surfacing.

2.2.3.3 Pre-School Age Group

Platforms designed for children 3 through 5 years of age shall have a finished elevation a maximum 48 inches above the finished elevation of the protective surfacing.

2.2.3.4 School-Age Age Group

Platforms designed for children 5 through 8 years of age shall have a finished elevation a maximum 72 inches above the finished elevation of the protective surfacing.

2.2.3.5 Pre-Teen Age Group

Platforms designed for children 8 through 12 years of age shall have a finished elevation a maximum 72 inches above the finished elevation of the protective surfacing.

2.2.4 Protective Barrier and Guardrail

Provide protective barriers and guardrails in accordance with paragraph CHILD SAFETY AND ACCESSIBILITY STANDARDS. This specification establishes the protective barrier and guardrail requirements for the infant and pre-toddler age group.

2.2.4.1 Protective Barrier

The protective barrier for pre-toddler, toddler, and pre-school age groups shall be provided on elevated surfaces a minimum 30 inches above the protective surfacing. The protective barrier for school-age and pre-teen age groups shall be provided on elevated surfaces a minimum 48 inches above the protective surfacing. The protective barrier shall completely surround the elevated surface except for the access or egress route. As infants are not to be placed on an

elevated surface, the protective barrier for the infant age group shall be the same as the crawl wall defined in paragraph MEASURING FALL HEIGHT.

2.2.4.2 Guardrail

The guardrail for pre-toddler, toddler, and pre-school age groups shall be provided on elevated surfaces a minimum 20 inches above the protective surfacing. The guardrail for school-age and pre-teen age groups shall be provided on elevated surfaces a minimum 30 inches above the protective surfacing. The guardrail shall completely surround the elevated surface except for the access or egress route. As infants are not to be placed on an elevated surface, the guardrail for the infant age group shall be the same as the crawl wall defined in paragraph MEASURING FALL HEIGHT.

2.2.5 Multiple-Axis (Rotating) Swing

The swivel mechanism shall contain a durable long life bearing to reduce friction and wear. A tire manufactured specifically for a multiple-axis swing shall be provided and shall weigh a maximum 35 lb. The tire shall be composed of rotationally molded, low density elastomer, and internally reinforced with a steel ring. The tire shall have no openings for insects or water. The multiple-axis swing shall not be confused with the multiple occupancy swing as they are not the same.

2.2.6 Single-Axis (To-Fro) Swing

2.2.6.1 General Requirements

The swing seat shall be molded of high quality rubber or polyurethane with an encapsulated steel reinforcement. The swing seat shall be designed to accommodate one user

2.2.6.2 Full Bucket Swing Seat

A full bucket swing seat is designed to accommodate children up to a maximum 4 years of age; the seat is used by a child with adult assistance. The swing seat shall be constructed of rubber with a tempered steel insert molded inside, shall be double-sided, shall be enclosed by rubber both front and back, and shall include a 360 degree waist enclosure and leg enclosures. Leg enclosures shall be sized to avoid head or neck entrapment. Finish shall be smooth and edges shall be rounded. These swing seats shall not be mixed with other swing seats within a bay.

2.2.7 Spring Rocking Equipment

Spring mechanisms shall conform to the requirements for pinch, crush, and shear points for a maximum 120 lb weight limit in accordance with ASTM F1487. Seats shall be designed to accommodate only the intended number of users.

2.2.8 Roofs

Roofs shall contain no designated play surface.

2.2.9 Sliding Poles

Sliding poles shall be a maximum 1.9 inch diameter and a continuous surface with no protruding welds or joints along the sliding area.

2.2.10 Plastic Slide

The slide shall be molded of UV stabilized polyethylene or nylon with minimum of 3/16 inch wall thickness. The edge shall be a minimum 3/16 inch radius, ASTM D1248, Type II, Class A, Grade G4.

2.2.11 Play House or Enclosures

Provide the play house with a shelf at the window. The play house and enclosures will be designed to provide other than direct outside visibility from a minimum 5 feet to all inside corners.

PART 3 EXECUTION

3.1 SITE PREPARATION

3.1.1 Finished Grade and Underground Utilities

Verify that finished grades are as indicated; the smooth grading has been completed; installation of the underground utilities through the area has been completed; installation of the storm-drainage system through the area has been completed; and the installation of underground sprinklers through the area has been completed. The location of underground utilities and facilities in the area of the operation shall be verified. Damage to underground utilities and facilities shall be repaired at the Contractor's expense.

3.1.2 Layout

3.1.2.1 General

The layout of the entire outdoor play area shall be staked before excavation begins to include the following: all play event configuration access and egress points; use zone perimeters; hard surface areas and pathway widths; exterior plant material and planters; walls and fences; and structures. Provide sufficient space between all adjacent play events and individual play events for play activities and circulation. Moving and rotating play events shall be located away from circulation to prevent collisions.

3.1.2.2 Use Zone

The use zone is associated with the following terms; "Clear Area," and "Fall Zone". The use zone shall be free of hard surfaces, objects or obstacles that a child could run into or fall on top of and be injured. The use zone shall consist of protective surfacing in accordance with the requirements of Playground Protective Surfacing specification section. Use zone perimeters shall not overlap hard surfaces. The use zone perimeter shall meet or exceed the requirements of paragraph CHILD SAFETY AND ACCESSIBILITY STANDARDS. Use zone perimeters shall not overlap except for certain play events as defined in ASTM F1487.

3.1.3 Orientation

Bare or painted metal platforms and slide beds shall be oriented from the direct sun; or shaded to reduce contact burn risk. Play events that require orientation to adjacent play events or to meet visibility requirements shall be properly oriented.

3.1.4 Obstructions Below Ground

When obstructions below ground affect the work, submit shop drawings showing proposed adjustments for approval.

3.2 INSTALLATION

Play events shall be installed according to the manufacturer's recommendations and as shown to meet the requirements of paragraph CHILD SAFETY AND ACCESSIBILITY STANDARDS.

3.2.1 Play Event Modification

Site modifications of play events affect the coverage provided in paragraph WARRANTY; therefore, play events and equipment shall not be modified without the written approval of the manufacturer. Submit manufacturer's written approval.

3.2.2 Wood Finishes

Field applied or touch up of wood finishes shall meet the same specifications as finishes applied at the factory. Submit wood finish chemical content and toxicity level.

3.2.3 Plastic Play Events

Plastic and recycled plastic components shall be connected by stainless steel hardware. The hardware shall be countersunk. Recycled plastic molded as lumber or wood-polymer lumber shall be installed in accordance with the manufacturer's recommendations.

3.2.4 Footings

The top elevation of play event footings will be installed at the subbase of the protective surfacing.

3.2.5 Multiple-Axis (Rotating) Swing

The multiple-axis (rotating) swing shall be located away from other play events and circulation. It shall not be attached to a composite structure.

3.2.6 Single-Axis (To-Fro) Swing

The single-axis (to-fro) swing shall be located on the perimeter of the outdoor play area. It shall not be attached to a composite structure.

3.2.7 Slide

The required exit region clear area shall be provided in accordance with ASTM F1487.

3.2.8 Chain or Rope Ladder, Climber or Net Climber

A chain or rope ladder; climber; net climber; and similar components shall be installed in the vertical position. Angled or arch positions are not accepted.

3.2.9 Composite Structure

The composite structure use zone perimeter shall be composed of the use zone perimeters of the play events that, when joined together, comprise the composite structure.

3.2.10 Fall Height

3.2.10.1 General

The fall height is defined as the vertical distance between the finished elevation of the designated play surface and the finished elevation of the protective surfacing beneath it. For some play events the fall height and paragraph PLATFORM HEIGHT are the same. For some play events the fall height and maximum equipment height are the same. When the furnished play event fall height varies from the play event shown, submit scale drawings defining the revised depth or type of protective surfacing to meet or exceed the requirements of Playground Protective Surfacing specification section shall be provided.

3.2.10.2 Measuring Fall Height

EQUIPMENT	MEASURING FALL HEIGHT
Composite Structure	For a platform surrounded by protective barriers, measure from the platform finished elevation.
	For a platform surrounded by guardrails, measure from the guardrail top elevation.
Infant Crawl Area	A maximum 24 inch height, measured from the crawl wall or barrier finished elevation.
Playhouse, Nonclimbable	Measure from the designated play surface finished elevation.
Spring Rocking Equipment	Measure from the seat top elevation.
Stationary Equipment, Climbable	Measure from the maximum equipment height finished elevation.
Stationary Equipment, Nonclimbable	Measure from the designated play surface finished elevation.
Swing	Measure from the bottom of the pivot point.

3.2.11 Signage

Durable permanent signage shall be provided to identify the age group the equipment is designed to accommodate.

3.3 RESTORATION AND CLEAN UP

When the operation has been completed, clean up and protect the site. Existing areas that have been damaged from the operation shall be restored to original condition at the Contractor's expense.

3.3.1 Clean Up

The site and play events shall be cleaned of all materials associated with the operation. Play events and surfaces shall be cleaned of dirt, stains, filings, and other blemishes occurring from shipment and installation. Cleaning methods and agents shall be as recommended by the manufacturer. Required labeling shall be undamaged and visible in accordance with paragraph EQUIPMENT IDENTIFICATION.

3.3.2 Protection

The area shall be protected as required or directed by providing barricades and signage.

3.3.3 Disposal of Materials

Excess and waste material shall be removed and disposed off-site.

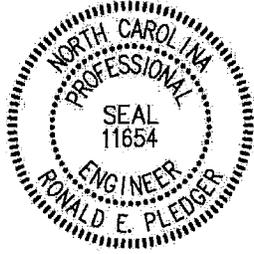
3.4 CHILD SAFETY AND ACCESSIBILITY EVALUATION

- a. When the protective surfacing is installed the play events and protective surfacing shall be thoroughly inspected and measured to verify the playground meets manufacturer's recommendations, paragraph CHILD SAFETY AND ACCESSIBILITY STANDARDS, and paragraph FALL HEIGHT.
- b. The play events shall be age appropriate for the age group using them in accordance with paragraph PLATFORM HEIGHT. Determine 1) secure anchoring; 2) all hardware and connectors are tight; 3) all hardware and connectors require tools to loosen; 4) all hooks are closed; 5) head and neck entrapment; 6) sharp points, edges, and protrusions; 7) entanglement; 8) pinch, crush, and shear points; 9) suspended hazards; 10) all component holes are filled; and 11) recycled plastic components used as load bearing structural members.
- c. Use zone distances shall be measured to determine the area is free of hard surfaces, objects or obstacles. Determine exceptions to use zone overlaps occur in accordance with paragraph USE ZONE. Play event fall height shall be measured and compared to critical height value for thickness of installed protective surfacing. The slide exit region shall have the required clear zone. Play events and surfaces shall be properly oriented. Chain, rope, net climbers or similar components shall be installed in a vertical position. Swing seat clearances shall be measured while occupied by a maximum user for the age group using the equipment. Warning labels and manufacturer identification labels shall be visible in accordance with paragraph EQUIPMENT IDENTIFICATION.
- d. Play events that do not comply shall be reinstalled. Fasteners, anchors, hardware and labels that do not comply shall be replaced. Ensure positive drainage for the area and the lowest elevation of protective surfacing subgrade has been provided. A written report describing the results of the evaluation shall be provided.
- e. Submit records of measurements and findings by the certified playground safety inspector. Submit verification stating that the installed play events and equipment meet manufacturer's recommendations and paragraph CHILD SAFETY AND ACCESSIBILITY STANDARDS.

3.5 RE-INSTALLATION

When re-installation is required, accomplish the following: Re-install the product as specified. Provide new replacement materials supplied by the manufacturer. Material acquisition of replacement parts is the responsibility of the Contractor. Damage caused by the failed installation shall be repaired at the Contractor's expense.

END OF SECTION 11680



Ronald E. Pledger

1/15/2016

SECTION 16100 - GENERAL ELECTRICAL REQUIREMENTS

The Electrical Contractor must organize his work and secure material in a manner that will expedite the project thus completing the project on schedule. Conditions of the Contract, Form of Construction Contract, Notice to Bidders, Supplementary General Conditions, General Specifications and all of which are a part of these specifications.

The electrical work shall be part of the general contract.

The Contractor shall refer to the Notice to Bidders, Instructions to Bidders and General Conditions of the Contract, Form of Construction Contract, Supplementary General Conditions, General Specifications and all Division 16 Electrical Specifications all of which are a part of these specifications.

Refer to drawings for exact dimensions and layout.

PART 1 GENERAL

1.01 These specifications and the accompanying plans are intended to describe the installation of a complete electrical system in this building complex. The work to be done under these specifications shall include the furnishing of all labor, equipment and materials required to provide a complete and working electrical system as shown on the plans and as outlined in these specifications.

PART 2 GENERAL

2.01 The contract shall include all labor, materials, permits, etc. necessary for the completion of the work. All materials, shall be new except as specifically noted, and shall have Underwriter's Laboratory approval or U.L. re-examination listing, and shall be installed in accordance with the best practice by experienced mechanics.

2.02 The electrical plans are diagrammatic only and are not intended to show all details of the work. The location of all conduit work is approximate and the Electrical Contractor shall make any necessary changes in the location to avoid piers, beams, footings, plumbing, duct and other obstructions at no additional cost to the owner.

2.03 The spirit as well as the letter of the plans and specifications

work shall be executed according to the true intent and meaning of plans and specifications, both of which are intended to include everything requisite for a complete electrical system.

2.04 The Electrical Contractor shall comply with all state and Underwriter's requirements, ordinances or rules governing work of the character including the current edition of the National Electrical Code and OSHA and all applicable local codes.

2.05 Should any error or omission exist in either or both of these plans and specifications, or conflict one with the other, the Contractor shall not avail himself of such unintentional error, omission or conflict, but shall have same explained and adjusted before signing the contract or proceeding with the work, otherwise, he shall at his expense supply the proper materials and labor to make good any damage to or defect in his work caused by such error, omission or conflict.

PART 3 SAMPLES

3.01 All materials, equipment and accessories entering into the work area are subject to the approval or disapproval of the Engineer. No samples are required to be submitted with bid documents. Name of equipment suppliers shall be provided on the Bid Form where required.

3.02 The samples required by the Engineer shall be submitted after the award of the contract and acceptance of the Contractor's bond. All samples shall be delivered to a location designated by the Engineer.

3.03 No inspection or test shall be made except upon formal notice to the Engineer from the Contractor by letter or telegram. Contractor shall furnish all labor and appliances for tests and shall meet all expenses of said test.

3.04 In all cases where devices or part of the equipment is herein referred to in the singular number, it is intended that such referred shall apply to as many devices as are required to complete the installation.

PART 4 SPECIAL CONDITIONS

4.01 Everything necessary for the completion and successful operation of the work, whether or not here definitely specified or indicated on the drawings, shall be furnished and installed as well and faithfully as if so indicated and specified.

4.02 Contractor shall store all materials in trailers each night. No materials shall be left in the institution.

4.03 System voltage shall be the following:

120/230 VAC, single phase, 3 wire, 60 hertz

PART 5 PAINTING

5.01 All factory finished metal surfaces damaged during installation shall be restored to their original condition.

PART 6 SUPERVISION AND SUPERINTENDENCE

6.01 This Contractor shall during the progress of the work, maintain a competent superintendent who shall not be changed except if he proves unsatisfactory to the Contractor or the Engineer.

PART 7 WORKMANSHIP

7.01 Only the finest quality workmanship shall be acceptable and any shoddy work shall be removed without delay and such materials shall not be re-used without the consent of the Engineer.

7.02 The Electrical Contractor's foreman shall be thoroughly experienced in the installation of electric wiring as covered by the plans and specifications and he shall remain on the job continually while the work is in progress. His qualifications, and ability shall be acceptable to the Engineer.

PART 8 INSPECTION AND TESTS

8.01 The system shall be installed in strict accordance with the regulations of the local and State Codes and ordinances.

8.02 The final inspection and tests shall be made only after the Engineer shall be satisfied that the work described in these specifications has been completely installed in accordance with the spirit and intent of these specifications. The acceptance of the work shall not in any way prejudice the rights to demand the replacement of defective materials or workmanship. The Electrical Contractor shall furnish instruments, special apparatus, and expert service to make all necessary tests to show that the system is absolutely clear of improper grounds and short circuits and to demonstrate that the entire equipment as to capacity, quality, and completeness is properly installed to meet all requirements of these specifications and defects shall be remedied without delay. Electrical Certificate shall be by the State Electrical Inspector for the applicable part of the project under their jurisdiction.. Electrical contractor shall coordinate all state electrical inspections through the State Construction Office.

The Electrical Contractor shall notify the local electrical inspector and schedule required inspections including rough-in, and final inspections. A "certificate of approval" shall be obtained from the local Electrical Inspector after project final inspection approval.

PART 9 VISIT TO SITE

9.01 All bidders shall visit the site and thoroughly familiarize themselves with the existing conditions before submitting their bids. No allowances will be made for a lack of knowledge of existing conditions.

PART 10 GUARANTEES

10.01 The contractor shall deliver the systems to the owner in first class operating condition in every respect and shall guarantee as specified in Instructions To Bidders and General Conditions of the Contract for one full year after final acceptance of the project

PART 11 LIQUIDATED DAMAGES

11.01 Refer to General Conditions

PART 12 COORDINATION

12.01 The electrical contractor shall be responsible for any delays in construction caused by the Electrical Contractor.

PART 13 FEES AND PERMITS

13.01 Contractor shall acquire and pay for all fees and permits required by authorities.

PART 14 CONTRACTOR DEFINED

14.01 The words "Contractor", "contractor" and "Electrical Contractor" are used in this section are synonymous.

PART 15 ACCEPTANCE

15.01 The entire electrical construction will be accepted as a unit. There will be no partial acceptance.

PART 16 DAMAGES

16.01 This contractor shall be responsible for damage to the work of others or the property and any damage by this contractor shall be repaired or replaced by this contractor at no cost to the owner.

PART 17 RECORD DRAWINGS

17.01 The contractor shall furnish to the Engineer drawings of any arrangements installed differently from those shown on the Engineer's contract drawings.

PART 18 SUBSTITUTE MATERIALS

18.01 A 10 day prior approval before the bid date shall be required for any substitutions than the materials listed in the specifications.

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



SECTION 16111 - CONDUIT

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Electrical Metallic Tubing and Fittings
- B. Non Metallic Conduit and Fittings
- C. Rigid Metal Conduit and Fittings

1.02 REFERENCES

- A. ANSI C80.3 Electrical Metallic Tubing, zinc coated
- B. ANSI/NEMA FB 1 - Fittings and Supports for Conduit and cable assemblies.
- C. FS WW-C-581 - Specifications for Galvanized Rigid Conduit

PART 2 PRODUCTS

2.01 RIGID STEEL CONDUIT:

- A. Rigid steel conduit: ANSI C80:1; FS WW C 581. Conduits shall be rigid steel hot dipped galvanized zinc, metallized, sherradized mild steel, Schedule 40 size, threaded, manufactured in accordance with Underwriter's Laboratory standard and so labeled.
- B. ACCEPTABLE MANUFACTURERS:
 - 1. National
 - 2. Republic
 - 3. Spang
 - 4. Or Equal
- C. Fittings and Conduit Bodies: ANSI/NEMA FB1; threaded style.

2.02 PLASTIC CONDUITS AND FITTINGS:

- A. Conduit NEMA TC2: 40 PVC manufactured in accordance with Underwriter's Laboratory Standard and UL listed.
- B. Fittings and conduit bodies TC3.
- C. Acceptable Manufacturers:
 - 1. Allied
 - 2. Carbon
 - 3. FRE Conduit

2.03 FLEXIBLE METALLIC CONDUIT AND FITTINGS

- A. Conduit FS-WW-C-566 (Aluminum)
- B. Fittings and conduit bodies: ANSI (NEMA FB)

2.04 CONDUIT SUPPORTS

- A. Conduit clamps, straps, and supports: malleable iron for riser assemblies.

2.05 METALLIC CONDUIT AND FITTINGS

- A. Conduit FS-WW-566 (aluminum)
- B. Fitting and conduit bodies
- C. Acceptable Manufacturers
 - 1. Alflex Corp.
 - 2. Allied
 - 3. Thomas and Betts

2.06 EMT

- A. EMT: ANSI C80.3 galvanized tubing.
- B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel only hexagonal threaded connectors unless specified otherwise. Indenter fittings will not be allowed.

C. ACCEPTABLE MANUFACTURERS

1. National
2. Republic
3. Spang

PART 3 EXECUTION

3.01 CONDUIT SIZING, ARRANGEMENT, AND SUPPORTS

- A. Size conduit for conductor type installed. 3/4" (20mm) minimum size.
- B. Arrange conduit to present a neat appearance.
- C. Route exposed conduit above accessible ceilings parallel and perpendicular to walls and adjacent piping.
- D. Maintain minimum 6" clearance between conduit and piping. Maintain 12" (300mm) clearance between conduit and heat sources such as flues, steam pipes, and heating appliances.
- E. Paralleled conduit shall be run straight and true with offsets uniform and symmetrical. Conduit terminals, boxes and cabinets shall be rigidly secured with double locknuts, one inside and one outside and bushings. Insulated bushings of the plastic type shall be used on all conduits 3/4" trade size and larger. Lacquer coating of conduits shall be removed where ground clamps are to be installed.
- F. Group conduit in parallel runs where practical and use conduit rack constructed of steel channel with conduit straps or clamps. Provide space for 25 percent additional conduit.
- G. Do not fasten conduit with wire or perforated pipe straps. Remove all wire used for temporary conduit support during construction, before conductors are pulled.
- H. Exposed conduit shall be securely fastened in place in accordance with the latest issue of the NEC. Horizontal and vertical conduit runs may be supported by one-hole malleable straps, clampbacks or other approved device with suitable bolts, expansion shields where needed or beam clamps for mounting to building structure or special brackets. Adjustable hangers may be used to suspend conduits when separately located. The required strength of the supporting equipment shall be based on the combined weight of conduits, hangers and cables.

3.02 CONDUIT INSTALLATIONS ABOVE GRADE

- A. Cut conduit square using a saw or pipe cutter; de-burr cut ends.
- B. Bring conduit to the shoulder of fittings and couplings and fasten securely.
- C. Use conduit hubs or sealing locknuts for fastening conduit to cast boxes, and for fastening conduit to sheet metal boxes in damp or wet locations.
- D. Install no more than the equivalent of four 90-degree bends between boxes.
- E. Use conduit bodies to make sharp changes in direction.
- F. Use hydraulic one shot conduit bender or factory elbows for bends in conduit larger than 2" (50 mm) size.
- G. Avoid moisture traps where possible; where unavoidable, provide junction box with drain fitting at conduit low point.
- H. Use suitable conduit caps to protect installed conduit against entrance of dirt and moisture.
- I. Provide No. 12 AWG insulated conductor or suitable pull string in empty conduit, except sleeves and nipples.
- J. Where conduit penetrates fire-rated walls and floors, provide mechanical fire-stop fittings with UL listing fire rating equal to wall or floor rating.
- K. Route exposed surface metal raceway to provide least obvious installation. Utilize corners of rooms as much as possible.
- L. Conduit couplings for CRC and PVC shall be in accordance with NEC.
- M. EMT couplings shall be of the plated steel hexagonal compression type. No POT METAL or INDENTED type couplings shall be utilized.
- N. EMT couplings shall be "concrete tight" where buried in masonry or concrete. Where installed in damp locations fittings shall be of the "raintight" type.

3.03 UNDERGROUND CONDUIT INSTALLTION – BELOW GRADE

- A. Underground installation shall conform to ANSI C2 and NFPA 70 except as otherwise specified or indicated.
- B. Direct Burial System: Branch circuit conduit shall be buried directly in earth. Trenches in which conduits are placed shall be excavated by hand or with mechanical trenching equipment. Provide a minimum conduit depth to bottom of trench of 30" for power conductors operated less than 600 volts. Trenches shall not be less than 6" wide, and shall be in straight lines between cable markers. Cable plows shall not be used. Bends in trenches shall have a radius of not less than 36". Where two or more conduits are laid in parallel in the same trench, they shall be spaced laterally at least 3" apart. When rock is encountered, it shall be removed to a depth of at least 3" below the cable and the space filled with sand or clean earth free from particles larger than 1/4". Provide a plastic warning tape as specified herein. Conduits exposed to physical damage shall be encased in 3" of concrete including service entrance conduits. No concrete encasement is required for Telecommunications, data and audio raceways.
- C. Conduits crossing other metal piping shall be separated from the other pipe by not less than 12" of well tampered earth.
- D. The top of the duct shall not be less than 30" below grade, shall have a minimum slope of 3" in each 100 feet away from buildings and toward other necessary drainage points, and shall run in straight lines except where a change of direction is necessary. As each conduit run is completed, a testing, mandrel not less than 12" long with a diameter of 1/4" less than the inside diameter of the duct shall be drawn through each conduit; after which a brush, having stiff bristles, shall be drawn through until the conduit is clear of all particles of earth, sand, or gravel; conduit plugs shall then immediately be installed. There shall not be less than 3" clearance from the conduit to each side of the trench. The bottom of the trenches shall be graded smooth; where rock, soft spots, or sharp edged materials are encountered, excavate the bottom for an additional 3"
- E. Warning Tapes in Earth Trenches: For the purpose of early warning and identification during future trenching or other excavation, continuous identification tapes shall be provided in the trench above direct buried cables. Tape shall be nonmagnetic plastic tape or aluminum foil plastic-backed tape manufactured for the purpose of early warning and identification of utilities buried below the tape. Tape shall be at least 3" in width. Color of tape shall be standard with the manufacturer for the type of utility buried below the tape. Tape shall not have lettering at least 1" high with not less than the following identification of the tape: "BURIED ELECTRIC LINE BELOW". Tape shall be installed according to the printed recommendations of the tape manufacturer as modified herein. Tapes shall be buried at a depth of 6" below the top surface of earth: in pavements, this 6" shall be measured from the top of the subgrade.
- F. Terminate conduits in end bells where duct lines enter handholes.

G. Reconditioning of Surfaces:

Unpaved surfaces disturbed during the installation of duct or dirt burial cable shall be restored to their original elevation and condition. Sod or topsoil shall be preserved carefully and replaced after the backfilling is completed. Sod that is damaged shall be replaced by sod of quantity equal to that removed. Where the surface is disturbed a newly seeded area, the restored surface shall be reseeded with the same quality and formula of seed as that used in the original seeding. Compaction shall be in 6" layers.

H. Surfaces to be paved shall be restored and soil replaced to meet all requirements for paved road preparation as detailed in the Civil Engineering Specifications including backfill to 95% compaction.

I. Cable Pulling: Cables shall be pulled down grade with the feed-in point at the point of the highest elevation. Flexible cable feeds shall be used to convey cables through the opening and into the duct runs. Cable lubricants shall be soapstone, graphite, or talc for rubber or plastic jacketed cables. Cable pulling tensions shall not exceed the maximum pulling tension recommended by the cable manufacturer. If basket-grip type cable pulling devices are used to pull cable in place, cut off the section of the cable under the grip before splicing and terminating.

3.04 SCHEDULE OF CONDUIT INSTALLATION

A. Interior concealed installation: Electrical metallic tubing for all conduit less than and including 2". Rigid galvanized steel conduit shall be used for all conduit 2 1/2" or larger. EMT shall not be installed where:

1. It will be subject to severe physical damage.
2. It will be subject to severe corrosive influence.
3. Tubing, elbows, couplings, and fittings would be in concrete or in direct contact with the earth.
4. It is protecting the service entrance conductors.

B. Rigid conduit shall be used where subject to severe physical damage. Use rigid galvanized steel conduits for any exterior exposed conduit installation.

C. Use schedule 40 PVC conduit direct burial for area lighting and branch circuit conduit installed underground.

D. Use rigid galvanized conduit in the Fletcher mechanical room.

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



SECTION 16120 – WIRE AND CABLE

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Building Wire
- B. Cable
- C. Wiring connections and terminations

1.02 REFERENCES

- A. NEMA WC-5 thermoplastic insulated wire and cable for the transmission and distribution of Electrical Energy

1.03 SUBMITTALS

- A. None

PART 2 PRODUCTS

2.01 BUILDING WIRE

- A. Thermoplastic insulated Building Wire - NEMA WC 5
- B. Branch circuit 10 AWG and Smaller copper solid conductor, 600 volt insulation, THHN/THWN.
- C. Branch circuit -conductors #8 AWG and larger shall be stranded copper conductor 600 volt insulation THHN/THWN. All insulation for #6 and #8 AWG shall be color coded by pigmentation, not tape.
- D. Minimum conductor size for all power and lighting circuits shall be #12 AWG.
- E. All conductors shall be color coded by pigmentation.

2.02 CONDUCTORS

- A. All conductors shall be tinned soft or annealed copper wire of the quality manufactured in accordance with ASTM specifications. Cutting away of strands to permit inserting into lugs will not be tolerated.

- B. Conductor sizes shall be American Wire gauge sizes as indicated and stranded construction. All wires to be factory marked with stamping every two feet indicating size, type, voltage, rating and manufacturer's name. Wire shall be factory color-coded. Color coding shall be as follows: 120/208 VAC 3 Phase 4 wire: Phase A(1) Black, Phase B (2) Red, Phase B (3) Blue, Neutral (N) White, and Ground, (G) Green. The system-grounding conductor shall be colored green. The system-grounding conductor shall be colored green. Note the green coding required by NEC for conductors intended solely for the grounding purposed. In multiconductors, the group shall be color coded. All color-coding shall be by pigmentation. Surface colored wires will not be accepted.

2.03 ACCEPTABLE MANUFACTURERS

- A. Phelps Dodge
B. Houston
C. Southwire

PART 3 EXECUTION

3.01 GENERAL WIRING:

- A. Use no wire smaller than 12 AWG for power and lighting circuits. For 20 ampere single phase branch circuits longer than 75 feet, use #10 AWG.
- B. Place an equal number of conductors for each phase of a circuit in same raceway or cable.
- C. Splice only in junction or outlet boxes..
- D. Neatly train and lace wiring inside boxes, equipment and panelboards.
- E. Each feeder conductor in pull box or panel containing more than one home run shall be identified by non-magnetic metal tag. Tags shall be one inch in diameter and have stamped numbers and letters 1/2" high. Tape with printed numbers, etc., type identifiers shall be acceptable for temporary use during construction. Thoroughly wipe wire and cable with alcohol to clean surface before applying tape identifiers.

3.02 WIRING INSTALLATION IN RACEWAYS

- A. Pull all conductors into a raceway at the same time. Use UL listed wire pulling lubricants for pulling 4 AWG and larger wires.

- B. Install wire in raceway after all mechanical work likely to injure conductors has been completed.
- C. As far as practicable, all feeder cables shall be continuous from origin to panel termination without running splices in intermediate pull boxes or splicing chambers. Sufficient slack shall be left at the termination to make proper connections. Unless otherwise noted, each conduit raceway shall contain only those conductors constituting a single feeder circuit. All cable terminals, taps and splices shall be made secure with solderless pressure type connectors unless otherwise specified. Where conductors are to be connected to metallic surfaces, the coated surfaces for the metal shall be polished before installing the connector. Marlin twine shall be used to bind cable groups together.
- D. Completely and thoroughly swab raceway system before installing conductors.

3.03 CABLE INSTALLATION

- A. Use suitable cable fittings and connectors.

3.04 WIRING CONNECTIONS AND TERMINATIONS

- A. Splice only in accessible junction boxes, outlets, troughs or handholes if necessary, avoid splicing if possible.
- B. Joints in solid conductors shall be spliced using Ideal "wirenuts", 3M Company "Scotchlock" or T&B "Piggy" connectors in junction boxes, outlet boxes and lighting fixtures.
 - 1. "Sta-kon" or other permanent type crimp connectors shall not be used for branch circuit connections.
 - 2. Joints in stranded conductors shall be spliced by approved mechanical connectors and gum rubber tape or friction tape. Solderless mechanical connectors for splices and taps, provided with U/L approved insulating covers, may be used instead of mechanical connectors plus tape.
 - 3. Conductors, in all cases, shall be continuous from outlet to outlet and no splicing shall be made except within outlet or junction boxes, troughs, and gutters.
- C. Use compression connectors for copper wire splices and taps 8 AWG and larger. All joints splices and taps and other sections of wiring requiring taping shall be taped with at least two layers of approved gum rubber tape which shall be laid on with half lap followed by at least one layer of friction or plastic tape laid on with half lap. The intent of this specification is that the taping shall be neatly done and form a

permanently secured insulation equal to 150 percent of the insulation value of the conductor.

- C. Thoroughly clean wires before installing lugs and connectors.
- D. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.
- E. Terminate spare conductors with electrical tape.

3.05 FIELD QUALITY CONTROL

- A. Field inspection and testing shall be performed.
- B. Inspect wire and cable for physical damage and proper connection.
- C. Torque test conductor connections and terminations to manufacturer's recommended value.
- D. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

3.06 WIRE AND CABLE INSTALLATION SCHEDULE

- A. Interior Locations: Building wire in raceways.
- B. Exterior Locations: Building wire in raceways.

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

SECTION 16130 - BOXES

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Wall and ceiling outlet boxes
- B. Pulling and junction boxes

1.02 RELATED WORK

- A. Section 16141 General Purpose Wiring Devices

1.03 REFERENCES

- A. ANSI/NFHA OS 1 Metal outlet boxes, device boxes, covers and box supports
- B. UL Standard 886
- C. FED. SPEC. W-C-583B

PART 2 PRODUCTS

2.01 OUTLET BOXES

- A. Cast boxes: cast ferroalloy, deep type, threaded hubs.
- B. ACCEPTABLE MANUFACTURERS
 - 1. RACO
 - 2. STEEL CITY
 - 3. APPLETT

2.02 OUTLET BOXES - SHEET METAL

- A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1. galvanized steel with 1/2 inch (13 mm) male fixture studs where required. Boxes shall be at least 2-1/2" deep and of sufficient size to accommodate devices noted. Boxes for fixtures shall have mounting lugs or ears for covers. Wall switch outlet boxes shall be set as indicated above finished floor. Where located near doors, they shall be installed on the *lock* side of the door.

B. ACCEPTABLE MANUFACTURERS

1. RACO
2. STEEL CITY
3. APPLETON

2.03 PULL AND JUNCTION BOXES:**A. Sheet metal junction boxes: ANSI/NEKA OS I**

1. Pull and junction boxes shall be fabricated from galvanized sheet steel not less than 16 gauges thick with covers held in place by corrosion resisting machine screws. Boxes shall be furnished and installed where indicated on the plans and where necessary to facilitate cable pulling and splicing. Box size shall be as required by NEC for the number of conduits and conductors entering and leaving it. Where feeder splices are to be made, box shall be large enough to provide ample work space. Boxes shall be installed in locations approved by the Engineer. Exposed junction boxes 4-11/16" x 4" x 4" shall be covered with Bowers #649 and #469 "blank Box covers" respectively.

2.04 CABLE BOXES:

- A. The electrical contractor shall furnish and install junction boxes, pull boxes, cable support boxes, and wiring troughs as shown on the drawings, herein specified or otherwise required. All boxes shall be of the code gauge galvanized steel with screw covers fastened with corrosion resistant machine screws and they may be painted or treated to resist corrosion in addition. Boxes shall be supported independently of conduits entering them. Brackets, rod hangers, bolts or other suitable supporting methods may be used.

PART 3 EXECUTION**3.01 COORDINATION OF BOX LOCATIONS**

- A. Provide electrical boxes as shown on drawings and as required for splices, taps, wire pulling, equipment connections and code compliance.
- B. Electrical box locations shown on contract drawings are approximate unless dimensioned. Verify locations of outlets in work areas prior to rough-in. owner reserves the right to make minor changes in the location of any switch or box without additional cost prior to installation.

- C. Locate and install boxes to allow access. Where installation is inaccessible, coordinate locations and sizes of required access doors.
- D. Locate and install to present a neat appearance.
- E. Before any outlet box or switch for use by other trades is set, the exact location required shall be obtained from the contractor installing the equipment. If not adhered to, the Electrical contractor shall be responsible for changes at no cost to the owner or other trades.

3.02 OUTLET BOX INSTALLATION

- A. Provide surface mounted cast metal outlet boxes for devices as per drawings
- B. Provide recessed sheet metal outlet boxes with masonry plaster ring.
- C. Provide knockout closures for unused openings.
- D. Support boxes independently of conduit.
- E. Use multiple-gang boxes where more than one device is mounted together; do not use sectional boxes. Provide barriers to separate wiring of different voltage.
- F. Coordinate mounting heights and locations of outlets mounted in enclosures or cabinets.
- G. Position outlets to locate luminaries as shown on Room Floor Plans.
- H. Provide surface mounted boxes when designated; secure boxes to wall and accurately position.
- I. Provide cast outlet boxes in exterior locations exposed to the weather and wet locations.
- J. Align wall mounted outlet boxes for switches, timers and similar devices.
- K. Provide stainless steel bolts and screws in corrosion resistant applications.

3.03 PULL AND JUNCTION BOX INSTALLATION

- A. Install pull boxes and junction boxes above in unobtrusive locations.
- B. Support pull and junction boxes independent of conduit.
- C. Provide stainless steel bolts and screws in corrosion resistant applications.

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

SECTION 16134 – OUTLET BOXES

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Outlet Boxes

1.02 RELATED WORK

- A. Section 16141 - Wiring Devices
- B. Section 16147 - Plate Covers

PART 2 COVERS

2.01 MATERIALS

- A. Interior Boxes: Cast ferroalloy metal, shallow type.
- B. For ceilings: 4.5 inch (115 mm) octagonal boxes cast ferroalloy for receiving three or less 3/4" (19mm) conduit.
- C. Surface mounted: 4 inch (102 mm) square cast ferroalloy.
- D. Wiring devices to have #302 stainless steel plates (see 16141).

PART 3 INSTALLATION

- A. Surface mount outlet boxes for surface mounted conduits.
- B. Do not use sectional or handy boxes unless specifically requested.

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



SECTION 16195 – ELECTRICAL IDENTIFICATION

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Nameplates and tape labels.
- B. Wire and cable markers.
- C. Conduit color coding.

1.02 RELATED WORK

- A. Section 16120 - Wire & Cable.

1.03 SUBMITTALS

- A. Include schedule for nameplates and tape labels.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Nameplates: Engraved three-layer laminated plastic, blue surface with white core for 120/230 volt equipment. Black surface with white core for 277/480 volt equipment.
- B. Wire and Cable Markers: Metal tags, split sleeve or tubing type.
- C. Self sticking vinyl cloth wire markers.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Degrease and clean surfaces to receive nameplates and tape labels.
- B. Install nameplates and tape labels parallel to equipment lines.
- C. Secure nameplates to equipment fronts using stainless steel self tapping screws. Secure nameplate to inside face of recessed panelboard doors in finished locations. Adhesive to secure plates will not be allowed.
- D. Embossed tape will not be permitted for any application.

- E. Clean wire and cable with alcohol to receive self sticking wire markers.

3.02 WIRE IDENTIFICATION

- A. Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Identify with branch circuit or feeder number for power and lighting circuits, and with control wire number as indicated on schematic and interconnection diagrams for control wiring.

3.03 NAMEPLATE ENGRAVING SCHEDULE

- A. Provide nameplates to identify all electrical distribution and control equipment, and loads served. Letter height: 1/4 inch (6 mm) for distribution and control equipment identification
- B. Provide nameplates with name, amperage, voltage, and phase.

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

SECTION 16482 – LIGHTING CONTACTORS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Lighting contactors for all ballast or driver lighting loads.

1.02 RELATED WORK

- A. Section 16195 - Electrical Identification

1.03 REGULATORY REQUIREMENTS

- A. UL 508
- B. NEMA ICS2-211-B

1.04 SUBMITTALS

- A. Submit shop drawings and product data.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. SQUARE D
- B. CUTLER HAMMER
- C. GENERAL ELECTRIC
- D. ASCO
- E. ZENITH

2.02 LIGHTING CONTACTORS

- A. Provide mechanically held lighting contactor: contactor shall include coil clearing contacts. Contactor coils shall be continuously rated and encapsulated.

Provide separate terminal strips for remote device interconnection to coil circuit

- B. Contactor shall have totally enclosed, double break silvercadmium oxide power contacts. Auxiliary arcing contacts are not acceptable. Contact inspection and replacement shall be possible without disturbing the line or load wiring.
- C. The contactor shall be industrial duty with straight through wiring with all terminals clearly marked.
- D. Control circuit fuse holder and control circuit transformer.
- E. A. 0.2 - 60 second variable time delay relay shall be incorporated within the contactor enclosure.
- F. Transient suppression and lighting surge protection shall be included to protect the contactor and coil assembly.
- G. Provide manual – off – auto bypass switch in cover of contactor to bypass the time clock and energize contactor coil.

2.03 PROVIDE LIGHTING CONTACTORS AS FOLLOWS

:

- A. 20 ampere rating/pole for led, ballast and-tungsten lighting
- B. 4 poles
- C. 230 VAC
- D. 0.2 - 60 second time delay attachment
- E. NEMA 1 enclosure
- F. Provide circuit breaker overcurrent protection.

2.04 DIGITAL TIMER

- A. See section 16520 Lighting Fixtures

PART 3 EXECUTION

3.01 INSTALLATION

- A. Mount lighting contactors level in enclosure and install suitable identification plate.

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



SECTION 16501 - LAMPS

1. SECTION 16501 – LAMPS

1.01 WORK INCLUDED

- A. Provide and install items as indicated.

1.02 RELATED WORK

- A. Section 16502 - Ballasts & Accessories
- B. Section 16510 - Lighting Fixture

1.03 SUBMITTALS

- A. Submit manufacturer's installation instructions and complete schedule including manufacturer's data and cuts.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. General Electric
- B. Phillips
- C. Sylvania

2.02 LED LAMPS

- A. LED Lamps: 4100 K, (85) CRI color rendering index, 180 degree beam spread, +/- 75 K color variation, 45 lumens per watt efficacy.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install lamps in accordance with manufacturer's instructions.

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

SECTION 16502 – BALLAST AND ACCESSORIES

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Provide and install required ballasts.

1.02 RELATED WORK

- A. Section 16510 - Lighting Fixtures
- B. Section 16501 - Lamps

1.02 REGULATORY REQUIREMENTS

- A. Provide ballasts that meet standards of an electrical testing laboratory and the Certified Ballasts Manufacturer's Association.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. General Electric
- B. Advance
- C. Universal

2.01 LED LAMPS - LED DRIVERS

- A.
 - 1. Input voltage 120 VAC
 - 2. Minimum power Factor - .98
 - 3. frequency 60 Hz
 - 4. 1 Channel
 - 5. output volts 6-20 VDC

6. Minimum operating temperature – 20C
7. THD – Less than 10%
8. LED drivers shall be dimmable

PART 3 EXECUTION

3.01 INSTALLATION

- A. Provide ballasts of compatible design to lamps specified.
- B. Ballast shall be mounted in fixtures to reduce - noise transmission.
- C. LED drivers shall be dimmable. Provide gazebo lights with dimmer.

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

SECTION 16510 – LIGHTING FIXTURES

PART 1 GENERAL

1.01 WORK INCLUDED

- A. This section includes supply and installations of luminaries, supports and accessories and supply of surface mounted boxes, stems and canopies required for a complete installation.

1.02 RELATED WORK

- A. Section 16120 - Wires and Cables
- B. Section 16190 - Supporting Devices
- B. Section 16501 – Lamps
- D. Section 16502 - Ballasts and Accessories

1.03 SUBMITTAL AND SAMPLES

- A. Submit shop drawings and product data.
- B. Submit shop drawings for luminaries indicating pertinent physical characteristics.
- C. If requested by the Engineer/Architect, provide complete photometric data and heat dissipation report from independent testing laboratory.
- D. Provide sample luminaire to ECU for inspection if required.
- E. Provide point by point computerized foot-candle layout for area lighting.

1.04 INTERFACE

- A. Confirm compatibility and interface of other materials with luminaire and other system. Report discrepancies to the Engineer and defer ordering until clarified.
- B. Provide pedestal bases including forming and framing per details as described on drawings (See lighting fixture schedule with selected distribution).

1.05 POLES

- A. Poles shall be round straight with black finish per lighting fixture schedule for 12ft. mounting. Poles shall have an EPA rating for 110 mph winds for the side mount style luminaires. Include bonding and grounding lug inside handhole.
- B. Provide anodized aluminum anchor bolt cover to completely enclose pole foot,. Provide finish to match pole.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. See lighting fixture schedule.

2.02 LED LIGHTING FIXTURES

- A. 50,000 hours operation
- B. LM80 certified LEDS
- C. IP 65 Weather rating
- D. UL Listed
- E. Lumens per Watt - 54
- E. Operating temperature -20F to + 140 F
- F.

2.03 TIMER CONTROLS (Exterior Lighting)

- A. Provide 120 VAC digital timer with automatic daylight savings and leap year adjustment. Provide as programmable for multiple separate output contacts.
- B. Provide digital time clock for 24 hour, seven day astronomic timing for lighting contactor control. Digital time clock shall include power outage backup for 100 hours. Provide for two different time scheduling for multiple loads. Include 20 on/off settings, LCD display, and 30 ampere 120 VAC ratings.

- B. Furnish Tork DWZ or equal by Intermatic.

- C. Program timer to turn off area lighting and gazebo separately from remaining Area Lighting.

PART 3 EXECUTION

A. INSTALLATION

PART 3 EXECUTION

A. INSTALLATION

3.01 SUPPORTS

- A. Install area lighting on formed concrete pedestal bases.
- C. Provide galvanized raceway and boxes mounted in Concession Building.
- D. Mount Exterior area lighting fixtures at locations indicated.
- E. Install digital timer adjacent to new lighting contactors.
- F. Provide photocontrol on building for those area lights that are to be energized from dusk to dawn

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

