LINDEN STREET OVER EXETER RIVER

BRIDGE NO. 081/046

BRIDGE REPAIR

TOWN OF EXETER

EXETER, NEW HAMPSHIRE

BIDDING/CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

DECEMBER 2023

20837D

TOWN CONTRACT NO. 24-01

WRIGHT-PIERCE
Engineering a Better Environment

TOWN OF EXETER

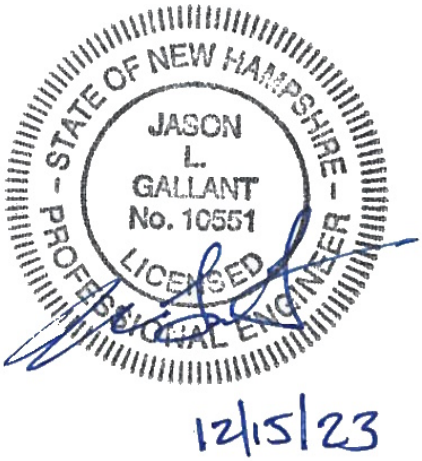
EXETER, NEW HAMPSHIRE

BIDDING/CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

FOR

LINDEN STREET OVER EXETER RIVER
BRIDGE NO. 081/046
BRIDGE REPAIR

DECEMBER 2023



Prepared By:

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Portsmouth, NH 03801
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TABLE OF CONTENTS

SECTION 00100

ADVERTISEMENT FOR BIDS

TOWN OF EXETER
EXETER, NEW HAMPSHIRE
LINDEN STREET OVER EXETER RIVER
BRIDGE NO. 081/046
BRIDGE REPAIR

General Notice

Town of Exeter (Owner) is requesting Bids for the construction of the following Project:

Linden Street Over Exeter River
Bridge No. 081/046
Bridge Repair

Bids for the construction of the Project will be received at the **Town of Exeter** at the **Town Manager's Office**, in the **Town Office Building (10 Front Street, Exeter, NH 03833)** until **Monday**, **January 29, 2024,** at **2:00 PM** local time. At that time the Bids received will be opened and read aloud at the Select Board Meeting at 7:00 PM that evening.

The Project includes the following Work:

The work requires the repair of Linden Street Bridge (Bridge 081/046) over the Exeter River. The repairs shall include, as outlined in the contract plan set, the following: installation of soil anchors to stabilize the existing timber faced abutments and wingwalls; demolition and reconstruction of the abutment backwall; partial demolition and reconstruction of the wingwalls; construction of approach slabs; replacement of existing guardrail and bridge rails; removal of existing pavement and repaving; and associated work to complete the project.

Obtaining the Bidding Documents

The Issuing Office is Wright-Pierce. Information and Bidding Documents for the Project can be found at the following designated website: **[https://www.wright-pierce.com/projects]**

Bidding Documents may be downloaded from the designated website at a cost of **$60** per download.

To be considered a responsive Bidder, the Bidder shall have obtained at least one set of Bidding Documents from the Issuing Office using the name that is to appear on the Bid Form. The designated website will be updated periodically with addenda, lists of plan holders, reports, and other information relevant to submitting a Bid for the Project. All official notifications, addenda, and other Bidding Documents will be offered only through the designated website. Neither Owner nor Engineer will be responsible for Bidding Documents, including addenda, if any, obtained from sources other than the designated website. It is the Bidder's responsibility to check the designated website for addenda.

Pre-bid Conference

A pre-bid conference for the Project will be held on **Monday, January 15, 2024**, at **10:00 AM** at the **Exeter Public Works Department John Doyle Room, 13 Newfields Road, Exeter, NH 03833.** Attendance at the pre-bid conference is encouraged but not required and will be followed by a visit to the site.

Instructions to Bidders

For all contract requirements regarding funding agency notifications, funding agency requirements, bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

This Advertisement is issued by:

Owner: **Town of Exeter**
By: **Paul Vlasich, P.E.**
Title: **Town Engineer, Interim Public Works Director**
Date: **December 18, 2023**

END OF SECTION

SECTION 00200

INSTRUCTIONS TO BIDDERS FOR CONSTRUCTION CONTRACT

TABLE OF CONTENTS

Page

ARTICLE 1—DEFINED TERMS

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

1.02 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 which registers plan holders.

ARTICLE 2—BIDDING DOCUMENTS

2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.

2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use. Authorization to download documents, or other distribution, includes the right for plan holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the plan holder pays all costs associated with printing or reproduction. Printed documents may not be re-sold under any circumstances.

2.03 Bidder may register as a plan holder and obtain complete sets of Bidding Documents, in the number and format stated in the Advertisement or invitation to bid, from the Issuing Office. Bidders may rely that sets of Bidding Documents obtained from the Issuing Office are complete, unless an omission is blatant. Registered plan holders will receive Addenda issued by Owner.

2.04 *Electronic Documents*

A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.

1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf). It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.

B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.06.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents

and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

ARTICLE 3—QUALIFICATIONS OF BIDDERS

3.01 Deleted.

3.02 Deleted.

3.03 *Bidder is to submit the following information with its Bid to demonstrate Bidder's qualifications to perform the Work:*

A. Written evidence establishing its qualifications such as financial data, previous experience, and present commitments.

B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract.

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

D. Subcontractor and Supplier qualification information.

E. Other required information regarding qualifications.

F. Bidders shall be prequalified by NHDOT for Bridge construction or provide Bidders Qualification Statement (Section 00450 of the contract documents)

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

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

3.06 To be considered a responsive Bidder, the Contractor shall have obtained at least one set of Bidding Documents from the Issuing Office. The Bid will not be awarded to a Bidder unless a record for obtaining at least one set of Bidding Documents exists in the Issuing Office. To meet this requirement and to establish the record of receipt, a prospective Bidder must obtain Bidding Documents using the name that is to appear on the Bid Form.

ARTICLE 4—PRE-BID CONFERENCE

4.01 A non-mandatory pre-bid conference will be held at the time and location indicated in the Advertisement or invitation to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference; however, attendance at this conference is not required to submit a Bid.

4.02 Information presented at the pre-Bid conference does not alter the Contract Documents. Owner will issue Addenda to make any changes to the Contract Documents that result from discussions at the pre-Bid conference. Information presented, and statements made at the pre-bid conference will not be binding or legally effective unless incorporated in an Addendum.

ARTICLE 5—SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

5.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

5.02 *Existing Site Conditions*

A. *Subsurface and Physical Conditions; Hazardous Environmental Conditions*

1. The Supplementary Conditions identify the following regarding existing conditions at or adjacent to the Site:

a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.

b. Those drawings known to Owner of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data.

c. Reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.

d. Technical Data contained in such reports and drawings.

2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05 of the General Conditions, and not in the drawings referred to in Paragraph 5.02.A of these Instructions to Bidders. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

5.03 *Other Site-related Documents*

A. No other Site-related documents are available.

5.04 *Site Visit and Testing by Bidders*

A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas. During the visit the Bidder must not disturb any ongoing operations at the Site.

B. A Site visit is scheduled **immediately following the pre-bid conference** at the date and time as noted in the Advertisement for Bids.

C. Bidders visiting the Site are required to arrange their own transportation to the Site.

D. All access to the Site other than during a regularly scheduled Site visit must be coordinated through the Owner. Bidder must conduct the required Site visit during normal working hours.

E. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

F. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.

G. Bidder must comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

H. Bidder must fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

5.05 *Owner's Safety Program*

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

5.06 *Other Work at the Site*

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

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Express Representations and Certifications in Bid Form, Agreement*

A. The Bid Form that each Bidder will submit contains express representations regarding the Bidder's examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should

review these representations and certifications, and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.

B. If Bidder is awarded the Contract, Bidder (as Contractor) will make similar express representations and certifications when it executes the Agreement.

ARTICLE 7—INTERPRETATIONS AND ADDENDA

7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.

7.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing. Contact information and submittal procedures for such questions are as follows:

A. **Jason Gallant, PE (Wright-Pierce) – jason.gallant@wright-pierce.com – (603) 570-7166**

7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all registered plan holders. Questions received less than seven working days prior to the date for opening of Bids may not be answered. Addenda will be issued not later than five working days before the bid opening. Bidders are responsible for determining that they have received all Addenda issued.

7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

ARTICLE 8—BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of **at least five percent (5%)** percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a Bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions. Such Bid bond will be issued in the form included in the Bidding Documents. Bid security must be at least 5% of the Bidder's maximum Bid price.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract 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, in whole in the case of a penal sum bid bond, and to the extent of Owner's damages in the case of a damages-form bond. Such forfeiture will be Owner's exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the

Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within 7 days after the Bid opening.

ARTICLE 9—CONTRACT TIMES

9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any) are to be achieved, are set forth in the Agreement.

9.02 Deleted.

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

ARTICLE 10—SUBSTITUTE AND "OR EQUAL" ITEMS

10.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.

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

ARTICLE 11—SUBCONTRACTORS, SUPPLIERS, AND OTHERS

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

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

A. **Soil Anchor Designer and Subcontractor**

B. **Concrete Subcontractor as applicable**

11.03 If requested by Owner, such list must be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award

is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

11.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 of the General Conditions.

ARTICLE 12—PREPARATION OF BID

12.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form must be completed in ink and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. ~~If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."~~

12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8½ inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.

12.03 A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.

12.04 A Bid by a partnership must 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 must be shown.

12.05 A Bid by a limited liability company must be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.

12.06 A Bid by an individual must show the Bidder's name and official address.

12.07 A Bid by a joint venture must be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.

12.08 All names must be printed in ink below the signatures.

12.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.

12.10 Postal and e-mail addresses and telephone number for communications regarding the Bid must be shown.

12.11 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.

12.12 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder's licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13—BASIS OF BID

13.01 *Lump Sum with Unit Prices and Alternates*

A. Bidders must submit a Bid on a lump sum basis for each lump sum item, and on a unit price basis for each unit price item of Work listed in the Bid Form for the base Bid and include a separate price for each alternate described in the Bidding Documents and as provided for in the Bid Form. The price for each alternate will be the amount added to or deleted from the base Bid if Owner selects the alternate.

B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity", which Owner or its representative has set forth in the Bid Form, for the item and the corresponding "Bid Unit Price" offered by the Bidder. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

D. The total of all unit price "Bid Prices" and all lump sum items will be used by Owner for Bid comparison purposes.

13.02 *Allowances*

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

ARTICLE 14—SUBMITTAL OF BID

14.01 Deleted.

14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid and must 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 must 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 must be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid must be addressed to the location designated in the Advertisement.

14.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 15—MODIFICATION AND WITHDRAWAL OF BID

15.01 An unopened Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 and submit a new Bid prior to the date and time for the opening of Bids.

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

ARTICLE 16—OPENING OF BIDS

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

ARTICLE 17—BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 18—EVALUATION OF BIDS AND AWARD OF CONTRACT

18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.

18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible.

18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.

18.04 If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid.

18.05 *Evaluation of Bids*

A. In evaluating Bids, Owner will consider whether 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.

18.06 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

18.07 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 19—BONDS AND INSURANCE

19.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds, other required bonds (if any), and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by required bonds and insurance documentation.

19.02 Article 8, Bid Security, of these Instructions, addresses any requirements for providing bid bonds as part of the bidding process.

ARTICLE 20—SIGNING OF AGREEMENT

20.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Agreement and any bonds and insurance documentation required to be delivered by the Contract Documents to Owner. Within 10 days thereafter, Owner will deliver one fully executed counterpart of the Agreement to Successful

Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 21—DELETION OF ITEMS

21.01 Owner reserves the right to reduce project scope by the elimination of Bid items, reduction of quantities on unit price Bid items, or deleting elements of lump sum Bid items. No adjustment to other Bid items prices will be permitted. In the case of reduction of quantities on unit price items, the unit price will not be adjusted. Such adjustments to project scope will be determined prior to award of the Contract and will be negotiated with the apparent Successful Bidder only. If such negotiations are not satisfactory to Owner, Owner will reject all Bids.

END OF SECTION

SECTION 00410

BID FORM FOR CONSTRUCTION CONTRACT

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

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to:

Town of Exeter
Town Office Building
10 Front Street
Exeter, NH 03833
Linden Street Over Exeter River
Bridge No. 081/046
Bridge Repair

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—ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. List of Proposed Subcontractors;

C. List of Proposed Suppliers;

D. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;

E. Required Bidder Qualification Statement with supporting data;

F. A tabulation of Subcontractors, Suppliers and other persons and organizations required to be identified in this Bid.

ARTICLE 3—BASIS OF BID—LUMP SUM BID AND UNIT PRICES

3.01 *Base Bid Items*

A. Bidder will complete the Work in accordance with the Contract Documents for the following lump sum, unit price and allowance items.

B. Bidder acknowledges that:

1. each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and

2. estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents (estimated "*").

Item No.	Description	Unit	Quantity	Bid Unit Price	Bid Amount
202.7	REMOVAL OF GUARDRAIL	LF	387		$
203.1	COMMON EXCAVATION	CY	96		$
209.201	GRANULAR BACKFILL (BRIDGE) (F)	CY	71		$
304.3	CRUSHED GRAVEL (F)	CY	75		$
403.11013	HBP-1" BASE MIX, MACHINE METHOD	TON	24		$
403.11043	HBP-1/2" SURFACE MIX, MACHINE METHOD	TON	39		$
403.21053	HBP-3/8" MIX, MACHINE METHOD (BRIDGE BASE)	TON	9		$
410.22	ASPHALT EMULSION FOR TACK COAT	GAL	32		$
417	COLD PLANING BITUMINOUS SURFACES	SY	192		$
502	REMOVAL OF EXISTING BRIDGE STRUCTURE	U	1		$
504.1	COMMON BRIDGE EXCAVATION (F)	CY	94		$
505.6	SOIL ANCHORS	LS	1		$
508	STRUCTURAL FILL	CY	11		$
520.01	CONCRETE CLASS AA	CY	96		$
538.1	BARRIER MEMBRANE, PEEL AND STICK (F)	SY	160		$
544.31	REINFORCING STEEL, EPOXY COATED (CONTRACTOR DETAILED)	LB	12,700		$
544.7	SYNTHETIC FIBER REINFORCEMENT (F)	LB	260		$
559.4	ASPHALTIC PLUG EXPANSION JOINT (F)	LF	48		$
563.99	TIMBER BRIDGE RAIL (TL-4)	LF	118		$
585.3	STONE FILL, CLASS C	CY	1		$
593.411	GEOTEXTILE; PERM CONTROL CL.1, NON-WOVEN	SY	2		$
606.1285	BEAM GUARDRAIL (BRIDGE APPROACH UNIT)	U	4		$
606.127	BEAM GUARDRAIL (TERMINAL UNIT TYPE G-2) (STEEL POST)	U	4		$
606.18011	31" W-BEAM GUARDRAIL WITH 8" OFFSET BLOCK (8' STEEL POST)	LF	350		$
609.811	BITUMINOUS CURB, TYPE B (4" REVEAL)	LF	140		$
619.1	MAINTENANCE OF TRAFFIC	U	1		$

Item No.	Description	Unit	Quantity	Bid Unit Price	Bid Amount
628.2	SAWED BITUMINOUS PAVEMENT	LF	48		$
646.51	TURF ESTABLISHMENT WITH MULCH, TACKIFIERS AND LOAM	SY	60		$
692	MOBILIZATION	U	1		$
699	MISCELLANEOUS TEMPORARY EROSION AND SEDIMENT CONTROL	ALLOW	$10,000		$
1008.9	ALTERATIONS AND ADDITIONS AS NEEDED - TESTING OF MATERIALS	ALLOW	$5,000		$
1008.91	ALTERATIONS AND ADDITIONS AS NEEDED - DECK REPAIRS	ALLOW	$5,000		$
1008.92	ALTERATIONS AND ADDITIONS AS NEEDED - CONCRETE CLASS F	ALLOW	$7,500		$
Total Base Bid					$

3.02 *Bid Alternate 1*

A. Bidder will complete the Work in accordance with the Contract Documents for the following bid alternate items.

Item No.	Description	Unit	Quantity	Bid Unit Price	Bid Amount
505.7	CONCRETE FACING	SF	1100		$
692	MOBILIZATION	U	1		$

3.03 *Total Bid (Base Bid Plus Bid Alternate 1)*

Total Bid (Total of all Lump Sum and Unit Price Bids)	$

ARTICLE 4—DELETED

ARTICLE 5—DELETED

ARTICLE 6—TIME OF COMPLETION

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

6.02 Deleted.

6.03 Deleted.

6.04 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

7.01 *Bid Acceptance Period*

A. 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.

7.02 *Instructions to Bidders*

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

7.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 8—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

8.01 *Bidder's Representations*

A. In submitting this Bid, Bidder represents the following:

1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and

procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. 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.

9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

8.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. 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.

2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.

3. Bidder has not solicited or induced any individual or entity to refrain from bidding.

4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:

a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.

b. 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.

c. 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.

d. 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.

BIDDER hereby submits this Bid as set forth above:

Bidder:

_____
(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

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

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

Address for giving notices:

_____

_____

Bidder's Contact:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Phone: _____

Email: _____

Address:

_____

_____

_____

Bidder's Contractor License No.: (if applicable) _____

END OF SECTION

SECTION 00450

QUALIFICATIONS STATEMENT

ARTICLE 1—GENERAL INFORMATION

1.01 Provide contact information for the Business:

Legal Name of Business:			
Corporate Office			
Name:		Phone number:	
Title:		Email address:	
Business address of corporate office:			
Local Office			
Name:		Phone number:	
Title:		Email address:	
Business address of local office:			

1.02 Provide information on the Business's organizational structure:

Form of Business:	☐ Sole Proprietorship ☐ Partnership ☐ Corporation		
☐ Limited Liability Company ☐ Joint Venture comprised of the following companies:			
	1.		
	2.		
	3.		
Provide a separate Qualification Statement for each Joint Venturer.			
Date Business was formed:		State in which Business was formed:	
Is this Business authorized to operate in the Project location?	☐ Yes ☐ No ☐ Pending		
Identify all		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			

1.03 Provide information regarding the Business's officers, partners, and limits of authority.

Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	

ARTICLE 2—LICENSING

2.01 Provide information regarding licensure for Business:

Name of License:			
Licensing Agency:			
License No:		Expiration Date:	
Name of License:			
Licensing Agency:			
License No:		Expiration Date:	

ARTICLE 3—DIVERSE BUSINESS CERTIFICATIONS (NOT APPLICABLE)

3.01 Provide information regarding Business's Diverse Business Certification, if any. Provide evidence of current certification.

Certification	Certifying Agency	Certification Date
☐ Disadvantaged Business Enterprise		
☐ Minority Business Enterprise		
☐ Woman-Owned Business Enterprise		
☐ Small Business Enterprise		
☐ Disabled Business Enterprise		
☐ Veteran-Owned Business Enterprise		
☐ Service-Disabled Veteran-Owned Business		
☐ HUBZone Business (Historically Underutilized) Business		
☐ Other		
☐ None		

ARTICLE 4—SAFETY

4.01 Provide information regarding Business's safety organization and safety performance.

Name of Business's Safety Officer:		
Safety Certifications		
Certification Name	Issuing Agency	Expiration

4.02 Provide Worker's Compensation Insurance Experience Modification Rate (EMR), Total Recordable Frequency Rate (TRFR) for incidents, and Total Number of Recorded Manhours (MH) for the last 3 years and the EMR, TRFR, and MH history for the last 3 years of any proposed Subcontractor(s) that will provide Work valued at 10% or more of the Contract Price. Provide documentation of the EMR history for Business and Subcontractor(s).

Year									
Company	EMR	TRFR	MH	EMR	TRFR	MH	EMR	TRFR	MH

ARTICLE 5—FINANCIAL

5.01 Provide information regarding the Business's financial stability. If required in the "Submit" check box below, provide a copy of the most recent audited financial statement, and if such audited financial statement is not current, also provide the most current financial statement.

Financial Institution:		
Business address:		
Date of Business's most recent financial statement:		☐ Submit
Date of Business's most recent audited financial statement:		☐ Submit
Financial indicators from the most recent financial statement		
Contractor's Current Ratio (Current Assets ÷ Current Liabilities)		
Contractor's Quick Ratio ((Cash and Cash Equivalents + Accounts Receivable + Short Term Investments) ÷ Current Liabilities)		

ARTICLE 6—SURETY INFORMATION

6.01 Provide information regarding the surety company that will issue required bonds on behalf of the Business, including but not limited to performance and payment bonds.

Surety Name:			
Surety is a corporation organized and existing under the laws of the state of:			
Is surety authorized to provide surety bonds in the Project location?	☐ Yes ☐ No		
Is surety listed in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" published in Department Circular 570 (as amended) by the Bureau of the Fiscal Service, U.S. Department of the Treasury? ☐ Yes ☐ No			
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 7—INSURANCE

7.01 Provide information regarding Business's insurance company(s), including but not limited to its Commercial General Liability carrier. Provide information for each provider.

Name of insurance provider, and type of policy (CLE, auto, etc.):			
Insurance Provider		Type of Policy (Coverage Provided)	
Are providers licensed or authorized to issue policies in the Project location?		☐ Yes ☐ No	
Does provider have an A.M. Best Rating of A-VII or better?		☐ Yes ☐ No	
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 8—CONSTRUCTION EXPERIENCE

8.01 Provide information that will identify the overall size and capacity of the Business.

Average number of current full-time employees:	
Estimate of revenue for the current year:	
Estimate of revenue for the previous year:	

8.02 Provide information regarding the Business's previous contracting experience.

Years of experience with projects like the proposed project:				
As a general contractor:		As a joint venturer:		
Has Business, or a predecessor in interest, or an affiliate identified in Paragraph 1.03:				
Been disqualified as a bidder by any local, state, or federal agency within the last 5 years? ☐ Yes ☐ No				
Been barred from contracting by any local, state, or federal agency within the last 5 years? ☐ Yes ☐ No				
Been released from a bid in the past 5 years? ☐ Yes ☐ No				
Defaulted on a project or failed to complete any contract awarded to it? ☐ Yes ☐ No				
Refused to construct or refused to provide materials defined in the contract documents or in a change order? ☐ Yes ☐ No				
Been a party to any currently pending litigation or arbitration? ☐ Yes ☐ No				
Provide full details in a separate attachment if the response to any of these questions is Yes.				

8.03 List all projects currently under contract in Schedule A and provide indicated information.

8.04 List a minimum of three and a maximum of six projects completed in the last 5 years in Schedule B and provide indicated information to demonstrate the Business's experience with projects similar in type and cost of construction.

8.05 In Schedule C, provide information on key individuals whom Business intends to assign to the Project. Provide resumes for those individuals included in Schedule C. Key individuals include the Project Manager, Project Superintendent, Quality Manager, and Safety Manager. Resumes may be provided for Business's key leaders as well.

ARTICLE 9—REQUIRED ATTACHMENTS

9.01 Provide the following information with the Statement of Qualifications:

A. If Business is a Joint Venture, separate Qualifications Statements for each Joint Venturer, as required in Paragraph 1.02.

B. Diverse Business Certifications if required by Paragraph 3.01.

C. Certification of Business's safety performance if required by Paragraph 4.02.

D. Financial statements as required by Paragraph 5.01.

E. Attachments providing additional information as required by Paragraph 8.02.

F. Schedule A (Current Projects) as required by Paragraph 8.03.

G. Schedule B (Previous Experience with Similar Projects) as required by Paragraph 8.04.

H. Schedule C (Key Individuals) and resumes for the key individuals listed, as required by Paragraph 8.05.

I. Additional items as pertinent.

This Statement of Qualifications is offered by:

Business: _____
(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(date signed)

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

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address for giving notices:

_____

_____

_____

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

_____

_____

_____

Phone: _____

Email: _____

Schedule A—Current Projects

Name of Organization				
Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule B—Previous Experience with Similar Projects

Name of Organization				
Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule B—Previous Experience with Similar Projects

Name of Organization				
Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner		Project Name		
General Description of Project				
Project Cost		Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule C—Key Individuals

Project Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Project Superintendent			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Safety Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Quality Control Manager			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

END OF SECTION

SECTION 00510

NOTICE OF AWARD

Date of Issuance:
Owner: Owner's Project No.:
Engineer: Engineer's Project No.:
Project:
Contract Name:
Bidder:
Bidder's Address:

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

[Describe Work, alternates, or sections of Work awarded]

The Contract Price of the awarded Contract is $**[Contract Price]**. Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

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

☐ Drawings will be delivered separately from the other Contract Documents.

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

1. Deliver to Owner **[number of copies sent]** counterparts of the Agreement, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any): **[Describe other conditions that require Successful Bidder's compliance]**

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

Owner: **[Full formal name of Owner]**
By *(signature)*: _____
Name *(printed)*: _____
Title: _____

Copy: Engineer

END OF SECTION

SECTION 00520

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

This Agreement is by and between **Town of Exeter** ("Owner") and **[name of contracting entity]** ("Contractor").

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

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 work requires the repair of Linden Street Bridge (Bridge 081/046) over the Exeter River. The repairs shall include, as outlined in the contract plan set, the following: installation of soil anchors to stabilize the existing timber faced abutments and wingwalls; demolition and reconstruction of the abutment backwall; partial demolition and reconstruction of the wingwalls; construction of approach slabs; replacement of existing guardrail and bridge rails; removal of existing pavement and repaving; and associated work to complete the project.**

ARTICLE 2—THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: **Town of Exeter, NH – Linden Street over Exeter River (081-046) – Bridge Repair - Town Contract No. 24-01.**

ARTICLE 3—ENGINEER

3.01 The Owner has retained **Wright-Pierce** ("Engineer") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by **[insert "Engineer" if an entity has been identified as such in Paragraph 3.01, and that same entity prepared the design; or indicate by name the entity other than Engineer that prepared the design]**.

ARTICLE 4—CONTRACT TIMES

4.01 *Time is of the Essence*

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

4.02 *Contract Times: Dates*

A. The Work will be substantially complete on or before **October 31, 2024**, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before **November 15, 2024**.

1. The full closure and detour of Linden Street is limited to five consecutive months.

4.03 *Milestones*

A. Parts of the Work must be substantially completed on or before the following Milestone(s):

1. Linden Street fully opened to traffic by **October 31, 2024.**

4.04 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. *Substantial Completion:* Contractor shall pay Owner $500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.

2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $500 for each day that expires after such time until the Work is completed and ready for final payment.

3. *Milestones:* Contractor shall pay Owner $500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone 1, until Milestone 1 is achieved, or until the time specified for Substantial Completion is reached, at which time the rate indicated in Paragraph 4.05.A.1 will apply, rather than the Milestone rate.

4. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.

B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

ARTICLE 5—CONTRACT PRICE

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

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

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

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

6.02 *Progress Payments; Retainage*

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

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

a. **90** percent of the value of the Work completed (with the balance being retainage).

1) Deleted

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

B. Upon Substantial Completion of the entire construction to be provided under the Contract Documents, Owner shall pay an amount sufficient to increase total payments to Contractor to **98** percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less **100** percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

1. The final **2** percent of the value of the Work shall be retained for a period of one year from the date of Substantial Completion.

6.04 *Consent of Surety*

A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.05 *Interest*

A. All amounts not paid when due will bear interest at the rate of **prime plus 2** percent per annum.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

A. The Contract Documents consist of all of the following:

1. This Agreement.
2. Bonds:
    a. Performance bond (together with power of attorney).
    b. Payment bond (together with power of attorney).
3. General Conditions.
4. Supplementary Conditions.
5. Specifications as listed in the table of contents of the project manual (copy of list attached).
6. Drawings (not attached but incorporated by reference) consisting of **14** sheets with each sheet bearing the following general title: **Town of Exeter, NH – Linden Street of Exeter River (081/046) – Bridge Repair**.
7. Addenda (numbers **[number]** to **[number]**, inclusive).
8. Exhibits to this Agreement (enumerated as follows):
    a. Contractor's Bid
    b. **[list exhibits]**
9. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.
    c. Change Orders.
    d. Field Orders.
    e. Warranty Bond, if any.

B. The Contract Documents listed in Paragraph 7.01.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 7.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

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

1. Contractor has examined and carefully studied the Contract Documents, including Addenda.

2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.

4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.

5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. 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.

9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *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 8.02:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything 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.

8.03 *Standard General Conditions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.-

8.04 *Other Provisions*

A. None

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

This Agreement will be effective on **[indicate date on which Contract becomes effective]** (which is the Effective Date of the Contract).

Owner:	Contractor:
_____ *(typed or printed name of organization)*	_____ *(typed or printed name of organization)*
By: _____ *(individual's signature)*	By: _____ *(individual's signature)*
Date: _____ *(date signed)*	Date: _____ *(date signed)*
Name: _____ *(typed or printed)*	Name: _____ *(typed or printed)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
	*(If **[Type of Entity]** is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)*
Attest: _____ *(individual's signature)*	Attest: _____ *(individual's signature)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
Designated Representative:	Designated Representative:
Name: _____ *(typed or printed)*	Name: _____ *(typed or printed)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
Address:	Address:
_____	_____
_____	_____
_____	_____
Phone: _____	Phone: _____
Email: _____	Email: _____
*(If **[Type of Entity]** is a corporation, attach evidence of authority to sign. If **[Type of Entity]** is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)*	License No.: _____ *(where applicable)*
	State: _____

END OF SECTION

SECTION 00550

NOTICE TO PROCEED

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

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on **[date Contract Times are to start]** pursuant to Paragraph 4.01 of the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement: **[Select one of the following two alternatives, insert dates or number of days, and delete the other alternative.]**

The date by which Substantial Completion must be achieved is **[date for Substantial Completion, from Agreement]**, and the date by which readiness for final payment must be achieved is **[date for readiness, from Agreement]**.

[or]

The number of days to achieve Substantial Completion is **[number of days, from Agreement]** from the date stated above for the commencement of the Contract Times, resulting in a date for Substantial Completion of **[date, calculated from commencement date above]**; and the number of days to achieve readiness for final payment is **[number of days, from Agreement]** from the commencement date of the Contract Times, resulting in a date for readiness for final payment of **[date, calculated from commencement date above]**.

Before starting any Work at the Site, Contractor must comply with the following:

[Note any access limitations, security procedures, or other restrictions]

Owner:	**[Full formal name of Owner]**
By *(signature)*:	
Name *(printed)*:	
Title:	
Date Issued:	

Copy: Engineer

END OF SECTION

SECTION 00610

PERFORMANCE BOND

Contractor Name: **[Full formal name of Contractor]** Address *(principal place of business)*: **[Address of Contractor's principal place of business]**	**Surety** Name: **[Full formal name of Surety]** Address *(principal place of business)*: **[Address of Surety's principal place of business]**
Owner Name: **[Full formal name of Owner]** Mailing address *(principal place of business)*: **[Address of Owner's principal place of business]**	**Contract** Description *(name and location)*: **[Owner's project/contract name, and location of the project]** Contract Price: **[Amount from Contract]** Effective Date of Contract: **[Date from Contract]**

Bond

Bond Amount: **[Amount]**

Date of Bond: **[Date]**

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 16

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

Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
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 is 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 will 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 may 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 will 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 does 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 does 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 will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will 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 will not be reduced or set off on account of any such unrelated obligations. No right of action will 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 must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must 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 will be applicable.

12. Notice to the Surety, the Owner, or the Contractor must 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 will be deemed deleted therefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will 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 will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

END OF SECTION

SECTION 00615

PAYMENT BOND

Contractor Name: **[Full formal name of Contractor]** Address *(principal place of business)*: **[Address of Contractor's principal place of business]**	**Surety** Name: **[Full formal name of Surety]** Address *(principal place of business)*: **[Address of Surety's principal place of business]**
Owner Name: **[Full formal name of Owner]** Mailing address *(principal place of business)*: **[Address of Owner's principal place of business]**	**Contract** Description *(name and location)*: **[Owner's project/contract name, and location of the project]** Contract Price: **[Amount, from Contract]** Effective Date of Contract: **[Date, from Contract]**

Bond

Bond Amount: **[Amount]**

Date of Bond: **[Date]**

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 18

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

Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
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 is 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 will 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 will 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 will 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 will 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 will 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 will 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 satisfying 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 will 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 will be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will 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 will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will 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:

        16.1.1. The name of the Claimant;

        16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

        16.1.3. 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;

        16.1.4. A brief description of the labor, materials, or equipment furnished;

16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

16.1.7. The total amount of previous payments received by the Claimant; and

16.1.8. 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 is 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 will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

18. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

END OF SECTION

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.

APPLICATION FOR PAYMENT

Prepared By

EJCDC®
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

ACEC
AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

NSPE®
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed By

CSI®
Building Knowledge
Improving Project Delivery

NUCA
We Dig America

National Society of Professional Engineers
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Contractor's Application for Payment

Owner:		Owner's Project No.:	
Engineer:		Engineer's Project No.:	
Contractor:		Contractor's Project No.:	
Project:			
Contract:			
Application No.:		Application Date:	
Application Period:	From	to	

1. Original Contract Price					$ -
2. Net change by Change Orders					$ -
3. Current Contract Price (Line 1 + Line 2)					$ -
4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)					$ -
5. Retainage					
a.		X	$ -	Work Completed	$ -
b.		X	$ -	Stored Materials	$ -
c. Total Retainage (Line 5.a + Line 5.b)					$ -
6. Amount eligible to date (Line 4 - Line 5.c)					$ -
7. Less previous payments (Line 6 from prior application)					
8. Amount due this application					$ -
9. Balance to finish, including retainage (Line 3 - Line 4)					$ -

Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:
(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;
(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such liens, security interest, or encumbrances); and
(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor:			
Signature:		Date:	

Recommended by Engineer		Approved by Owner	
By:		By:	
Title:		Title:	
Date:		Date:	
Approved by Funding Agency			
By:		By:	
Title:		Title:	
Date:		Date:	

Progress Estimate - Lump Sum Work

Contractor's Application for Payment

Owner: _____ Owner's Project No.: _____

Engineer: _____ Engineer's Project No.: _____

Contractor: _____ Contractor's Project No.: _____

Project: _____

Contract: _____

Application No.: _____ Application Period: From _____ to _____ Application Date: _____

A	B	C	D	E	F	G	H	I
			Work Completed					
Item No.	Description	Scheduled Value ($)	(D + E) From Previous Application ($)	This Period ($)	Materials Currently Stored (not in D or E) ($)	Work Completed and Materials Stored to Date (D + E + F) ($)	% of Scheduled Value (G / C) (%)	Balance to Finish (C - G) ($)
Original Contract								
			-			-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
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						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
	Original Contract Totals	$ -	$ -	$ -	$ -	$ -		$ -

Progress Estimate - Lump Sum Work

Contractor's Application for Payment

Owner: _____ Owner's Project No.: _____

Engineer: _____ Engineer's Project No.: _____

Contractor: _____ Contractor's Project No.: _____

Project: _____

Contract: _____

Application No.: _____ Application Period: From _____ to _____ Application Date: _____

A	B	C	D	E	F	G	H	I
			Work Completed					
Item No.	Description	Scheduled Value ($)	(D + E) From Previous Application ($)	This Period ($)	Materials Currently Stored (not in D or E) ($)	Work Completed and Materials Stored to Date (D + E + F) ($)	% of Scheduled Value (G / C) (%)	Balance to Finish (C - G) ($)
Change Orders								
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
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						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
	Change Order Totals	$ -	$ -	$ -	$ -	$ -		$ -
Original Contract and Change Orders								
	Project Totals	$ -	$ -	$ -	$ -	$ -		$ -

Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner: ____________________

Engineer: ____________________

Contractor: ____________________

Project: ____________________

Contract: ____________________

Owner's Project No.: __________

Engineer's Project No.: __________

Contractor's Project No.: __________

Application No.: __________ Application Period: From __________ to __________

Application Date: __________

A	B	C	D	E	F	G	H	I	J	K	L
		Contract Information				Work Completed					
Bid Item No.	Description	Item Quantity	Units	Unit Price ($)	Value of Bid Item (C X E) ($)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) ($)	Materials Currently Stored (not in G) ($)	Work Completed and Materials Stored to Date (H + I) ($)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) ($)
Original Contract											
					-		-		-		-
					-		-		-		-
					-		-		-		-
					-		-		-		-
					-		-		-		-
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					-		-		-		-
					-		-		-		-
				Original Contract Totals	$ -		$ -	$ -	$ -		$ -

Progress Estimate - Unit Price Work | Contractor's Application for Payment

Owner: ______________________ Owner's Project No.: __________

Engineer: ______________________ Engineer's Project No.: __________

Contractor: ______________________ Contractor's Project No.: __________

Project: ______________________

Contract: ______________________

Application No.: __________ Application Period: From __________ to __________ Application Date: __________

A	B	C	D	E	F	G	H	I	J	K	L
		Contract Information				Work Completed					
Bid Item No.	Description	Item Quantity	Units	Unit Price ($)	Value of Bid Item (C X E) ($)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) ($)	Materials Currently Stored (not in G) ($)	Work Completed and Materials Stored to Date (H + I) ($)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) ($)
Change Orders											
					-		-		-		-
					-		-		-		-
					-		-		-		-
					-		-		-		-
					-		-		-		-
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					-		-		-		-
					-		-		-		-
					-		-		-		-
					-		-		-		-
Change Order Totals					$ -		$ -	$ -	$ -		$ -
Original Contract and Change Orders											
Project Totals					$ -		$ -	$ -	$ -		$ -

Owner: ______________________ Owner's Project No.: ____________

Engineer: ______________________ Engineer's Project No.: ____________

Contractor: ______________________ Contractor's Project No.: ____________

Project: ______________________

Contract: ______________________

Application No.: ____________ Application Period: From ____________ to ____________ Application Date: ____________

A	B	C	D	E	F	G	H	I	J	K	L	M
						Materials Stored			Incorporated in Work			
Item No. (Lump Sum Tab) or Bid Item No. (Unit Price Tab)	Supplier Invoice No.	Submittal No. (with Specification Section No.)	Description of Materials or Equipment Stored	Storage Location	Application No. When Materials Placed in Storage	Previous Amount Stored ($)	Amount Stored this Period ($)	Amount Stored to Date (G+H) ($)	Amount Previously Incorporated in the Work ($)	Amount Incorporated in the Work this Period ($)	Total Amount Incorporated in the Work (J+K) ($)	Materials Remaining in Storage (I-L) ($)
								-			-	-
								-			-	-
								-			-	-
								-			-	-
								-			-	-
								-			-	-
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								-			-	-
								-			-	-
								-			-	-
					Totals	$ -	$ -	$ -	$ -	$ -	$ -	$ -

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

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ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

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

2. Agreement—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. Application for Payment—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. Bid—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. Bidder—An individual or entity that submits a Bid to Owner.

6. Bidding Documents—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. Bidding Requirements—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. Change Order—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. Change Proposal—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. Claim

    a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.

c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.

d. A demand for money or services by a third party is not a Claim.

11. Constituent of Concern—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. Contract—The entire and integrated written contract between Owner and Contractor concerning the Work.

13. Contract Documents—Those items so designated in the Agreement, and which together comprise the Contract.

14. Contract Price—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. Contract Times—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. Contractor—The individual or entity with which Owner has contracted for performance of the Work.

17. Cost of the Work—See Paragraph 13.01 for definition.

18. Drawings—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. Effective Date of the Contract—The date, indicated in the Agreement, on which the Contract becomes effective.

20. Electronic Document—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. Electronic Means—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. Engineer—The individual or entity named as such in the Agreement.

23. Field Order—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

24. Hazardous Environmental Condition—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.

    a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.

    b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.

    c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.

25. Laws and Regulations; Laws or Regulations—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. Liens—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

27. Milestone—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.

28. Notice of Award—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

29. Notice to Proceed—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

30. Owner—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

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

32. Project—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. Resident Project Representative—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.

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

35. Schedule of Submittals—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.

36. 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.

37. Shop Drawings—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

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

39. Specifications—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

40. 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.

41. Submittal—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

42. 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 of such Work.

43. Successful Bidder—The Bidder to which the Owner makes an award of contract.

44. Supplementary Conditions—The part of the Contract that amends or supplements these General Conditions.

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

46. Technical Data

    a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

    b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.

    c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

47. Underground Facilities—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

48. Unit Price Work—Work to be paid for on the basis of unit prices.

49. Work—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

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

1.02 Terminology

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. Intent of Certain Terms or Adjectives: The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

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

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

1. does not conform to the Contract Documents;

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

3. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).

E. Furnish, Install, Perform, Provide

1. The word "furnish," when used in connection with services, materials, or equipment, means 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, means 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, means to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. Contract Price or Contract Times: References to a change in "Contract Price or Contract Times" or "Contract Times or Contract Price" or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term "or both" is not expressed.

G. 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 Performance and Payment Bonds; Evidence of Insurance

A. Performance and Payment Bonds: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).

B. Evidence of Contractor's Insurance: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

C. Evidence of Owner's Insurance: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 Copies of Documents

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 Before Starting Construction

A. Preliminary Schedules: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:

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

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 Preconstruction Conference; Designation of Authorized Representatives

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 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 the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.

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

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

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

4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 Electronic Transmittals

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 Intent

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

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will 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.

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

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

3.02 Reference Standards

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies

1. Contractor's Verification of Figures and Field Measurements: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

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

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. Resolving Discrepancies

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

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

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

3.04 Requirements of the Contract Documents

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 Reuse of Documents

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

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

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 Starting the Work

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

4.03 Reference Points

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 Progress Schedule

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 Delays in Contractor's Progress

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. Abnormal weather conditions;

3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

4. Acts of war or terrorism.

D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.

2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;

2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;

3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;

4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and

5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 Availability of Lands

A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

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

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

5.02 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. Removal of Debris During Performance of the Work: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.

C. Cleaning: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

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

5.03 Subsurface and Physical Conditions

A. Reports and Drawings: The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;

2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and

3. Technical Data contained in such reports and drawings.

B. Underground Facilities: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. Reliance by Contractor on Technical Data: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

D. Limitations of Other Data and Documents: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

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

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

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 Differing Subsurface or Physical Conditions

A. Notice by Contractor: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;

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

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

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

B. Engineer's Review: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. Owner's Statement to Contractor Regarding Site Condition: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. Early Resumption of Work: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. Possible Price and Times Adjustments

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

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

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

c. Contractor failed to give the written notice required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

F. Underground Facilities; Hazardous Environmental Conditions: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 Underground Facilities

A. Contractor's Responsibilities: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. Notice by Contractor: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. Engineer's Review: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;

3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

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

D. Owner's Statement to Contractor Regarding Underground Facility: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. Early Resumption of Work: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. Possible Price and Times Adjustments

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

c. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 Hazardous Environmental Conditions at Site

A. Reports and Drawings: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.

B. Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

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

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

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

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

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 Performance, Payment, and Other Bonds

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 Insurance—General Provisions

A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 Contractor's Insurance

A. Required Insurance: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. General Provisions: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

4. apply with respect to the performance of the Work, whether such performance is 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; and

5. include all necessary endorsements to support the stated requirements.

C. Additional Insureds: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;

2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and

5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 Builder's Risk and Other Property Insurance

A. Builder's Risk: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

B. Property Insurance for Facilities of Owner Where Work Will Occur: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. Property Insurance for Substantially Complete Facilities: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

D. Partial Occupancy or Use by Owner: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. Insurance of Other Property; Additional Insurance: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 Property Losses; Subrogation

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. 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 all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights 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 insured peril, risk, or cause of loss.

D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 Receipt and Application of Property Insurance Proceeds

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 Contractor's Means and Methods of Construction

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 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.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 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 maintain good discipline and order at the Site.

B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.

C. 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 will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 Services, Materials, and Equipment

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will 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 must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 "Or Equals"

A. Contractor's Request; Governing Criteria: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

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

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

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

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

4) is not objectionable to Owner.

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

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

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

B. Contractor's Expense: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. Engineer's Evaluation and Determination: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. Effect of Engineer's Determination: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. Treatment as a Substitution Request: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

A. Contractor's Request; Governing Criteria: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

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

    a. will certify that the proposed substitute item will:

        1) perform adequately the functions and achieve the results called for by the general design;

        2) be similar in substance to the item specified; and

        3) be suited to the same use as the item specified.

    b. will state:

        1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;

        2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

        3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

    c. will identify:

        1) all variations of the proposed substitute item from the item specified; and

        2) available engineering, sales, maintenance, repair, and replacement services.

    d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. Engineer's Evaluation and Determination: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

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

D. Reimbursement of Engineer's Cost: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. Contractor's Expense: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. Effect of Engineer's Determination: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 Concerning Subcontractors and Suppliers

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

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

K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 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 an 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 will be disclosed in the Contract Documents.

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

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

Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 Permits

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

7.10 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.

7.11 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. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 Record Documents

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

to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 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.

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

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

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

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

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. 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.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

H. 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.

I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 Hazard Communication Programs

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

7.15 Emergencies

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent 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 by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 Submittals

A. Shop Drawing and Sample Requirements

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

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

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

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. Submittal Procedures for Shop Drawings and Samples: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. Shop Drawings

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. Samples

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

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

C. Engineer's Review of Shop Drawings and Samples

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. 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, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

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

D. Resubmittal Procedures for Shop Drawings and Samples

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

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

   a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

   b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

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

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

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

1. abuse, or improper modification, 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.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;

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

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

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

5. Any review and approval of a Shop Drawing or Sample submittal;

6. The issuance of a notice of acceptability by Engineer;
7. The end of the correction period established in Paragraph 15.08;
8. Any inspection, test, or approval by others; or
9. Any correction of defective Work by Owner.

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

7.18 Indemnification

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (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 from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will 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.

7.19 Delegation of Professional Design Services

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;

2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and

3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 Other Work

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. 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.

E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, 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.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 Coordination

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

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

8.03 Legal Relationships

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price

will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

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

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 Communications to Contractor

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

9.02 Replacement of Engineer

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

9.03 Furnish Data

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

9.04 Pay When Due

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

9.05 Lands and Easements; Reports, Tests, and Drawings

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 Insurance

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

9.07 Change Orders

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

9.08 Inspections, Tests, and Approvals

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

9.09 Limitations on Owner's Responsibilities

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

9.10 Undisclosed Hazardous Environmental Condition

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

9.11 Evidence of Financial Arrangements

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

9.12 Safety Programs

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

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 Owner's Representative

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

10.02 Visits to Site

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

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 Resident Project Representative

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 Engineer's Authority

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

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 Determinations for Unit Price Work

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

10.06 Decisions on Requirements of Contract Documents and Acceptability of Work

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

10.07 Limitations on Engineer's Authority and Responsibilities

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will 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 Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 Compliance with Safety Program

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

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 Amending and Supplementing the Contract

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 Change Orders

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

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

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 Work Change Directives

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 Field Orders

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 Owner-Authorized Changes in the Work

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 Unauthorized Changes in the Work

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 Change of Contract Price

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. Contractor's Fee: When applicable, the Contractor's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or

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

a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;

b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;

c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;

d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and

f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 Change of Contract Times

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 Change Proposals

A. Purpose and Content: Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. Change Proposal Procedures

1. Submittal: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. Supporting Data: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

   a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

   b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

   The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. Engineer's Initial Review: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. Engineer's Full Review and Action on the Change Proposal: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. Binding Decision: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

C. Resolution of Certain Change Proposals: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. Post-Completion: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 Notification to Surety

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

ARTICLE 12—CLAIMS

12.01 Claims

A. Claims Process: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

B. Submittal of Claim: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. Review and Resolution: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.

D. Mediation

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. Partial Approval: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. Denial of Claim: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. Final and Binding Results: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

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

13.01 Cost of the Work

A. Purposes for Determination of Cost of the Work: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. Costs Included: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will 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 in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will 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 accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will 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, which 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 will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

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

5. Other costs consisting of 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, 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.

1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. Construction Equipment Rental

1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.

3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed 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 builder's risk or other property insurance established in accordance with Paragraph 6.04), 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 include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

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

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

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

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

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

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

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

5. 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.

6. Expenses incurred in preparing and advancing Claims.

7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. Contractor's Fee

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:

1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

E. Documentation and Audit: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

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

B. Cash Allowances: Contractor agrees that:

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

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

C. Owner's Contingency Allowance: Contractor agrees that an Owner's 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 for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

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

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

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

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. Adjustments in Unit Price

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

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

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

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

14.01 Access to Work

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction 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 with such procedures and programs as applicable.

14.02 Tests, Inspections, and Approvals

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

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

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

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

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

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 Defective Work

A. Contractor's Obligation: It is Contractor's obligation to assure that the Work is not defective.

B. Engineer's Authority: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. Notice of Defects: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. Correction, or Removal and Replacement: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. Preservation of Warranties: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. Costs and Damages: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 Acceptance of Defective Work

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

14.05 Uncovering Work

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

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

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

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 Owner May Stop the Work

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

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

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

15.01 Progress Payments

A. Basis for Progress Payments: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. Applications for Payments

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

2. 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 must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

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

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

C. Review of Applications

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

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

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

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

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

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

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

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

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

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

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

    d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

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

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

    a. the Work is defective, requiring correction or replacement;

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

    c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

    d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

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

D. Payment Becomes Due

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

E. Reductions in Payment by Owner

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

    a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. The Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. The Contract Price has been reduced by Change Orders;

i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;

j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

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

l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

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

15.02 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

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

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 Partial Use or Occupancy

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

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 Final Inspection

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

15.06 Final Payment

A. Application for Payment

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
    a. all documentation called for in the Contract Documents;
    b. consent of the surety, if any, to final payment;
    c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

d. a list of all duly pending Change Proposals and Claims; and

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

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. Engineer's Review of Final Application and Recommendation of Payment: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. 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. Notice of Acceptability: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

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

E. Final Payment Becomes Due: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 Waiver of Claims

A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 Correction Period

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;

2. correct such defective Work;

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

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

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all 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). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. 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.

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

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

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 Owner May Suspend Work

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

16.02 Owner May Terminate for Cause

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

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

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

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

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

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 Owner May Terminate for Convenience

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

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

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

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 Contractor May Stop Work or Terminate

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 Methods and Procedures

A. Disputes Subject to Final Resolution: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. Final Resolution of Disputes: For any dispute subject to resolution under this article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
2. agree with the other party to submit the dispute to another dispute resolution process; or
3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 Giving Notice

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 Computation of Times

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

18.03 Cumulative Remedies

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

18.04 Limitation of Damages

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

18.05 No Waiver

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

18.06 Survival of Obligations

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

18.07 Controlling Law

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

18.08 Assignment of Contract

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

18.09 Successors and Assigns

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

18.10 Headings

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

These Supplementary Conditions amend or supplement EJCDC® C-700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

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

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, “Paragraph SC-4.05.”

CONTENTS OF SUPPLEMENTARY CONDITIONS

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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 EJCDC No. C-620 or similar approved format. The Owner must approve all Applications for Payment before payment is made.

SC-1.01.A.8 CHANGE ORDER

Add the following language to the end of Paragraph 1.01.A.8:

The Change Order form to be used on this Project is EJCDC No. C-941. Owner approval is required before Change Orders are effective.

SC-1.01 A.30 OWNER

Add the following to the end of Paragraph 1.01.A.30 of the General Conditions:

Owner is referred to as Grantee in certain sections of these Contract Documents. Owner and Grantee are one and the same.

SC-1.01 A.50 WORK CHANGE DIRECTIVE

Add the following language at the end of the last sentence of Paragraph 1.01.A.50

The Work Change Directive form to be used on this Project is EJCDC C-940 (2018). A Work Change Directive cannot change Contract Price or Contract Times without a subsequent Change Order.

Add the following language at the end of Paragraph 1.01.A.50

The Work Change Directive form to be used on this Project is EJCDC C-940 (2018). Agency approval is required before a Work Change Directive is issued. A Work Change Directive cannot change Contract Price or Contract Times without a subsequent Change Order.

SC-1.01 A.51 NON-RESIDENT CONTRACTOR

Add the following paragraph immediately after Paragraph 1.01.A.50 of the General Conditions, which is to read as follows:

51. Non-Resident Contractor -

a. A person who is not a resident in the State where the proposed construction is to be located, or

b. Any partnership that has no member thereof resident in the State where the proposed construction is to be located.

c. Any corporation established under laws other than those of the State in which the proposed construction is located.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

Add a new paragraph immediately after Paragraph 2.01.C of the General Conditions, which is to read as follows:

D. *Non-Resident Contractor*: The Contractor, if a corporation established under laws other than the State in which the proposed construction is located, shall file with the Owner, notice of the name of its resident attorney, appointed as required by the laws of the State in which the proposed construction is located. The Contractor, if a resident of a State other than that in which the proposed construction is located and not a corporation, shall file, at the time of execution of the Agreement, with the Owner a written appointment of a resident of the State in which the construction is located, having an office or place of business therein, to be his/her true and lawful attorney upon whom all lawful processes in any actions or proceedings against him/her may be served; and in such writing, which shall set forth said attorney's place of residence, shall agree that any lawful process against him/her which is served on said attorney shall be of the same legal force and validity as if served on him/her and that the authority shall continue in force so long as any liability remains outstanding against him/her in said State. The power of attorney shall be filed in the office of the Secretary of State if required, and copies certified by the Secretary shall be sufficient evidence thereof. Such appointment shall continue in force until revoked by an instrument in writing, designating in a like manner some other person upon whom such processes may be served, which instrument shall be filed in the manner provided herein for the original appointment.

2.02 *Copies of Documents*

SC-2.02 Delete Paragraph 2.02.A in its entirety and insert the following new paragraph in its place:

A. Owner shall furnish to Contractor **one** printed copies of conformed Contract Documents incorporating and integrating all Addenda and any amendments negotiated prior to the Effective Date of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies of the conformed Contract Documents will be furnished upon request at the cost of reproduction.

2.06 *Electronic Transmittals*

SC-2.06 Delete Paragraphs 2.06.B and 2.06.C in their entirety and insert the following in their place:

B. *Electronic Documents Protocol:* The parties shall conform to the following provisions in Paragraphs 2.06.B and 2.06.C, together referred to as the Electronic Documents Protocol ("EDP" or "Protocol") for exchange of electronic transmittals.

1. *Basic Requirements*

a. To the fullest extent practical, the parties agree to and will transmit and accept Electronic Documents in an electronic or digital format using the procedures described in this Protocol. Use of the Electronic Documents and any information contained therein is subject to the requirements of this Protocol and other provisions of the Contract.

b. The contents of the information in any Electronic Document will be the responsibility of the transmitting party.

c. Electronic Documents as exchanged by this Protocol may be used in the same manner as the printed versions of the same documents that are exchanged using non-electronic format and methods, subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.

d. Except as otherwise explicitly stated herein, the terms of this Protocol will be incorporated into any other agreement or subcontract between a party and any third party for any portion of the Work on the Project, or any Project-related services, where that third party is, either directly or indirectly, required to exchange Electronic Documents with a party or with Engineer. Nothing herein will modify the requirements of the Contract regarding communications between and among the parties and their subcontractors and consultants.

e. When transmitting Electronic Documents, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the receiving party's use of software application packages, operating systems, or computer hardware differing from those established in this Protocol.

f. Nothing herein negates any obligation 1) in the Contract to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations; 2) to comply with any applicable Law or Regulation governing the signing and sealing of design documents or the signing and electronic transmission of any other documents; or 3) to comply with the notice requirements of Paragraph 18.01 of the General Conditions.

2. *System Infrastructure for Electronic Document Exchange*

a. Each party will provide hardware, operating system(s) software, internet, e-mail, and large file transfer functions ("System Infrastructure") at its own cost and sufficient for complying with the EDP requirements. With the exception of minimum standards set forth in this EDP, and any explicit system requirements specified by attachment to this EDP, it is the obligation of each party to determine, for itself, its own System Infrastructure.

1) The maximum size of an email attachment for exchange of Electronic Documents under this EDP is 10 MB. Attachments larger than that may be exchanged using large file transfer functions or physical media.

2) Each Party assumes full and complete responsibility for any and all of its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, or otherwise enabling its System Infrastructure, including operating systems and software, for use with respect to this EDP.

b. Each party is responsible for its own system operations, security, back-up, archiving, audits, printing resources, and other Information Technology ("IT") for maintaining operations of its System Infrastructure during the Project, including coordination with the party's individual(s) or entity responsible for managing its System Infrastructure and capable of addressing routine communications and other IT issues affecting the exchange of Electronic Documents.

c. Each party will operate and maintain industry-standard, industry-accepted, ISO-standard, commercial-grade security software and systems that are intended to protect the other party from: software viruses and other malicious software like worms, trojans, adware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties, including transmission of Electronic Documents by physical media such as CD/DVD/flash drive/hard drive. To the extent that a party maintains and operates such security software and systems, it shall not be liable to the other party for any breach of system security.

d. In the case of disputes, conflicts, or modifications to the EDP required to address issues affecting System Infrastructure, the parties shall cooperatively resolve the issues; but, failing resolution, the Owner is authorized to make and require reasonable and necessary changes to the EDP to effectuate its original intent. If the changes cause additional cost or time to Contractor, not reasonably anticipated under the original EDP, Contractor may seek an adjustment in price or time under the appropriate process in the Contract.

e. Each party is responsible for its own back-up and archive of documents sent and received during the term of the contract under this EDP, unless this EDP establishes a Project document archive, either as part of a mandatory Project website or other communications protocol, upon which the parties may rely for document archiving during the specified term of operation of such Project document archive. Further, each party remains solely responsible for its own post-Project back-up and archive of Project documents after the term of the Contract, or after termination of the Project document archive, if one is established, for as long as required by the Contract and as each party deems necessary for its own purposes.

f. If a receiving party receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission.

g. The parties will bring any non-conforming Electronic Documents into compliance with the EDP. The parties will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the communication.

C. *Software Requirements for Electronic Document Exchange; Limitations*

1. Each party will acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the software formats required in this section of the EDP.

a. Prior to using any updated version of the software required in this section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or adjust its transmission to comply with this EDP.

2. The parties agree not to intentionally edit, reverse engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes any Electronic Document or information contained therein that was transmitted in a

software data format, including Portable Document Format (PDF), intended by sender not to be modified, unless the receiving party obtains the permission of the sending party or is citing or quoting excerpts of the Electronic Document for Project purposes.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.02 *Standards Specifications, Codes, Laws and Regulations*

SC-3.02.A Add the following paragraphs immediately following *Paragraph 3.02.A.2:*

3. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued.
4. Where the date of a reference standard in provided, reference shall be to the version of the reference standard associated with that date, regardless if the reference standard has been superseded by a version with a later date, discontinued, or replaced."

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

No changes to this Article.

ARTICLE 5—SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS

5.03 *Subsurface and Physical Conditions*

SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.D:

E. The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which Contractor may rely:

Report Title	Date of Report	Technical Data
Boring Logs	July 25, 2023	**See Appendix B – Boring Logs**

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

SC-6.01 Add the following paragraphs immediately after Paragraph 6.01.A:

1. *Required Performance Bond Form:* The performance bond that Contractor furnishes will be in the form of EJCDC® C-610, Performance Bond (2018 edition).
2. *Required Payment Bond Form:* The payment bond that Contractor furnishes will be in the form of EJCDC® C-615, Payment Bond (2018 edition).

6.03 *Contractor's Insurance*

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

D. *Other Additional Insureds:* As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, and pollution liability policies must the Owner and Engineer as additional insureds.

E. *Workers' Compensation and Employer's Liability:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance, including, as applicable, United States Longshoreman and Harbor Workers' Compensation Act, Jones Act, stop-gap employer's liability coverage for monopolistic states, and foreign voluntary workers' compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions).

Workers' Compensation and Related Policies	**Policy limits of not less than:**
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
Jones Act (if applicable)	
Bodily injury by accident—each accident	N/A
Bodily injury by disease—aggregate	N/A
Employer's Liability	
Bodily Injury, Each accident	$1,000,000
Bodily Injury by disease, Each employee	$1,000,000
Bodily injury/disease aggregate	$2,000,000

F. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:

1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
2. damages insured by reasonably available personal injury liability coverage, and
3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

G. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage.
    a. Such insurance must be maintained for three years after final payment.

b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.

3. Severability of interests and no insured-versus-insured or cross-liability exclusions.

4. Underground, explosion, and collapse coverage.

5. Personal injury coverage.

6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.

7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

H. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).

2. Any exclusion for water intrusion or water damage.

3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.

4. Any exclusion of coverage relating to earth subsidence or movement.

5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).

6. Any limitation or exclusion based on the nature of Contractor's work.

7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

I. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	**Policy limits of not less than:**
General Aggregate	$10,000,000
Products—Completed Operations Aggregate	$10,000,000
Personal and Advertising Injury	$2,000,000
Bodily Injury and Property Damage—Each Occurrence	$5,000,000

J. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	**Policy limits of not less than:**
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	$5,000,000

K. *Umbrella or Excess Liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	**Policy limits of not less than:**
Each Occurrence	$5,000,000
General Aggregate	$5,000,000

L. *Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements:* Contractor may meet the policy limits specified for employer's liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policy's policy limits and partial attribution of the policy limits of an umbrella or excess liability policy that is at least as broad in coverage as that of the underlying policy, as specified herein. If such umbrella or excess liability policy was required under this Contract, at a specified minimum policy limit, such umbrella or excess policy must retain a minimum limit of $**10,000,000** after accounting for partial attribution of its limits to underlying policies, as allowed above.

N. *Contractor's Professional Liability Insurance:* If Contractor will provide or furnish professional services under this *Contract*, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

Contractor's Professional Liability	**Policy limits of not less than:**
Each Claim	$1,000,000
Annual Aggregate	$2,000,000

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.03 *Labor; Working Hours*

SC-7.03 Add the following new subparagraphs immediately after Paragraph 7.03.C:

1. Regular working hours will be **Monday through Friday, 7:00 AM to 7:00 PM.**

    a. Alternate work hours may be allowed with prior written approval from the Owner.

2. Owner's legal holidays are State mandated holidays.

SC-7.03 Add the following new paragraph immediately after Paragraph 7.03.C:

D. **Contractor** shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

3. For purposes of administering the foregoing requirement, additional overtime costs are defined as **work outside the hours described under Paragraph SC-7.03.**

SC-7.05 *"Or Equals"*

Add a new subparagraph SC-7.05.B.1 immediately after subparagraph 7.05.B:

1. It shall be Contractor's responsibility to coordinate all submittals to Engineer for approval to eliminate any conflicts which might arise due to the use of "or equal" items. Any additional costs incidental to the use of "or equal" items shall be paid by Contractor.

SC-7.06 *Substitutes*

Add a new subparagraph SC-7.06.E.1 immediately after subparagraph 7.06.E:

1. It shall be Contractor's responsibility to coordinate all submittals to Engineer for approval to eliminate any conflicts which might arise due to the use of substitutes. Any additional costs incidental to the use of substitutes shall be paid by Contractor.

SC-7.07 Concerning Subcontractors and Suppliers

Amend Paragraph 7.07.A by adding the following to the end of the paragraph:

The total amount of work subcontracted by the Contractor shall not exceed fifty percent of the Contract price without prior approval from the Owner.

Delete Paragraph 7.07.B in its entirety and insert [Deleted].

Add the following subparagraphs immediately after subparagraph 7.07.M:

N. Contractor shall make payments to Subcontractors in accordance with applicable State and Federal laws.

O. The Contractor shall not award work valued at more than fifty (50%) percent of the Contract Price to Subcontractor(s), without prior written approval of the Owner.

SC-7.09 *Permits*

Add the following subparagraph immediately after Paragraph 7.09.A:1. Local permit fees for permits required from the **Owner** will be waived.

Add the following paragraph immediately after Paragraph 7.09.A:

B. The following permits/approvals have been or will be obtained by the Owner. Full copies of the permit applications and approvals will be on file at the Owner's Offices. It is the responsibility of the Contractor to be familiar with and comply with the applicable provisions of each permit as they apply to the work:

1. NHDES Shoreland Permit by Notification

2. NHDES Wetland Permit by Notification

ARTICLE 8—OTHER WORK AT THE SITE

No changes to this Article.

ARTICLE 9—OWNER'S RESPONSIBILITIES

No changes to this Article.

ARTICLE 10—ENIGINEER'S STATUS DURING CONSTRUCTION

10.03 *Resident Project Representative*

SC-10.03 Add the following new paragraph immediately after Paragraph 10.03.B:

C. The Resident Project Representative (RPR) will be Engineer's representative at the Site. RPR's dealings in matters pertaining to the Work in general will be with Engineer and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The RPR will:

1. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor's safety meetings), and as appropriate prepare and circulate copies of minutes thereof.

2. *Safety Compliance:* Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR's own personal safety while at the Site.

3. *Liaison*

a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.

b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

c. Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.

4. *Review of Work; Defective Work*

a. Conduct on-Site observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.

b. Observe whether any Work in place appears to be defective.

c. Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection or approval.

5. *Inspections and Tests*

a. Observe Contractor-arranged inspections required by Laws and Regulations, including but not limited to those performed by public or other agencies having jurisdiction over the Work.

b. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.

6. *Payment Requests:* Review Applications for Payment with Contractor.

7. *Completion*

a. Participate in Engineer's visits regarding Substantial Completion.

b. Assist in the preparation of a punch list of items to be completed or corrected.

c. Participate in Engineer's visit to the Site in the company of Owner and Contractor regarding completion of the Work, and prepare a final punch list of items to be completed or corrected by Contractor.

d. Observe whether items on the final punch list have been completed or corrected.

D. The RPR will not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction.

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. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 11—CHANGES TO THE CONTRACT

No changes to this Article.

ARTICLE 12—CLAIMS

No changes to this Article.

ARTICLE 13—COST OF WORK; ALLOWANCES, UNIT PRICE WORK

SC-13.03 UNIT PRICE WORK

SC-13.03 Delete Paragraph 13.03.E in its entirety and insert the following in its place:

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

   a. the extended price of a particular item of Unit Price Work amounts to **5%** percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than **15%** percent from the estimated quantity of such item indicated in the Agreement.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

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

14.03 Defective Work

SC 14.03 Add new paragraph immediately after Paragraph 14.03.F

G. Installation of materials that are non-compliant with American Iron and Steel requirements shall be considered defective work.

ARTICLE 15—PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

SC-15.01 PROGRESS PAYMENTS

SC-15.01 Add the following language at the end of Paragraph 15.01.B.4:

No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage or invest the retainage for the benefit of the Contractor.

SC-15.01 Add new paragraph immediately after Paragraph 15.01.B.4:

5. The Application for Payment form to be used on this Project is EJCDC C-620. The Owner must approve all Applications for Payment before Payment is made.

SC-15.01 Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place:

The Application for Payment with Engineer's recommendations will be presented to the Owner for consideration. If the Owner finds the Application for Payment acceptable, the recommended amount less any reduction under the provisions of Paragraph 15.01.E will become due twenty (20) days after the Application for Payment is presented to the Owner, and the Owner will make payment to the Contractor.

Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place:

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

SC-15.03 SUBSTANTIAL COMPLETION

SC-15.03 Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under this Article 15.

SC-15.03 Add the following new subparagraph to Paragraph 15.03.C:

1. Substantial Completion shall only be granted for the Milestones identified in the Agreement.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

No changes in this Article.

ARTICLE 17—FINAL RESOLUTIONS OF DISPUTES

No changes to this Article.

ARTICLE 18—MISCELLANEOUS

No changes to this Article.

END OF SECTION

SECTION 00920

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:
Engineer:
Contractor:
Project:
Contract Name:

Owner's Project No.:
Engineer's Project No.:
Contractor's Project No.:

This ☐ Preliminary ☐ Final Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

[Describe the portion of the work for which Certificate of Substantial Completion is issued]

Date of Substantial Completion: **[Enter date, as determined by Engineer]**

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

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

Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work must be as provided in the Contract, except as amended as follows:

Amendments to Owner's Responsibilities: ☐ None ☐ As follows:

[List amendments to Owner's Responsibilities]

Amendments to Contractor's Responsibilities: ☐ None ☐ As follows:

[List amendments to Contractor's Responsibilities]

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

[List attachments such as punch list; other documents]

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.

Engineer

By *(signature)*: _____
Name *(printed)*: _____
Title: _____

END OF SECTION

SECTION 00935

NOTICE OF ACCEPTABILITY OF WORK

Owner: Owner's Project No.:
Engineer: Engineer's Project No.:
Contractor: Contractor's Project No.:
Project:
Contract Name:
Notice Date: Effective Date of the Construction Contract:

The Engineer hereby gives notice to the Owner and Contractor that Engineer recommends final payment to Contractor, and that the Work furnished and performed by Contractor under the Construction Contract is acceptable, expressly subject to the provisions of the Construction Contract's Contract Documents ("Contract Documents") and of the Agreement between Owner and Engineer for Professional Services dated **[date of professional services agreement]** ("Owner-Engineer Agreement"). This Notice of Acceptability of Work (Notice) is made expressly subject to the following terms and conditions to which all who receive and rely on said Notice agree:

1. This Notice has been prepared with the skill and care ordinarily used by members of the engineering profession practicing under similar conditions at the same time and in the same locality.
2. This Notice reflects and is an expression of the Engineer's professional opinion.
3. This Notice has been prepared to the best of Engineer's knowledge, information, and belief as of the Notice Date.
4. This Notice is based entirely on and expressly limited by the scope of services Engineer has been employed by Owner to perform or furnish during construction of the Project (including observation of the Contractor's Work) under the Owner-Engineer Agreement, and applies only to facts that are within Engineer's knowledge or could reasonably have been ascertained by Engineer as a result of carrying out the responsibilities specifically assigned to Engineer under such Owner-Engineer Agreement.
5. This Notice is not a guarantee or warranty of Contractor's performance under the Construction Contract, an acceptance of Work that is not in accordance with the Contract Documents, including but not limited to defective Work discovered after final inspection, nor an assumption of responsibility for any failure of Contractor to furnish and perform the Work thereunder in accordance with the Contract Documents, or to otherwise comply with the Contract Documents or the terms of any special guarantees specified therein.
6. This Notice does not relieve Contractor of any surviving obligations under the Construction Contract, and is subject to Owner's reservations of rights with respect to completion and final payment.

Engineer

By *(signature)*: _____
Name *(printed)*: _____
Title: _____

END OF SECTION

SECTION 00936

CONSENT OF SURETY TO FINAL PAYMENT

To: _____ (Owner)
_____
_____

From: _____ (Contractor)
_____
_____

CONTRACT TITLE: _____
BOND NUMBER: _____

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the _____ (Surety Company) on the bond of the Contractor hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety Company of any of its obligations to the Owner as set forth in the said Surety Company's Bond.

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand this _____ day of _____, 20___.

_____
Surety Company Name

_____
Signature of Authorized Representative

_____
Printed Name and Title

Attest: (Seal)

Note: Power of Attorney should be attached in instances where same applies.

END OF SECTION

SECTION 00937

CONTRACTOR'S AFFIDAVIT

STATE OF _____

COUNTY OF _____

Before me, the undersigned, a _____
(Notary Public, Justice of Peace, Alderman)

in and for said County and State personally appeared, _____
(Individual, Partner or duly

_____ who being duly sworn according to law
(Authorized Representative of Corporate Contractor)

deposes and says that the cost of all the Work, and outstanding claims and indebtedness of whatever nature arising out of the performance of the contract between

_____
(Owner)

and _____ of _____
(Contractor)

dated _____ for the construction of the _____
(Agreement Date) (Project)

_____ and necessary appurtenant installations have been paid in full.

_____
(Individual, Partner, or duly authorized representative of corporate contractor)

Sworn to and subscribed before me
This _____ day of _____, 20___

END OF SECTION

SECTION 00938

CONTRACTOR'S RELEASE

KNOW ALL PERSONS BY THESE PRESENTS that _____ (Contractor)
of _____, County of _____ and State of _____

do hereby acknowledge that _____ (Contractor) has this day had, and received of and from _____ (Owner) the sum of One Dollar and other valuable considerations in full and complete satisfaction and payment of all sums of money owed, payable and belonging to _____ (Contractor) by any means whatsoever, for on account of a Contract Agreement between _____ (Owner) and _____ (Contractor) dated _____ (Agreement Date) for _____ (Project)

NOW, THEREFORE, the said _____ (Contractor)

(for myself, my heirs, executors and administrators) (for itself, its successors and assigns) do/does, by these presents remise, release, quit-claim and forever discharge _____ (Owner), of and from all claims and demands, arising from or in connection with the said contract dated _____ (Agreement Date), and of and from all, and all manner of action and actions, cause and causes of action and actions, suits, debts, dues, duties, sum and sums of money, accounts, reckonings, bonds, bills, specialties, covenants, contracts, agreements, promises, variances, damages, judgments, extents, executions, claims and demand, whatsoever in law or equity, or otherwise, against _____ (Owner) its successors and assigns, which (I, my heirs, executors, or administrators) (it, its successors and assigns) ever had, now have or which (I, my heirs, executors, or administrators) (it, its successors and assigns) hereafter can, shall or may have, for, upon or by reason of any matter, cause, or thing whatsoever; from the beginning of recorded time to the date of these presents.

IN WITNESS WHEREOF, _____
(Contractor)

has caused these presents to be duly executed this _____ day of _____ 20_____

Signed, Sealed and Delivered in the presence of:

_____ _____(seal)
(Individual -Contractor)

_____(seal)
(Partnership - Contractor)

_____ By _____(seal)
(Partner)

Attested:

_____
(Corporation)

_____ By _____
(Secretary) (President or Vice President)

(Corp. Seal)

END OF SECTION

SECTION 00939

WAIVER OF LIEN - MATERIALS AND LABOR

STATE OF _____
COUNTY OF _____

To: _____ (Owner)
_____
_____

WHEREAS, _____ (the undersigned) have been employed by _____ (Contractor) on the _____ (Project Name) to furnish the following:
_____
_____
_____ (description of material and services).

NOW THEREFORE, the undersigned, for good and valuable considerations do hereby waive and release any and all lien, or right of lien, or claim to lien on said above project and premises under the Law, in relation to Mechanics' Liens Law, on account of labor and materials, or both, furnished by the undersigned to or on account of the said contract for the said project and premises only so far as that portion of work which has been included in our requisition dated _____ and all prior requisitions.

THIS WAIVER AND RELEASE is being made to the undersigned in the amount of $ _____ which sum the undersigned certifies to be the balance due the undersigned for all labor, materials or both, furnished by the undersigned to or on account of the said contract as included on Contractor's requisition dated _____.

GIVEN UNDER our hand and seal, this _____ day of _____, 20 __.

By: _____
Manufacturer, Supplier or Subcontractor Name

_____
Signature of Authorized Representative

_____
Printed Name and Title

END OF SECTION

SECTION 00941

CHANGE ORDER NO.: [Number of Change Order]

Owner: Owner's Project No.:
Engineer: Engineer's Project No.:
Contractor: Contractor's Project No.:
Project:
Contract Name:
Date Issued: Effective Date of Change Order:

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

Description:

[Description of the change]

Attachments:

[List documents related to the change]

Change in Contract Price	**Change in Contract Times [as days or dates]**
Original Contract Price: $ _____	Original Contract Times: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] from previously approved Change Orders No. 1 to No. **[Number of previous CO]**: $ _____	**[Increase] [Decrease]** from previously approved Change Orders No.1 to No. **[Number of previous CO]**: Substantial Completion: _____ Ready for final payment: _____
Contract Price prior to this Change Order: $ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] this Change Order: $ _____	**[Increase] [Decrease]** this Change Order: Substantial Completion: _____ Ready for final payment: _____
Contract Price incorporating this Change Order: $ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____

Recommended by Engineer (if required)	Accepted by Contractor
By: _____	_____
Title: _____	_____
Date: _____	_____
Authorized by Owner	**Approved by Funding Agency (if applicable)**
By: _____	_____
Title: _____	_____
Date: _____	_____

END OF SECTION

SECTION 00942

FIELD ORDER NO.: [Number of Field Order]

Owner:	Owner's Project No.:
Engineer:	Engineer's Project No.:
Contractor:	Contractor's Project No.:
Project:	
Contract Name:	
Date Issued:	Effective Date of Field Order:

Contractor is hereby directed to promptly perform the Work described in this Field Order, issued in accordance with Paragraph 11.04 of the General Conditions, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference:

Specification Section(s):

Drawing(s) / Details (s):

Description:

[Description of the change to the Work]

Attachments:

[List documents supporting change]

Issued by Engineer

By: _____

Title: _____

Date: _____

END OF SECTION

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 DESCRIPTION:

A. Location: The Work locations include, but are not limited to, locations within the right-of-ways on the following streets and easements in the Town of Exeter.
   1. Linden Street

B. Work Included: The Work includes, but is not limited to, the following:
   1. Earthwork:
      a. Remove existing guardrail
      b. Remove existing pavement and roadway subbase.
      c. Backfill proposed bridge components.
   2. Base Courses and Pavements:
      a. Replace existing pavement on approaches and on the bridge
   3. Structures:
      a. Remove portions of timber wingwalls and abutment backwall.
      b. Construct new reinforced concrete backwalls, wingwalls, and approach slabs
      c. Install proposed soil anchors
      d. Install proposed timber bridge railing
   4. Incidental Construction:
      a. Design, install, and maintain traffic control measures including portable concrete traffic barriers for the project duration
      b. Design, install, and maintain stormwater pollution prevention measures including silt fencing for duration of the project
      c. Install drainage swale and bituminous concrete curbing
      d. Perform final grading to match existing and establish turf using mulch and tackifiers
      e. Mobilize and demobilize
   5. Bid Alternate 1:
      a. Construct a reinforced concrete facing on the timber faced MSE walls after the soil anchors have been installed.
   6. All related site work including groundwater dewatering, disposal of excess excavated materials, filter fabric, bedding, backfill, compaction
   7. Construction and materials for temporary laydown area.
   8. All material handling.
   10. Removing existing pavement and paving as required.

C. Related Work Specified Elsewhere
   1. Coordination: Section 01050
   2. Alternates: Section 01100
   3. Construction Schedules: Section 01310

D. Removals, Relocations and Rearrangements
   1. Existing landscaping or site amenities disturbed during construction shall be replaced and established to preconstruction conditions. Prior coordination with property owners shall be made prior to removal, relocation, and replacement.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 MAINTAIN EXISTING WORKS

A. Continuous Operations Criteria:
   1. The Contractor shall conduct operations in such a manner and sequence which shall neither result in a disruption of, nor interfere with, the functional workings of any existing utilities.
   2. The Contractor shall be responsible for the operation and maintenance of all new and temporary facilities until such time as the new facilities are accepted by the Owner.

3.2 CONSTRUCTION SEQUENCE

A. Construction of the proposed bridge repairs and associated work will disrupt traffic along Linden Street and the abutters within the project area. To maintain traffic and minimize impacts to traffic and abutters, the construction must be in accordance with the accepted traffic control plans.
B. The Contractor shall submit to the Engineer for review and acceptance a complete schedule of the proposed sequence of construction operations prior to commencing any work. This schedule shall include the Contractor's plans for doing the work.
C. The Contractor shall submit to the Engineer for review and acceptance a complete schedule of their proposed sequence of construction operations prior to commencing any work. This schedule shall include the Contractor’s plans for performing the work.
D. The Contractor shall submit to the Engineer a written request to deviate from the above sequence with adequate supporting information to demonstrate to the Engineer that the continuity and degree of treatment will not be adversely affected.

3.3 SITE ACCESS LIMITATIONS

3.4 SCHEDULE LIMITATIONS AND WORK RESTRICTIONS/ REQUIREMENTS

A. Work Hours:
   1. Work hours are defined in the Section 00700 (General Conditions) and Section 00800 (Supplemental Conditions).
   2. All Work shall be prohibited on Saturdays, Sundays, and legal holidays
   3. The Contractor shall request permission to work outside the work hours specified above at least 72 hours in advance of the proposed work. The

Contractor shall not commence work outside of the work hours specified above unless or until granted such permission from the Owner and Engineer.

B. Temporary Facilities Plan:
   1. A project Temporary Facilities Plan shall be submitted prior to the Pre-Construction Meeting. The Temporary Facilities Plan shall identify the approach for maintaining continuous operations for each impacted utility.

C. Maintain Services:
   1. Maintain all existing stormwater and electrical services.

D. Traffic Control Plan:
   1. A project-specific Traffic Control Plan shall be submitted prior to the Pre-Construction Meeting (refer to Section 01570 and 619.1). The Traffic Control Plan shall identify traffic management requirements for each distinct component of the project.
   2. Contractor shall maintain access to all residences and businesses at all times.
   3. Contractor shall maintain access for garbage collection and mail services to all residences and businesses at all times. Contractor shall coordinate with these service providers.
   4. Contractor shall maintain access for bus routes, schools, day care facilities, etc. at all times. Contractor shall coordinate efforts with local school district to ensure access.

E. Proposed Road Closures:
   1. Road closures shall be requested in writing and shall be approved by Town of Exeter Highway Department.

F. Pavement Maintenance and Winter Shutdown Period:
   1. The work shall be completed during one construction season. There is no allowance for work after November 15th.

G. Tree Cutting/Clearing:
   1. Tree cutting and/or clearing is prohibited between June 1 and July 31 to protect the Northern Long-eared Bat.

END OF SECTION

SECTION 01050

COORDINATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Contractor is required to work in close proximity to Owner's existing facilities. The Contractor, under this Contract, will be responsible for coordinating construction activities with Owner to ensure that services, facilities, and safe working conditions are maintained.

B. Any damage to existing structures, equipment and property, accepted equipment or structures, and property or work in progress by others; as a result of the Contractor's or their subcontractor's operations shall be made good by the Contractor at no additional cost to the Owner.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 COORDINATION WITH OTHERS

A. The Contractor shall be responsible for coordinating all work around Public and Private Utilities with the appropriate utility owner and shall bear the costs of inspection requirements, temporary support requirements, facilities relocation for underground services, and all other requirements other than those associated specifically with work.

1. The location of public utility information depicted on the plans is approximate and may not be complete. In accordance with NH State Law, the Contractor is responsible for contacting DIGSAFE (888.344.7233 or DIAL 811) and notifying non-member utilities to have the utility locations marked in the field prior to the start of construction.

B. Town of Exeter Highway Department:

1. The contractor shall be responsible for coordinating work in the vicinity of stormwater lines with the Town of Exeter Public Works Department. The Contractor shall bear all costs associated with Department Requirements.

Town of Exeter Public Works Department
13 Newfields Road
Exeter, NH 03833
Paul Vlasich, P.E.
603.773.6157
pvlasich@exeternh.gov

C. Exeter Police Department
The Contractor shall coordinate access, egress, detours, and traffic control, as required, with the Exeter Police Department. The Contractor shall request approval from the Exeter Police, and subsequently notify the Highway Department, the Fire Department, and local dispatch at least 48-hour advance of any street closings or detours.

Exeter Police Department
603.772.1212

D. Dover Fire & Rescue Department
The Contractor shall coordinate access, egress, detours, and traffic control, if required, with the Exeter Fire Department. The Contractor shall notify the Fire Department when any hydrants will be required to be shut down and the start time and stop time when hydrants will be shut down. The Contractor shall coordinate with the Fire Department if dedicated building alarm signals are encountered and should contact the Fire Department prior to digging in areas where alarm conduits may be present.

Exeter Fire Department
603.773.6131

E. School Administrative Unit 16 – School Department
The Contractor shall coordinate access, egress, detours, and traffic control with the School Department for school accessibility needs within the project area. The Contractor shall notify the School District Transportation Manager at least 48 hours in advance of any street closings or detours. The Contractor shall coordinate with the Transportation Manager for the School District to ensure safe passage and routing of all school buses and pedestrians and provide accessibility as required by the School District.

School Administrative Unit 16 – School Department
603.778.0591

F. Unitil Electric
The Contractor shall coordinate work in the vicinity of the electric lines with Unitil Electric. The Contractor shall bear all costs associated with Unitil Electric Requirements.

Unitil
800.582.7276

G. Telephone/Cable TV – Comcast
The Contractor shall coordinate work in the vicinity of the telephone/cable TV lines with Comcast. The Contractor shall bear all costs associated with Comcast Requirements.

Comcast
115 Epping Road
Exeter, NH 03833
800.266.2278

END OF SECTION

SECTION 01070

ABBREVIATIONS & SYMBOLS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Where any of the following abbreviations are used in these Specifications, they shall have the meaning set forth opposite each.

AASHTO	American Association of State Highway & Transportation Officials
AC	Alternating Current
ACI	American Concrete Institute
ACP	Asbestos Cement Pipe
AGA	American Gas Association
AIC	Ampere Interrupting Capacity
AGMA	American Gear Manufacturers Association
AIEE(IEEE)	American Institute of Electrical Engineers (Institute of Electrical and Electronics Engineers, Inc.)
AISC	American Institute of Steel Construction
AMP	Ampere 125-16
Amer. Std.	American Standard for Cast Iron Pipe Flanges and Flanged Fittings, Class l25 (ASA Bl6 ll960)
ANSI	American National Standards Institute
API	American Petroleum Institute
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWG	American or Brown and Sharpe Wire Gage
AWWA	American Water Works Association
CCTV	Closed Circuit Television
CF	Cubic Foot
CFM	Cubic Foot Per Minute
CFS	Cubic Foot Per Second
CI	Cast Iron
CIPP	Cured-in-Place Pipe
CIPRA	Cast Iron Pipe Research Association
CSI	Construction Specifications Institute
CY	Cubic Yard
DC	Direct Current
DEP	Department of Environmental Protection
DI (DIP)	Ductile Iron (Pipe)
DOT	Department of Transportation
EDR	Equivalent Directional Radiation

EPA	U.S. Environmental Protection Agency
FPS	Feet Per Second
FT	Feet
GAL	Gallons
GPD	Gallons Per Day
GPM	Gallons Per Minute
HP	Horsepower
IBR	Institute of Boiler and Radiator Manufacturers
IN	Inches
ISA	Instrument Society of America
KVA	Kilovolt-ampere
KW	Kilowatt
LB	Pound
MACP	Manhole Assessment and Certification Program
MAX	Maximum
MGD	Million Gallons Per Day
MIN	Minimum
NACE	National Association of Corrosion Engineers
NASSCO	National Association of Sewer Service Companies
NBS	National Bureau of Standards
NEC	National Electrical Code, Latest Edition
NEMA	National Electrical Manufacturers Association
NEWWA	New England Water Works Association
NPT	National Pipe Thread
OS&Y	Outside Screw and Yoke
PCA	Portland Cement Association
PPM	Parts Per Million
PSI	Pounds Per Square Inch
PSIG	Pounds Per Square Inch Gage
PVC	Polyvinyl Chloride
RPM	Revolutions Per Minute
RUS	Rural Utility Service
SF	Square Foot
STL. W.G.	U.S. Steel Wire, Washburn and Moen, American Steel and Wire Cos., or Roebling Gage
SY	Square yard
TDH	Total Dynamic Head
USAS	Standards of the United States of America Standards Institute (formerly American Standards Association)
USS GAGE	United States Standard Gage
VC	Vitrified Clay
WSP	Working Steam Pressure
Fed. Spec.	Federal Specifications issued by the Federal Supply Service of the General Service Administration, Washington, D.C.

END OF SECTION

SECTION 01100

ALTERNATES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Each Bidder shall be held fully responsible for examining the scope of the Alternates generally defined herein and for recognizing any modifications to the Work caused by any Alternate

B. Alternate:
   1. To enable the Owner to compare total costs where alternate materials and methods might be used, an Alternate has been established as described in this Section of these Specifications.

C. Related Work Specified Elsewhere:
   1. Materials and methods to be used in the Base Bid and in the Alternate have been described on the DRAWINGS and in pertinent Sections of these Specifications.
   2. Method for stating the proposed Contract Sum is described in the Bid Form.

D. Submittals:
   1. All Alternates described in this Section are required to be reflected on the Bid Form as submitted by bidders. However, do not submit alternates other than as described in this Section, except as provided for "substitutions" under the General Conditions.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

PART 2 - PRODUCTS

2.1 PRODUCT HANDLING

A. If the Owner elects to proceed on the basis of one or more of the described Alternatives, make all modifications to the Work required in furnishing and installing the selected Alternative or Alternatives to the approval of the Engineer and at no additional cost to the Owner other than as proposed on the Bid Form.

2.2 ALTERNATE NO. 1

A. Bid Alternate 1 shall consist of installing a reinforced concrete facing to the timber abutments and wingwalls to encase the components of the installed soil anchoring system.

PART 3 - EXECUTION

3.1 ADVANCE COORDINATION

Immediately after award of the Contract, or as soon thereafter as the Owner has made a decision on whether the Alternate will be selected, thoroughly and clearly advise all necessary personnel and suppliers as to the nature and extent of Alternates selected by the Owner. Use all means necessary to alert those personnel and suppliers involved as to all changes in the work caused by the Owner's selection or rejection of the Alternate.

END OF SECTION

SECTION 01150

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. Lump Sum payment shall be made to the Contractor based on Specification Divisions 2 through 6. Payment shall be made to the contractor in accordance with an accepted progress schedule and schedule of values on the basis of actual work completed in-place. No allowance will be made for materials stored either on or off site.

B. Item quantities and pricing provided with the bid will be utilized in determining the monthly work progress for billing and negotiating any future work. Payment shall be based on the actual amount of work accepted and for the actual amount of materials in-place, as shown by the final measurements.

1. All Item measurements shall be in accordance with NHDOT Standard Specification for Highway and Bridge Construction, 2016 Edition as amended by this Specification.
2. At the end of each work week, the Contractor's Superintendent or other authorized representative of the Contractor shall meet with the Resident Project Representative and determine the quantities of work accomplished and/or completed during the preceding week.
3. The Resident Project Representative will then prepare two "Weekly Progress Reports" which shall be signed by both the Resident Project Representative and Contractor's Representative.
4. Once each month the Resident Project Representative will prepare two "Monthly Progress Summation" forms from the month's accumulation of "Daily Progress Reports" which shall also be signed by both the Resident Project Representative and Contractor's Representative.
5. These completed forms will provide the basis of the Engineer's monthly quantity estimate upon which payment will be made. Items not appearing on both the Weekly Progress Reports and Monthly Progress Summation will not be included for payment. Items appearing on forms not properly signed by the Contractor will not be included for payment.
6. After the work is completed and before final payment is made, the Engineer will make final measurements to determine the quantities of various items of work accepted as the basis for final settlement.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Measurement and payment as described under Divisions 2 through 6 of this Specification shall be in accordance with NHDOT Standard Specification for Road and Bridge Construction, 2016 Edition as amended by this Specification.

B. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 SCOPE OF PAYMENT

A. Payments to the Contractor will be made for the actual quantities of the Contract items performed and accepted in accordance with the Contract Documents. Upon completion of construction, if these actual quantities show either an increase or decrease of 25% from the quantities given in the Proposal Form, the Contract Unit Prices will still prevail.

B. The Contractor shall accept in compensation, as herein provided, in full payment for furnishing all materials, labor, tools, equipment, and incidentals necessary to the completed work and for performing all work contemplated and embraced by the Contract; also for all loss or damage arising from the nature of the Work, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the Work and until its final acceptance by the Engineer, and for all risks of every description connected with the prosecution of the work, except as provided herein, also for all expenses incurred in consequence of the suspension of the Work as herein authorized.

C. The payment of any partial estimate or of any retained percentage except by and under the approved final invoice, in no way shall affect the obligation of the Contractor to repair or renew any defective parts of the construction or to be responsible for all damage due to such defects.

1.4 PAYMENT FOR INCREASED OR DECREASED QUANTITIES

A. When alterations in the quantities of work not requiring supplemental agreements, as hereinbefore provided for, are ordered and performed, the Contractor shall accept payment in full at the Contract unit prices for the actual quantities of work done. No allowance will be made for anticipated profits. Increased or decreased work involving supplemental agreements will be paid for as stipulated in such agreements.

1.5 OMITTED ITEMS

A. Should any items contained in the bid form be found unnecessary for the proper completion of the work contracted, the Engineer may eliminate such items from the Contract, and such action shall in no way invalidate the Contract, and no allowance will be made for items so eliminated in making final payment to the Contractor.

1.6 PARTIAL PAYMENTS

A. Partial payments shall be made monthly as the work progresses. Partial payments shall be made subject to the provisions of the Supplemental and General Conditions. The breakdown of quantities will be determined by the Engineer.

1.7 PAYMENT FOR MATERIAL DELIVERED

A. When requested by the Contractor and at the discretion of the Owner, payment may be made for all or part of the value of acceptable, non-perishable materials and equipment which are to be incorporated into bid items, have not been used and have been delivered to the construction site, or placed in storage places acceptable to the Owner. Payment shall be subject to the provisions of the General and Supplemental Conditions.

B. No payment shall be made upon fuels, supplies, lumber, false work, or other materials of any kind which are not a permanent part of the Contract.

1.8 FINAL PAYMENT

A. After final measurements are made by the Engineer, the Contractor will prepare a final quantity invoice of the amount of the Work performed and the value of such Work. Owner shall make final payments of the sum found due less retainages subject to provisions of the General and Supplemental Conditions.

1.9 INCIDENTAL WORK

A. Incidental work items for which separate payment will not be made includes, but is not limited to, the following items:
   1. Pre-Construction photographs or videos.
   2. Maintaining Project Record Documents for the duration of the project (Refer to Division 1, Section 01720).
   3. Preparing site for construction.
   4. Locating, marking, and protecting public and private utilities.
   5. Replacing damaged signs not scheduled for replacement.
   6. Coordinating and cooperating with other Contractors and utility companies including related inspection costs and other costs (Refer to Section 01050).
   7. Utility crossings and relocations, unless otherwise paid for.
   8. Providing and maintaining temporary utility services to buildings, as required, during construction.
   9. Minor Items--such as relocating signposts, guard rails, rock wall, mailboxes, curbs, traffic loop detectors, pavement markings, etc., damaged during construction and not scheduled for replacement.
   10. Designing, furnishing, installing, and removing temporary excavation support, such as, trench boxes, steel and/or wood sheeting unless otherwise noted on the Drawings or Specifications.
   11. Temporary construction dewatering as necessary.
   12. Dust control.
   13. Quality assurance testing.
   14. Final cleaning of storm drains.
   15. Providing flagman services, unless otherwise noted on the Drawings or Specifications.
   16. Construction schedules, bonds, insurance, shop drawings, warranties, guarantees, certifications and other submittals required by the Contract Documents.
   17. Weather protection.
   18. Permits not otherwise paid for or provided by the Owner.
   19. Visits to the project site or elsewhere by personnel or agents of the Contractor, including manufacturer's representatives, as may be required.
   20. Contract administration and insurance.
   21. Test pits to establish in place field soils density, groundwater conditions, or requirements for dewatering.
   22. Test Pits for the Contractor’s Benefit
   23. Temporary resetting or replacement of existing street and traffic signs and temporary traffic signals where necessary.
   24. Disconnecting and reconnecting traffic signal power to accommodate the work.

25. Raising and lowering of existing frames and covers of buried utilities to grade unless payment is otherwise provided for.
26. Adjusting existing frames, covers and grates horizontally to match final grades and curb faces.
27. Removing and resetting existing steps, guard rails, fences, walls and non-paved brick or paver walkways disturbed during construction, other than those identified on the Drawings to be replaced.
28. Protecting existing block and stone retaining walls unless otherwise identified to be removed, relocated or modified in the Drawings.
29. Modifying, to include coring, patching and parging of existing sewer and drainage structures to accommodate new pipes as shown on plans.
30. Removing and subsequent delivery of replaced or obsolete frames, covers, grates, hydrants curbstones and signs to a location within the City limits designated by the Owner.
31. Removing temporary pavement markings related to maintenance of traffic and repainting the original pavement markings through the project work zone.
32. Relocating, replacing and extending all underground telephone, power, cable, data, gas and all other private utility services from within the Rights of Way to the dwellings, structures or meters.
33. Flushing and final cleaning of storm drain system.
34. Clean-up and restoring property within the project area impacted by construction.
35. Restoring fences and other structures disturbed by construction.

1.10 DESCRIPTION OF PAY ITEMS

A. Pay Items for the work shall be identified and broken down as described under Specification Divisions 2 through 6.
B. Each unit or lump-sum price stated in the Bid Form shall constitute full compensation, as herein specified, for each item of the work completed.

1.11 BASIS OF PAYMENT

Payment will be made monthly based on agreed upon completed work in accordance with Division 0, Section 00700 – General Conditions, Article 15.

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: To enable orderly review during progress of the work, and to provide for systematic discussion of problems, the Engineer will conduct project meetings throughout the construction period.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 QUALITY ASSURANCE

A. Persons designated by the Contractor to attend and participate in the project meetings shall have all required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.4 SUBMITTALS

A. Agenda items: To the maximum extent practicable, advise the Engineer at least 24 hours in advance of project meetings regarding all items to be added to the agenda.

B. Minutes: The Engineer will compile minutes of each project meeting and will furnish a copy to the Contractor. The Contractor may make and distribute such other copies as they wish.

PART 2 - PRODUCTS

(No products are required in this Section.)

PART 3 - EXECUTION

3.1 MEETING SCHEDULE

A. Except as noted below for Preconstruction Meeting, project meetings will be held monthly. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.2 MEETING LOCATION

A. Meetings will be held at the job site in the Engineers' field office, unless the Owner and/or Engineer determine that virtual meetings are applicable and appropriate for any reason (e.g., COVID, Safety and Health Plan, etc.).

1. If meetings are required by Owner/Engineer to be held virtually, Engineer will host the meetings via Microsoft Teams. All required meeting attendees are responsible for providing hardware necessary to view, share, be heard and hear content of the meeting.

3.3 PRECONSTRUCTION MEETING

A. Preconstruction meeting will be scheduled within twenty days after the Effective Date of the Agreement, but before the Contractor starts work at the site. Provide attendance by authorized representatives of the Contractor and all major subcontractors. The Engineer will advise other interested parties and request their attendance.

B. Minimum agenda: Distribute data on, and discuss:
   1. Identification of key project personnel for Owner, Engineer, Contractor, funding/regulatory Agencies.
   2. Responsibilities of Owner, Engineer, Resident Project Representative, Contractor.
   3. Channels and procedures for communications.
   4. Construction schedule, including sequence of critical work.
   5. Easements, permits.
   6. Contract Documents, including distribution of required copies of original documents and revisions.
   7. Processing of Shop Drawings and other data submitted to the Engineer for review.
   8. Processing of field decisions and Change Orders.
   9. Rules and regulations governing performance of the Work, including funding/regulatory Agency requirements.
   10. Procedures for safety and first aid, security, quality control, housekeeping, and other related matters.

3.4 PROJECT MEETINGS

A. Attendance: To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work. The Superintendent shall attend. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspects of the Work are involved.

B. Minimum agenda:
   1. Review, revise as necessary, and approved minutes of previous meeting.
   2. Review progress of the Work since last meeting, including status of submittals for approval.
   3. Review schedule of work to be accomplished prior to next meeting.
   4. Discuss monthly partial payment request.
   5. Review status of change order requests and Work Directive Changes.
   6. Identify problems which impede planned progress.
   7. Develop corrective measures and procedures to regain planned schedule.
   8. Complete other current business.

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Within ten (10) days after the effective date of the Agreement between Owner and Contractor submit to the Engineer an estimated progress schedule as specified herein.

B. Form of Schedules:
   1. Narrative: Completely describe the construction methods to be employed.
   2. Network Analysis System:
      a. Provide a separate horizontal schedule line for each trade or operation and show concurrent and preceding activities.
      b. Present in chronological order the beginning of each trade or operation showing duration and float time.
      c. Scale: Identify key dates and allow space for updating and revision.
   3. Mathematical Analysis:
      a. A mathematical analysis shall accompany the network diagram. A computer printout will be acceptable.
      b. Information shall be included on activity numbers, duration, early start, late start, etc. and float times.

C. Content of Schedules:
   1. Provide complete sequence of construction by activity:
      a. Shop Drawings, Project Data and Samples:
         i. Submittal dates.
         ii. Dates reviewed copies will be required.
      b. Decision dates for:
         i. Products specified by allowances.
         ii. Selection of finishes.
      c. Estimated product procurement and delivery dates.
      d. Dates for beginning and completion of each element of construction.
   2. Identify work of separate phases and logically grouped activities.
   3. Show the projected percentage of completion for each item of work as of the first day of each month.
   4. Provide separate sub-schedules, if requested by the Engineer, showing submittals, review times, procurement schedules, and delivery dates.
   5. Schedule sheets shall be printed in color on 24”x36” paper, unless a smaller size paper is allowed by the Engineer.

D. Updating:
   1. Show all work activities including those already complete.
   2. Show all changes occurring since previous submission.
   3. Indicate progress of each activity, show completion dates.
   4. Include:
      a. Major changes in scope.

b. Activities modified since previous updating.
c. Revised projections due to changes.
d. Other identifiable changes.

5. Provide narrative report, including:
   a. Discussion of problem areas, including current and anticipated delay factors.
   b. Corrective action taken or proposed.
   c. Description of revisions that may affect schedules.
   d. Description of activities to be performed in the next 6-week period.
   e. Updated list of key shop drawings, project data and samples to be submitted in the next 6-week period.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 SUBMITTALS

A. Submit updated schedules with each progress payment request.
B. Submit 4 copies of initial and updated schedules to the Engineer.

END OF SECTION

SECTION 01320

SAFETY AND HEALTH PLAN

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. The Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work, as outlined herein and in the General and Special Conditions of the Contract Documents. Within 10 days after the effective date of the Agreement between Owner and Contractor, submit to the Engineer a Safety and Health Plan as specified herein. Refer to submittals section below.
2. Contractor shall comply with all applicable Laws and Regulations related to the safety of persons or property, or for the protection of persons or property from damage, injury, illness, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
3. Contractor shall designate a qualified and experienced safety representative (OSHA defined "Competent Person") at the site whose duties and responsibilities shall be the prevention of accidents and maintaining and supervising of safety precautions and programs, including a "Job Hazards Analysis".
4. The Contractor shall be solely responsible to provide all labor, equipment, and utilities sufficient to ensure no construction noise, particulates, or odors, are allowed to accumulate to levels which adversely affect health or work in, or near the construction area.

B. Content of Safety and Health Plan:

1. Prepare complete safety and health plan in accordance with the requirements of CFR Title 29 Part 1926 - Safety and Health Regulations for Construction.
    a. Provide documentation that Contractor's hazardous communication program is up to date.
    b. Provide documentation that Contractor's safety training is up to date.
    c. Prepare a project specific Safety and Health Plan addressing construction safety and protection, including but not limited to excavations, fall protection, egress, as well as provisions for construction in hazardous environmental conditions, confined space entry, electrically-classified spaces, chemical storage/handling, biological hazards, etc., at the project site.
2. Safety provisions for confined space entry shall follow the requirements of CFR Title 29 Part 1926, Subpart AA – Confined Spaces in Construction and will be incorporated into the Safety and Health Plan.

C. Updating:

1. Contractor shall be responsible for updating the Safety and Health Plan as appropriate throughout the course of the construction period.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 SUBMITTALS

A. Submit the Contractor's site-specific Safety and Health Plan to the Engineer, in accordance with Section 01340. Submit hardcopy submittals, if required.
B. Submit updated Safety and Health Plans as necessary during the course of the project.
C. The Safety and Health Plan is provided "for information only" to inform the Owner, Engineer and Resident Project Representative of the project specific safety program requirements; however, if the Safety and Health Plan incomplete (e.g., missing elements relevant to the project work), inadequate (e.g., outdated qualifications) or not project-specific, it will be returned "revise and resubmit". Delays related to an incomplete Safety and Health Plan are the responsibility of the Contractor.
D. The Contractor will overview the plan with the Owner (and staff), Engineer (and Resident Project Representative) prior to work beginning at the project site, and subsequently when/if the safety plan is updated.
E. Contractor's most current Safety and Health Plan shall be available at the construction site throughout the construction project.

1.4 ON-SITE COORDINATION MEETINGS

A. Contractor shall review key aspects of Safety and Health Plan at the Pre-Construction Meeting, and subsequent on-site safety informational meeting.
B. Contractor shall report to Engineer and Owner at each progress meeting concerning compliance with the Safety and Health Plan for the most recent construction period and new considerations and requirements for the upcoming period.
C. Contractor shall hold weekly on-site coordination meetings with Resident Project Representative and Owner to ensure that Owner's staff is aware of key Safety and Health Plan requirements of the current phase of construction.

END OF SECTION

SECTION 01340

SUBMITTALS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Submit all shop drawings, operations and maintenance manuals, Manufacturers' certificates, project data, and samples required by the Specifications.

B. General Submittals Requirements: This project shall utilize:
   1. Submittals – Electronic via Email/FTP with Hard Copy for Record
      a. The Contractor shall submit to the Engineer an electronic submittal of shop drawings and O&M Manuals in portable document format (PDF) transmitted via email or file transfer protocol (FTP). The Engineer shall return an electronic PDF of the submittal review comments to the Contractor for distribution to subcontractors, suppliers and manufacturers. The electronic submittals shall serve as the electronic record of the project.
      b. In addition, completed shop drawings and completed operations and maintenance (O&M) manuals shall be provided in hard copy (paper) format, for the record, in accordance with the following requirements.
         i. Shop drawings and O&M manuals shall be considered "completed" once an action code of "0" or "1" has been attained, as specified below, unless otherwise directed by the Engineer.
         ii. Once completed, the Contractor shall provide three hard copy sets (for Owner, Engineer and Resident Project Representative, respectively).
         iii. Hard copy submittals shall be updated on a monthly basis, for those submittals completed during the preceding month.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 SHOP DRAWINGS

A. Shop Drawings are required for each and every element of the work.

B. Shop Drawings are generally defined as all fabrication and erection drawings, diagrams, brochures, schedules, bills of material, manufacturers data, spare parts lists, and other data prepared by the Contractor, their subcontractors, suppliers, or manufacturers which illustrate the manufacturer, fabrication, construction, and installation of the work, or a portion thereof.

C. The Contractor shall provide a completed Contractor Submittal Certification Form (copy provided for Contractor's use at the end of this Specification Section) which shall be attached to every copy of every shop drawing and signed by the Contractor and Manufacturer (where applicable). Shop Drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawing. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for the work.

1. Each shop drawing submittal shall include a complete copy of the relevant specification section markup up to reflect “compliance” or “deviation” on an item-by-item basis.

D. Shop Drawings shall be submitted as a complete package by specification section, unless otherwise reviewed and approved by the Engineer. It is the intent that all information, materials and samples associated with each specification section be included as a single submittal for the Engineer's review. Any deviation from this requirement, shall be requested in writing with an anticipated shop drawing breakdown/schedule prior to any associated submittal. An exception to this requirement are shop drawings for reinforcing steel, miscellaneous metals and structural steel, which shall be submitted separately for each structure unless otherwise permitted by the Engineer.

E. The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence of such drawings.

F. No material or equipment shall be purchased or fabricated especially for the Contract until the required shop and working drawings have been submitted as hereinabove provided and reviewed for conformance to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by said drawings.

G. Until the necessary review has been made, the Contractor shall not proceed with any portion of the work (such as the construction of foundations), the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which review is required.

H. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from their subcontractors and returning reviewed drawings to them. Shop drawings shall be formatted to standard paper sizes to enable the Owner to maintain a permanent record of the submissions. Approved standard sizes shall be: (a) 24 inches by 36 inches; (b) 11 inches by 17 inches, and (c) 11 inches by 8-1/2 inches. Provision shall be made in preparing the shop drawings to provide a binding margin on the left hand side of the sheet. Shop drawings submitted other than as specified herein may be returned for resubmittal without being reviewed.

I. Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by their subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to confirm that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer.

J. If a shop drawing shows any deviation from the Contract requirements, the Contractor shall make specific mention of the deviations in the transmittal. Shop Drawings that contain significant deviations that are not brought to the attention of the Engineer may be subject to rejection.

K. Should the Contractor submit equipment that requires modifications to the structures, piping, electrical conduit, wires and appurtenances, layout, etc., detailed on the Drawings, Contractor shall also submit details of the proposed modifications. If such

equipment and modifications are accepted, the Contractor, at no additional cost to the Owner, shall do all work necessary to make such modifications.

L. A maximum of two submissions of each Shop Drawing will be reviewed, checked, and commented upon without charge to the Contractor. Any additional submissions which are ordered by the Engineer to fulfill the stipulations of the Drawings and Specifications, and which are required by virtue of the Contractor's neglect or failure to comply with the requirements of the Drawings and Specifications, or to make those modifications and/or corrections ordered by the Engineer in the review of the first two submissions of each Shop Drawing, will be reviewed and checked as deemed necessary by the Engineer, and the cost of such review and checking, as determined by the Owner, and based upon Engineer's documentation of time and rates established for additional services in the Owner-Engineer Agreement for this Project, may be deducted from the Contractor to make all modifications and/or corrections as may be required by the Engineer in an accurate, complete, and timely fashion. Resubmittals for the sole purpose of providing written responses to review comments will not be considered a resubmittal counting towards the two submission limit.

M. Shop Drawings that include drawings or other material that is illegible or too small may be returned without review.

1.4 SAMPLES

A. The Contractor shall submit samples when requested by the Engineer to establish conformance with the specifications, and as necessary to define color selections available. Submittals of “samples” shall be documented through the electronic submittal process by including a photograph of the item(s) and indicating the date the sample was mailed and/or delivered.

1.5 MANUFACTURER'S CERTIFICATES

A. Prior to accepting the installation, the Contractor shall submit manufacturer's certificates for each item specified.

B. Such manufacturer's certificates shall state that the equipment has been installed under either the continuous or periodic supervision of the manufacturer's authorized representative, that it has been adjusted and initially operated in the presence of the manufacturer's authorized representative, and that it is operating in accordance with the specified requirements, to the manufacturer's satisfaction. All costs for meeting this requirement shall be included in the Contractor's bid price.

1.6 SUBMISSION REQUIREMENTS

A. Accompany submittals with a transmittal cover sheet, containing:
   1. Date.
   2. Project title and number.
   3. Contractor's name and address.
   4. The sequential shop drawing number for each shop drawing, project data and sample submitted shall be:
      a. Specification Section number followed by a dash and then a sequential number beginning with 01 (e.g., 16000-01).
      b. Under limited situations when additional different pieces of equipment are submitted under the same specification section, those submittals shall be numbered sequentially (e.g. 05500-01, 05500-02, 05500-03, etc.).

c. Resubmittals shall include an alphabetic suffix after the corresponding sequential number (e.g., 16000-01A).

5. Notification of deviations from Contract Documents.
6. Other pertinent data.

B. A completed Contractor Submittal Certification Form shall be attached to each hardcopy and electronic PDF of each shop drawing and must include:
1. Project name
2. Specification Section and sequential number with alphabet suffix for resubmittal
3. Description
4. Identification of deviations from Contract Documents.
5. Contractor's stamp, initialed or signed, certifying review of the submittal, verification of field measurements and compliance with Contract Documents.
6. Where specified or when requested by the Engineer, manufacturer's certification that equipment, accessories and shop painting meet or exceed the Specification requirements.
7. Where specified, manufacturer's guarantee.

C. Additional Requirements for Electronic Submittals:
1. Each individual shop drawing or O&M submittal shall be contained in one PDF.
2. The first page of the PDF shall be the Contractor Submittal Certification Form as described above.
3. The electronic PDF shall be **exactly** as submitted in the hardcopy.
4. The electronic PDF shall include an electronic table of contents that is bookmarked for each section of the submittal.
5. The electronic PDF shall be configured such that is fully searchable.
6. PDF versions of 24x36 drawings shall be converted to 24 x 36 PDFs so as not to lose the clarity of the original drawing.
7. Electronic PDF submittals that are not submitted in accordance with the requirements stated above will not be reviewed by the Engineer.
8. Electronic submittals shall be transmitted via the protocol established in Part 1 above.

1.7 RESUBMISSION REQUIREMENTS

A. Revise initial submittals as required and resubmit as specified for initial submittal.

B. Indicate on submittals any changes which have been made other than those required by Engineer. All renumbering of shop drawings, relabeling of individual pieces or assemblies or relocating of pieces or assemblies to other Drawings within the submittal shall be clearly brought to the attention of the Engineer. If relabeling of individual pieces or assemblies has taken place, the labels from the previous submittal shall be indicated to assist in comparing the original and resubmitted shop drawing.

C. All resubmittals shall include a summary of the previous submittal review comments with the vendors' written response as to how the previous comments were addressed.

1.8 ENGINEER'S REVIEW

A. The review of shop and working drawings hereunder will be general only, and nothing contained in this specification shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and in particular, the specific responsibility of the Contractor for details of design and dimensions

necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified thereunder.

B. The Engineer's review comments will be summarized on a Submittal Review Form, which includes an action code. A description of each action code is provided below.
   1. No Exceptions Taken (Status 0 on shop drawing log). The shop drawing complies with the Contract Document requirements. No changes or further information are required. Where appropriate, the submittal review form will be used to alert the Contractor, Owner and Field personnel of remaining items within that specification section that still needs to be submitted.
   2. Make Corrections Indicated (Status 1 on shop drawing log). The shop drawing complies with the Contract Document requirements except for minor changes, as indicated. Engineer requires that all comments will be addressed by the Contractor, unless otherwise notified in writing prior to execution of the relevant work.
   3. Conditional to Remarks (Status 2 on shop drawing log). The shop drawing potentially complies with the Contract Document requirements, contingent upon satisfactory resolution of review comments. Remarks will explicitly list what information needs to be resubmitted. Resubmittal from the Contractor should include a cover letter or summary which indicates how each review comment has been addressed.
   4. Revise and Resubmit (Status 3 on shop drawing log). The shop drawing does not comply with the Contract Document requirement as submitted, but may with changes indicated and/or submission of additional information. The entire package must be resubmitted with the necessary information and a cover letter which indicates how each review comment has been addressed and where to find the information in the resubmittal.
   5. Rejected (Status 4 on shop drawing log). The shop drawing does not comply with the Contract Document requirements, for the reasons indicated in the remarks, and is unacceptable.
   6. For Information Only (Status 5 on shop drawing log). The shop drawing review was for information only.
   7. In Review (Status 6 on shop drawing log). The shop drawing is currently under review.

CONTRACTOR SUBMITTAL CERTIFICATION FORM

PROJECT: _____ CONTRACTOR'S PROJ. NO: _____

CONTRACTOR: _____ ENGINEER'S PROJ. NO: _____

ENGINEER: _____

SHOP DRAWING NUMBER: _____ - _____

SPECIFICATION SECTION OR DRAWING NO: | SEQUENTIAL NUMBER (& ALPHA SUFFIX FOR RESUBMITTAL)

DESCRIPTION: _____

MANUFACTURER: _____

The above referenced submittal has been reviewed by the undersigned and I/we certify that the material and/or equipment meets or exceeds the project specification requirements with

☐ NO DEVIATIONS

or

☐ A COMPLETE LIST OF DEVIATIONS AS FOLLOWS:

_____
_____
_____
_____

By: _____ By: _____

Contractor

Manufacturer

Date: _____ Date: _____

a Any deviations not brought to the attention of the Engineer for review and concurrence shall be the responsibility of the Contractor to correct, if so directed.
b Required on all submittals
c When required by specifications Page ___ of ___

General Contractor's Stamp

SECTION 01380

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Pre-Construction Record: Contractor shall take digital photographs and video to obtain a visual record of the project area prior to beginning any work at the project site.
   2. Provide a description for each photograph or video.
   3. Notify Engineer at least three (3) working days prior to photographing or videoing the project area so Engineer may, at their option, observe.

1.2 QUALITY

A. Pre-Construction Record: Quality shall be such that the condition of existing pavement, curbing, driveway entrances, sidewalks, walls, doors, equipment, piping, etc. can be readily determined. Pre-construction record photographs and videos shall be taken by the Contractor with the Engineer or RPR present.
B. Electronic files shall be high resolution digital images in *.jpeg format and shall not be compressed or downsized. Electronic files shall not be less 2MB in size

1.3 SUBMITTALS

A. Pre-Construction Record:
   1. Submit pre-construction photographs/videos in accordance with Section 01340 prior to initiating any work on-site.
B. The quality of the photos and video are subject to approval by the Engineer.
C. Photographs and videos taken for the project and submitted are released to the Owner and Engineer for reproduction and use for records retention, governmental, commercial, and marketing purposes.

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. General Quality Control.
B. Workmanship.
C. Manufacturer's Instructions.
D. Manufacturer's Certificates.
E. Manufacturer's Field Services.
F. Testing Laboratory Services.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.
B. Division 0, Section 1340 – Submittals
C. Division 2 – Earthwork
D. Division 3 – Base Courses
E. Division 5 – Structures

1.3 QUALITY CONTROL

A. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

1.4 WORKMANSHIP

A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
B. Perform work by persons qualified to produce workmanship of specified quality.
C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.5 MANUFACTURERS' INSTRUCTIONS

A. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

1.6 MANUFACTURERS' CERTIFICATES

A. When required by individual Specifications Section, submit manufacturer's certificate that products meet or exceed specified requirements.

1.7 MANUFACTURERS' FIELD SERVICES

A. When specified in respective Specification Sections, require supplier and/or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.

B. Representative shall submit written report to Engineer listing observations and recommendations.

1.8 TESTING LABORATORY SERVICES

A. Contractor will employ and pay for services of an Independent Testing Laboratory to perform inspections, tests, and other services wherever an Independent Testing Laboratory is required by individual specification sections listed in paragraph 1.2 above, unless otherwise indicated. Contractor will be reimbursed for testing services as outlined below.

B. Services will be performed in accordance with requirements of governing authorities and with specified standards.

C. Reports will present observations and test results and indicate compliance or non-compliance with specified standards and with Contract Documents. Independent Testing Laboratory will submit one copy of each report directly to each of the following: Engineer, Resident Project Representative, Contractor. Reports will be submitted within 5 days of obtaining test results. If test results indicate deficiencies, Independent Testing Laboratory shall telephone or email results to Engineer, Resident Project Representative and Contractor within 24 hours.

D. Contractor shall cooperate with Independent Testing Laboratory personnel; furnish tools, samples of materials, design mix, equipment, storage and assistance as requested.

E. Contractor shall coordinate all testing work and shall notify Engineer and Independent Testing Laboratory at least 48 hours prior to performing work requiring testing services. If scheduled tests or sampling cannot be performed because the work is not ready as scheduled, testing costs associated with the delay will be determined by Engineer and invoiced by Owner to Contractor. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price. If adequate notice is not provided, Contractor shall suspend work on that portion of the Project until testing can be performed. Such suspension will not be grounds for a claim against the Owner for delay, nor will it be an acceptable basis for an extension of time.

F. Payment for Independent Testing Laboratory services shall be as follows:

1. General: Where testing is the Contractor's responsibility, payment will be made as stated below unless other requirements are given in Specification Sections. Testing which is the responsibility of the Contractor will be considered an incidental item unless otherwise indicated in Section 01150, Measurement and Payment.
2. Initial Testing: Owner will reimburse the Contractor for the cost of the initial testing. No markup is allowed.
3. Retesting: The Contractor **will not** be reimbursed for costs associated with retesting due to non-compliance of original work and/or failed test results.
4. Cancellations: If scheduled tests or sampling cannot be performed because the work is not ready as scheduled, testing costs associated with the delay are the responsibility of the Contractor and will not be reimbursed by the Owner. Testing costs due to cancelation by the Owner will be reimbursed to the Contractor.

5. Contractor's Convenience Testing: Inspections and tests performed for Contractor's convenience will be paid for by Contractor and **will not** be reimbursed by the Owner.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION
Not Used

END OF SECTION

SECTION 01562

DUST CONTROL

PART 1 - GENERAL

1.1 DESCRIPTIONS

A. Work Included:

1. Furnish and apply water or calcium chloride on the road surfaces within the construction site, when required to control dust and when directed by the Engineer.
2. When dust control is not included as a separate item in the Contract, the work shall be considered incidental to the appropriate items of the Contract.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Water for Sprinkling:

B. Clean, free of salt, oil, and other injurious matter.

C. Calcium Chloride:

1. Meet the requirements of AASHTO M144.

PART 3 - EXECUTION

3.1 APPLICATION

A. Water:

1. Apply water by methods approved by the Engineer.
2. Use approved equipment including a tank with gauge equipped pump and spray bar.

B. Calcium Chloride:

1. Apply at a rate sufficient to maintain a damp surface but low enough to assure non-contamination of water courses.
2. Apply water prior to calcium chloride addition.

END OF SECTION

SECTION 01570

TRAFFIC REGULATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Provide all materials and perform all work necessary to completely regulate traffic in the area of Work.
   2. Perform all work in such a manner as to provide safe passage at all times for the public and with a minimum of obstruction to traffic.
   3. Do not close roads or streets to passage of the public without the permission of the proper authorities.
   4. Uniformed officers with vehicles and flaggers (including police officers when required by law, regulations, ordinances, or as a result of poor traffic control) shall be obtained and paid for by the Contractor.

B. The local police department and/or the appropriate state transportation authority who will decide if safe passage is being maintained and shall have the authority to require the Contractor to take any additional steps necessary to maintain safe passage. If the Authority furnishes an inspector on the job or requires additional traffic control as a result of poor traffic control by the Contractor, the Contractor shall be responsible for all costs assessed by the Authority and for additional traffic control at their own expense. Minimize the length of delays or traffic stoppage to the extent practicable. Maximum traffic stoppage time shall be 10 minutes.

C. Develop a project specific traffic control plan that meets the requirements of Manual of Uniform Traffic Control Devices (MUTCD) and any local and state requirements. Proposed Traffic Control Plan shall indicate signs/locations to be used. Traffic controls plans shall be submitted by a licensed Professional Engineer in the State of New Hampshire for review and acceptance by the Owner and Engineer prior to the commencement of work.

D. The Contractor's designated traffic control representative shall respond to all traffic safety complaints and be available to direct traffic control subcontractors the entire time work is occurring on site. If the designated representative is not on site for a period of time, another on site representative shall be designated by the Contractor for that period.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 SCHEDULING WORK

A. During the Project Pre-Construction Meeting one Contractor representative will be designated as the coordinator between the Police Department and subcontracted traffic control.

B. Variable Message Signs notifying the public of pending road closure and/or

construction must be in place seven days prior to road closure or as required by the Town of Exeter and/or New Hampshire Department of Transportation.

C. Schedule all work so that two adjacent parallel streets are not closed to passage by the public at any one time, if at all possible.
D. Revise the plan of work if it will create a traffic hazard or an unreasonably long detour.
E. Do not start work in any new location without the permission of the Engineer.
F. Notify all police and fire departments of all scheduled detours and when streets are reopened.

1.4 SUBMITTALS

A. Submit a project specific traffic control plan that meets the requirements of the Manual of Uniform Traffic Control Devices (MUTCD) and any local and state requirements. The proposed Traffic Control Plan shall indicate signs/locations to be used.
B. The proposed Traffic Control Plan is provided "for information only" to inform the Owner, Engineer and Resident Project Representative of the project specific traffic control; however, if the Traffic Control Plan is incomplete (e.g., missing elements relevant to the project work), inadequate (e.g., outdated qualifications) or not project specific, it will be returned "revise and resubmit". Delays related to an incomplete Traffic Control Plan are the responsibility of the Contractor.

PART 2 - PRODUCTS

2.1 WARNING SIGNS AND BARRICADES

A. Traffic control (plans, methods and devices) shall be as outlined in the MUTCD as published by U. S. Department of Transportation, and any local and state requirements.
B. Provide adequate warning signs, barricades, signal lights, flaggers/uniformed police officers, and take other necessary precautions for the safety of the public.
C. Provide and illuminate suitable warning signs to show where construction, barricades or detours exist.
D. Provide digital message boards at appropriate locations as determined by the local police department and/or the Town of Exeter and/or New Hampshire Department of Transportation to maintain safe passage of traffic and work zone.
E. Provide barricades of substantial construction and painted with a finish that increases visibility at night, as outlined in the MUTCD.
F. Keep signal lights illuminated at all barricades and obstructions from sunset to sunrise.
G. Maintain all necessary signs, barricades, lights, flaggers, crew and other safety precautions during authorized suspension of the Work, weekends, holidays or other times when the Work is not in progress.
H. Contractor shall make periodic inspection throughout the day of the traffic control patterns, methods, signs and other devices to ensure that they are properly placed.

2.2 UNIFORMED POLICE OFFICER

A. A uniformed police officer is a police officer (local, county or state) on regular or

special duty dressed in uniform with the necessary high visibility vest and apparel needed for traffic control.

B. Arrange the police detail with the local Chief of Police, County Sheriff, or State Police Captain depending on jurisdiction.

2.3 FLAG PERSON

A. A flag person is a trained and certified individual assigned specifically to the task of directing traffic and is outfitted in the necessary high visibility vest and apparel needed for traffic control.

B. Flag persons shall be provided by the Contractor.

PART 3 - EXECUTION

3.1 DETOURS

A. Provide, identify and maintain suitable detours when the project, or any part thereof, is closed to public travel.

B. When the closed part of the project is reopened, restore the detour area and any other disturbed areas to the original condition.

3.2 INCONVENIENCE TO RESIDENTS OF VICINITY

A. Whenever a traveled way is closed, perform the Work in such a manner that local travel, residents and businesses in the vicinity of the Work will be inconvenienced as little as possible.

B. Allow access to residents and abutting land owners along the project to driveways and other normal outlets from their property.

3.3 TRAFFIC CONTROL OFFICERS

A. Where required by the local, county or state police departments and/or when specified, traffic control officer shall be Uniformed Police Officers.

B. Where the local, county or state police departments do not wish to or are unable to furnish traffic control officers and/or when specified, the traffic control officers shall be flag person.

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Keep accurate record documents for all additions, demolition, changes of material or equipment (from that shown on the Drawings), variations in work, and any other additions or revisions to the Contract (via Change Order, Work Change Directive, Field Order or Clarification).

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 MAINTENANCE OF DOCUMENTS

A. Maintain at job site, one copy of:
   1. Contract Drawings
   2. Specifications
   3. Addenda
   4. Reviewed Shop Drawings
   5. Change Orders
   6. Any other modifications to the Contract
   7. Field Test Reports

B. Store documents in files and racks specifically identified for Record Drawing use, that are apart from documents used for construction.

C. File documents in a logical manner indexed for easy reference.

D. Maintain documents in clean, dry, legible condition.

E. Do not use record documents for construction purposes.

F. Make documents available at all times for inspection by the Engineer and Owner, and by the end of the project, transmit these documents to the Engineer.

G. Failure to maintain current records, as specified herein, shall be grounds for withholding additional retainage from monthly partial payment requests.

1.4 RECORDING

A. Label each document "PROJECT RECORD" in large high printed letters.

B. Keep record documents current and do not permanently conceal any work until required information has been recorded.

C. General Field Recording Issues:
   1. All swing ties shall be taken from existing, permanent features such as utility poles, corners of buildings and hydrants. Porches, sheds or other house additions shall be avoided as they could be torn down. A minimum of two swing ties shall be taken. Survey grade GPS coordinates are also acceptable.
   2. Stations shall be recorded to the nearest foot.

3. Inverts shall be recorded to the nearest hundredth of a foot.
4. Elevations shall be recorded to the nearest hundredth of a foot.
5. Building dimensions shall be recorded to the nearest 1/4".
6. Equipment and Piping shall be recorded to the nearest tenth of a foot, and the overall dimensions and layout of the equipment shall be adjusted to reflect the equipment provided.

D. Project Record Drawings - Legibly mark Contract Drawings to record existing utilities and actual construction of all work, including but not limited to the following (where applicable):
   1. Existing Utilities
      a. Water mains and services, water main gate valves, sewer mains and services, storm drains, culverts, steam lines, gas lines, tanks and other existing utilities encountered during construction must be accurately located and shown on the Drawings. In congested areas supplemental drawings or enlargements may be required.
      b. Show any existing utilities encountered in plan and profile and properly labeled showing size, material and type of utility. Ties shall be shown on plan. Utility shall be drawn to scale in section (horizontally and vertically) and an elevation shall be called out to the nearest hundredth of a foot.
      c. When existing utility lines are broken and repaired, ties shall be taken to these locations.
      d. If existing water lines are replaced or relocated, document the area involved and pipe materials, size, etc. in a note, and with ties.
   2. Manholes, Catch Basins, Valve Pits and other structures.
      a. Renumber structure stationing to reflect changes.
      b. Show ties to center of structure covers or hatches.
      c. In general, show inverts at center of structures. However, for manholes with drop structures, or steep channels (greater than 0.2' change on slope), show inverts at face of manhole.
      d. Show inverts for other structures at the face of the structure.
      e. Draw any new structures that are added on plan and profile.
      f. Show any field or office redesigns.
      g. Redraw plan if the structure's location is moved more than 5 feet in any direction. Note: It is important to show existing utilities, as outlined in Paragraph 1 above, especially if they were one reason for relocating the sewer, manholes and other structures.
      h. Redraw profile if inverts changed by more than 6 inches.
   3. Gravity Sewer Line
      a. Change sewer line slopes indicated on Drawings if inverts are changed.
      b. Draw any new gravity lines that are added on plan and profile.
      c. Show any field or office redesigns.
      d. Redraw the sewer line profile if manhole inverts are redrawn.
      e. Redraw the sewer line on plan corresponding to relocated manholes.
   4. Water Mains and Force Mains
      a. Show ties to the location of all valves, bends (horizontal and vertical), tees and other fittings. The use of thrust blocks shall be recorded.

b. Revise elevations indicated on the Drawings to reflect actual construction.

5. House Services
   a. Draw all house services (even to empty lots) on plan, and show ties.
   b. Show ties or distances to wyes from manhole.
   c. Show chimneys heights in the profile.
   d. The Wright-Pierce "Sanitary Sewer Service Location" forms and “Water Service Location” forms shall be used to record sewer and water service information. A copy of these forms shall be provided to the Owner, along with the Record Drawing Set.
6. Septic Tanks
   a. Show ties to center of tank covers.
   b. Label size of septic tanks that are other than standard 1,000-gallon capacity.
   c. The Wright-Pierce "Sanitary Sewer Service Location" forms shall be used to record septic tank information. A copy of these forms shall be provided to the Owner, along with the Record Drawing Set.
7. Ledge
   a. Ledge profiles shall be shown. Note whether the plotted ledge profile reflects undisturbed or expanded conditions.
8. Yard Piping and Buried Electrical Conduit
   a. Site piping and utilities shall be drawn to reflect the installed locations, with ties and elevation of all bends (horizontal and vertical).
   b. Show routing for electrical conduits and pull boxes, especially in close proximity to buildings and when the conduits change direction or cross process piping.
9. Roads
   a. Show centerline road profile and level spot elevations.
   b. Show pavement widths.
   c. On road cross sections, show the pavement cross slope.
   d. Show any deviations from the design plans.
10. Buildings
   a. In general, small changes to structures shall not be redrawn. If any dimensional changes were made in the field, the numerical change shall be made on the Drawing and be properly labeled. Update dimensions and elevations on Drawings.
   b. Show finished concrete elevations (top of slab, top of wall, top of footing, etc.). Redraw any foundation, frost wall, etc. that was modified, deepened, or altered during construction.
   c. Adjust finished concrete horizontal dimensions that are shown on the Drawings.
   d. Adjust structural steel elevations and horizontal dimensions that are shown on the Drawings.
   e. Show location of anchors, construction and control joints, and waterstops, when they are different from those shown on Drawings.

f. Any additions or major changes shall be shown in both plan and elevation (i.e. relocated doors, opposite door swings, change in wall location, relocation of floor drains).
g. Show approximate location and routing of electrical conduits in walls, slabs and ceilings. Most conduits are run in groups, therefore, use range of measurements to define location for entire section of conduits.
h. Special circuits for computers, alarms and instrumentation shall be shown.
i. Show any changes in location and elevation of ductwork and devices, fuel piping and equipment, and heat piping and equipment.
j. Location of gravity sewer system below slabs in buildings shall be shown, if changes are made in the configuration.
k. If wall mounted electrical switches, control boxes, thermostats, etc. have been relocated significantly, (other side of door, or to a wall other than indicated diagrammatically on electrical plans) make the revision accordingly.

11. Utilities
    a. When encountered, additional utilities (e.g., gas, cable, telephone, fiber optic, etc.) shall be indicated on the Record Drawings.
12. Equipment Systems and Piping
    a. Show any changes to equipment systems, whether interior or exterior, for process, HVAC, plumbing, instrumentation or electrical. If any dimensional changes were made in the field, the numerical change shall be made on the Drawing and be properly labeled. Update dimensions and elevations on Drawings. Record Drawings must reflect any equipment configuration and layout changes differing from that shown on the Drawings.
    b. Show any changes to piping systems, whether interior or exterior, for process, HVAC, plumbing and instrumentation. If any dimensional changes were made in the field, the numerical change shall be made on the Drawing and be properly labeled. Update dimensions and elevations on Drawings.

E. Specifications and Addenda - Legibly mark up each section to record:
1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
2. Changes made by Change Order, Field Order, or other method.

1.5 SUBMITTALS

A. At the completion of the project, and prior to the release of retainage, deliver record documents to the Engineer.
1. Record drawings shall be provided as a bound paper set of computer generated drawings, an electronic file (pdf format) of the bound paper set, and electronic files in AutoCAD format. Ownership of the drawings and files shall pass to the Owner at the time of submittal.
2. Record drawings shall be provided as electronic files in ESRI GIS format. Ownership of the drawings and files shall pass to the Owner at the time of submittal.

B. Accompany submittal with transmittal letter, in duplicate, containing:
   1. Date, project title and number.
   2. Contractor's name and address.
   3. Title and number of each record document with certification that each document is completed and accurate.
   4. Signature of Contractor, or their authorized representative.

C. Failure to supply all information on the Project Record Drawings as specified in Part 1.3 may result in withholding final completion and in non-approval of final payments of the Contract. If Contract Time has elapsed, this shall be grounds for imposing liquidated damages.

1.6 QUALITY ASSURANCE

A. All horizontal and vertical dimensions, swing-ties, and elevations shall be accurate to within one-tenth of a foot, unless greater accuracy is specified elsewhere in the Specifications (e.g., concrete elevations, weir elevations, etc.).

PART 2 - PRODUCTS – NOT APPLICABLE

PART 3 - EXECUTION

3.1 MAINTAINING AND PROVIDING RECORDS

A. Records shall be kept current as the work progresses.

B. Records shall be made available for review by the Owner, Engineer, Resident Project Representative and/or Funding Agency(s) upon request.

C. Failure to maintain current records, as specified herein, shall be grounds for withholding additional retainage from monthly partial payment requests. Failure to provide records shall also be grounds for withholding of final payment and, if beyond contract time, shall be grounds for imposing liquidated damages.

3.2 AS-BUILT SURVEY PERFORMANCE

A. From established survey control, and construction baseline as shown on the drawings, conduct surveys of the project area during construction as needed to obtain information of buried and above ground items. Surveys shall include information outlined in Section 1.3.

B. Actual road alignments; walls; fence and guardrail; existing, new and relocated utility poles; traffic and warning sign locations; crosswalks, parking space and stop bar locations; retaining walls and foundations drains; all underground and overhead utility poles and lines within the project limits, including those installed on private property; all other new features and appurtenances and those existing features and appurtenances changed as a result of this project shall be included in the survey.

3.3 FORMAT FOR ELECTRONIC DELIVERABLES

A. AutoCAD digital survey data for the as-built survey shall include:
   1. Copy of field notes and sketches of the survey.
   2. Paper copy of description of layers.
   3. Paper copy of base map.

4. Provide digital information on compact disk with paper copy printout; information shall be provided in .DWG format (AutoCAD 2011 or earlier). Data shall be provided in 3D format (northing, easting, elevation, or Y, X, Z).
5. Drawing scale: Minimum one inch = twenty feet.
6. Layering:
    a. Repetitive symbols made into blocks and defined on layer 0.
    b. All entities shall be drawn “by layer” as opposed to individual properties.
    c. Use one linetype and one color per layer as opposed to numerous colors/linetypes on a single layer.
    d. Preface each layer with the initials of the Survey company or Contractor (example, Survey Company: SC “layername”).
    e. Database text annotation will be coordinated so the text will be right-reading.
    f. Place text on separate layers.

B. ESRI GIS digital survey data for the as-built survey shall include:
1. All lines and points shall be accompanied by the attributes listed in Tables 1, 2, and 3 with consistent formatting and punctuation (e.g. 6, 8, 12, not 6”, 8, 10”, 12), and shall be provided in an ESRI geodatabase that may be easily imported by the Owner into their GIS System.

Table 1
Drainage - GIS Attribute Table

Field	Description
Casing	
INSTALLDATE	The date the asset was installed
DIAMETER	The diameter of the asset
MATERIAL	Material the casing is manufactured with
RECORDLENG	Recorded length of the casing
CASEINVUP	Invert elevation of the casing (upstream)
CASEINVDOWN	Invert elevation of the casing (downstream)
Culverts	
INSTALLDATE	The date the asset was installed
MATERIAL	Material the asset is manufactured with
DIAMETER	The diameter of the asset
MAINSHAPE	The shape of the culvert
OWNEDBY	Indicates which organization owns the asset = City
MAINTBY	Indicates which organization maintains the asset = City
DOWNELEV	Downstream invert elevation
UPELEV	Upstream invert elevation
SLOPE	Culvert slope
DischargePoint	
DISCHRGTYP	The type of stormwater discharge = Stormwater
PERMIT	Permit Name
PERMITID	Unique permit identifier
INSTALLDATE	The date the asset was installed
DIAMETER	The diameter of the asset
Stormwater Gravity Main	
INSTALLDATE	The date the asset was installed
MATERIAL	Material the asset is manufactured with
DIAMETER	The diameter of the asset
MAINSHAPE	The shape of the gravity main
FROMMH	The upstream structure
TOMH	The downstream structure
OWNEDBY	Indicates which organization owns the asset = City
MAINTBY	Indicates which organization maintains the asset = City
DOWNELEV	The downstream elevation where the pipe meets the structure
UPELEV	The upstream elevation where the pipe meets the structure
SLOPE	The slope of the main from outside face of structure
CALCPIPELENGTH	The pipe length used to calculate slope

Table 1
Drainage - GIS Attribute Table

Field	Description
Inlet (typically found along side of roads or in drainage swales)	
INSTALLDATE	The date the asset was installed
INLETTYPE	The type of stormwater inlet = Pipe, Beehive, or Headwall
ACCESSDIAM	Access diameter for the inlet
INVERTELEV	Invert elevation
ACCESSMAT	Access material for lid or cover
ACCESSTYPE	Method for accessing the opening = Remove Grate
Manhole and Catch Basin	
FACILITYID	Locally assigned Facility Identifier
INSTALLDATE	The date the asset was installed
HIGHELEV	High pipe elevation inside manhole - for drops
INVERTELEV1	Invert elevation 1
INVERTELEV2	Invert elevation 2
INVERTELEV3	Invert elevation 3
INVERT	The depth of the structure from rim to bottom
RIMELEV	The elevation of the structure rim
CVTYPE	The type of stormwater structure cover
WALLMAT	Wall Material = Brick, Block, or Precast Concrete
MHTYPE	The type of structure = Concentric, Eccentric, or Flat Slab
CONDITION	The condition of the asset = Excellent
GPSDATE	Date the feature was located with GPS
MAINTBY	Indicates which organization maintains the asset = City
NetworkStructure - (Pump Stations, etc)	
FACILITYID	Locally assigned Facility Identifier
INSTALLDATE	The date the asset was installed
OPDATE	Date when the facility was put into service
STRUCTTYPE	Type of Sewer Network structure
System Valves	
INSTALLDATE	The date the asset was installed
DIAMETER	The diameter of the asset
VALVETYPE	Type of control valve
ELEV	Elevation at the top nut of valve

END OF SECTION

DIVISION 02 – EARTHWORK

PART 1 - GENERAL

1.1 DESCRIPTION

A. Earthwork as depicted by Item Numbers on the contract plans, documents and, as noted below, shall conform with New Hampshire Department of Transportation (NHDOT) Standard Specification for Road and Bridge Construction, 2016 Edition, Division 200 – Earthwork.

NHDOT ITEM NUMBER	ITEM DESCRIPTION	UNITS
202.7	REMOVAL OF GUARDRAIL	LF
203.1	COMMON EXCAVATION	CY
209.201	GRANULAR BACKFILL (BRIDGE) (F)	CY

B. Work for each NHDOT Item Number shall be performed as defined and described under the Description provided for each NHDOT Specification Section.

1.2 CONSTRUCTION REQUIREMENTS

A. Work shall be performed as described under the Construction Requirements provided under each NHDOT Specification Section.

1.3 METHOD OF MEASUREMENT

A. The method of measurement for each contract pay item shall be in accordance with the methods described under the Method of Measurement of the appropriate NHDOT Item Specification Section as amended by Section - 01150 of this Specification.

1.4 BASIS OF PAYMENT

A. Payment for each contract pay item shall be made in accordance with the Basis of Payment section of the related NHDOT Item Specification Section as amended by Section 01150 of this Specification.

END OF SECTION

DIVISION 03 – BASE COURSES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Base Courses as depicted by Item Numbers on the contract plans, documents and, as noted below, shall conform with New Hampshire Department of Transportation (NHDOT) Standard Specification for Road and Bridge Construction, 2016 Edition, Division 300 – Base Courses.

NHDOT ITEM NUMBER	ITEM DESCRIPTION	UNITS
304.3	CRUSHED GRAVEL (F)	CY

B. Work for each NHDOT Item Number shall be performed as defined and described under the Description provided for each NHDOT Specification Section.

1.2 CONSTRUCTION REQUIREMENTS

A. Work shall be performed as described under the Construction Requirements provided under each NHDOT Specification Section.

1.3 METHOD OF MEASUREMENT

A. The method of measurement for each contract pay item shall be in accordance with the methods described under the Method of Measurement of the appropriate NHDOT Item Specification Section as amended by Section 01150 of this Specification.

1.4 BASIS OF PAYMENT

A. Payment for each contract pay item shall be made in accordance with the Basis of Payment section of the related NHDOT Item Specification Section as amended by Section 01150 of this Specification.

END OF SECTION

DIVISION 04 – PAVEMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Pavements as depicted by Item Numbers on the contract plans, documents and, as noted below, shall conform with New Hampshire Department of Transportation (NHDOT) Standard Specification for Road and Bridge Construction, 2016 Edition, Division 400 – Pavements.

NHDOT ITEM NUMBER	ITEM DESCRIPTION	UNITS
403.11013	HBP-1" BASE MIX, MACHINE METHOD	TON
403.11043	HBP-1/2" SURFACE MIX, MACHINE METHOD	TON
403.21053	HBP-3/8" MIX, MACHINE METHOD (BRIDGE BASE)	TON
410.22	ASPHALT EMULSION FOR TACK COAT	GAL
417	COLD PLANING BITUMINOUS SURFACES	SY

B. Work for each NHDOT Item Number shall be performed as defined and described under the Description provided for each NHDOT Specification Section.

1.2 CONSTRUCTION REQUIREMENTS

A. Work shall be performed as described under the Construction Requirements provided under each NHDOT Specification Section.

1.3 METHOD OF MEASUREMENT

A. The method of measurement for each contract pay item shall be in accordance with the methods described under the Method of Measurement of the appropriate NHDOT Item Specification Section as amended by Section - 01150 of this Specification.

1.4 BASIS OF PAYMENT

A. Payment for each contract pay item shall be made in accordance with the Basis of Payment section of the related NHDOT Item Specification Section as amended by Section 01150 of this Specification.

END OF SECTION

DIVISION 05 – STRUCTURES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Structures as depicted by Item Numbers on the contract plans, documents and, as noted below, shall conform with New Hampshire Department of Transportation (NHDOT) Standard Specification for Road and Bridge Construction, 2016 Edition, Division 500 – Structures.

NHDOT ITEM NUMBER	ITEM DESCRIPTION	UNITS
502	REMOVAL OF EXISTING BRIDGE STRUCTURE	U
504.1	COMMON BRIDGE EXCAVATION (F)	CY
505.6	SOIL ANCHORS	LS
508	STRUCTURAL FILL	CY
520.01	CONCRETE CLASS AA	CY
538.1	BARRIER MEMBRANE, PEEL AND STICK	SY
544.31	REINFORCING STEEL, EPOXY COATED (CONTRACTOR DETAILED)	LB
544.7	SYNTHETIC FIBER REINFORCEMENT (F)	LB
559.4	ASPHALTIC PLUG EXPANSION JOINT (F)	LF
563.99	TIMBER BRIDGE RAIL (TL-4)	LF
585.3	STONE FILL, CLASS C	CY
593.411	GEOTEXTILE; PERM CONTROL CL.1, NON-WOVEN	SY

B. Work for each NHDOT Item Number shall be performed as defined and described under the Description provided for each NHDOT Specification Section.

1.2 CONSTRUCTION REQUIREMENTS

A. Work shall be performed as described under the Construction Requirements provided under each NHDOT Specification Section.

1.3 METHOD OF MEASUREMENT

A. The method of measurement for each contract pay item shall be in accordance with the methods described under the Method of Measurement of the appropriate NHDOT Item Specification Section as amended by Section -1150 of this Specification.

1.4 BASIS OF PAYMENT

A. Payment for each contract pay item shall be made in accordance with the Basis of Payment section of the related NHDOT Item Specification Section as amended by Section 1150 of this Specification.

END OF SECTION

DIVISION 06 – CONSTRUCTION INCIDENTALS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Construction incidentals as depicted by Item Numbers on the contract plans, documents and, as noted below, shall conform with New Hampshire Department of Transportation (NHDOT) Standard Specification for Road and Bridge Construction, 2016 Edition, Division 600 – Construction Incidentals.

NHDOT ITEM NUMBER	ITEM DESCRIPTION	UNITS
606.1285	BEAM GUARDRAIL (BRIDGE APPROACH UNIT)	U
606.127	BEAM GUARDRAIL (TERMINAL UNIT TYPE G-2) (STEEL POST)	U
606.18011	31" W-BEAM GUARDRAIL WITH 8" OFFSET BLOCK (8' STEEL POST)	LF
609.811	BITUMINOUS CURB, TYPE B (4" REVEAL)	LF
619.1	MAINTENANCE OF TRAFFIC	U
628.2	SAWED BITUMINOUS PAVEMENT	LF
646.51	TURF ESTABLISHMENT WITH MULCH, TACKIFIERS AND LOAM	SY
692	MOBILIZATION	U
699	MISCELLANEOUS TEMPORARY EROSION AND SEDIMENT CONTROL	ALLOW

B. Work for each NHDOT Item Number shall be performed as defined and described under the Description provided for each NHDOT Specification Section.

C. Amend Section 606

1. Amend Description and Materials Section to read:
   a. The Contractor shall install Item 606.1285 Beam Guardrail (Bridge Approach Unit) in conformity with details and materials shown on the plans or ordered.

1.2 CONSTRUCTION REQUIREMENTS

A. Work shall be performed as described under the Construction Requirements provided under each NHDOT Specification Section.

1.3 METHOD OF MEASUREMENT

A. The method of measurement for each contract pay item shall be in accordance with the methods described under the Method of Measurement of the appropriate NHDOT Item Specification Section as amended by Section - 01150 of this Specification.

1.4 BASIS OF PAYMENT

A. Payment for each contract pay item shall be made in accordance with the Basis of Payment section of the related NHDOT Item Specification Section as amended by Section 01150 of this Specification.

END OF SECTION

APPENDIX A
Special Attention

06/11/20
SSD: 09/01/05, 04/07/09, 11/30/10, 06/1//13

S P E C I A L A T T E N T I O N

SECTION 606 – GUARDRAIL

W-BEAM GUARDRAIL

There may be situations where standard beam guardrail, set at 31 inches high as required by the mid-splice guardrail system, will need to be connected to beam guardrail terminals that have only been crash tested at 27 inches high or bridge approach units that are designed at 27-inches high. This may reflect an existing or new installation. Similarly, new standard beam guardrail may be connected to existing beam guardrail that is not at the 31-inch height as stated above. In those circumstances, transition the height of the new standard beam guardrail over 50 feet to connect to the existing rail, terminal unit, or bridge approach unit (transition will be subsidiary to 606 Items).

Set the EAGRT heights according to the manufacturer's recommendation, as accepted under the Manual for Assessing Safety Hardware (MASH) - 2016 criteria. All other terminals, including but not limited to, ELT, MELT, and the CRT, shall be set at the crash acceptance height of 27-inch unless otherwise accepted under crash test acceptance for a higher height.

APPENDIX B
Supplemental Specifications & Special Provisions

SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Add the following New Hampshire Department of Transportation (NHDOT) Supplemental Specifications (SS) and Special Provisions (SP) to the NHDOT Standard Specification for Road and Bridge Construction, 2016 Edition.

NHDOT SECTION	DESCRIPTION
SS 401	PLANT MIX PAVEMENTS - GENERAL
SS 403	HOT BITUMINOUS PAVEMENT
SS 410	BITUMINOUS SURFACE TREATMENT
SS 520	PORTLAND CEMENT CONCRETE
SS 606	GUARDRAIL
SS 702	BITUMINOUS MATERIALS
SP 401	PLANT MIX PAVEMENTS - GENERAL
SP 505	SOIL ANCHORS
SP 544	REINFORCING STEEL
SP 563	BRIDGE RAIL
SP 606	GUARDRAIL
SP 619	MAINTENANCE OF TRAFFIC
SP 1008.9	ALTERATIONS AND ADDITIONS AS NEEDED – TESTING AND MATERIALS
SP 1008.91	ALTERATIONS AND ADDITIONS AS NEEDED – DECK REPAIRS
SP 1008.92	ALTERATIONS AND ADDITIONS AS NEEDED – CONCRETE CLASS F

END OF SECTION

SUPPLEMENTAL SPECIFICATION

AMENDMENT TO SECTION 401 – PLANT MIX PAVEMENTS – GENERAL

This Supplemental Specification is a rewrite of Section 401 to remove redundancies and inconsistencies due to many revisions throughout the years. Previous supplemental specifications thus far have been incorporated.

Description

1.1 These specifications include general requirements that are applicable to all types of plant mix asphalt pavements irrespective of the gradation of aggregate, kind and amount of asphalt binder, or pavement use. Deviations from these general requirements will be indicated in the specific requirements for each type.

1.2 These specifications provide for the use of reclaimed asphalt pavement material in certain specified mixtures.

1.3 This work shall consist of the construction of one or more courses of asphalt pavement constructed on a prepared foundation in accordance with these specifications and the specific requirements of the type under Contract. The work shall be in reasonably close conformance with the lines, grades, thickness, and typical cross-sections shown on the plans, within the tolerances specified or established by the Engineer.

1.4 These specifications provide for both method and quality control/quality assurance (QC/QA) specification work. Sections under the heading Performance Requirements (QC/QA) are applicable on QC/QA items only. Sections marked Method Requirements are applicable for non-QC/QA items and those portions of QC/QA items that are not measured for pay adjustment. All sections under the heading General are for use with all items.

1.5 Performance Requirements (QC/QA).

1.5.1 The work will be accepted under Performance Requirements (QC/QA) provisions in accordance with these Specifications and the applicable requirements of Section 106.

(a) The QC/QA Tier 1 item is to be used on specified projects that are on new locations, interstate projects, full depth reconstruction projects in rural areas, or on reclamation projects in rural areas.

(b) The QC/QA Tier 2 item is to be used on specified projects that are inlay type projects, full depth reconstruction projects with maintenance of traffic phasing, projects with intersecting streets, projects with pavement tapers, bridge projects with short approach paving, projects where there are many manhole/drainage structures or driveways (generally in urban and suburban areas).

QUALITY/PAY FACTORS TO BE ASSESSED

	Tier 1	Tier 2
Asphalt Content and Gradation	X	X
Cross Slope	X	
Density	X	X
Ride Quality	X	
Thickness	X	

Materials

2.1 Aggregates – General.

2.1.1 Aggregates shall be uniform quality durable pebbles or fragments of rock, with or without sand or other inert finely divided mineral aggregate. All material shall be free from clay balls, organic matter, deleterious substances, and an excess of flat or elongated pieces as specified in ASTM D 4791. Washing will not be required, except when aggregate plants do not produce clean material by the dry process method. In order to obtain uniformity of color and appearance of the pavement throughout the project, the aggregate for all the surface mixes shall be obtained from the same material source. Sufficient material shall be on hand prior to starting daily operations to ensure uninterrupted processing for the working day.

2.1.2 Fine aggregate shall consist of sound durable particles of sand, crushed stone, or a combination thereof. Stone screening shall be produced from stone at least equal in quality to that specified for coarse aggregate.

2.1.2.1 Fine aggregate may be 100 percent manufactured aggregate.

2.1.3 Mineral filler shall conform to AASHTO M 17 except that 100 percent shall pass the No 16 sieve, waiving the requirement for the No. 30 sieve.

2.1.4 Coarse aggregate shall be crushed stone or crushed gravel and shall have a percentage of wear as determined by AASHTO T 96 of not more than 45 percent unless otherwise specified by Contract item. In each stockpile, not less than 50 percent by weight of the particles retained on the No. 4 sieve shall have at least one fractured face. Stockpiles consisting of a blend of crushed stone and crushed gravel will be permitted so long as the overall consistency of the stockpile is reasonably maintained and the lesser portion of coarse aggregate material does not exceed 10 percent of the total. This percentage shall be determined on the portion of the total sample by weight that is retained on the No. 4 laboratory sieve.

2.2 Bituminous Materials – General.

2.2.1 Bituminous materials used for asphalt cement binder shall meet the properties specified in AASHTO M 320. The grade of asphalt cement binder to be used will be specified in a Special Provision contained in the Proposal. Asphalt cement shall not be air blown or contain any form of used, recycled or re-refined oil.

2.2.1.1 The unit bid price for hot bituminous pavement containing failing asphalt binder shall be assessed a 10% reduction for one temperature grade below the specified high temperature grade or one temperature grade above the specified low temperature grade. The penalty will be applied to all tonnage produced with the non-compliant binder. When the binder failure is non-compliant by two grades or more, as described above, the Contractor shall be required to remove and replace all non-compliant material at the Contractor's expense, or at the Engineer's discretion, may be allowed to leave the tonnage in place at a unit price reduction of 50%.

2.2.2 Liquid binder samples shall be obtained by plant personnel in the presence of the Inspector/Technician. Samples shall be obtained during each day's production.

2.2.3 Producers and suppliers of asphalt binders shall comply with the requirement of AASHTO R 26. Asphalt binder suppliers shall have a quality control plan approved by the Bureau of Materials and Research that complies with AASHTO R 26.

2.2.3.1 All suppliers of PG binder shall certify that the PG binder supplied for use on Department projects does not contain used, recycled or re-refined oil.

2.3 Approval of Materials - Method Requirements.

2.3.1 At least five working days in advance of the date of starting operations, the Bureau of Materials & Research may request that representative samples of all materials proposed for use be submitted for testing.

2.4 Composition of Mixtures - General.

2.4.1 Hot bituminous pavement shall be composed of a mixture of aggregate, filler if required, and asphalt binder. The several aggregate fractions shall be sized, uniformly graded, and combined in such proportions that the resulting mixture meets the grading requirements of the job mix formula. The Contractor shall use the Volumetric Mix Design Method in AASHTO Standard Practice R 35 as modified herein.

2.4.2 The Contractor shall have the option of utilizing asphalt pavement removed under the Contract, if any, or old asphalt pavement from an existing stockpile or supplying all new materials for the production of asphalt pavement or any combination of the foregoing. If the job mix formula uses recycled materials, the mix shall meet the requirements of Reclaimed Asphalt Pavement as specified in 2.9.

2.4.3 The Department allows the use of recycled binder in mix designs, up to 1.0% Total Reused Binder (TRB), without any change in asphalt binder requirements as long as the mix design meets all volumetric mix design criteria. When a design has been completed using the maximum allowable percentage of TRB, one point verifications may be performed using decreasing percentages of TRB. If the design is not validated using a decreased amount of TRB, a new design will be required.

2.5 Job Mix – General.

2.5.1 When a new volumetric mix design is required, the Contractor shall use the Volumetric Mix Design Method in AASHTO Standard Practice R 35 to develop a mix that meets the associated design criteria. The Mix design shall follow the procedure detailed in AASHTO with the following exceptions: Amend Table 1 Superpave Gyratory Compaction Effort to read as follows:

Design ESALs (Million)	N initial	N design	N max
0 < **5**	6	50	75
≥**5**	7	75	115

Add the following:

Minimum Binder Content

50 Gyration		75 Gyration
	3/8”	6.0%
5.8%	1/2”	5.5%
5.5%	Winter Binder 3/4”	5.2%
4.9%	3/4”	4.6%
4.6%	1”	4.3%

This required minimum asphalt content is based on the use of aggregate with a specific gravity of 2.65 to 2.70. The minimum asphalt content requirement may be adjusted when aggregate with a higher specific gravity is used, or the minimum may be adjusted at the discretion of Materials and Research if it is believed to be in the best interest of the Department.

Amend Table 4 in AASHTO M 323, referenced in AASHTO R 35, to read as follows:

Table 401-1 –Design Control Points*

Standard			**Nominal Maximum Aggregate Size**									
Sieves	1”		3/4”		3/4” Winter Binder		1/2”		3/8”		No. 4	
	Max.	Min.	Max.	Min.	Max.	Min.	Max	Min.	Max.	Min.	Max.	Min.
Inch	Percentage by Weight Passing Criteria (Control Points)											
2												
1-1/2		100.0										
1	100.0	90.0		100.0		100.0						
3/4	90.0		100.0	90.0	100.0	90.0		100.0				
1/2			90.0		90.0		100.0	90.0		100.0		
3/8							90.0		100.0	90.0	100.0	99.0
No. 4									90.0		97.0	90.0
No. 8	45.0	19.0	42.0	32.0	48.0	38.0	52.0	42.0	56.0	46.0	75.0	65.0
No. 16											55.0	45.0
No. 30											36.0	26.0
No. 50											30.0	20.0
No. 100											13.0	8.0
No. 200	7.0	1.0	8.0	2.0	8.0	2.0	10.0	2.0	10.0	2.0	8.0	4.0

All mix designs shall be submitted to the Department for verification and approval.

* Superpave designs will be accepted through the restricted zone, pending verification and approval by the Bureau of Materials & Research. The Contractor shall submit compaction data from trial blends at the optimum asphalt content and at 0.5% below and above the optimum asphalt content. The data shall include the temperature at which the hot bituminous pavement was aged.

2.5.1.1 All 25 mm base course mixes shall be designed using the 50 gyration N_{design}.

2.5.2 The Design Information shall include:

(a) Asphalt Binder
(b) PG Test Data
(c) Specific Gravity
(d) Laboratory Mix/Compaction Temperature
(e) Aggregate

(f) Dry and Washed Gradation
(g) Bulk and Apparent Specific Gravity
(h) All appropriate consensus properties
(i) Blends
(j) Baghouse material from the plant shall be incorporated into the mix design. The amount of baghouse material should be based on estimated usage or experience.
(k) Moisture susceptibility according to AASHTO T 283.

Along with the design information, Materials & Research (M&R) requires 2 quarts of the designated asphalt binder, 4 pre-blended aggregate specimens for gyratory and 2 pre-blended aggregate specimens, suitable for AASHTO T-209 when mixed with the appropriate asphalt, in order to verify the design. M&R will accept the mix design based on the submitted information meeting the mix requirements and on verification of the mix volumetrics of the submitted specimen. If the verification samples indicate voids between 3.0 and 5.5 percent, and the Voids in Mineral Aggregate (VMA) and Voids Filled with Asphalt (VFA) fall within the specified limits, then the design will be accepted. Once accepted, the approved mix design is the job mix formula (JMF). If the voids are outside the aforementioned range or the VMA or VFA are outside the specified limits, the design will be rejected. M&R may elect to verify the design again.

2.5.3 The proposed mix designs and materials shall be submitted to the Engineer a minimum of 20 working days before placement for approval. It shall be the responsibility of the Contractor to ensure all approved mix designs have been entered into the plant automation system before production begins. The Contractor will also be required to post a copy of the JMF in the DOT testing laboratory.

2.5.4 Whenever the aggregate properties change enough to negate the project's existing design, a new design shall be submitted.

2.5.5 If it becomes necessary to change the asphalt binder grade or the source of aggregate, a new mix design shall be developed. Up to 14 calendar days will be required to evaluate a change. Approved changes in target values will not be applied retroactively for acceptance or payment. If it becomes necessary to change the source of asphalt binder, the Contractor must submit recent quality test results from the manufacturer for the asphalt binder including a temperature viscosity curve.

2.5.6 The Contractor shall perform a single point verification of an existing project mix design at the beginning of a new construction season to determine if the design remains valid. If the design is validated, the data from the single point verification shall be submitted to the Department. If the design cannot be validated, a new design shall be developed.

2.5.7 The Bureau of Materials and Research may require the use of certain chemical additives.

2.5.8 The laboratory performing the design shall be approved by the Department. To obtain the Department's approval, a laboratory must demonstrate that it is equipped, staffed, and managed so as to be able to produce job mix formulas and test hot asphalt mix in accordance with these Specifications. Approval for each laboratory shall remain in effect for a period of one year.

2.6 Method Requirements.

2.6.1 Stockpiled coarse aggregate shall meet the requirements of Table 401-2.

Table 401-2 -- Percent Passing

Sieve Size	Base Mix 1-1/2"	Binder Mix 3/4"	Surface Mix 1/2"	Surface Mix 3/8"
1-1/2"	100			
1-1/4"	90.0 - 100			
1"	50.0 - 85.0	100		
3/4"	10.0 - 50.0	90.0 - 100	100	
1/2"		15.0 - 55.0	90.0 - 100	100
3/8"			20.0 - 60.0	95.0 - 100
# 4				22.0- 55.0
No. 8	0 - 5.0	0 - 5.0	0 - 10.0	0 - 10.0

2.6.2 After the job mix formula (JMF) is established, all mixtures furnished for the project shall conform within the following ranges of tolerances:

Passing No. 4 and larger sieves	±7.0 percent
Passing No. 8 No. 100 sieves (inclusive)	±4.0 percent
Passing No. 200 sieve	±1.0 percent
Asphalt binder	±0.4 percent
Temperature of mixture	± 20 °F (11 °C)

2.6.3 When Non-compliant test results or other conditions make it necessary, it shall be the responsibility of the Contractor to make all adjustments required to ensure the mix conforms to the JMF.

If two consecutive non-compliant results occur, the Engineer may stop production until satisfactory corrective action has been taken. A 5% reduction in unit price will be assessed to all tonnage represented by consecutive gradation failures and a 10% reduction will be assessed to all tonnage represented by consecutive asphalt binder content failures. At the Engineer's discretion, the Contractor may be required to remove non-compliant material (no payment will be made for this material or its removal).

Contractor quality control personnel will not be required to be on site during production of non-quality control projects, but contract information shall be posted in the testing lab.

2.7 Plant Mix Surface Treatment - General.

2.7.1 The general composition limits given in Table 411-1 indicate target value ranges of mixtures permissible under Section 411. The job mix formula shall lie within the target value ranges indicated for the particular type of hot asphalt mix.

2.8 Bridge Pavement Bases Course – General.

2.8.1 Bridge pavement base course shall be 3/8" surface mix.

2.9 Non-modified Asphalt Binder – General.

2.9.1 Non-modified asphalt binder shall contain silicone additive with the concentration being 3 parts per million plus or minus 1 part per million of silicone to asphalt binder, unless otherwise directed. Silicone additive shall be in liquid form and have a viscosity of 1,000 centipoises (1 Pas) at 77 ºF. Asphalt binder containing silicone shall meet the requirements of 401.2.2

2.10 Allowed Recycled Materials – General.

2.10.1 Reclaimed asphalt pavement (RAP) may be used in the production of hot bituminous pavement. The allowed dust to asphalt ratio shall be as identified in AASHTO M 323. The maximum allowable total reused "asphalt" binder (TRB) in hot bituminous mixes shall be 1.0%. Any changes in the combination of recycled materials shall require a new mix design unless otherwise approved by the Bureau of Materials & Research.

2.10.2 Reclaimed Asphalt Pavement (RAP).

2.10.2.1 RAP shall consist of recycled asphalt pavement and shall be processed by crushing, cold milling, or other approved sizing techniques approved by the Bureau of Materials and Research to meet the required gradation specifications. The mixture of RAP and new aggregate shall meet the requirements specified in Table 401-1 for aggregate gradation. The RAP shall be tested every 1,000 tons for gradation and asphalt binder content as a stockpile is being built. These test results shall remain on file by the Contactor until such time as the entire RAP stockpile has been utilized.

2.10.2.2 The PG grade of added asphalt shall be as specified by the Bureau of Materials and Research. The aggregate component of the RAP shall meet the requirements of 401.2.1. The bitumen component of the RAP shall be asphalt cement and shall be free of significant contents of solvents, tars, and other volatile organic compounds or foreign substances that will make the RAP unacceptable for recycling as determined by the Bureau of Materials and Research.

2.10.2.3 RAP materials may be rejected if deemed unsuitable for any reason or require an increase or decrease in the mix asphalt content. The Contractor shall submit representative samples, and gradation and asphalt cement content test results of the RAP to be incorporated into the Recycled Mixture for approval by the Bureau of Materials and Research at least 30 calendar days prior to the start of paving.

2.11 Asphalt Modifiers - General.

2.11.1 The generic type of each asphalt binder admixture, modifier and/or additive shall be identified on the certificate of analysis, which shall be furnished by the manufacturer for each load of asphalt delivered. Modifiers shall be pre-blended with the asphalt binder.

2.11.2 Asphalt binder modification to produce high-strength mix shall utilize either a styrene-butadiene or a styrene-butadiene-styrene polymer to achieve the specified performance grade of asphalt. The Section 401 contract Special Provision specifying the asphalt binder grade shall also identify the AASHTO test method by which the binder grade shall be determined. The modified binder shall be pre-blended, storage-stable and homogeneous.

2.11.3 The use of Warm Mix Technologies will be permitted in mix production. Qualified technologies are listed on the Qualified Warm Mix Asphalt (WMA) Technologies List.

2.12 Pavement Joint Adhesive - General. Pavement Joint Adhesive shall be a product listed on the Qualified Products List.

Construction Requirements

3.1 Mixing Plants - General.

3.1.1 Coarse aggregates shall be furnished in at least two nominal sizes for mix types containing topsize aggregates of 1/2" and larger.

3.1.2 RAP shall be fed into the plant by equipment specifically designed for recycling and approved by the Bureau of Materials and Research. In addition, all requirements pertaining to aggregates shall apply to RAP. Scalping screens, grizzlies, or similar devices shall be installed on the RAP feed bin(s) to remove any debris or other foreign materials in excess of 2". If a drum mix plant is used, the RAP shall be fed into the drum so that it will not come in direct contact with the burner flame. Mixing of RAP with the new aggregate shall occur before the bituminous material introduction point. The final mix produced shall be visually free from any chunks of RAP.

3.1.3 Plants shall be approved at least five days prior to operations and will be capable of maintaining an adequate supply of mixture to the project.

3.1.4 The site shall have ample storage space for the required separate bins, stalls, or stockpiles to allow delivery of uncontaminated sized aggregates to the feeder. To prevent spillage from one pile or bin to the next, aggregate assigned to different stockpiles shall be separated by bulkheads or other satisfactory means.

3.1.5 Stockpiles of coarse aggregate produced for use in drum mix plants having top size aggregates greater than 3/4" shall be constructed in layers not to exceed 4 ft.

3.1.6 All blending of aggregates shall be accomplished through separate bins at the cold elevator feeders and not in stockpiles.

3.1.7 The plant shall be provided with a dust collector or collectors, designed to waste or return uniformly to the hot elevator all or part of the material collected, as directed. All plants shall have adequate covers and housing as may be necessary to ensure the proper collection of dust and the general cleanliness of the plant operation. The Contractor shall comply with all State and Federal environmental regulations.

3.1.8 Mixing plants shall conform to AASHTO M 156. An efficient dust collecting system shall be provided to prevent the loss of fine material. The material collected may be returned to the mixture at a uniform rate or discarded.

3.1.9 Safety Requirements for Inspection

3.1.9.1 Adequate and safe stairways to the mixer platform shall be provided, and guarded ladders to other plant units shall be located where required for accessibility to plant operations.

3.1.9.2 All gears, pulleys, chains, sprockets, and other dangerous moving parts shall be thoroughly guarded and protected.

3.1.9.3 Ample and unobstructed space shall be provided on the mixing platform. The plant operator shall have a clear and unobstructed view of the plant operations.

3.1.9.4 A platform shall be located in close proximity to the inspector's laboratory for the purpose of easily obtaining samples of the mixture from the trucks.

3.1.9.5 When the plant is to be operated in other than daylight hours, adequate lighting shall be provided in all areas frequented by the inspector during his normal routine. Specific areas to be illuminated include the truck loading zone and sampling location. A light or lights shall also be located so as to allow the clear observance of the truck body lubrication operation.

3.1.10 Scheduling Inspection Personnel

3.1.10.1 The Contractor shall notify the Bureau of Materials and Research at least three working days in advance of starting paving operations to allow sufficient time to schedule required plant inspection personnel. When paving bridge decks that have barrier membranes, this notice shall include the name of the membrane product so that the mix temperature may be established.

3.1.11 Access to Production Facilities

3.1.11.1 The Engineer shall have access at any time to all parts of the plant for inspection of the conditions and operations of the plant, for confirmation of the adequacy of the equipment in use, for verification of proportions and character of materials, and for determination of temperatures being maintained in the preparation of the mixtures. The Contractors shall provide a suitable building, room, or trailer for exclusive use by the DOT Technician as a testing laboratory in which to house and use the testing equipment. Laboratories shall be in an approved location, with one laboratory provided for each plant.

3.1.12 Field Laboratories

3.1.12.1 Field laboratories shall meet the following minimum requirements:

Size:	Laboratory shall consist of a minimum of 200 ft^2 of floor space, laid out to accommodate shelves, benches, desk, equipment and personnel movement.
Windows:	Two, with locks and screens, providing cross ventilation.
Doors:	One, with lock and screen.
Electrical:	Adequate lighting and power outlets.
Air Conditioner:	Unit size shall be as recommended for size of the facility.
Heat:	Thermostatically controlled to maintain a minimum temperature of 68°F (20°C).
Weatherproofing:	Roof, sides, and floor shall be maintained weatherproof at all times.
Appurtenances:	a) An exhaust fan and hood over the extractor. The hood shall be large enough to cover the extractor. The fan shall be a high-volume axial-flow fan, at least 10” in diameter, and of sufficient capacity to vent the fumes adequately. b) Free wall space of at least 12 ft^2; or a bulletin board of equal area for posting notices and job mix formulas. c) Suitable shelves and benches. Bench space shall be approximately 24” wide by 36” high. There shall be a minimum total length of 19 ft of bench space.

3.1.12.2 The following office furnishings and testing equipment shall be provided:

(a) Electronic balance with tray, at least 300 oz net capacity, sensitive to 0.003 oz.

(b) Desk and chair in good working condition.

(c) Set of U.S. Standard brass sieves, each sieve being 12” in diameter and 1- 1/2” high. The set shall consist of one each of the following sizes: 1- 1/2”, 1-1/4”, 1”, 3/4”, 1/2", 3/8”, No. 4, No. 8, No. 16, No. 30, No. 50, No. 100, No. 200, with pan and cover.

(d) Motor driven shaker for 12” diameter sieves. Shaker shall meet the following requirements: Rotating turntable, tilt to 45-degree angle and have hammers to tap each sieve during operation.

(e) Motor driven centrifuge extractor, 100 oz capacity with variable speed up to 3600 rpm, with filter rings and non-toxic solvent approved by the Bureau of Materials and Research.

(f) Tachometer readily available to check the speed of the extractor.

(g) Automatic timer with interval of 0 to 30 minutes.

(h) Bristle brush for cleaning No. 200 sieve.

(i) Brass brush for cleaning 8” diameter sieves.

(j) Five pans or bowls, approximately 4” high, 15” round or square.

(k) Spatula, large spoon, garden trowel, measuring scoop, and 1-quart pitcher.

(l) Fire extinguisher, minimum five pound dry chemical.

(m) Desk brush and floor broom.
(n) Sample splitter (riffle type), chute width 1- 1/2 to 2”
(o) Microwave oven when drum mix plant is used.
(p) Minimum of one metal sample pail for each hot bin.
(q) Lavatory with toilet (See 698.3.1.4) and wash basin, unless approved otherwise.
(r) Water, hot and cold, and water suitable for drinking. (Fountain style will be acceptable).
(s) Telephone with private line.
(t) Drying oven, minimum of 3.5 ft^3.*
(u) Equipment sufficient to perform AASHTO T 209.*
(v) Water-cooled diamond saw capable of cutting 6” road cores.
(w) High Speed Internet Connection - Each laboratory (on State-bid projects) will be provided with bi-directional Internet access having a minimum data rate of 256K bps.
(x) Wheelbarrow when a drum mix plant is used.

*All ovens other than microwaves shall be vented to the outside.

3.1.12.3 All of the foregoing testing equipment shall be in good condition and shall be replaced or repaired by the Contractor if, during the duration of the project, it becomes unsuitable for testing purposes. Testing equipment shall be calibrated by the Contractor in accordance with 106.03. The above mentioned equipment is for operation of a single plant.

3.2 Storage of Asphalt Binder – General.

3.2.1 Tanks for storage of asphalt binder shall be of minimum 10,000-gallon capacity and equipped for heating the material under effective and positive control at all times, to the temperature requirements set forth in the specifications for the paving mixture. Heating shall be accomplished by steam or oil coils, electricity, or other means such that no flame shall come in contact with the heating tank.

3.2.2 A complete system providing for continuous circulation of the asphalt binder between the storage tank and the proportioning units shall be employed. The discharge end of the circulating pipe shall be maintained below the surface of the asphalt binder in the storage tank to prevent discharging the hot asphalt binder into the open air.

3.2.3 The Contractor shall provide an in-line valve that is conveniently located between the storage tank and the mixing plant. The valve shall be installed in such a manner that samples may be withdrawn from the line slowly at any time during plant operation. A drainage receptacle shall be provided for flushing the outlet prior to sampling.

3.3 Control of Asphalt Binder – General.

3.3.1 Satisfactory means either by weighing or metering shall be provided to obtain the proper amount of bituminous material in the mix within the tolerance specified. Means shall be provided for checking the quantity or rate of flow of bituminous material into the mixer as follows:

(a) Metering devices for asphalt binder shall indicate accurately to within 1.0 percent the amount of asphalt binder delivered. The section of the asphalt binder flow line between the charging valve and the spray bar shall be provided with a three-way valve and outlet whereby the quantity delivered by the meter may be checked by actual weight. The valve controlling the flow of asphalt binder to the mixer shall close tightly to prevent asphalt binder from leaking into the pug mill during the mixing cycle. The meter shall be constructed so that it may be locked at any dial setting to 0.1 gal and will automatically reset to this reading after the addition of asphalt binder to each batch. The dial shall be in full view of the mixer operator. The size and spacing of the spray bar openings shall provide a uniform application of asphalt binder the full length of the mixer in a thin uniform sheet or in multiple sprays.

(b) If a bucket is used for weighing the asphalt binder, the bucket shall be of sufficient capacity to hold and weigh the amount required for a batch in a single weighing. The filling system and bucket shall be of such design, size, and shape that asphalt binder will not overflow, splash, or spill outside the confines of the bucket during filling and weighing. The filling system and bucket shall be so arranged as to deliver the asphalt binder in a thin uniform sheet or in multiple sprays over the full length of the mixer. The time required to add the asphalt binder shall be not more than 15 seconds.

(c) Asphalt binder scales shall conform to the requirements for aggregate scales as specified in 3.4.10. Beam type scales shall be equipped with a tare beam or adequate counter-balance for balancing the bucket and compensating periodically for the accumulation of asphalt binder on the bucket.

3.3.2 Suitable means shall be provided, by either steam or oil jacketing or insulation, for maintaining the specified temperatures of the asphalt binder in the pipelines, meters, weigh buckets, spray bars, and other containers or flow line.

3.4 Batching Plants – General.

3.4.1 All aggregate shall be delivered by belt driven feeders. All feeders shall provide for adjustment of the cold feed and shall be capable of being secured in any position. The cold feeder for recycled materials shall be equipped with an oversize particle scalper.

3.4.2 Dryers shall continuously agitate the aggregate during the heating and drying process without leaving any visible unburned oily residue on the aggregate when it is discharged from the dryer. If unusually wet aggregate is being used, the input to the dryer shall be reduced to that amount which the dryer is capable of drying. Aggregates shall be free from coatings of dust after drying.

3.4.3 Plant screens shall be constructed and operated in such manner that all aggregates will be uniformly separated into the sizes required for proportioning. They shall have sufficient capacity to furnish the necessary quantity of each aggregate size required for continuous operation. Screen cloth that has become broken or has worn sufficiently to affect the gradation shall be replaced.

3.4.4 Thermometric equipment shall be provided as follows:

(a) An armored thermometer of suitable range shall be fixed in the asphalt binder feed line at a suitable location near the discharge at the mixer unit.

(b) The plant shall be further equipped with an approved thermometer, pyrometer, or other approved thermometric instrument that continuously indicates the temperature of the heated aggregate at the discharge chute of the dryer.

3.4.5 Hot bins shall consist of at least four separate aggregate compartments. One compartment shall be reserved for fine aggregate, and when required, one additional compartment shall be added for dry storage of mineral filler. Alternate bin systems may be utilized with prior approval from the Department. Provision shall be made for accurate proportioning. Each compartment shall contain the following features:

(a) Sufficient volume to supply the mixer at full rated capacity.

(b) An overflow pipe that shall be of such size and at such a location as to prevent any backing up of material into other bins or into contact with the screen. Overflow apparatus shall be equipped with a telltale device that alerts the operator and the inspector when the overflow equipment is full.

(c) Adequate telltale devices to indicate the position of the aggregate in the bins at the lower quarter points.

(d) Gates that cut off quickly and completely with no leakage.

(e) Adequate and convenient facilities including safe platforms for obtaining representative samples from each bin.

3.4.6 Weigh boxes shall be of sufficient size to hold the maximum required weight of aggregate for one batch without hand raking or running over. The weigh box shall be supported on fulcrums and knife edges so constructed that they remain in alignment or adjustment. All parts of the weigh box shall be free from contact with any supporting rods, columns, or other equipment that affects the proper functioning of the hopper or scale. Gates on both bins and weigh hopper shall be constructed to prevent leakage when closed.

3.4.7 Aggregate scales for any weigh box or hopper shall be of standard make and design and shall be accurate to 0.5 percent of the indicated load. The weight shall be indicated on a digital display. Scales shall be substantially constructed and shall be installed in such a manner as to be free from vibration. The display shall be in full view of the operator, and the numerals shall be of such a size that the inspector can easily read them. If the digital display is so located that it is not easily accessible to the inspector, a duplicate display will be required for exclusive viewing by the inspector. The job mix formula target weights shall continuously be part of the digital display during plant operations. The digital scale weight indications shall be displayed adjacent (in juxtaposition) to each target weight for easy comparison to the job mix formula. It shall be the responsibility of the Contractor to ensure that all scales are tested and sealed according to provisions as shown in the National Institute of Standards and Technology Handbook

44, at least on an annual basis. The work shall be accomplished by a competent commercial scale company prior to the start of the construction season. Scales shall be re-tested prior to use, after they have been moved. The Contractor shall have readily available at least ten standard 50 lb. weights, for checking the scales during operations.

3.4.7.1 Recycled materials weighed separately from the materials in the virgin weigh hopper shall be weighed on a dedicated scale with digital display at the accuracy described in 3.4.7.

3.4.8 The batch mixer shall be of an approved pug mill type, hot oil or steam jacketed, or heated by other approved means and capable of producing uniform mixtures within the specified tolerances. The mixer shall have a batch capacity of not less than 4,000 lb. and be constructed so as to prevent leakage during the mixing cycle. The amount of material that may be mixed per batch shall not exceed the manufacturer's rated capacity. If the mixer does not mix properly at the rated capacity, or if its production does not coordinate with the other plant units, the Department reserves the right to reduce the size of the batch until the desired efficiency is obtained. The pug mill shall be equipped with a sufficient number of paddles operated at such speed as to produce a properly and uniformly mixed batch. If, in the course of mixing, two adjacent paddle tips become broken, immediate repair will be called for. If the paddle tips become broken at widely separated points, repair may be delayed until the end of the working day. The clearance of the tips from all fixed and moving parts shall not exceed 3/4". Badly worn or defective tips shall not be used in mixing operations. The mixer shall be covered to prevent loss of fine material. The discharge gate shall be so designed that no uncoated material is retained at the gate opening during the mixing operation. Leakage from the pug mill gate during operation will not be permitted.

3.4.9 Each plant shall be equipped with an accurate time lock to control the operations of a complete mixing cycle. A mixing cycle shall consist of two periods, the dry mixing period and the wet mixing period. The dry mixing period shall be the interval of time between the opening of the aggregate weigh hopper gate and the start of the application of asphalt binder. The wet mixing period shall be the interval of time between the start of the application of asphalt binder and the opening of the mixer gate. The time lock shall be capable of being set at intervals of five seconds or less throughout the mixing cycle and shall have a suitable case equipped with an approved lock. The setting of time intervals shall be performed in the presence and under the direction of the Engineer who may lock the case until such time as a change is to be made in timing periods. The time lock shall lock the asphalt binder bucket throughout the dry mixing period and shall lock the mixer gate throughout the dry and wet mixing period.

3.4.10 The use of a fully automatic batching plant will be required and shall meet the following requirements:

(a) The automatic proportioning controls shall include equipment for accurately proportioning batches of the various components of the mixture by weight in the specified sequence and for controlling and timing the mixing operation. Interlocks shall be provided that delay, stop, or lock out the automatic batch cycling whenever the batched quantity of any component weight or the total batch is not within the specified weight tolerance, or when there is a malfunction in any portion of the control system.

(b) The automatic control for each batching scale system shall be equipped with a device for stopping the automatic cycle in the underweight check position and in the overweight check position for each material so that the tolerance setting may be checked.

(c) Each dial scale system shall be equipped with a removable dial puller that can be attached to the dial lever system so that the dial can be moved smoothly and slowly through its range to check the settings of the automatic control system. The plant operator shall perform this automatic control system checkout procedure periodically as requested by the Engineer.

(d) The weigh batching controls shall meet the following tolerances for the various components weighed in each batch:

Component Weighed	Percentage of Total Batch Weight
Tare weight of aggregate weigh box	±0.5
Tare weight of asphalt binder weigh bucket	±0.1
Each aggregate component	±1.5
Mineral filler	±0.5
Asphalt	±0.1

(e) The total weight of the batch shall not vary by more than ±2.0 percent of the designated batch weight.

(f) Recording equipment shall be provided in all plants employing automatic proportioning. Each recorder shall include an automatic printer system. The printer shall be positioned so that the scale reading and the printer can be readily observed from one location by the plant inspector. The printer shall produce, in digital form, a weight slip conforming to the requirements of 109.01 and 401.3.8.1.

(g) If at any time the automatic proportioning or recording system becomes inoperative, the plant will not be allowed to operate.

3.4.11 Each size of hot aggregate, the mineral filler if required, recycled material if applied, and the bituminous cement shall be measured separately and accurately to the proportions in which they are to be mixed.

3.4.12 The virgin aggregate shall be dried and heated to a minimum temperature of 260° F. The asphalt binder shall be heated to a temperature between 260º and 325º F. The weigh hopper shall be charged with the hot aggregate, coarse sizes first, unless otherwise directed.

3.4.13 Virgin Aggregates shall be dry mixed for 5 to 15 seconds.

3.4.14 Recycled materials can only be introduced to the weigh hopper or to the mixer.

3.4.14.1 Recycled materials that are introduced in the weigh hopper shall be dry mixed per 3.4.13.

3.4.14.2 When recycled materials are delivered to the mixer separately from the virgin aggregates, wet mixing time shall not begin until all recycled material is introduced to the mixer and is moisture free. The duration shall be determined based on field/plant conditions, and by agreement of the Contractor and Engineer.

3.4.15 The asphalt binder shall be added and the mixing continued until a uniform coating is obtained and all particles of the aggregate are thoroughly coated. The total dry and wet cycle shall not be less than 35 seconds for base and binder mixtures and not less than 40 seconds for the surface mix. In no case shall the total mixing period exceed 75 seconds. If the aggregate in the hot bins contains sufficient moisture to cause foaming in the mixture, such aggregate shall be removed from the bins, and production rate shall be reduced so as not to exceed the capacity of the dryer. Material having once gone through the mixing plant shall not be returned to the stockpiles.

3.5 Drum Mix Plants – General.

3.5.1 The plant shall be specifically designed for the process and shall be capable of satisfactorily heating, drying, and uniformly mixing the bituminous material and aggregate in accordance with the job mix formula. The rate of flow through the drum shall be controlled in order that a homogeneous mixture is obtained with all particles uniformly coated. In no case shall the quantity of mix produced exceed the manufacturer's rated capacity. If the percent of moisture in the mixture exceeds 1.0 percent by weight, the right is reserved to decrease the rate of production. The plant shall be equipped with automatic burner controls.

3.5.2 The cold bins shall be divided in at least five compartments and shall be designed to prevent the overflow of material from one bin to another. Each cold bin shall be equipped with an orifice to feed the aggregate accurately and uniformly. The feeding orifice shall be adjustable, and indicators shall be provided to show the gate opening. An automatic plant shutoff device shall be provided to operate when any aggregate bin becomes empty or the flow from any bin gate becomes restricted. A vibrator or other suitable means may be required in order to ensure a uniform flow of materials. The order of aggregate feed onto the composite cold feed belt shall be from coarse to fine. Aggregate shall pass through a scalping screen prior to the weigh belt.

3.5.2.1 When recycled material is used, an additional bin, equipped with its own oversize particle scalper, shall be required. In event of an emergency, this bin may be used to feed aggregate in an amount not to exceed 15% of material to complete the day's production.

3.5.3 The total cold aggregate feed shall be weighed continuously by an approved belt scale. The weighing system shall register within +0.5 percent of the indicated load.

3.5.4 Proportioning controls for aggregate and asphalt binder shall be located at the panel that also controls the mixture and the temperature. The panel shall be equipped with automatic controls that shall display, in digital form, the percentages of asphalt binder, mineral filler if required, and each aggregate in the job mix formula. The panel shall also be equipped to raise and lower the production rate without having to reset the individual controls for each change in production rate. The controls shall maintain aggregate flow accuracy such that the total variation of all materials being drawn per interval of time shall not exceed an amount equal to 1.5 percent of the total weight of bituminous mixture per interval of time.

3.5.5 Provisions shall be made for introducing the moisture content of the total cold feed into the belt weighing system and correcting the wet aggregate weight to dry aggregate weight. The system shall be capable of adjusting the flow of bituminous material to compensate for any variation in the dry weight of the aggregate flow. It shall be the responsibility of the Contractor to monitor and determine accurate moisture contents of the aggregate and RAP stockpiles used for production of hot bituminous pavement. Accurate moisture contents shall be determined at a minimum every other day of production. In the event of rain, moisture contents shall be determined for all aggregates and RAP to be utilized before the next day's production.

3.5.6 The dry weight of the aggregate flow shall be displayed by automatic digital readout in units of weight per interval of time.

3.5.7 When mineral filler is specified, a separate bin and feeder shall be provided with a variable drive interlocked with the aggregate feeders. Mineral filler shall be introduced and uniformly dispersed into the mixture without loss to the dust collection system. A device shall be provided to indicate when the flow of filler into the delivery system stops or its specified volume is out of job mix tolerance. The rate of flow shall be accurate to within 0.5 percent by weight, of the total mix. Means shall be provided to readily divert the flow of mineral filler into a container for measurement.

3.5.8 The asphalt binder shall be introduced through a continuously registering cumulative indicating meter by a pump specifically designed for the plant. The meter shall be located in the asphalt line so that it continuously registers the asphalt discharge to the mixer and so that the discharge through the meter can be readily diverted into a suitable container for measurement by actual weight. The meter shall indicate accurately to within 1.0 percent the amount of asphalt binder being delivered. The accuracy of the pump and meter shall be verified at periodic intervals as designated by the Engineer.

3.5.9 Satisfactory means shall be provided to ensure positive interlock between dry weight of aggregate flow and the flow of bituminous material through an approved meter.

3.5.10 The flow of bituminous material shall be displayed by automatic digital readouts in terms of volume or intervals of weight and time.

3.5.11 The plant shall have a means of diverting mixes at start up and shut down or where mixing is not complete or uniform.

3.5.12 A surge or storage system complying with 3.7 shall be provided.

3.6 Mixing Temperature - General.

3.6.1 The Engineer may adjust the job mix formula temperature within the limits of 260° and 350°F according to the existing conditions. Material with a temperature at discharge outside the job mix formula tolerance may be rejected. In no case will a mixture be accepted with a discharge temperature in excess of 375°F.

3.6.2 During hot weather, the temperature of the mixture when discharged shall be as low as is consistent with proper mixing and placing. During cold weather, a temperature approaching the upper limit is desirable

3.7 Hot Storage System – General.

3.7.1 Material may be placed in a storage silo for a period not to exceed 24 hours from the time of mixing. The upper and lower gates when closed shall create an airtight seal. The silo shall be filled to capacity. 24-hour storage will not be allowed if there is reason to believe there is a problem with the gate seals or excessive heat loss.

3.7.2 The hot storage system shall be capable of conveying the hot mix from the plant to insulated and enclosed storage bins and storing the hot mix without appreciable loss in temperature, asphalt migration, segregation, or oxidation.

3.7.3 The conveyer system may be a continuous type or skip bucket type. If the continuous type is used, it shall be enclosed to prevent a drop in mix temperature. If the skip bucket type is used, the bucket must be of sufficient capacity to transport an entire batch and mass dump it into the bins.

3.7.4 The storage bins shall be designed in such a manner as to prevent segregation of the hot mix during discharge from the conveyor into the bins and shall be equipped with discharge gates that do not cause segregation of the hot mix while loading the mix into the trucks. The storage bin heating system shall be capable of maintaining the mix temperature without localized heating (hot spots).

3.7.5 The bin shall be equipped with a light or indicator to show when the level of material reaches the top of the discharge cone. The bin shall not be emptied below the top of the discharge cone until the use of the bin is completed each day. The material remaining in the discharge cone may be rejected if there is evidence of segregation.

3.8 Weighing and Hauling – General.

3.8.1 The Contractor shall provide an approved automatic printer system that prints the weights of the material delivered, provided the system is used in conjunction with an approved automatic batching and mixing control system. Such weights shall be evidenced by a weight slip for each load.

3.8.2 Weight slips shall include requirements as shown in 109.01 and the following for batch plants with automatic proportioning equipment:

(a) Tare weight of aggregate weigh box.
(b) Tare weight of asphalt binder weigh bucket.
(c) Accumulative weights as batched for each aggregate (total of last aggregate will be aggregate total).
(d) Weight of asphalt binder.
(e) Accumulated total weight of batch.

3.8.3 Each weight slip will show a consecutive load number and shall include an accumulative total of material delivered for each day.

3.9 Vehicles – General.

3.9.1 The inside surfaces of vehicles may be lightly lubricated with a soap solution or non-petroleum release agent that will not be detrimental to the mix. Equipment that leaks oil, diesel fuel, gasoline, or any other substance detrimental to the pavement will not be allowed on the project.

3.9.2 The mixture shall be transported from the paving plant to the project in trucks having tight, smooth, metal beds previously cleaned of all foreign materials. Truck beds may be lined with a polyethylene type material designed and installed for hauling hot bituminous mixes. Each load shall be covered with canvas or other suitable material of sufficient size and thickness to retain heat and to protect it from weather conditions. The cover material when new shall weigh a minimum of 18 oz/yd^2 and it shall be a tightly woven or solid material. When necessary, so that the mixture can be delivered on the project at the specified temperature, truck beds shall be insulated, and covers shall be securely fastened.

3.10 Placing

3.10.1 General.

3.10.1.1 Prior to placing of any mix, a pre-paving conference shall be held to discuss and approve the paving schedule, source of mix, type and amount of equipment to be used, sequence of paving pattern, rate of mix supply, traffic control, and general continuity of the operation. Special attention shall be made to the paving pattern sequence to minimize cold joints. The field supervisors of the above mentioned operations shall attend this meeting.

3.10.1.2 The Contractor shall notify the Engineer at least five working days in advance of paving operations to allow sufficient time to schedule required site inspection and testing. All paving and compaction equipment shall be approved and on site prior to start up each day.

3.10.1.3 Base course pavement lifts shall not exceed the maximum compacted thickness of 5 inches. Any course exceeding 5 compacted inches shall be placed in 2 passes.

3.10.1.4 When performing paving operations at night, in addition to the requirements of 3.1.4.5, the Contractor shall provide sufficient lighting at the work site to ensure the same degree of accuracy in workmanship and conditions regarding safety as would be obtained in daylight.

3.10.1.5 When patching existing pavement, the material shall be placed on the prepared clean underlying surface at the locations designated and shall be spread to produce a smooth and uniform patch. The patch material shall be thoroughly compacted and shall match the line and grade of the adjacent pavement.

3.10.1.6 Relatively small areas not accessible to the paver may be spread by hand, but extreme care shall be taken to create a surface texture similar to the machine work. Surface material shall be spread by lutes and not by rakes.

3.10.1.7 Unless otherwise authorized, the final surface course shall not be placed until guardrail posts have been set and general cleanup has been completed.

3.10.1.8 When hot bituminous bridge pavement is to be placed over barrier membrane, the placing temperature shall be as specified in 538.3.3.5. A paver, mounted on rubber tracks or tires, shall be used to place the 1" base course unless this procedure is found to cause damage to the membrane. When such damage is found to be evident, the hand method may be allowed. The hand method may also be allowed if the Engineer determines that the use of a paver for this work is impracticable. During warm weather, the above paving shall be done during the cool period of the day. A paver shall be used to place the surface course.

3.10.1.9 Where pavement is placed adjacent to structural members such as expansion joints, the material in the top course shall be placed so that the compacted grade of the pavement is 1/4 to 3/8" above the grade of the structural member.

3.10.1.10 When paving on aggregate base courses and/or base course pavement, the first pass paved shall be on the travel way and not on the shoulders.

3.10.1.11 Drainage and utility structures within the limits of the pavement shall be set and raised in accordance with the provisions of 604.3.4. Contact surfaces of the drainage and utility castings as ordered shall be painted with a thin coating of suitable bituminous material.

3.10.1.12 At the beginning and end of the project or project section, the existing pavement shall be removed to a sufficient depth to allow the placing of the new pavement and construction of a transverse joint, which shall be painted with a suitable bituminous material. The underlying course shall be clean and free from foreign materials and loose bituminous patches and must present a dry, unyielding surface.

3.10.2 Performance Requirements (QC/QA). The Contractor shall provide the following equipment for testing and sampling at the project site. The equipment shall be in good condition and shall be replaced by the Contractor if, during the duration of the project, it becomes unsuitable for testing or sampling purposes.

3.10.2.1 Metal plate 12" minimum each side, flat bottom scoop 3000-gram capacity minimum, and sample containers to perform NHDOT Test Procedure B-7 (see Appendix A) sampling.

3.10.3 Weather Limitations - General

3.10.3.1 Mixtures shall be placed only when the underlying surface is dry and frost free. The Engineer may permit, in case of sudden rain, the placing of mixture then in transit from the plant, if laid on a base free from pools of water, provided motorist visibility is not impaired and all other specifications are met. No load shall be sent out so late in the day that spreading and compaction cannot be completed during the daylight, unless the requirements of 3.10.1.5 are met. The Engineer may suspend operations for the day when the Contractor is unable to meet specifications.

3.10.3.2 Surface course shall not be scheduled for placement after October 1st and before May 1st without written approval by the Engineer.

3.10.3.3 All mix placed after October 1st and before May 1st shall be modified by a qualified warm mix technology.

3.10.3.4 In special instances, when the Engineer determines that it is in the best interest of the State, the Engineer may waive the requirements of 3.10.3, provided that 3.10.3.1 shall always remain in effect.

3.10.4 Sweeping - General. Existing pavement or previously laid courses shall be thoroughly dry and free from all dust, dirt, and loose material. Sweepi ng with a power broom, supplemented by hand brooming, may be necessary.

3.10.5 Tack coat - General. Surfaces of any pavement course shall have a tack coat of emulsified asphalt applied in accordance with the requirements of 410.3.4.

3.11 Pavers and Material Transfer Vehicles (MTV) – General.

3.11.1 Pavers shall be:

(a) Self-contained, power-propelled units with adjustable vibratory screeds and full-width screw augers that reach within 18" of the end plate for fixed-width paving.
(b) Heated for the full width of the screed.
(c) Capable of spreading and finishing courses of hot asphalt mix in widths at least 12" more than the width of one lane.
(d) Equipped with a receiving hopper having sufficient capacity to ensure a uniform spreading operation.
(e) Equipped with automatic feed controls, which are properly adjusted to maintain a uniform depth of material ahead of the screed.

(f) Capable of being operated at forward speeds consistent with satisfactory laying of the mix.
(g) Capable of producing a finished surface of the required smoothness and texture without segregating, tearing, shoving, or gouging the mixture.
(h) Equipped with the following automatic screed controls:
1. Two 24 ft. ski type devices or floating beams.
2. Two grade sensors.
3. Two short skis (joint matchers).
4. Slope sensing control for transverse slope

3.11.1.1 Pavers used for all machine method work shall have a minimum weight of 28,000 lbs. and a minimum 8-foot wheelbase, unless otherwise approved by the Engineer

3.11.1.2 All courses shall be spread and finished to the required thickness by approved, self-contained, self-propelled spreading and finishing machines (pavers). Pavers shall be provided with an adjustable, activated screed and shall be capable of spreading the mixtures with a finish that is smooth, true to the required cross-section, uniform in density and texture, and free from hollows, tears, gouges, corrugations, and other irregularities. Broadcasting behind the paver shall be held to a minimum. Pavers shall be capable of spreading and finishing courses of the required thicknesses and lane widths. Horizontally oscillating strike-off assemblies will not be approved.

3.11.1.3 The activated screed shall be of the vibrating or tamping bar type or a combination of both and shall operate without tearing, shoving, or gouging the mixture. The activated portion of the screed shall extend the full width of the mixture being placed in the traveled way and other areas with sufficient width to accommodate a paver. In other locations as permitted such as narrow shoulders, tapers, and areas adjacent to curbs, non-activated extensions to the screed will be allowed. The paver shall be equipped with a screed heater. The screed heater shall be used when starting a cold machine and for maintaining a suitable screed temperature when needed.

3.11.1.4 The paver hopper gates shall be adjusted to pass the correct amount of mix to the augers so that they operate more or less continuously. The height of material shall be maintained at a constant level in front of the screed, to a point where approximately half of the auger shall be visible at all times.

3.11.1.5 The sensors for either or both sides of the paver shall be capable of sensing grade from an outside reference line or from the surface using a ski type device. A slope control sensor, mounted on the slope beam of the paver shall be capable of sensing transverse slope of the screed. The sensors shall provide automatic signals that operate the screed to maintain the desired grade and transverse slope. Pavers shall not be used until the automatic controls have been checked and approved by the Engineer.

3.11.1.6 The use of automatic grade and slope controls shall be required on all pavers. On projects or parts of projects where the Engineer deems that the use of automatic controls are impracticable, some or all of the controls listed in 3.11.1(h) may be waived.

3.11.1.7 Whenever a breakdown or malfunction of the automatic controls occurs, the equipment may be operated manually for the remainder of the normal working day on which the breakdown or malfunction occurred. This method of operation must meet all other specifications.

3.11.1.8 The forward speed of the paver shall be adjusted to the rate of the supply of materials so that the paver operates without having to make stops except for emergencies. If the Engineer determines that the paving operations result in excessive stopping of the paver, the Engineer may suspend all paving operations until the Contractor makes arrangements to synchronize the rate of paving with the rate of delivery of materials.

3.11.2 Material Transfer Vehicle (MTV)

3.11.2.1 An approved MTV shall be used to transfer the bituminous mix from the hauling equipment to the paver. The MTV shall operate independently from the paver and shall be a commercially manufactured unit specifically designed for the transfer of mix from the hauling equipment to the paver without depositing the mix on the roadway. It shall have the ability to swing the discharge conveyor to reach the paver hopper. The MTV shall be designed so that the mix is internally remixed. The minimum storage capacity of the MTV shall be 12 tons.

3.11.2.2 The MTV will only be required for mainline construction and straight ramps (does not include loop ramps, interim connections, interim crossovers and side roads) when the section is a minimum of 600 tons per paver mobilization unless otherwise approved by the Contract Administrator.

3.11.2.3 When the MTV passes over a bridge that is not a fill over structure, it shall be as near to empty as possible. The MTV also shall not exceed 5 miles per hour while on the bridge. If the Contractor proposes moving the MTV over a bridge with more than a minimal amount of material in it, a proposal must be submitted to and

approved by the Bureau of Bridge Design prior to the placing of any mix. The submittal needs to show in detail the wheel and axle loading that will be placed on the bridge deck.

3.12 Compaction.

3.12.1 General.

3.12.1.1 Immediately after the hot asphalt mix has been spread, struck off, and surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling. The completed course shall be free from ridges, ruts, humps, depressions, objectionable marks, visible segregation, or irregularities and in conformance with the line, grade, and cross-section shown in the Plans or as established by the Engineer.

3.12.1.2 All compaction units shall be operated at the speed, within manufacturers recommended limits, that will produce the required compaction. The use of equipment, which results in excessive crushing of the aggregate, will not be permitted. Any asphalt pavement that becomes loose, broken, contaminated, shows an excess or deficiency of asphalt binder, or is in any way defective, shall be removed and replaced at no additional cost with fresh hot asphalt mix, which shall be immediately compacted to conform to the surrounding area. Hot asphalt mix shall not be permitted to adhere to the roller drums during rolling.

3.12.1.3 When a vibratory roller is being used, the vibration shall stop automatically when the roller is stopped or reversing direction of travel. Vibratory rollers shall not be operated in the vibratory mode under the following conditions: When checking or cracking of the mat occurs, when fracturing of aggregate occurs, and on bridge decks.

3.12.1.4 Pneumatic-tire rollers shall be self-propelled and shall be equipped with smooth tires of equal size and diameter. The wheels shall be so spaced that one pass of a two-axle roller accomplishes one complete coverage. The wheels shall not wobble and shall be equipped with pads that keep the tires wet. The rollers shall provide an operating weight of not less than 2,000 lb. per wheel. Tires shall be maintained at a uniform pressure between 55 and 90 psi with a 5 psi tolerance between all tires. A suitable tire pressure gauge shall be readily available.

3.12.1.5 Pneumatic-tired rollers shall be used on all pavement leveling courses.

3.12.1.6 Rollers must be in good mechanical condition, free from excessive backlash, faulty steering mechanism, or worn parts. The empty weight and the ballasted weight shall be properly marked on each roller.

3.12.1.7 To prevent adhesion of the mixture to the rollers, the wheels shall be kept properly moistened with water or water mixed with very small quantities of detergent or other approved material. Excess liquid will not be permitted. All steel rollers shall be equipped with adjustable wheel scrapers.

3.12.1.8 A minimum of three rollers shall be used. Unless an alternate compaction package is approved at the project pre-pave meeting, roller trains shall consist of the equipment describe herein.

3.12.2 Method Requirements.

3.12.2.1 The initial rolling shall be done with a static or vibratory steel-drum roller. Intermediate rolling shall be performed by a pneumatic-tired roller and/or a vibratory/oscillatory roller. Final rolling shall be performed with a static steel-drum roller. The minimum weight of static steel-drum rollers shall be 8 tons.

3.12.2.2 Unless otherwise directed, rolling shall begin at the sides and proceed longitudinally parallel to the roadway centerline, gradually progressing to the crown of the roadway. The overlap shall be one-half the roller width for wheeled rollers and 6 inches for vibrating rollers. No overlap is required for pneumatic-tired rollers. When paving in echelon or abutting a previously placed lane, the longitudinal joint shall be rolled first followed by the regular rolling procedure. On superelevated curves, the rolling shall begin at the low side and progress to the high side by overlapping of longitudinal passes parallel to the centerline.

3.12.2.3 Rollers shall move at a slow but uniform speed with the drive roll or drive wheels nearest the paver, except on steep grades. Static and pneumatic-tired rollers shall not operate at speeds in excess of 6 mph. All courses shall be rolled until all roller marks are eliminated.

3.12.2.4 Cores shall be collected by the Contractor at locations as determined and witnessed by the Engineer. One core per lane mile, but no less than two, shall be taken for each roadway segment paved. When shoulders are overlayed, cores shall be collected solely for density information at a frequency of one core for every 750 tons of mix.

The Contractor will deliver the cores to the designated testing laboratory once Department chain of custody measures have been applied.

The minimum compaction requirement shall be 91% of maximum theoretical density as determined in accordance with AASHTO T 209. The following reductions in unit price shall apply for all tonnage placed that is represented by any core (excluding shoulder cores) that does not meet the minimum requirement: for results below 91% but equal to or greater than 90%, a 5% reduction will be assessed; for any results below 90%, a 10% penalty for all tonnage placed will be assessed. At the Engineer's discretion, the Contractor may be required to remove noncompliant material below 90% (no payment will be made for this material or its removal).

3.12.2.4.1 All cores need not be cut at the same time. The Contractor will be allowed the option to collect cores through all placed lifts at once, provided cores are collected within two working days of placing the first course. Corrective action to any covered course is at the Contractor's risk.

3.12.2.5 Any displacement occurring as a result of reversing the direction of a roller, or from other causes, shall be corrected at once by the use of lutes and the addition of fresh mixture when required. Care shall be exercised in rolling so as not to displace the line and grade of the edges of the bituminous mixture.

3.12.2.6 Along forms, curbs, headers, and similar structures and other places not accessible to a normal full-sized roller, sidewalk rollers weighing at least 2,000 lb (900 kg) shall be used. Where rollers are impracticable, the mixture shall be thoroughly compacted with heated or lightly oiled hand tamps or vibrating plate compactors.

3.12.2.7 Unless the Engineer determines that for the weight and placement conditions a lesser number will be satisfactory to obtain the desired pavement densities, the following is the list of required compaction equipment. The output of each paver placing surface course (Table 1) materials shall be compacted by the use of one each of the following complement of rollers as a minimum: a static or vibratory steel-wheel roller, a pneumatic-tired roller and a three-axle roller or a static steel-wheeled roller. If the required density is not being obtained with the rollers supplied, the use of additional rollers of the specified type may be ordered. Paving widths in excess of 16 ft will require additional rollers as ordered.

3.12.3 Performance Requirements (QC/QA).

3.12.3.1 As agreed upon at the Pre-Pavement meeting, the type of rollers to be used and their relative position in the compaction sequence shall be the Contractor's option, provided specification densities are attained.

3.13 Joints - General.

3.13.1 Unless otherwise shown on the plans, the longitudinal surface course joints shall be at the edge of lane placed, where the edge line, lane line and centerline pavement markings will be applied, and joints of other courses shall be offset approximately 2".

3.13.2 The material being placed next to a previously paved lane shall be tightly crowded against the face of the abutting lane. The paver shall be positioned so that during spreading, the material will overlap the edge of the first lane by 1 to 2" and shall be left sufficiently high such that finish pavement of the lane being placed is approximately 1/8" higher than the previously paved lane after compaction. The overlapped material shall be rolled without luting. Longitudinal joint compaction shall be achieved by rolling from the hot side to within 6" of the previously placed mat. The next roller pass will overlap onto the previously placed paved lane by 6". Further compactive effort shall be applied to all joints during the intermediate and final rolling.

3.13.3 Placing of the course shall be as continuous as possible while complying with Contract Traffic Control Plans. Transverse joints will be allowed at the end of each work shift or as required to provide properly bonded longitudinal joints.

3.13.3.1 No longitudinal joints greater than 1-1/2" height shall be left open to traffic unless a tapered overlapping ("wedge") joint is used. Joints between traveled way and shoulder greater than 3/4" shall be delineated by barrels. Barrels shall meet the requirements of Section 619.

3.13.3.2 Unless otherwise precluded by weather conditions, longitudinal joints shall not remain open to traffic longer than 30 hours.

3.13.4 If a bulkhead is not used to form the transverse joint, the previously laid material shall be cut back to the designed slope and grade of the course. The joint face shall be coated with approved bituminous bonding material meeting the requirements of 410.2.1 before the fresh mixture is placed against it. Extreme care shall be taken to ensure that no unevenness occurs at the joint. If unsatisfactory riding qualities are obtained at the transverse joint in the surface course, the joint shall be corrected by an approved method.

3.13.4.1 Prior to opening any lane(s) to traffic, transverse joints shall be ramped by means of an asphalt fillet at a minimum of 5 ft. horizontal to 1" vertical slope.

3.13.4.2 When paving into a permanent transverse joint, a full head of material shall be carried into the joint.

3.13.5 When specified, a bituminous pavement joint adhesive, Item 403.x6, shall be applied to the longitudinal joint. If joint adhesive has not been specified, an approved bituminous bonding material meeting the requirements of 410.2.1 shall be applied to completely cover all joint contact surfaces.

3.13.5.1 Joint adhesive shall be applied to the longitudinal joints so that the entire joint surface is covered with a minimum 1/8" thick layer of material. If a wedge joint is used the upper 4" of joint surface shall be covered with joint adhesive. In lieu of using joint adhesive, the Contractor may elect, with the approval of the Engineer, to use multiple pavers in echelon to eliminate the longitudinal joint. Echelon paving shall be performed as stated in 3.13.8.

3.13.5.2 The joint face on which the joint adhesive is to be applied shall be dry, free from loose material, dust, or other debris that could interfere with adhesion. If dust or debris adheres to the joint adhesive, it shall be cleaned or recoated as directed by the Engineer.

3.13.5.3 Trucks or traffic shall not drive across the joint adhesive until it has cooled sufficiently to prevent damage from tracking.

3.13.5.4 Joint adhesive shall be melted in a melting kettle that meets the requirements of 413.2.2(b). The joint adhesive shall be applied at the temperature specified by the manufacturer and shall not be heated above the safe heating temperature specified by the manufacturer.

3.13.5.5 Joint adhesive shall be applied using a pressure feed wand applicator system equipped with an applicator shoe as recommended by the manufacturer. A pour-pot applicator will be allowed on wedge joints only.

3.13.5.6 Joint adhesive (Bridge Base) shall be applied to curbs, concrete armoring, and pavement matches so that the entire joint is covered with a minimum 1/8" thick layer of material.

3.13.6 A tapered overlapping ("wedge") joint may be used on all longitudinal joints provided that the adjacent lane can be placed when the existing surface temperature is above 50° F.

3.13.6.1 An inclined face (3:1) on the joint shall be formed in the first bituminous mat placed. The inclined face may be for the entire height or an inclined face with a 1/2" maximum vertical face at the top of the mat.

3.13.6.2 After the initial mat is placed, the mat shall be rolled to the edge of the unconfined face.

3.13.6.3 When the adjoining mat is placed, the initial longitudinal wedge shall be treated as in 3.13.5.

3.13.7 The Contractor shall furnish and have available a 10 ft, lightweight metal straightedge with a rectangular cross-section of 2 by 4" at the paver at all times during paving operations. All courses shall be tested with the straightedge laid across the transverse joint parallel to the centerline and any variations from a true profile exceeding 3/16" shall be satisfactorily eliminated. The finished surface of the pavement shall be uniform in appearance, shall be free from irregularities in contour, and shall present a smooth-riding surface.

3.13.8 Echelon Paving. Echelon paving, when specified or approved, shall be defined as multiple pavers paving simultaneously and adjacent to one another such that all rolling of both mats is performed concurrently.

3.14 Variations in Profile and Cross Slope – Method (See 3.18.4.4.1)**.**

3.15 Replacement – General. If unsatisfactory areas are found in any course, the Contractor shall remove the unsatisfactory material and replace it with satisfactory material.

3.16 Finished Appearance – General. Any bituminous material remaining on exposed surfaces of curbs, sidewalks, or other structures shall be removed.

3.17 Quality / Process Control - General.

3.17.1 The Contractor shall operate in accordance with a Quality Control Plan, hereinafter referred to as the "Plan", sufficient to assure a product meeting the Contract requirements. The plan shall meet the requirements of 106.03.1 and these special provisions.

3.17.2 The Plan shall address all elements that affect the quality of the Plant Mix Pavement including, but not limited to, the following:

(a) Job mix formula(s).
(b) Hot asphalt mix plant details.
(c) Stockpile Management.
(d) Make & type of paver(s).

(e) Make & type of rollers including weight, weight per inch (centimeter) of steel wheels, and average ground contact pressure for pneumatic tired rollers.
(f) Name of Plan Administrator.
(g) Name of Process Control Technician(s).
(h) Name of Quality Control Technician(s).
(i) Mixing & Transportation.
(j) Process Control Testing.
(k) Placing sequence and placing procedure for ride quality.
(l) Paving and Weather Limitations.
(m) Sequence for paving around catch basins, under guardrail, around curb, at bridges, and intersections, drives and minor approaches, to ensure a proper finish and drainage.
(n) Procedure for fine grading the top of the surface to be paved.
(o) Binder supplier(s)

3.17.3 The Plan shall include the following personnel performing the described functions and meeting the following minimum requirements and qualifications:

A. Plan Administrator shall meet one of the following qualifications:

(a) Professional Engineer licensed in the State of NH with one year of highway experience acceptable to the Department and proof of past certification as a NETTCP QA Technologist.
(b) Engineer-In-Training with two years of highway experience acceptable to the Department and hold current certification as a NETTCP QA Technologist.
(c) An individual with three years highway experience acceptable to the Department and with a Bachelor of Science Degree in Civil Engineering Technology or Construction and hold current certification as a NETTCP QA Technologist.
(d) An individual with five years of paving experience acceptable to the Department and hold current certification as a NETTCP QA Technologist.

B. Process Control Technician(s) (PCT) shall utilize test results and other quality control practices to assure the quality of aggregates and other mix components and control proportioning to meet the job mix formula(s). The PCT shall periodically inspect all equipment used in mixing to assure it is operating properly and that mixing conforms to the mix design(s) and other Contract requirements. The Plan shall detail how these duties and responsibilities are to be accomplished and documented and whether more than one PCT is required. The Plan shall include the criteria utilized by the PCT to correct or reject unsatisfactory materials. The PCT shall be certified as a Plant Technician by the New England States Technician Certification Program or be a Materials Testing Technician in Training, working under the direct observation of a NETTCP certified Plant Technician.

C. Quality Control Technician(s) (QCT) shall perform and utilize quality control tests at the job site to assure that delivered materials meet the requirements of the job mix formula(s). The QCT shall inspect all equipment utilized in transporting, laydown, and compacting to assure it is operating properly and that all laydown and compaction conform to the Contract requirements. The plan shall detail how these duties and responsibilities are to be accomplished and documented, and whether more than one QCT is required. The Plan shall include the criteria utilized by the QCT to correct or reject unsatisfactory materials. The QCT shall be certified as a HMA Paving Technician as certified by the North East Transportation Training and Certification Program or be a Materials Testing Technician in Training, working under the direct observation of a NETTCP certified HMA Paving Technician.

3.17.4 The Plan shall detail the coordination of the activities of the Plan Administrator, the PCT and the QCT. The Plan shall also detail who has the responsibility to reject material, halt production or stop placement.

3.17.4.1 All project-specific Appendices and issues agreed to at the Pre-Paving meeting shall be considered to be part of the Plan.

3.17.5 Rejection by Contractor. The Contractor may, prior to sampling, elect to remove any defective material and replace it with new material at no expense to the Department.

3.17.5.1 No surface course pavement shall be removed or repaired without prior approval of the Engineer.

3.18 Performance Requirements (QC/QA)

3.18.1 Asphalt pavement shall be sampled, tested, evaluated and recorded by the Contractor in accordance with the minimum process control guidelines in Table 401-3.

3.18.1.1 Cross slope shall be measured on every pavement lift using the method described in 3.18.5.5.1 prior to placement of subsequent lifts. Particular emphasis on the first pavement lift shall be required when correcting existing substandard cross slopes. Cross slope measurements exceeding 0.5% from the specified cross slope for that location shall require an adjustment in ongoing or subsequent paving operations to correct the deficiency. If two or more consecutive measured sublots are greater than 0.5% from the specified cross slope, paving operations shall cease until the Contractor submits a corrective action satisfactory to the Engineer.

Table 401-3 - Minimum Process Control Guidelines

Properties	Test Frequency	Test Method
Temperature of Mix	6 per day at paver hopper and plant	
Surface Temperature	As needed	
Temperature of Mat	4 per day	
Density	1 per 500 tons (500 metric tons) or min. 2 per day	AASHTO T 343 or ASTM D 2950
Maximum Theoretical Specific Gravity	1 per day of operation	AASHTO T-209
Fractured Faces	1 per 2000 tons (1800 metric tons) for Gravel Sources only	AASHTO T 11 & AASHTO T 27
Aggregate Gradation & Asphalt Binder content	1 per 750 tons (700 metric tons) recommended	AASHTO T 130 & 164
Asphalt Binder	As needed	AASHTO M 226 M 320
Thickness	Contractor Defined	Contractor Defined
Cross Slope	1 per 5 full stations	Per 3.18.5.5.1

3.18.2 The Contractor may utilize innovative equipment or techniques not addressed by the specifications or these provisions to produce or monitor the production of the mix, subject to approval by the Engineer.

3.18.3 Quality Assurance.

3.18.3.1 Asphalt pavement designated for acceptance under Quality Assurance (QA) provisions will be sampled once per sublot on a statistically random basis, tested, and evaluated by the Department in accordance with 106.03.2 and the acceptance testing schedule in Table 401-4. Testing shall not take place until the material has been placed and deemed acceptable by the Contractor.

Table 401-4 - Acceptance Testing Schedule

PROPERTIES	POINT OF SAMPLING	LOT SIZE	SUBLOT SIZE	TEST METHOD
Gradation	Behind paver & before rolling[4]	401.3.17.2.2	750 tons	AASHTO T 30 NHDOT B-1
Asphalt Binder content	Behind paver & before rolling[4]	401.3.17.2.2	750 tons	AASHTO T 164 NHDOT B-2 NHDOT B-6
Maximum theoretical specific gravity	Compacted Roadway[1] Core		750 tons	NHDOT B-8 AASHTO T 209
In Place Air Voids in total mix[5,6,7]	Compacted roadway[1] core	401.3.17.2.2	750 tons	NHDOT B-8 AASHTO T 269
Ride Smoothness[7]	Completion of surface course	Total project	0.1 lane mile	401.3.17.3.4
Cross Slope[7]	Completion of surface course	Total project	1 per 5 full stations	401.3.17.3.5
Thickness[2][5][7]	Compacted roadway[1] core	Total project	750 tons	NHDOT B-8 ASTM D 3549

1. Excluding bridge pavements.
2. Measurements taken from full depth cores obtained for in place air voids determination.
3. For leveling course, samples to be taken at the plant.
4. Sampling and testing will not be performed for leveling course.
5. Not including leveling course.
6. When the Contractor is supplying mix to more than one paver simultaneously, Contractor's personnel shall keep a running total of tonnage supplied to each paver on each paver.
7. Tier 1 Item only.

3.18.3.2 Lot Size. For purposes of evaluating all acceptance test properties, a lot shall consist of the total quantity represented by each item listed under the lot size heading in the table above, up to 15,000 tons. For Items with quantities in excess of 15,000 tons, lot sizes will be determined at the pre-placement meeting. Each lot will be broken down into at least three (3) sublots.

The Contractor may request a change in the job mix formula. If the request is approved, all of the material produced prior to the change will be evaluated on the basis of available tests and a new lot will begin. Three sublots must be sampled and tested before a new lot may begin.

3.18.3.2.1 A lot for Gradation, Asphalt Content and In Place Air Voids shall be the total quantity represented by the job mix formula with the following exception; the shoulders will be evaluated as a separate lot for in place air voids.

3.18.3.3 Sublot Size. The quantity represented by each sample will constitute a sublot. The size of each sublot shall be as listed under the sublot size heading in Table 401-4. If there is insufficient quantity in a lot to make up at least three sublots of the designated size in Table 401-4, then the lot quantity will be divided into three equal sublots.

If there is less than one-half of a sublot remaining at the end, then it shall be combined with the previous sublot. If there is more than one-half of a sublot remaining at the end, then it shall constitute the last sublot and shall be represented by test results.

3.18.3.4 Test Results. The Engineer may calculate pay factors and pay adjustments at any time while a lot is being produced. This may be necessary for a partial estimate or to see if quality is falling to a point where immediate attention is required. Pay factors will be determined from all available acceptance tests for the lot being evaluated.

3.18.4 Acceptance Testing

3.18.4.1 Gradation and Asphalt Binder Content. Samples for gradation and asphalt binder content shall be obtained from behind the paver in conformance with NHDOT Test Procedure B-7 (see Appendix A) and taken from each pavement layer by the Contractor in the presence of the Engineer. The sample locations will be established by selecting a random location within each sublot in accordance with Section 106. Sample locations (center of sample) will not be within 1 foot from an edge of pavement or within 4 feet from any structure. Sample locations falling within 4 feet from any structure will be relocated 4 feet from the structure along station at the same offset.

Where samples have been taken, new material shall be placed and compacted to conform to the surrounding area immediately after the samples are taken. Samples shall be accompanied by a sample tag containing the following information:

a) Project name and number.
b) Lot and sublot number.
c) Material type.
d) Date placed.
e) Location in station and offset, tonnage
f) Contract Administrator
g) Sampler
h) Item number

When the project exceeds 30 minutes travel time from the testing laboratory location, material samples will be taken and identified by Department project personnel and shall be transported before cooling by the Contractor and delivered to Department testing technicians at the testing Laboratory. Samples lost in transit will incur a penalty of 5% of the bid price for the entire sublot represented by that sample. Sublots with no test results due to a lost sample will not be evaluated and the total quantity represented by that sublot shall not be included in any positive pay factor.

3.18.4.1.1 Testing. Target values shall be as specified in the job mix formula. All sieve sizes specified in the job mix formula will be evaluated for gradation. The specification limits in Table 401-5 will be used for calculating pay factors for gradation and asphalt binder content.

Table 401-5 - Gradation and Asphalt Binder Specification Limits

Property	Maximum Aggregate Size				
	1”	3/4”	¾” winter	1/2”	3/8”
		USL and LSL (Target +/- %)			
1 1/2”	0	0	0	0	0
1-1/4”	0	0	0	0	0
1”	8.0	0	0	0	0
3/4”	8.0	6.0	6.0	0	0
1/2”	7.0	6.0	6.0	5.0	0
3/8”	7.0	6.0	6.0	5.0	5.0
No. 4	4.5	4.5	4.5	4.0	4.5
No. 8	4.5	4.5	4.5	3.5	3.5
No. 16	2.5	2.5	2.5	2.5	2.5
No. 30	2.5	2.5	2.5	2.5	2.5
No. 50	2.5	2.5	2.5	2.5	2.5
No. 100	2.5	2.5	2.5	2.5	2.5
No. 200	1.0	1.0	1.0	1.0	1.0
Asphalt Binder	0.4	0.4	0.4	0.4	0.4

Any sublot with a gradation or asphalt binder content falling outside the ranges of the reject limits in Table 401-6 will be either removed and replaced at the expense of the Contractor or require corrective action to the satisfaction of the Engineer. After replacement or correction, new samples will be taken and the old test results from that sublot will be discarded.

Table 401-6 - Gradation and Asphalt Binder Content Reject Limits (Deviation from Target)

SIEVE SIZE	1”	3/4”	¾” Winter	1/2”	3/8”
	Percent Passing By Weight – Combined Aggregate				
1-1/4”					
1”					
3/4”	±12	(1)	(1)		
1/2”	(1)	±10	±10	(1)	
3/8”	(1)	(1)	(1)	±10	(1)
No. 4	±9	±9	±9	±9	±9
No. 8	±7	±7	±7	±7	±7
No. 16	±6	±6	±6	±6	±6
No. 30	(1)	(1)	(1)	(1)	(1)
No. 50	(1)	(1)	(1)	(1)	(1)
No. 100	(1)	(1)	(1)	(1)	(1)
No. 200	±3	±3	±3	±3	±3
Asphalt Binder: % of Mix	±1.0	±1.0	±1.0	±0.8	±0.8

(1) Reject limits will be waived for these sieves.

The Contractor shall have the option of requesting a change in job mix formula (aim change) values used for calculating quality level to reflect actual production values after the placement of two sublots as long as no change in plant production values are made. A new lot is not needed for this change.

3.18.4.2 In Place Air Voids. In place air voids shall be determined in accordance with AASHTO T 269 using 6” diameter cores taken from each pavement layer by the Contractor in the presence of the Engineer. Core sampling shall be in conformance with ASTM D 5361 and NHDOT Test Procedure B-8 (see Appendix A). Full depth cores containing all new pavement layers shall be required. Core locations (center of core) will be established by selecting a random location within each sublot in accordance with Section 106. When shoulders are overlayed, cores shall be collected solely for density information at a frequency of one core for every 750 tons of mix. Cores will not be located in the following areas:

(a) Within 1 foot from an edge of pavement.
(b) Within 4 feet from any structure. Core locations falling within this area will be relocated 4 feet from the structure along station at the same offset.
(c) Within shoulders 4 feet or less in width.
(d) Within 1 foot from any break in slope across the mat surface.

Cores shall be taken before opening pavement to traffic, except when location of core is within the last hour of that day's placement. Cores shall be taken within 24 hours after placement. Where cores have been taken, new material shall be placed and compacted to conform to the surrounding area the same day the samples are taken. Core samples shall be accompanied by a sample tag containing the following information:

(a) Project name & number.
(b) Lot and sublot number.
(c) Material Type.
(d) Date placed.
(e) Date sampled.
(f) Location in station and offset, and/or tonnage.
(g) Plan thickness.
(h) Contract Administrator
(i) Sampler
(j) Item number

The complete sample(s) (unseparated) shall be protected against damage, transported, and delivered by the Contractor within one working day to Department testing technicians at the Laboratory. Sublots where the core becomes lost or damaged will be resampled at the direction of the Engineer at the Contractor's expense.

The specification limits in Table 401-7 will be used for calculating pay factors for in place air voids for each lot:

Table 401-7 - In Place Air Voids Acceptance Limits

TARGET (%)	LSL	USL
Average of Samples	- 2.0%[1]	+2.0%[2]

[1] But not less than 2.5%
[2] But not more than 9%

When a core is less than 80% of the nominal thickness, a new core will be taken in the same sublot at a random location for the determination of in place air voids.

A sublot with a test result less than 2.0% for in place air voids will be rejected and subject to removal and replacement.

3.18.4.2.1 Maximum Theoretical Density (MTD). MTD shall be determined in conformance with AASHTO T 209 once per sublot from the core obtained for determining in place air voids.

3.18.4.2.2 Disputed Cores. If a Contractor believes that a core result is invalid for whatever reason, the Contractor shall notify the Engineer of this in writing within 24 hours of being informed of the test result. After being informed of the disputed core result, the Engineer will select three random core locations, one in each three sections of the disputed sublot at the same offset as the disputed core. The Contractor shall cut the cores at the selected locations in the presence of the Engineer who shall place them in secured containers for delivery and testing at the Bureau of Materials and Research laboratory in Concord, NH. If there are 10 or more cores already tested to date, the pay factor for voids in the lot will be calculated (without using the result of the disputed core). If less than ten cores have been tested in the disputed lot, the three cores shall be held until ten cores have been tested or the lot is complete, whichever comes first, at which time the pay factor will be calculated.

If the pay factor for the lot that contains the disputed result is 0.95 or greater, and the disputed test result is outside three standard deviations from the mean value of the lot (calculated without using the result of the disputed core), the three cores shall be tested and the average value of the three will be calculated.

If any of these three cores falls outside three standard deviations from the mean value for the lot (calculated without using the result of the disputed core), the original core test value will stand. If the three cores fall within three standard deviations of the mean value the average of the three cores will be used as the core result for the disputed sublot.

If the three cores are not used, the Contractor shall pay for the cost of testing.

3.18.4.3 Pavement Thickness. The thickness requirements contained herein shall apply only when each pavement layer is specified to be a uniform thickness greater than 3/4" The thickness of each layer of hot asphalt mix will be measured in conformance to ASTM D 3549 to determine compliance with the acceptance tolerance. Measurements shall be obtained from cores taken for determining in place air voids of each pavement layer. A leveling course, or the first layer over a gravel or stone base, a milled surface or an existing surface, shall be excluded from thickness measurement.

3.18.4.3.1 Once each thickness measurement has been taken, a thickness index will be calculated. The thickness index is the actual deviation from target divided by the allowable tolerance. This will allow statistical comparisons to be made among measurements based on varying specified thickness. Thickness indexes will be established for the sole purpose of calculating pay factors. Thickness index shall be calculated under the following equation using the specification limits in Table 401-8.

$$TI = (M - ST)/T$$

where: TI = Thickness Index
ST = Specified Thickness
M = Measured Layer Thickness from Core
T = 15% x ST, but no less than 1/4"

Table 401-8 -Thickness Index Acceptance Limits

	TARGET	LSL	USL
Thickness Index	0.00	-1.00	+1.00

3.18.4.3.2 Disputed Thickness If a Contractor believes that a thickness result is invalid for whatever reason, the Contractor shall notify the Engineer of this in writing within 24 hours of being informed of the test result. After being informed of the disputed result, the Engineer will select three random core locations in the disputed sublot. In the presence of the Engineer, the Contractor shall cut the cores at the selected locations and place them in secured containers for testing. The Contractor shall deliver these cores to the Department testing technicians at the Laboratory. If there are 10 or more cores already tested to date, the pay factor for thickness in the lot will be calculated (without using the result of the disputed core). If less than ten cores have been tested in the disputed lot, the three cores shall be held until ten cores have been tested or the lot is complete, whichever comes first, at which time the pay factor will be calculated.

If the pay factor for the lot that contains the disputed result is 0.95 or greater, and the disputed test result is outside three standard deviations from the mean value of the lot (calculated without using the result of the disputed thickness), the three cores shall be measured and the average value of the three will be calculated.

If any of these three cores falls outside three standard deviations from the mean value for the lot (calculated without using the result of the disputed core), the original thickness test value will stand. If the three cores fall within three standard deviations of the mean value, the average of the three measurements will be used as the thickness for the disputed sublot.

If the three cores are not used, the Contractor shall pay for the cost of testing.

3.18.4.4 Ride Smoothness.

3.18.4.4.1 The Contractor shall furnish and have available a 10 ft., light weight metal straightedge with a rectangular cross section of 2" x 4" at the paver at all times during paving operations. All courses shall be tested with the straightedge laid parallel or perpendicular to the centerline and any variations from a true profile or cross slope exceeding 3/16" shall be satisfactorily eliminated. The finished surface of the pavement shall be uniform in appearance, free from irregularities in contour and shall present a smooth-riding surface.

3.18.4.4.2 A GM type profilometer will be furnished by the Department for determination of pavement smoothness. This device provides a Ride Number in both wheel paths that are averaged to produce a ride number for the surface tested. In the event the Engineer feels that there is a significant difference in the wheel path profiles, a Ride Number evaluation of the individual wheel paths will be made. The surface will be tested within 30 days after the surface course and pavement markings for each discrete section of the project are complete. Immediately before testing, the Contractor will ensure the surface is entirely free from any foreign matter that may affect the test results. No special considerations will be given to criteria such as degree of curve and vertical geometry. Ride Number will be calculated to the nearest one hundredth for each 0.1-mile segment.

3.18.4.4.3 Profilometer testing will include all mainline paving including bridges with lanes at least 11 feet wide. Testing will begin 20 feet after the approach joint and end 20 feet before the departure joint. The pavement will not be evaluated over bridge expansion joints, tapers, raised pavement markings, and sections less than 0.1 mile in lane length.

3.18.4.4.4 All areas with bumps or high points exceeding 0.3" in 25 feet shall be corrected by removal of a minimum of 1" of the full lane width by the length required (a minimum of 100 feet) and replaced at the Contractor's expense.

3.18.4.4.5 The Ride Number average of all sublots will be used to determine the final pay factor. The final pay factor shall not exceed 1.05 and will be computed as follows:

For Level 1 Projects: (Ride Number 4.20)
Pay Factor = RN (0.5)-1.1

For Level 2 Projects: (Ride Number 4.14)
Pay Factor = RN (0.5682) – 1.3523

3.18.4.4.6 A final Ride Number shall be established after the surface course is completed and striped. Separate completed sections of a project will be evaluated before the entire surface course is completed. Any sublot with a ride number less than 3.7 shall be repaired or replaced.

3.18.4.4.6.1 Any sublot that has an individual wheel path ride number less than 3.7 shall be repaired or replaced. The repair treatment shall be for the full width of the lane. Sublots that have been repaired or replaced shall be reevaluated for ride smoothness and then averaged with all other sublots to determine the final project pay factor. Construction joints resulting from repairs or replacement will be included.

3.18.4.4.6.2 Level 1 will generally be all interstate and limited access highways with the following exception:

(a) A single course overlay that has a before ride number average of less than 4.00.

3.18.4.4.6.3 Level 2 will generally be all other highways with the following exceptions:

(a) Where the surface course must be constructed in short sections (< 3 sublots).
(b) Projects shorter than one half mile in length.
(c) Projects with a posted speed of 35 MPH or less.
(d) Projects with many driveways and/or cross roads with constant traffic.
(e) District resurfacing projects.

3.18.4.5 Cross Slope.

3.18.4.5.1 Cross slope will be measured once per sublot (see Table 401-4) behind the paver after final rolling of the surface course has taken place. Cross slope will only be evaluated when specific slopes and superelevations are shown on the plans for the entire project. Only travel lanes will be evaluated for cross slope. Measurements will be taken only in areas of normal tangent or full bank curves on even stations. Measurement shall take place utilizing one of the following methods, and shall be agreed upon by both parties: "digital read" level and 10 to 12 foot straightedge; "bubble" level, ruler, and 10 to 12 foot straightedge; transit; or electronic positioning equipment as approved by both Contractor and Department. If a straightedge is employed, perpendicularity shall be assured with the use of a right angle prism or other method acceptable to both parties. If a "bubble" or "digital read" level is employed, a second reading 180 degrees to the first shall be made and recorded, and the two shall be averaged for the test result. Measurement data shall be shared between parties within 24 hours of measurement.

3.18.4.5.2 Once a cross slope percentage has been measured, a cross slope index (CSI) will be calculated. The target cross slope shall be defined as the cross slope shown on the plans or as ordered to the nearest tenth of a percent. The CSI is the actual deviation from the target divided by **0.40** percent, which is the tolerance used for pay factor calculation only. This will allow statistical comparisons to be made among measurements based on varying specified cross slopes. The CSI will be established for the sole purpose of calculating pay factors. The CSI shall be calculated under the following equation using the specification limits in Table 401-10.

$$CSI = \frac{(M - SCS)}{T}$$

where: CSI = Cross Slope Index
SCS = Specified Cross Slope in percent
M = Measured Cross Slope in percent
T = 0.40

Table 401-10 - Acceptable Quality Level Limits

	TARGET	LSL	USL
Cross Slope Index	0.00	-1.00	+1.00

3.18.4.5.3 If three or more consecutive cross slope sublot measurements on the pavement lift used to calculate the pay factor deviate more than 0.5 (in percent) from the specified cross slope value at those locations, those sublots will be considered to exceed the engineering limit of 0.5%. The Contractor shall submit a corrective action plan for approval by the Engineer for cross slope sublots that exceed this limit.

3.18.4.5.4 After the approved corrective action plan is implemented, the sublots will be measured to ensure compliance, but will not be re-measured for the purpose of re-calculating pay factor. Alternatively, the Contractor may submit a written request for acceptance of the material at a negotiated price. The Engineer will determine whether the material may remain in place at the negotiated price.

3.18.4.6 Rejection of Material.

3.18.4.6.1 An Individual Sublot. For any sublots with any test results exceeding the specified reject limits, the Engineer will:

(a) Require complete removal and replacement with hot asphalt mix meeting the Contract requirements at no additional expense to the department, or
(b) Require corrective action to the satisfaction of the Engineer at no additional expense to the Department.

3.18.4.6.2 A Lot in Progress. The Engineer will shut down paving operations whenever:

(a) The pay factor for any property drops below .90 and the Contractor is taking no corrective action, or
(b) Three consecutive tests show that less than 50 percent by weight of the particles retained on the No. 4 sieve have at least one fractured face.

Paving operations shall not resume until the Engineer determines that material meeting the Contract requirements can be produced. Corrective action will be considered acceptable by the Engineer if the pay factor for the failing property increases. If it is determined that the resumption of production involves a significant change to the production process, the current lot will be terminated and a new lot will begin.

3.18.4.6.3 Remeasure and Retest. All requests to the Engineer to remeasure and retest a sublot shall be in writing.

Method of Measurement

4.1 Asphalt pavement mixture will be measured by the ton to the nearest 0.1 ton, and in accordance with 109.01. Batch weights will be permitted as a method of measurement only when the provisions of 3.8.3 are met, in which case, payment will be based on the cumulative weight of all the batches. The quantity will be the weight used in the accepted pavement, and no deduction will be made for the weight of asphalt binder or additives in the mixture.

4.1.1 No separate measurement will be made for lighting necessary or overtime required due to night operations at the plant or at the site.

4.1.2 Due to possible variations in the specific gravity of the aggregates, and to possible field changes in areas to be paved, the quantity used may vary from the proposal quantities, and no adjustment in Contract unit price will be made because of such variations.

4.2 Asphalt pavement, removed because of faulty workmanship or contamination by foreign materials, will not be included in the pay quantity.

4.3 Blank.

4.4 Joint adhesive will be measured by the linear foot for each lift of pavement to be placed, to the nearest foot of adhesive applied. If the Contractor chooses to pave in echelon in lieu of using joint adhesive, payment for the length of joint eliminated by the echelon paving will be made.

4.5 Echelon paving, when specified or approved, will be measured by the linear foot along the shared edge of the mats being simultaneously placed.

Basis of Payment

5.1 All work performed and measured as prescribed above will be paid for at the Contract unit price as provided in the respective sections for each type specified.

5.2 Tack coat material ordered under 3.10.5 will be paid as provided for in Section 410.

5.3 Blank.

5.4 Plant or project site lighting for hot bituminous pavement, machine or hand method, or overtime required due to night operations will be subsidiary to the paving items.

5.5 Asphalt cement additives will be subsidiary to the paving items.

5.6 Implementation of the Quality Control Plan and costs associated with obtaining core samples for acceptance testing shall be subsidiary. When items are to be accepted under Quality Assurance provisions, pay adjustment will be made in accordance with 106.03.2.4 as specified below.

5.6.1 Gradation composite pay factor (CPF). The total price for each lot will be adjusted by a composite pay factor (CPF) based on the gradation of the material after extraction using the pay factors for each sieve size and the sieve size weight factors in Tables 401-11, 11a & 11b.

Table 401-11 - Sieve Size Weight Factors 1”

Property		Weight Factor “f”
	1/2”	6
	#30	4
Gradation (each sieve)	#8 and #200 sieves	8
	All other sieves (each)	2

Table 401-11a - Sieve Size Weight Factors 3/4”

Property		Weight Factor “f”
	3/8”	6
	#30	4
Gradation (each sieve)	#8, and #200 sieves	8
	All other sieves (each)	2

Table 401-11b - Sieve Size Weight Factors 1/2” and 3/8”

Property		Weight Factor “f”
	No. 4	6
	#30	4
Gradation (each sieve)	#8, and #200 sieves	8
	All other sieves (each)	2

$$\text{Composite Pay Factor (CPF)} = \frac{[f_1(PF_1) + f_2(PF_2) + \ldots f_j(PF_j)]}{\Sigma f}$$

5.6.2 Pay Adjustment. The pay adjustment for each measured characteristic will be determined by the following equation:

$$PA_j = (Pf_j - 1)\frac{f_j}{\sum f}(Q)(P)$$

where: PA = Pay adjustment payment in dollars for each characteristic.
Pf = Pay factor or composite pay factor for each characteristic.
f = Weight factor from Table 401-12 for each characteristic.
$\sum f$ = Sum of weight factors.
Q = Quantity computed from all accepted delivery records for the lot.
P = Contract unit price per ton.

Table 401-12 – Tier 1 Weight Factors

Measured Characteristic	Weight Factor "f"
Gradation	0.15
Asphalt Binder Content	0.15
In Place Air Voids	0.20
Thickness	0.08
Cross Slope	0.12
Ride Smoothness	0.30

Table 401-13 – Tier 2 Weight Factors

Measured Characteristic	Weight Factor "f"
Gradation	0.25
Asphalt Binder Content	0.25
In Place Air Voids	0.5

5.6.3 Pay adjustment, Hot Bituminous Pavement QC/QA Items. The pay adjustment for gradation, cross slope, thickness, asphalt binder content, in place air voids, and ride quality (made up of the sum of all sublots) will be applied to Item 1010.3. Pay adjustments may be applied at the end of each month based on all available test results for each lot.

5.7 The accepted quantity of joint adhesive of type specified will be paid for at the Contract unit price per linear foot complete in place.

5.7.1 Recoating of the joint, as described in 3.13.5, shall be at the Contractor's expense.

5.7.2 When echelon paving is used in lieu of joint adhesive and the item is not included in the contract, the accepted quantity will be paid for at the price of joint adhesive under Item 403.6.

5.8 The Material Transfer Vehicle (MTV) Item will be paid for at the Item Bid Price per ton for the tons of bituminous mixture actually transferred by the MTV.

5.9 The accepted quantity of echelon paving will be paid for at the Contract unit price per linear foot complete.

5.9.1 If the Contractor chooses to pave in echelon in lieu of pavement joint adhesive, and the item is not in the contract, echelon paving will be paid as stated in 5.7.

APPENDIX A

NHDOT Test Procedure B-7

Sampling Bituminous Paving Mixtures for Acceptance Testing

Sample shall be taken behind the paver after placement and before compaction.

Sample location will be randomly selected by the Contract Administrator.

When paving over aggregate base course or cold planed surface, use a rectangular metal plate no less than 12" each side. Center plate on sample location.

After paver passes over plate, measure back to sample location.

Locate the edges of the plate.

Using a flat-bottomed scoop large enough to obtain up to a 3000 gram sample, place scoop on plate and push across the mat (perpendicular to the center line), through the center of the plate, filling the scoop to obtain the sample size specified below.

Required Sample Size

Base Courses	2000-3000 grams
Binder Courses	1500-3000 grams
Surface Courses	1000-3000 grams
Sand Courses	500-3000 grams

When sampling over an existing pavement, the plate is not required.

NHDOT Procedure B-8

Sampling and Testing

Procedure for In Place Air Voids

Cores will be taken at random locations selected by the Contract Administrator.

Cores shall be delivered intact by the Contractor to the Department's inspector at the Laboratory.

If Cores are lost or damaged, new cores shall be taken at the same location as the previous cores.

Cores shall be measured for thickness following ASTM D 3549.

Bulk specific gravity shall be determined by AASHTO T 166a.

Maximum Theoretical Density will be determined using the core by AASHTO T 209.

In Place Air Voids shall be determined by AASHTO T 2.

SUPPLEMENTAL SPECIFICATION

AMENDMENT TO SECTION 403 – HOT BITUMINOUS PAVEMENT

Purpose: To expand the HBP paving items to include the mix type in the in the item description (07/27/20 & 07/01/21). This update also to removes all references to night items and "percent wear" pay items (06/06/17).

Delete Section 1.3.

Amend Section 4.1.1 to read:

4.1.1 Hot Bituminous pavement transferred by the Material Transfer Vehicle (MTV) will be measured as prescribed in 401.4.

Amend Section 5.1.1 to read:

5.1.1 Blank.

Amend Section 5.2 to read:

5.2 Bridge surface course will be paid under machine method.

Replace Pay items and units with the following:

Key:
403. A B C D E

A Surface Type/Miscellaneous
1 Roadway
2 Bridge

B Placement Method

1	Machine Method	Ton
2	Hand Method	Ton
6	Pavement Joint Adhesive	Linear Foot
8	Leveling	Ton
9	Temporary	Ton

C Asphalt Type
0 Standard (as specified by Special Provision)
8 Polymer Modified (as specified by Special Provision)
9 High Strength

D Mix Type
0 Special (as specified by Special Provision)
1 1" Base Mix
2 3/4" Binder Mix
3 3/4" Winter Binder Mix
4 1/2" Surface Mix
5 3/8" Surface Mix
6 #4 Surface Mix

E QC/QA Tier or Method
1 Tier 1
2 Tier 2
3 Method

3 Blank
4 Material Transfer Vehicle (MTV) Ton
5 Blank
6 Echelon Paving Linear Foot
7 Blank
8 Blank
9 Blank

Examples:

Method

403.11013	HBP-1” Base Mix, Machine Method	Ton
403.11023	HBP-3/4” Binder Mix, Machine Method	Ton
403.11033	HBP-3/4” Winter Binder Mix, Machine Method	Ton
403.11043	HBP-1/2” Surface Mix, Machine Method	Ton
403.11053	HBP-3/8” Surface Mix, Machine Method	Ton
403.12	HBP-Hand Method	Ton
403.x19x3	HBP- _____, Machine Method, High Strength	Ton
403.11963	HBP-#4 Surface Mix, Machine Method, High Strength	Ton
403.18	HBP-Leveling Course	Ton
403.19	HBP-Temporary	Ton
403.21053	HBP-3/8” Mix, Machine Method (Bridge Base)	Ton
403.29	HBP-Temporary (Bridge)	Ton

QC/QA

403.11011	HBP-1” Base Mix, Machine Method, QC/QA Tier 1	Ton
403.11012	HBP-1” Base Mix, Machine Method, QC/QA Tier 2	Ton
403.11021	HBP-3/4” Binder Mix, Machine Method, QC/QA Tier 1	Ton
403.11022	HBP-3/4” Binder Mix, Machine Method, QC/QA Tier 2	Ton
403.11031	HBP-3/4” Winter Binder Mix, Machine Method, QC/QA Tier 1	Ton
403.11032	HBP-3/4” Winter Binder Mix, Machine Method, QC/QA Tier 2	Ton
403.11041	HBP-1/2” Surface Mix, Machine Method, QC/QA Tier 1	Ton
403.11042	HBP-1/2” Surface Mix, Machine Method, QC/QA Tier 2	Ton
403.11051	HBP-3/8” Surface Mix, Machine Method, QC/QA Tier 1	Ton
403.11052	HBP-3/8” Surface Mix, Machine Method, QC/QA Tier 2	Ton
403.x18xx	HBP-_____, Machine Method, Polymer Modified, QC/QA Tier X	Ton
403.x19xx	HBP-_____, Machine Method, High Strength, QC/QA Tier X	Ton

Other

403.16	Pavement Joint Adhesive	Linear Foot
403.26	Pavement Joint Adhesive (Bridge Base)	Linear Foot
403.4	Material Transfer Vehicle (MTV)	Ton
403.6	Echelon Paving	Linear Foot
1010.3	Quality Control/Quality Assurance (QC/QA) for Asphalt	Dollar

SUPPLEMENTAL SPECIFICATION

AMENDMENT TO SECTION 410 – BITUMINOUS SURFACE TREATMENT

The purpose of this Supplemental Specification is to:

- *Adopt new AASHTO specifications for emulsions (2.1 – 04/13/16)*
- *Revise the pavement conditions and application rates for tack (3.4.1.1 – 01/04/17)*
- *Identify tack sampling and penalties for non-conformance (2.1.1, 2.1.2, 3.2, 3.3, 3.4, 06/06/17)*
- *Amend distribution equipment and initiate an annual tack truck inspection program (3.2, 3.5.2, 07/06/18)*

Amend 2.1 to read:

2.1 Bituminous material shall be the type and grade specified or ordered and shall conform to the requirements of AASHTO M 140 or M 208, except as amended in Section 702.

Amend 3.2, 3.3, and 3.4 to read:

3.2 Equipment.

General equipment requirements for this work shall be as follows:

(a) Tack distribution trucks shall have a minimum GVW of 26,000 lbs and shall be equipped with a storage tank of 1,200-gallon minimum capacity.

(b) A tack distribution system shall be designed, equipped, maintained, and operated such that bituminous material at even heat (150° F) may be applied uniformly on variable widths of surface up to 12’ at readily determined and computer-controlled rates with uniform pressure. Distributor equipment shall include: a tachometer, pressure gauges, accurate inside and outside volume measuring devices, and an exterior thermometer for measuring temperatures of tank contents. Distributors shall be equipped with a power unit for the pump and with full circulation spray bars adjustable laterally and vertically from the truck cab. The spray bar shall contain spray nozzles providing a fan-shaped spray pattern adjusted so the vertical axis is perpendicular to the pavement surface. The spray pattern and spray bar height shall be adjusted to provide a uniform application of the tack coat [double coverage should be avoided for seal coats; overlapping coverage is required for tack coats]. The distributor shall be equipped with a mechanical device to adjust the spray height as material is discharged to keep a uniform height above the pavement for full coverage with the correct overlap. The distributor shall also be equipped with a hand-held spray attachment and 25’ hose for applying the material to areas inaccessible to spray bars and to fill in irregular areas to provide full coverage. Approved sampling valves shall be installed in distributors and transport tank trucks to permit the taking of representative samples of the contents. The recommended location of the sampling valve is in the rear bulkhead of the tank, roughly one-third of the height above the bottom. The inlet pipe shall project into the contained liquid as shown in ASTM D 140.

(c) A rotary power broom shall be required unless the equipment listed under (d) is provided.

(d) In urban and/or curbed sections, a vacuum truck or street sweeper shall be provided.

(e) For seal coat applications only:

i A steel-wheeled roller.

ii A self-propelled pneumatic-tired roller.

iii A sand spreader capable of spreading blotter material in sufficient quantity to prevent traffic pickup of the applied bituminous material.

iv A steel-brush drag of an approved type.

3.2.1 Only certified tack distributors will be allowed. Vehicles and equipment will be subject to a yearly inspection by June 1st by the NHDOT Paving Specialistwhich will include field verification of spray patterns. Yearly inspection shall be arranged with a ten working day notification. Approved vehicles will receive a seal certifying the tack distributor for that year.

3.2.2 Sampling. Tack shall be sampled as directed by the Engineer using new non-metal sample containers provided by the Engineer. Samples shall be taken by the operator in the presence of the Engineer. At least 1 qt. of material shall be drained off through the sampling valve and discarded before the sample is taken. To prevent the loss of solvents, containers shall be sealed with a tight fitting cover immediately after being filled and provided to the Engineer for testing. Any tack that is found to be out of specification will result in non-payment for all tack applied on the date the tack is sampled.

3.2.2.1 Non-conforming tack will be evaluated by the Engineer to determine if overlying pavement should remain in place. Any pavement left in place shall not relieve the Contractor of the responsibility for latent defects and/or gross mistakes in the pavement layer above it as outlined in section 107.14.

3.3 Surface Preparation for Tack Coat. The existing surface shall be patched and shall be free of irregularities to provide a reasonably smooth and uniform surface to receive the treatment. Unstable corrugated areas shall be removed and replaced with suitable patching materials. The edges of existing pavements that are to be adjacent to new pavement shall be cleaned to permit the adhesion of bituminous materials.

3.4 Application of Tack Coat.

3.4.1 Bituminous material shall be uniformly applied with an approved applicator. When ordered, a pressure distributor shall be used. The tack coat shall be applied in such a manner as to offer the least inconvenience to traffic and to permit one-way traffic without pickup or tracking of the bituminous material.

3.4.1.1 A tack coat shall be applied immediately prior to placement of pavement. The rate of application of emulsified asphalt shall be between 0.02 and 0.06 gal/yd^2, based on the application rate table below. The Engineer may further modify the rate depending on the relative absorbance and texture of the pavement surface.

Existing Pavement Condition	Application Rate in Gal/yd^2
Smooth HMA	0.02 – 0.04
Milled HMA	0.04 – 0.06

Amend 3.5.2 to read:

3.5.2 Blotter material at the rate ordered shall be applied before the bitumen has set; the entire treated surface shall be dragged, rolled and maintained. The remaining blotter material shall be removed with a power broom.

Amend 5.1 to read:

5.1 The accepted quantities of bituminous surface treatment will be paid for at the Item Bid Price per ton for bituminous material, complete in place.

Add Section 5.2.2

5.2.2 The quantity of tack coat used on the day represented by a non-conforming test sample will not be paid.

S U P P L E M E N T A L S P E C I F I C A T I O N

AMENDMENT TO SUBSECTION 520 – PORTLAND CEMENT CONCRETE

The purpose of this Supplemental Specification:

- *Amend the delivery temperature for Cast-in-Place concrete to match the Precast specifications (3.8.1.1, 04/02/18).*
- *Revise NETTCP QA Technologist requirements (3.1.6.2.1.2 A, 11/07/18).*

Amend 3.1.6.2.1.2 A to read:

3.1.6.2.1.2 The Plan shall include the following personnel performing the described functions and meeting the following minimum requirements and qualifications:

A. **Plan Administrator** shall meet one of the following qualifications:

(a) Professional Engineer licensed in the State of NH with one year of highway experience acceptable to the Department and proof of past certification as a NETTCP QA Technologist.

(b) Engineer-In-Training with two years of highway experience acceptable to the Department and hold current certification as a NETTCP QA Technologist.

(c) An individual with three years highway experience acceptable to the Department and with a Bachelor of Science Degree in Civil Engineering or an Associate's Degree in Civil Technology or Construction and hold current certification as a NETTCP QA Technologist.

Amend 3.8.1.1 to read:

3.8.1.1 The temperature of the concrete shall not exceed 90° F when placed in the forms. This may require the addition of ice to mixing water, sprinkling the forms and reinforcing steel, scheduling the concrete placements for early morning or evening hours, or any other approved methods.

S U P P L E M E N T A L S P E C I F I C A T I O N

AMENDMENT TO SUBSECTION 606 – GUARDRAIL

The purpose of this Supplemental Specification is to:

- *Add specific references to AWPA Standards and modify preservation requirements for wooden guardrail posts (04/02/18)*
- *Update Preformed Expansion Joint Filler Requirements (04/02/18)*
- *Update Corrosion Inhibitor Requirements (04/02/18)*

Amend 2.2 to read:

2.2 Preservative Treatment.

2.2.1 All wood posts, blocks and rails shall be pressure treated with preservative materials conforming to the requirements of AASHTO M 133, which includes AWPA Standards by reference.

2.2.2 The type of treatment shall be one of the following per AASHTO M 133 and AWPA:

Treatment
Type A Pentachlorophenol
Water-Borne Preservative

2.2.3 All wood posts and rails shall be treated after sawing and drilling or retreated after drilling in accordance with AASHTO M 133 and AWPA.

Amend 2.6.5 to read:

2.6.5 Preformed Expansion Joint Filler shall conform to AASHTO M 153, Type III (self-expanding cork) AASHTO M 213 (non-extruding and resilient bituminous types), or ASTM D8139 (semi-rigid, closed cell polypropylene foam).

Amend 3.4 to read:

3.4 Wood rail. Wood rail shall be constructed as shown on the plans. Wood surfaces cut or damaged shall be brush treated with 2 applications using preservatives specified in AWPA M4.

Amend 3.7.1.5 to read:

3.7.1.5 Concrete shall contain corrosion inhibitor (calcium nitrate) admixture added at the rate of 2 gallons per cubic yard.

S U P P L E M E N T A L S P E C I F I C A T I O N

AMENDMENT TO SECTION 702– BITUMINOUS MATERIALS

The purpose of this Supplemental Specification is to adopt new AASHTO specifications for emulsions.

Amend Section 702 to read**:**

Table 702-1 – Anionic Asphalt Emulsion

	Rapid-Setting						**Medium Setting**							
Grade	RS-1h		RS-1		RS-2		HFMS-2		MS-4		MS-5			**Test Method**
Tests on emulsified asphalt:	min	max	min	max	min	max	min	max	min	max	min	max		
Viscosity, Saybolt Furol at 25°C (77° F), s[a]	20	100	20	100					50	500	50	500		T59
Viscosity, Saybolt Furol at 50°C (122° F), s[a]					75	400	100 see (d)							
Storage stability test, 24 h, %[a,b]		1.0		1.0		1.0		1.0		1.0		1.0		
Demulsibility, 35 mL, 0.02 *N* $CaCl_2$, %[a]	60		60		60									
Coating ability and water resistance														
Coating, dry aggregate							good		75%		75%			
Coating, after spraying							fair		see (e) (f)		see (e) (f) (g)			
Coating, wet aggregate							fair							
Coating, after spraying							fair							
Sieve test, %[a,b]		0.10		0.10		0.10		0.10		0.10		0.10		
Distillation														
Oil distillate, %									2.0	7.0	0	3.0		
Residue, %[c]	55		55		65		65		65		65			
Tests on residue from distillation:														
Penetration, 25°C (77°F), 100 g, 5 s, 0.1 mm	40	90	90	150	90	150	90	250	200		150	250		T49
Ductility, 25°C (77°F), 5 cm/min, cm	40		40		40		40							T51
Ash content, %		1.0		1.0		1.0		1.0						T111
Float test, 60°C (140°F), s							1200		50		100			T50

Table 702-2 -- Cationic Asphalt Emulsion

Type	Rapid-Setting				
Grade	CRS-1h		CRS-1		
Tests on emulsified asphalt:	min	max	min	max	**Test Method**
Viscosity, Saybolt Furol at 50°C (122°F), s[a]	20	100	20	100	T59
Storage stability test, 24-h, %[a,b]		1		1	
Sodium dioctyl sulfosuccinate, %[a]	40		40		
Particle charge test	Positive		Positive		
Sieve test, %[a,b]		0.10		0.10	
Distillation:					
Oil Distillate by volume of emulsified asphalt, %		3		3	
Residue, %[c]	60		60		
Tests on residue from distillation:					
Penetration, 25°C (77°F), 100 g, 5 s, 0.1 mm	40	90	90	150	T49
Ductility, 25°C (77°F), 5 cm/min, cm	40		40		T51
Ash content, %		1		1	T111

Footnotes:

a. This test requirement and associated specification limits are waived for emulsified asphalt products following dilution
b. This test requirement on representative samples may be waived if successful application of the material has been achieved in the field.
c. For emulsions that are diluted, the percent residue requirements must be adjusted accordingly.
d. 50 + when material is used for sealing.
e. Wet Coating: Weigh 100 ± 0.5 g of aggregate, 20 to 30 mesh (0.85 to 0.60 mm) standard Ottawa sand, into a 600 mL glass beaker and add soft tap water, approximately twice the volume of that of sand. Weigh into the beaker containing the sand and water 8 ± 0.2 g of the emulsion at room temperature and mix for two minutes with a stiff spatula. Cover the mixture with approximately twice its own volume of tap water and pour the water off without further mixing. Repeat this process. After the second rinse, at least 75 percent of the sand shall remain coated.
f. Stripping: After evaluating the wet coating, place the mixture into a clear 600 mL glass beaker, cover the mixture with tap water, let stand for 1 to 16 hours, and examine. At least 75 percent of the sand shall remain coated.
g. The coating and stripping tests may be waived when MS-5 is used for sand sealing.

12/4/2023

EXETER
LINDEN STREET BRIDGE 081/046

December 4, 2023

S P E C I A L P R O V I S I O N

AMENDMENT TO SECTION 401 – PLANT MIX PAVEMENTS – GENERAL

This special provision provides clarification on the use of reclaimed asphalt pavement and neither amends nor modifies the provisions of this section except as stated herein.

Amend 2.10.1 to read:

2.10.1 The use of reclaimed asphalt pavement (RAP) is not permitted.

December 4, 2023

S P E C I A L P R O V I S I O N

SECTION 505 – SOIL ANCHORS

Item 505.6 –Soil Anchors
Item 505.7 – Concrete Facing

Description

1.1 This work shall consist of the design, procurement, and installation of the soil anchors for the project.

1.2 The proposed soil anchor design and layout presented on the Contract Plans was developed schematically for permitting and bidding purposes only. The final layout, anchors and associated components shall be designed by a Professional Engineer licensed to practice in the State of New Hampshire and hired by the Contractor. Hereafter referred to as the "Designer".

1.3 The Contractor and Designer, at their sole discretion, may propose and design an alternative soil anchor system provided it meets the requirements of the NHDES Permit and project requirements outlined in the contract documents.

Materials

2.1 The Designer shall be responsible for specifying and accepting all materials required for the soil anchors prior to construction. Materials shall conform to the requirements as listed in the contract documents and as specified by the Designer. In the event there is a discrepancy between documents, the NHDOT Standard Specifications shall be used to resolve the discrepancy.

2.1.1 **Certification and Material Requirements**. Certification of materials used in the construction of the wall shall meet the requirements of NHDOT Standard Specification 106.04. and all applicable sections of this specification. Materials for construction of soil anchored walls shall be furnished new and without defects. Defective materials shall be removed from the job site by the Contractor at no additional cost to the Owner.

2.2 Permanent Anchor Bar

2.2.1 All permanent steel anchor bars shall be straight shaft-deformed, continuous threaded-bar, new, straight, undamaged, hot-dipped galvanized OR with full

length fusion-bonded epoxy coating or encapsulation, and of the size and type indicated on the plans.

2.2.2 Permanent anchor bars shall be AASHTO M 31/ASTM A 615 Grade 60 steel, and shall be a single length continuous thread, ¾-inch diameter (#6 bar) minimum without splices or welds.

2.3. Anchorage Assembly

2.3.1. Anchorages shall be capable of developing a minimum of 100 percent of the guaranteed minimum ultimate tensile strength of the steel thread bar.

2.3.2. The bearing plate shall be fabricated from Grade A36 steel and shall be capable of developing a minimum of 100 percent of the guaranteed minimum ultimate tensile strength of the anchor bar.

2.3.3. All bearing plates, nuts, washers, etc. shall be hot-dipped galvanized OR fusion bonded epoxy corrosion protection.

2.3.4. Centralizers are required and shall be fabricated from Schedule 40 mil PVC, or other material not detrimental to the anchor steel (wood shall not be used) and shall be capable of being securely attached to the anchor bar. The centralizers shall be sized to meet the tolerance requirements for anchor locations and grout cover defined in Section 3.9 and for grout pipe installation defined in Section 3.10.

2.4. Cement Grout

2.4.1. Anchor grout shall be a non-shrink neat cement or sand/cement with a maximum water to cement ratio of 0.45 by weight, a minimum three-day compressive strength of 2,500 psi and a minimum 28-day compressive strength of 5,000 psi per AASHTO T 106/ASTM C 109.

2.4.2. Water for mixing grout shall be potable.

2.4.3. Grout strength accelerators shall not be used. Expansive admixtures shall only be used for secondary grouting and fitting trumpets. Admixtures which control bleed and retard set may be used. Admixtures shall be mixed and placed in accordance with manufacturer's recommendations.

2.4.4. Redesign of the cement grout mix shall be conducted by the Contractor if grout does not have a minimum compressive strength of 2,500 psi in 3 days and 5,000 in 28 days.

2.4.5. Appropriate measures shall be taken to preclude freezing of the grout prior to its reaching design strength.

2.4.6. Cement shall conform to AASHTO M 85/ASTM C 150, Type I, II, or III Portland cement.

2.5. Corrosion Protection

2.5.1. The corrosion protection system for the permanent anchor bars and anchoring system shall be the responsibility of the Contractor subject to the following criteria and guidelines.

2.5.2. All bearing plates, nuts, washers, couplings and hardware, etc. shall be provided with hot-dipped galvanizing OR fusion bonded epoxy coating.

2.5.3. Anchor bars shall be fusion bonded epoxy coated or encapsulated and shall conform to the following:

2.5.4. Fusion bonded epoxy coating shall conform to AASHTO M 284. Epoxy coating shall be electrostatically applied to a minimum 15 mils thickness. The entire length of the bar shall have fusion bonded epoxy coating. Bend test requirements shall be waived.

2.5.5. Encapsulation shall be a factory applied corrosion protection system and shall consist of a minimum 40 mil. corrugated PVC or HDPE sheath installed over the full length of the anchor bar. The annular space between the anchor bar and sheathing shall be filled with cement grout conforming to Section 2.4 of this specification. Portions of the anchor bar that are not fully encapsulated shall have fusion bonded epoxy coating. Corrugated HDPE sheath shall conform to AASHTO M 252 or PVC sheath shall conform to ASTM D 1784 Class 13464-B. Encapsulation shall provide at least 0.2 inches of grout cover over the anchor bar and be resistant to ultraviolet light degradation, normal handling stresses, and grouting pressures. The encapsulation shall be applied at the factory under controlled conditions.

2.5.6. Anchor bars and associated components shall be hot-dipped galvanized in accordance with the provisions of NHDOT Standard Specification Section 550 – Structural Steel, Paragraph 2.9.

2.6. Permanent Wall Weepholes

2.6.1. Weepholes shall consist of a 4-inch PVC pipe conforming to NHDOT Standard Specification 605.2.3.

2.7. Permanent Concrete Wall Facing

2.7.1 Provide a permanent concrete wall facing of cast-in-place concrete OR concrete shotcrete to the wingwalls and abutment breastwalls. The facing shall comply with either Section 2.7.1.1 or Section 2.7.1.2 as described below:

2.7.1.1 Cast-in-Place Concrete

2.7.1.1.1 The cast-in-place concrete facing shall comply with the requirements of NHDOT Standard Specification Section 520 and as indicated on the plans.

2.7.1.1.2 Concrete shall comply with the requirements of NHDOT Class AA Concrete as defined under NHDOT Tables 520-1A and 520-1B.

2.7.1.2 Shotcrete

2.7.1.2.1 Shotcrete shall consist of an application of one or more layers of mortar or concrete conveyed through a hose and pneumatically projected at a high velocity against a prepared surface.

2.7.1.2.1.1 The surface of the shotcrete walls shall provide a smooth surface with vertical control joints placed at 20-foot intervals (maximum). The Contractor shall determine the method required to provide the finished surface. The proposed finish shall be provided on the test panels described under Paragraph 3.13.3 below for review and acceptance by the Owner. The Contractor, at their option, may provide an alternate finish for the finished concrete wall surface at no additional cost to the Owner. Alternate finishes shall be submitted for acceptance by the Engineer and Owner prior to the work.

2.7.1.2.2 Shotcrete shall comply with the requirement of ACI 506.2-94 “Specification for Shotcrete”, except as otherwise specified. Shotcrete shall consist of an application of one or more layers of mortar or concrete conveyed through a hose and pneumatically projected at high velocity against a prepared surface.

2.7.1.2.3 Shotcrete may be produced by either a dry-mix or a wet-mix process. For additional descriptive information, the Contractor's attention is directed to the American Concrete Institute Standard "Guide to Shotcrete (ACI 506R)".

2.7.1.2.4 Cement shall comply with AASHTO M 85/ASTM C 150, Type I, II or III.

2.7.1.2.5 Fine aggregate shall comply with AASHTO M 6/ASTM C 33. Fine aggregate shall be clean, natural sand. Artificial or manufactured sand is acceptable provided it is suitable for pumping in accordance with ACI 304, 4.2.2.

2.7.1.2.6 Accelerating additives shall be fluid type, applied at the nozzle and shall be compatible with the cement used, be non-corrosive to steel and shall not promote other detrimental effects such as cracking and excessive shrinkage and shall not contain calcium chloride. They are to be used in accordance with manufacturers' recommendations. Silica fume, if used, shall not exceed 10 percent of the cement weight and shall be an admixture with a minimum of 90 percent SiO_2 with a proven record of performance for use in shotcrete.

2.7.1.2.7 Water used in the shotcrete mix shall be potable, clean and free from substances which may be injurious to concrete and steel. The water shall also be free of elements which would cause staining.

2.7.1.2.8 Premixed and prepackaged concrete products specifically manufactured as a shotcrete product may be provided for on-site mixed shotcrete if approved. The packages shall contain materials conforming to the materials portion of this specification.

2.7.1.2.9 Shotcrete admixtures shall not be used unless approved. Admixtures used to entrain air, to reduce water-cement ratio, to retard or accelerate setting time, or to accelerate the development of strength, shall be thoroughly mixed into the shotcrete at the rate specified by the manufacturer unless specified otherwise. Accelerating additives shall be compatible with the cement used, be non-corrosive to steel and shall not promote other detrimental effects such as cracking or excessive shrinkage. The maximum allowable chloride ion content of all ingredients shall not exceed 0.10% when tested in accordance with AASHTO T 260.

2.7.1.2.10 Shotcrete shall have a minimum compressive strength at 3 and 28 days of 2000 and 4000 PSI, respectively, when tested in accordance with AASHTO T 106/ASTM C 109. The average compressive strength of each set of three cores extracted must be equal to or exceed 85 percent of the specified compressive strength with no individual core less than 75 percent of the specified compressive strength in accordance with ACI 506.2.

2.7.1.2.11 **Batching and Mixing:** Aggregate and cement may be batched by weight or by volume. Mixing equipment shall be capable of thoroughly mixing the materials in sufficient quantity to maintain placing continuity. Ready mix shotcrete shall comply with AASHTO M 157. Shotcrete shall be batched, delivered and placed within 90 minutes of mixing unless otherwise approved.

2.7.1.2.12 Aggregate for shotcrete shall meet the strength and durability requirement of AASHTO M 80 and M 43 and shall meet the following gradation requirements:

Sieve Size	Percent Passing by Weight
1/2 inch	100
3/8 inch	90-100
No. 4	70-85
No. 8	50-70
No. 16	35-55
No. 30	20-35
No. 50	8-20
No. 100	2-10

2.7.1.2.13 Coarse aggregate shall conform to AASHTO M 80, Class B for quality.

2.7.1.2.14 Water reducer and superplasticizer shall comply with AASHTO M 194 Type A,D,F,G or ASTM C 494 Type A,D,F,G.

2.7.1.2.15 Air - entraining agents shall comply with AASHTO M 194/ASTM C 260.

2.7.1.2.16 Plasticizers shall conform with AASHTO M 194, Type A,D,F or G ASTM C 494.

2.7.1.2.17 Mineral admixtures shall conform to the following:

Fly Ash - AASHTO M 292, ASTM C 618 Type F or C.

Silica Fume - ASTM C 1240, 90 percent minimum silicon dioxide solids content, not to exceed 10 percent by weight of cement.

2.7.1.2.18 Curing compounds shall comply with AASHTO M 148 Type ID of Type 2

2.7.1.2.19 Steel Reinforcement shall conform to ASTM A 615, GR 60.

2.7.1.2.20 Prepackaged concrete shall comply with ASTM C 928.

Construction Requirements

3.1 Contractor Qualifications

The work defined in this Section is specialty construction requiring a specialty contractor who is highly knowledgeable and experienced in the fabrication and installation of soil anchors. The Contractor performing the work in this Section shall submit proof of three projects within five years on which the Contractor has successfully installed permanent soil anchors of similar types and capacities required for this project. A brief description of each project with the owner's name and current phone number shall be included.

3.1.1 The Contractor shall provide an experienced supervising engineer with at least 3 years of experience in the construction of permanent soil anchor walls. The Contractor's supervising engineer shall always be present during execution of this portion of the work and shall be thoroughly experienced with materials being installed, reference standards, and requirements of this work. Drilling operators and foremen shall have a minimum of 2 year's experience installing permanent soil anchors of similar types and capacities required for the project.

3.1.2 Designer Qualifications: The Designer shall be a Professional Engineer licensed to practice in the State of New Hampshire who is knowledgeable and experienced in the design and detailing of soil anchors. The Contractor shall submit proof of three projects the Designer has successfully designed which have been installed.

3.1.3 Shotcrete Nozzlemen Qualifications: All nozzlemen on this project shall have at least one year of accumulative experience in the past three years in similar shotcrete application work and shall demonstrate the ability to satisfactorily place the material. Qualification of the nozzleman shall also be based on a visual inspection of the shotcrete density and void structure and on achieving the specified 3-day and 28-day compressive strength requirements determined from the average test results from three cores extracted from each preconstruction and production test panel.

3.1.4 As part of the work plan submittal, the Contractor shall submit a list identifying the superintendent, drill rig operators, nozzlemen's qualifications and on-site supervisors assigned to the project. The list shall contain a summary of everyone's experience and shall be sufficiently completed to evaluate the individual's qualifications. The Contractor shall not use consultants' or manufacturer's representatives to satisfy the requirements of this section. The Engineer will accept or reject the Contractor's qualifications within 15 days after receipt of a complete submission. Work shall not be started, nor materials ordered until written acceptance of the Contractor's qualifications is given.

3.1.5 The Engineer may suspend the work if the Contractor substitutes non-acceptance personnel for acceptance personnel. The Contractor shall be fully liable for additional costs resulting from the suspension of work and no adjustments in the contract time resulting from the work suspension shall be allowed.

3.2 Design Requirements

The anchors shall be designed in accordance with the AASHTO LRFD Bridge Design Specifications, 9th Edition as amended, the NHDOT Bridge Design Manual, current edition, along with design criteria established and information provided on the contract plans and within this document.

3.3 Submittals

3.3.1 Submittals shall be made in accordance with Division 1, Section 1340 – Submittals of this specification and as stated below.

3.3.2 Shop Drawings and Design Calculations: At least 30 days prior to initiating the wall construction work, the Contractor shall submit for review a complete set of drawings and design calculations stamped and/or sealed by the Professional Engineer, licensed to practice in the State of New Hampshire, in responsible charge of the design work and plan preparation. The Engineer reserves the right to return working drawings based on the content and non-conformance with the contract documents. The Engineer's receipt of documentation and subsequent distribution of the Contractor's shop drawings and calculations does not relieve the Contractor or Designer from responsibility under Contract from errors in design methodology, dimensions, incorrect fabrication, installation procedure(s), specified design requirements, or successful completion of the Work. The submittals shall include the following information:

1. Dimensioned drawings depicting the proposed anchor layout, required sections and details required to complete the installation as described below.

2. Design calculations with summary of the design criteria used to prepare the drawings (design codes, material properties, design loads, load combinations, etc.).

3. Name and qualifications of the soil anchor contractor and shotcrete contractor. A description of the equipment and tools to be used including the manufacturer's specifications and catalog data for all drill rigs, grout pumps, dewatering pumps, drill bits and casing, grout placement pipes, shotcrete equipment, pumps and compressors and all other necessary tools.

4. A description of the wall construction sequence and a schedule for the work.

5. The method of excavation, including equipment, the means of equipment access to the wall site and a description of methods proposed for stabilizing the excavation.

6. Method of soil anchor drilling which includes drilling equipment, hole dimension, tools, casing, drill bits, method of drilling and supporting the drill hole, and methods of determining hole location and alignment.

7. Details of the anchor bar including details of the corrosion protection method and materials for field repair of corrosion protection, and method and materials of centralizing the anchor bar within the drill hole.

8. A detail of the grouting procedure including methods and equipment for pumping grout, the grout mix design, which includes the brand and type of Portland Cement, the source and gradation of the aggregates and the details of all proposed admixtures including the manufacturer, dosage and associated technical literature.

9. A description of the soil anchor verification testing and proof testing methods, including all equipment jacks and load cells, details of the test setup and jacking frame, methods of isolating the unbonded length, and methods for grouting the unbonded length of the proof test anchors.

10. Details for the 4-inch diameter weep holes depicted on the contract drawings.

11. Details of the selected permanent concrete wall facing reinforcement including methods for support of the reinforcement, methods for connecting for reinforcement between lifts and methods for protecting the reinforcement from shotcrete rebound.

12. Details of the selected permanent concrete wall facing including the mix design with a description of all aggregates and additives, methods of placement including all equipment and tools, methods of controlling the front face and determining the shotcrete thickness (if selected) and other tolerances, details of all construction/contraction joints including the proposed locations, and methods for finishing the shotcrete facing (if selected).

13. Details of the anchor head anchorage, including materials and methods for installing the shotcrete and wire mesh anchor head protection.

3.3.3 The Contractor will not be authorized to begin wall construction until all submittal requirements are satisfied and found acceptable. Changes or deviations from the accepted submittals must be resubmitted for acceptance. No adjustments in contract time will be allowed due to incomplete submittals.

3.4 Meetings and Site Visits

3.4.1 A pre-installation meeting with the Contractor, Designer, Resident Engineer or RPR, and other stakeholders deemed appropriate shall be held a minimum of one week prior to the start of installation of the soil anchor system. Topics for discussion shall include the following:

3.4.1.1 Field review of existing wall and site conditions to ensure existing wall is suitable for proposed work.

3.4.1.2 Review of accepted shop drawings and installation procedure(s).

3.4.1.3 Inspection and inventory of the soil anchor components to ensure all the required components are available for installation.

3.4.1.4 Review of required equipment for installation, area/limits of operation and work platforms (as required).

3.4.2 A meeting will be held at the completion of the installation with the Contractor, Designer, Resident Engineer or RPR, and Owner to review the completed installation.

3.4.3 The Designer shall make periodic site visits, as required during soil anchor system installation and preparation, to assist the Contractor with resolving questions

related to the work and to ensure the work is completed to the satisfaction of the Owner.

3.5 Quality of Workmanship Requirements: The Contractor is responsible for implementing a Quality Insurance Program which shall include inspection of all materials, installation, workmanship, and finished products. All grout materials and cores of shotcrete (if selected) shall be tested for conformance by an independent certified testing agency at the Contractor's expense.

3.6 General Installation Requirements

3.6.1 The Contractor shall provide a daily summary of permanent soil anchor installation progress at the end of each workday which details the length of permanent soil anchor installed, and grout volumes and pressures for all grouting conducted that day at each anchor location.

3.6.2 Work requiring the presence of the Engineer, but completed without the Engineer present, will not be accepted.

3.6.3 The Contractor shall take all precautions necessary to ensure that the permanent soil anchors are installed to the required length and capacity at the locations shown on the plans. At a minimum, all permanent soil anchors of a given length or load capacity shall be color-coded with permanent marking paint which is not detrimental to any of the grout, anchor, installation, or corrosion protection materials, such that the length of soil anchor installed at any location can be verified after anchor installation.

3.6.4 The construction sequence shall be in accordance with the accepted submittals unless otherwise approved.

3.6.5 The Contractor shall visit the site prior to any construction activities for the purpose of observing and documenting the pre-construction condition of all roadways, abutments, wingwalls and slopes. The Contractor shall observe the conditions of the abutments and wingwalls daily for signs of ground movements. The Contractor shall immediately notify the Engineer if signs of movements such as sloughing, new cracks or increased size of old cracks are observed. The Contractor shall provide the Engineer written documentation of the observed conditions within 24 hours of the observation.

3.7 Materials Handling and Storage

3.7.1 Materials shall be delivered, stored, and handled to prevent contamination, segregation, corrosion, or damage. Liquid admixtures shall be stored to prevent evaporation and freezing.

3.7.2 Carefully inspect the components upon delivery and compare to the Manufacturer's Bill of Materials. Inspect the delivery for any signs of damage to the components. Immediately report any damage to the Engineer and take corrective action to repair the damage or replace the component.

3.7.3 Store the components in a secure location away from construction traffic. The Contractor is responsible for protection of the components from theft and damage prior to installation.

3.7.4 Cement shall be adequately stored to prevent moisture degradation and partial hydration. Cement that has become caked or lumpy shall not be used. Aggregates shall be stored so that segregation and the inclusion of foreign materials are prevented. The bottom 6 inches of aggregate piles in contact with the ground shall not be used.

3.7.5 All steel reinforcement shall be carefully handled and shall be stored on supports to keep the steel from contact with the ground. Damage to the soil anchors and/or the epoxy coatings because of abrasion, cuts, nicks, welds, and weld splatter shall be cause for rejection by the Engineer. Grounding of welding leads to the anchor steel shall not be allowed. Soil anchors shall be protected from and sufficiently free of dirt, and other deleterious substances prior to installation.

3.7.6 Encapsulated anchors shall not be transported until the encapsulation grout has reached sufficient strength to resist damage during handling. Encapsulated anchors shall not be handled in a manner that will cause large deflections or distortions during handling. When handling or transporting encapsulated anchors, the Contractor shall provide slings or other equipment necessary to prevent damage to the anchor bar. Encapsulated anchors shall not be dropped during handling and shall be protected from impact of any kind. Any encapsulated anchors that are damaged or defective shall be repaired in accordance with the manufacturer's recommendations or shall be rejected and removed from the site. Damaged areas of fusion bonded epoxy corrosion protection, including exposed cut-off anchor bar ends, shall be cleaned and coated with corrosion protective epoxy in accordance with the bar manufacturer's recommendations. Epoxy coating shall be repaired in accordance with the coater's recommendations using an epoxy field repair kit approved by the epoxy manufacturer.

3.7.7 Hot-dipped galvanized anchors shall be transported and handled in a manner to prevent damage to the zinc coating. Any hot-dipped galvanized anchors that or damaged shall be repaired in accordance with NHDOT Standard Specification, Section 550, Paragraph 2.9.1. This includes exposed cut-off anchor bar ends.

3.8 Wall Preparation

3.8.1 The Contractor shall clean the face of the remaining timber MSE walls to remove deleterious materials such as moss, biofilm, earth and/or other material that could inhibit concrete bond to the timber wall prior to installing the concrete facing. The method of cleaning, selected by the Contractor, shall not be detrimental to the surrounding environment (including river) or cause damage to the timber facing. Power washing will be accepted provided it does not damage the timber walls. The Contractor's proposed cleaning method, including products to be used, shall be submitted to the Engineer for acceptance prior to starting this work.

3.9 Installing Permanent Soil Anchors

3.9.1 The soil anchor system shall be installed in accordance with the accepted shop drawings and Contractor supplied installation procedure(s).

3.9.2 The Contractor shall select drilling equipment and methods suitable for the ground conditions described in the geotechnical report and shown in the boring logs. Drillhole diameter shall be selected to provide the minimum specified grout cover over the soil nail bar and to develop the specified load carrying capacity.

3.9.3 The Contractor shall immediately suspend drilling operations if ground subsidence is observed, if the soil nail wall is adversely affected, or if adjacent structures are damaged because of the drilling operation. Any adverse conditions shall be stabilized immediately using a temporary berm, temporary shotcrete or other methods as necessary and the Engineer shall be notified of such conditions within 24 hours.

3.9.4 Temporary casing shall be used to maintain a stable borehole through the soil, including cobbles and boulders, to at least 1 foot beyond the bottom of the bond zone. Drilling procedures (such as external flushing around drill casing), which can cause loss of drill water or cuttings will not be permitted. A rotary or percussion drilling procedure that uses internal flushing and advances the drill casing simultaneously with the drill bit shall be required. Open hole drilling will not be permitted. Drilling procedures shall in no way cause or allow caving of drill holes, loss of ground, or disturbance or movement of materials behind the wall. The temporary drill casing shall remain in-place throughout all drilling,

flushing, and nail installation procedures and shall be removed either in conjunction with grout placement or after grouting is completed. Drilling procedures shall be subject to review and approval.

3.9.5 Rotary drilling, or percussion drilling shall be used to drill bedrock.

3.9.6 The drilled nail hole shall extend a minimum of 1 ft. beyond the bar length.

3.9.7 After drilling, each drill hole shall be thoroughly cleaned of all drill cuttings, sludge and debris by flushing with clean water.

3.9.8 Soil Anchor Tolerances: Soil anchors which do not satisfy the specified tolerances due to the Contractor's installation methods shall be replaced to the Engineer's satisfaction at no additional cost. The required tolerances for the permanent soil nail drill holes shall be as follows:

1. The drill hole alignment, as measured by a straight line between the top and bottom of the drill hole, shall be within one degree of the orientation depicted on the plans.

2. Individual anchors shall be positioned plus or minus 3 inches from the design locations shown on the plans. However, a tolerance of plus or minus 6 inches may be acceptable, with the approval of the Engineer, at individual anchor locations if the surrounding anchors are within a plus or minus 3-inch tolerance.

3. Location tolerances shall be considered applicable to only one anchor and not cumulative over large wall areas.

4. The minimum drillhole diameter shall be 5 inches for an epoxy coated anchor bar and 4 inches for an encapsulated anchor bar. It is the Contractor's responsibility to determine the final drillhole diameter required to provide the ultimate soil-grout bond strength value indicated in the plans and meet the minimum grout cover requirements.

5. The permanent soil anchors shall have a minimum grout cover around an epoxy coated anchor bar of 1.5 inches and a minimum grout cover around an encapsulated anchor bar of 0.5 inches.

6. Anchor bars installed in holes larger than the minimum size specified shall be within 1 inch of the center of the drill hole.

3.10 Permanent Soil Anchor Assembly, Placement and Grouting Requirements

3.10.1 Anchor bars shall be provided as indicated on the accepted plans. Each anchor bar shall be fitted with centralizers as specified. Anchor bars shall be inserted into the drillhole to the required length without difficulty and in such a manner as to prevent damage to the drillhole or the anchor bar corrosion protection. Anchor bars which cannot be fully inserted to the design depth shall be removed from the drillhole and the drillhole shall be cleaned sufficiently to allow unobstructed installation of the anchor bar. Centralizers shall be placed at ten-foot intervals along the entire length of the anchor bar with the last centralizer one foot from the end of each nail.

3.10.2 Grout equipment shall produce a uniformly mixed grout free of lumpy and undispersed cement. A positive displacement grout pump shall be used. The pump shall be equipped with a pressure gauge, that is mounted at the intake to the anchor hole, which can measure at least twice but no more than three times the intended grout pressure. The grouting equipment shall be sized to enable the entire anchor to be grouted in one continuous operation. The mixer shall be capable of continuously agitating the grout during usage. Neat cement grout shall be screened to remove lumps. The maximum size of screen openings shall be 0.25 inch.

3.10.3 The drillhole shall be grouted after installation of the anchor bar. Grouting prior to insertion of the anchor bar can be allowed provided neat cement grout is used and the anchor bar is immediately inserted through the grout to the specified length without difficulty. No portion of the anchor hole shall be left open for more than 4 hours prior to grouting unless otherwise approved by the Engineer. The grout shall be injected at the lowest point of each drillhole through a grout injection pipe, with the drillhole filled in one continuous operation. Cold joints in the grout placement are not allowed except for construction of proof test anchors. The end of the grout pipe delivering the grout shall be kept at least 12 inches below the surface of the grout as the pipe is withdrawn. The grout pipe shall be withdrawn as the anchor hole is filled in a manner which prevents the creation of voids. The quantity of grout and the grout pressures shall be recorded for each soil anchor. Grout pressures shall be controlled to prevent ground heave or fracturing.

3.10.4 During casing removal for drillholes advanced by cased methods, the grout surface within the casing shall be continually monitored for maintenance of head sufficient to offset the external groundwater/soil pressure. The grout pipe shall remain ahead of the casing during removal of the casing with the uncased portion of the hole maintained full of grout, at all times. Casing seals shall not be broken

until the level of grout within the casing provides adequate head to prevent unstable soil or groundwater from contaminating or diluting the grout. Grout pressures shall be maintained to ensure that the drillhole will be completely filled with grout.

3.10.5 If the grouting of any anchor is suspended for more than 30 minutes or if the quality of the grout placement results in an anchor that does not satisfy the requirements of the Specification, then the steel and grout shall be removed from the hole, disposed of, and replaced with fresh grout and undamaged steel at no additional cost to the Owner.

3.10.6 The soil anchor shall remain undisturbed for a minimum of 3 days or until the grout has cured and obtained a minimum of 75 percent of the specified 28-day compressive strength. Testing and stressing of the soil anchor shall not be performed until strength tests on the grout indicate sufficient curing has occurred.

3.10.7 Additional grout shall be introduced through holes and or tubes provided through the anchorage assembly, such that the borehole is ultimately completely filled with grout.

3.10.8 During freezing weather conditions, grout shall not be allowed to freeze or partially freeze until fully cured.

3.10.9 Anchor grout shall be tested by the Contractor in accordance with AASHTO T 106/ASTM C 109 at a frequency of no less than one test for every 50 cubic yards of grout or once per week, whichever comes first.

3.11 Verification and Proof Testing Requirements

3.11.1 Anchor Testing: Verification and proof testing shall be performed at the locations indicated on the plans or as directed. All required test data will be recorded by the Designer and submitted to the Engineer for acceptance. Testing of anchors shall not be performed until the anchor grout and shotcrete facing have attained at least 50 percent of their specified 28-day compressive strengths. Where temporary casing of the unbonded length of test anchors is provided, the casing shall be installed to prevent any reaction between the casing and the grouted bond length of the anchor and/or the stressing apparatus.

3.11.1.1 Anchors that have successfully passed the testing requirements for verification and proof testing may be incorporated into the final work pending acceptance by the Designer.

3.11.2 Testing Equipment: Testing equipment shall include two dial gauges, a dial gauge support, jack and pressure gauge, a load cell, and a reaction frame. A minimum of two dial gauges capable of measuring to 0.001 inch shall be available at the site to measure the anchor movement. The dial gauges shall have a minimum travel sufficient to allow the test to be performed without re-setting the dial gauge. The dial gauges shall be aligned within 1 degree of the axis of the anchor and shall be supported independent of the jacking set-up and the wall. A hydraulic jack, pressure gauge, load cell, and pump shall be used to apply and measure the test load. The test equipment setup proposed shall be completely independent of the jack, shall not be susceptible to movement due to test loads applied to the anchor, construction activities or their outside influences.

3.11.2.1 The jack, pressure gauge and load cell shall be calibrated by an independent testing laboratory as a unit. Calibration of the jack and load cell assembly shall have been conducted within one month prior to conducting the first verification test. The calibration results shall be presented in the form a plot of gauge pressure and load cell output versus actual jack force. The unit shall be tested over the full ram travel of the hydraulic jack. The pressure gauge shall be graduated in 100 psi increments or less and shall have a range not exceeding twice the anticipated maximum pressure during testing unless otherwise approved by the Engineer. The ram travel of the jack shall be sufficient to enable the test to be performed without re-setting the jack (a minimum ram travel of 4 inches is recommended). The jack shall be capable of applying each test load increment in less than 1 minute.

3.11.2.2 The jack shall be independently supported and centered over the anchor so that the anchor does not carry the weight of the jack. The stressing equipment shall be placed over the anchor in such a manner that the jack, bearing plates, load cell, and stressing anchorage are in alignment. The jack shall be positioned at the beginning of the test such that unloading and repositioning of the jack during the test will not be required.

3.11.2.3 The reaction frame shall be sufficiently rigid and of adequate dimension such that excessive deformation of the test apparatus requiring repositioning of any components does not occur during testing. Where the reaction frame bears directly on the shotcrete facing, the reaction frame shall be designed to prevent fracture of the shotcrete and no part of the reaction frame shall bear within 6 inches of the edge of the test anchor blockout, unless otherwise approved.

3.11.2.4 During the testing of the verification and proof test anchors, the reading indicated on the load cell shall be used to determine the load being applied to the anchor bar. If at any time a difference of greater than 10% exists between the load indicated by the load cell and the load indicated by the pressure gauge, the testing apparatus shall be recalibrated.

3.11.3 Verification Testing of Sacrificial Anchors: Successful verification testing shall be performed prior to starting installation of production anchors to verify the Contractor's installation methods, soil conditions, nail pullout capacity, and design assumptions. Verification tests shall be performed within the limits of the work and at the locations specified in the plans, unless otherwise approved. The nails used for the verification tests shall be sacrificial and shall not be incorporated as production nails.

3.11.3.1 Verification test anchors shall be constructed using the same equipment, methods, and hole diameter as planned for the production anchors. Changes in the drilling or installation method may require additional verification testing as determined by the Engineer and shall be provided at no additional cost to the Owner.

3.11.3.2 Test anchors shall have both bonded and unbonded lengths. Prior to testing, only the bonded length of the test anchor shall be grouted. The unbonded length of the test anchor shall be at least 15 feet unless otherwise approved. The bonded length of the test anchor shall be determined by the Designer based on the bar grade and size such that the allowable bar structural load is not exceeded but shall not be less than 10 feet. The allowable bar structural load during testing shall not be greater than 90 percent of the yield stress for Grade 60 bars.

3.11.3.3 The verification test bonded length L_{BV} shall not exceed the test allowable bar structural load divided by twice the allowable soil-grout bond strength as determined by the Designer. The following equation shall be used for determining the test anchor bond length to avoid

$$L_{BV} \leq \frac{C f_y A_s}{2 P_B}$$

structurally over stressing the verification anchor bar size:

Where: L_{Bv} = Maximum Verification Test Anchor Bond Length (ft)
f_y = Bar Yield Stress (ksi)
A_s = Bar Area (square inches)
P_B = Allowable Soil-Grout Bond Strength
C = 0.9 for Grade 60 bars

3.11.3.4 The design test load during testing shall be determined by the following equation as determined by the Designer:

$DTL = L_B \times P_B$

Where: DTL = Design test load
L_B = As-built bonded test length (ft)
P_B = Allowable Soil-Grout Bond Strength

3.11.3.5 Verification test anchors shall be incrementally loaded to twice the design test load (DTL) followed by unloading in accordance with the following schedule. The soil anchor movements at each load and unload increment shall be recorded.

LOADING		**UNLOADING**	
LOAD	HOLD TIME	LOAD	HOLD TIME
AL(.05 DTL max.)	1 minute	1.75DTL	Until Stable
0.25DTL	10 minutes	1.50DTL	Until Stable
0.50DTL	10 minutes	1.25DTL	Until Stable
0.75DTL	10 minutes	1.00DTL	Until Stable
1.00DTL	10 minutes	0.75DTL	Until Stable
1.25DTL	10 minutes	0.50DTL	Until Stable
1.50DTL	60 minutes	0.25DTL	Until Stable
1.75DTL	10 minutes	AL	Until Stable
2.00DTL	10 minutes		

The alignment load (AL) should be the minimum load required to align the testing apparatus and should not exceed 10 percent of the design test load (DTL). Dial gauges should be set at "zero" after the alignment load has been applied.

3.11.3.6 Each load increment shall be held for at least 10 minutes. The verification test anchor shall be monitored for creep at the 1.50 DTL load increment. Anchor movements during the creep portion of the test shall be measured and recorded at 1 minute, 2, 3, 5, 6, 10, 20, 30, 50, and 60 minutes. The load during the creep test shall be maintained

within 2 percent of the intended load by use of the load cell. The anchor shall be unloaded in increments of 25 percent of the DTL with movements recorded at each unload increment. Each unload increment shall be held for a sufficient time to allow stabilization of the movement reading.

3.11.4 Proof Testing of Production Anchors: Proof testing shall be performed on the anchors indicated on the plans or as ordered.

3.11.4.1 Proof test anchors shall have both bonded and unbonded lengths. Prior to testing, only the bonded length of the test anchor shall be grouted. The Engineer shall determine the bonded and unbonded lengths of each test anchor. The unbonded length of the test anchor shall be at least 15 feet. The bonded length of the test anchor shall be determined by the Designer such that the allowable bar structural load is not exceeded but shall not be less than 10 feet. The allowable bar structural load shall not exceed 90 percent of the yield stress for Grade 60 bars.

3.11.4.2 Temporary unbonded lengths shall be provided for each proof test anchor. The test anchor bar shall be isolated from the shotcrete facing and the reaction frame used during testing. Isolation of a test anchor through the shotcrete facing shall not affect the location of the reinforcing steel under the bearing plate. Accepted proof test anchors may be incorporated in the work provided the temporary test unbonded length is fully grouted, after testing. Test anchor isolation methods, methods for providing an unbonded length, and methods for grouting the unbonded length after testing shall be submitted for review and approval in accordance with the work plan submittal requirements.

3.11.4.3 The proof test bonded length L_{BP} shall not exceed the test allowable bar load divided by 1.3 times the allowable soil-grout bond strength as determined by the Designer. The following equation shall be used for sizing the test anchor bond length to avoid over stressing the production

$$L_{BP} \leq \frac{C f_y A_s}{1.3 P_B}$$

bar:

Where: L_{BP} = Maximum Proof Test Anchor Bond Length (ft)

f_y = Bar Yield Stress (ksi)
A_s = Bar Stress Area (square inches)
P_B = Allowable Soil-Grout Bond Strength
C = 0.9 for Grade 60 bars

3.11.4.4 Proof tests shall be performed by incrementally loading the anchor to 130 percent of the design test load (DTL) as determined by the Designer. The design test load shall be determined as for verification test anchors. The anchor movement at each load shall be measured and recorded by the Engineer in the same manner as for verification tests. The load shall be monitored by a pressure gauge with a sensitivity and range meeting the requirements of pressure gauges used for verification test anchors. At load increments other than maximum test load, the load shall be held long enough to obtain a stable reading. Incremental loading for proof tests shall be in accordance with the following schedule:

AL (.05 DTL max.)
0.25DT
0.50DTL
0.75DTL
1.00DTL
1.30DTL (Maximum test load)
AL = Anchor Alignment Load
DTL = Anchor Design Test Load

The alignment load (AL) should be the minimum load required to align the testing apparatus and should not exceed 10 percent of the design test load (DTL). Dial gauges should be set at "zero" after the alignment load has been applied.

3.11.4.5 All load increments shall be maintained within 5 percent of the intended load. Depending on performance, either 10 minute or 60 minute creep tests shall be performed at the maximum test load (1.30 DTL). The creep period shall start as soon as the maximum test load is applied and the anchor movement shall be measured and recorded at 1 minute, 2, 3, 5, 6, and 10 minutes. Where the anchor movement between 1 minute and 10 minutes exceeds 0.04 inch, the maximum test load shall be maintained an additional 50 minutes and movements shall be recorded at 20 minutes, 30, 50, and 60 minutes.

3.11.5 Test Anchor Acceptance Criteria: A test anchor shall be considered acceptable when:

1. For verification tests, a creep rate less than 0.08 inch per log cycle of time between the 6 and 60 minute readings is observed during creep testing and the rate is linear or decreasing throughout the creep test load hold period.

2. For proof tests: (a) a total creep movement of less than 0.04 inch is observed between the 1 and 10 minute readings or a total creep movement of less than 0.08 inches is observed between the 6 and 60 minute readings and; (b) the creep rate is constant or decreasing throughout the creep test load hold period.

3. The total movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the test anchor unbonded length.

4. A pullout failure does not occur at the maximum test load. Pullout failure is defined as the load at which attempts to increase the test load simply result in continued pullout movement of the test anchor. The pullout failure load shall be recorded as part of the test data.

3.11.5.1 At the Contractor's option, successful proof test anchors meeting the above test acceptance criteria may be incorporated as production anchors, provided that (1) the unbonded test length of the anchor hole has not collapsed during testing, (2) the minimum required hole diameter has been maintained, (3) the specified corrosion protection is provided, and (4) the test anchor length is equal to or greater than the scheduled production anchor length. Test anchors meeting these requirements shall be completed by satisfactorily grouting the unbonded test length. Maintaining the temporary unbonded test length for subsequent grouting is the Contractor's responsibility. If the unbonded test length of production proof test anchors cannot be satisfactorily grouted subsequent to testing, the proof test anchor shall become sacrificial and the Contractor shall replace the proof test anchor with a production anchor installed to the satisfaction of the Engineer and at no additional cost.

3.11.6 Rejection of Verification Test Anchors. The Engineer shall evaluate the results of each verification test. Installation methods which do not satisfy the anchor testing requirements shall be rejected. The Contractor shall propose alternative methods and install replacement verification test anchors.

Replacement test anchors shall be installed and tested at no additional cost to the Owner.

3.11.7 Rejection of Proof Test Anchors. The Engineer will require that the Contractor replace some or all of the installed production anchors between a failed proof test nail and an adjacent passing proof test anchor. Alternatively, the Engineer may require proof testing of additionally installed proof test anchors be conducted to verify that adjacent previously installed production anchors have sufficient load carrying capacity. The Engineer's modifications may include the installation of additional test and/or production anchors (i.e., decreased anchor spacing from that specified in the plans), installing longer production anchors, increasing the drillhole diameter, or modifying the installation methods. Costs due to additional proof tests or installation of additional or modified anchors including removal and replacement of in-place shotcrete facing to install additional anchors as a result of proof test anchor failure shall be at no additional cost to the Owner.

3.12 Weepholes

3.12.1 4-inch diameter weepholes shall be installed in accordance with the contract drawings prior to installation of the shotcrete wall facing. The inlet side of the weephole shall be covered with non-woven geotextile filter fabric (subsidiary) to prevent backfill fines from washing through the drain. The drains shall be protected to prevent damage during installation of the shotcrete facing.

3.13 Permanent Structural Shotcrete Wall Facing

3.13.1 Provide a permanent concrete wall facing of cast-in-place concrete OR concrete shotcrete to the wingwalls and abutment breastwalls. The facing shall comply with either Section 2.7.1

3.13.2 The selected method for facing the timber walls with concrete shall be used throughout the entire project. Alternating methods will not be permitted.

3.13.3 Preconstruction and Production Shotcrete Test Panels (If Selected)

3.13.3.1 Both preconstruction and production shotcrete test panels shall be required. Test panels shall not be disturbed within the first 24 hours after shooting. Test panels shall be field cured under conditions similar to those anticipated for the work.

3.13.3.2 The Contractor shall notify the Engineer not less than 2 days prior to the shooting of a test panel.

3.13.3.3 Shotcreting and coring of test panels shall be performed by qualified personnel in the presence of the Engineer. The Contractor shall provide equipment, materials, and personnel as necessary to obtain shotcrete cores for testing, including construction of test panel boxes, field curing requirements and coring. The frequency specified for test panels is approximate. A greater number of panels may be required.

3.13.3.4 Unsatisfactory compressive strength tests of shotcrete samples shall result in suspension of the crew responsible for the unsatisfactory work, or until additional specimens have been submitted, tested, and proven satisfactory. Costs associated with additional testing and lost production due to tests failing to meet the specifications shall be borne by the Contractor.

3.13.3.5 Preconstruction Test Panels: Each shotcrete crew shall furnish at least two preconstruction test panels for each proposed mixture being considered and for each shooting position to be encountered on the job. Preconstruction test panels shall be made by each application crew using the equipment, materials, mixture proportions and procedures proposed for the job prior to the commencement of work. Preconstruction test panels for plain shotcrete shall be 30 x 30 inch in accordance with ACI 506.2-94, with the following exceptions.

1. One preconstruction test panel shall be of the maximum shotcrete thickness indicated in the plans and shall include the maximum anticipated reinforcing congestion. Cores extracted from the test panel shall demonstrate encapsulation of the reinforcement in accordance with ACI 506.2 equal to core grade 2 or better.

2. One preconstruction test panel shall be at least 4-in thick and constructed without reinforcement. Cores extracted from the test panel shall be tested for compressive strength.

3. The corners of preconstruction and production test panels shall be chamfered 45 degrees over the full panel thickness.

3.13.3.6 Production Test Panels: The Contractor shall furnish at least one production test panel or, in lieu of production test panels, six 3 in diameter cores from the shotcrete face during the first application of shotcrete and henceforth for every fifth application of shotcrete, or every 2500 square feet, or 50 cubic yards of shotcrete placed, whichever is less. The production test panels shall be constructed

simultaneously with the shotcrete facing installation at times designated by the Engineer. The production test panel shall have dimensions of 18-in. x 18-in. x 4-in.

3.13.3.7 Core Testing: At least six core samples will be cut from each pre-construction test panel and production test panel. Cores shall be soaked in water for at least 40 hours in accordance with AASHTO T 24. Cores shall be at least 3 inches in diameter and shall have a minimum length to diameter ratio of one. When the length of the core is twice the diameter, apply the correction factors given in ASTM C 42 to obtain the compressive strength of individual cores. Three cores shall be tested at 3-days and three cores shall be tested at 28-days. The average compressive strength of each set of three cores extracted must be equal to or exceed 85 percent of the specified strength with no individual core less than 75 percent of the specified compressive strength in accordance with ACI 506.2.

3.13.4 Safety Requirements: Special attention shall be given to eye and dust protection hazards when shotcrete is applied. Cement and other admixtures are caustic and may cause skin and respiratory irritation unless safety measures are taken in addition to required ventilation. Nozzlemen and helpers shall be equipped with gloves, eye protection, and adequate protective clothing during the application of shotcrete. The Contractor is responsible for meeting all federal, state and local safety code requirements.

3.13.5 Weather Limitations: Shotcrete shall not be placed in cold weather unless adequately protected when the ambient temperature is below 40°F and falling and/or when the shotcrete is likely to be subjected to freezing temperatures before a minimum strength of 700 psi. Cold weather protection shall be maintained until the strength of the in-place shotcrete is greater than 750 psi. Cold weather protection shall include heating under tents, blankets, or other means acceptable to the Engineer. The temperature of the shotcrete, when deposited, shall be not less than 50°F nor more than 90°F. Shotcrete application shall also be suspended during high winds and heavy rains when in the opinion of the Engineer the quality of the application is not acceptable. Newly placed shotcrete exposed to rain that washes out cement or otherwise makes the shotcrete unacceptable to the Engineer shall be removed and replaced. The Contractor shall provide adequately secured polyethylene sheeting or equivalent when adverse exposure to weather is anticipated.

3.13.6 Shotcrete Tolerances and Criteria: The Contractor shall ensure that the thickness of shotcrete satisfies the minimum requirements of the plans using

thickness control pins spaced five feet on center in each direction, or other means acceptable to the Engineer. The Contractor shall ensure that the front face of the shotcrete does not extend beyond the design plane of the face by greater than ¼ inch in 5 ft. measured radially from any point. The shotcrete shall be flat and level without protrusions. The surface of the shotcrete shall be finished so that the tolerance requirements defined in 2.8 for the rigid insulation are met. Shotcrete finish shall be either an undisturbed gun finish as applied from the nozzle or a screeded finish. Shotcrete extending into the finish face section beyond the tolerances specified shall be removed. Immediately after placing shotcrete, the shotcrete shall be kept continuously moist for at least the first seven days after shotcreting or until the required seven-day strength is obtained.

3.13.6.1 A clearly defined pattern of continuous horizontal or vertical ridges or depressions at the reinforcing elements after they are covered will be considered an indication of insufficient cover of reinforcement, poor application technique and probable voids. In this case the application of shotcrete shall be immediately suspended until inspected. The Contractor shall implement and complete corrective measures prior to resuming the shotcrete operations.

3.13.7 Construction and Contraction Joints: Contraction and construction joints shall be provided in accordance with ACI 506.2 – 90 (Specification of Shotcrete) Section 3.6 and ACI 506R-90 (Guide to Shotcrete) Section 5.7. Construction joints shall be uniformly tapered toward the excavation face over a minimum distance equal to the thickness of the shotcrete layer. Construction joints shall be tapered to a thin edge, and the surface of such joints shall be thoroughly wetted before any adjacent section is placed.

3.13.8 Surface Preparation for Shotcreting: Timber wall faces shall be cleaned in accordance with Paragraph 3.8.1 of this specification and loose or damaged wood fibers that could inhibit concrete bond shall be removed to sound wood in advance of applying the selected concrete facing. The wood shall be in a saturated surface dry condition prior to placing the concrete facing.

3.13.9 Delivery and Application**:** A clean, dry, oil-free supply of compressed air sufficient for maintaining adequate nozzle velocity for all parts of the work shall always be maintained. The equipment shall be capable of delivering the premixed material accurately, uniformly, and continuously through the delivery hose. The shotcrete shall be applied from the lower part of the work area upwards to prevent accumulation of rebound on uncovered surfaces. Weepholes and reinforcement to be overlapped shall be protected during

shotcrete operations to prevent rebound from bonding to the reinforcement and from plugging the weep holes.

3.13.9.1 Where shotcrete is used to complete the ungrouted zone of the anchor drill hole near the face, the nozzle shall be positioned into the mouth of the drillhole to completely fill the void. Rebound shall not be worked back into the placement nor shall the rebound be salvaged. Rebound which does not fall clear of the working area shall be removed.

3.13.9.2 The nozzle shall be held at a distance and at an angle approximately perpendicular to the working face so that rebound will be minimal and compaction will be maximized. The nozzle shall also be held so as to place material behind reinforcement before material is allowed to accumulate on the face. Shotcrete shall not be placed through more than one layer of reinforcing steel rods or mesh in one application unless demonstrated by preconstruction tests that the steel is properly encased.

3.13.9.3 Thickness, methods of support, air pressure, and rate of placement of shotcrete shall be controlled to prevent sagging or sloughing of freshly applied shotcrete. The shotcreting procedure may be corrected by adjusting the nozzle distance and orientation perpendicular to the surface, adjusting the water content of the shotcrete mix or other means acceptable to the Engineer. Excessive retempering of the mix shall be avoided. The shotcreted surface shall be broomed and roughened if needed to ensure proper bond of subsequent layers.

3.13.9.4 When any layer of shotcrete is to be covered by a succeeding layer, it shall first be allowed to develop its initial set. Then, all laitance, loose material, and rebound be removed by brooming or scraping. Laitance which had been allowed to take final set shall be removed by sandblasting and by thoroughly cleaning the surface.

3.13.10 Defective Shotcrete: Surface defects shall be repaired as soon as possible after initial placement of the shotcrete. All shotcrete which lacks uniformity, which exhibits segregation, sagging, honeycombing, or lamination, or which contains any voids or sand pockets shall be removed and replaced with fresh shotcrete by the Contractor to the satisfaction of the Engineer.

3.13.11 Attachment of the Bearing Plate and Nut: The bearing plate and nut shall be attached as shown in the accepted plans. Where the shotcrete is placed after the anchors have been installed, the plate shall be seated by hand wrench

tightening the nut such that uniform contact with the shotcrete is achieved while the shotcrete is still plastic and prior to its initial set. Where uniform contact between the plate and the shotcrete cannot be provided, the plate shall be seated on a mortar pad to provide uniform support. Once the mortar pad has attained strength (minimum 1 day), the nut shall be hand wrench tightened.

Method of Measurement

4.1 Soil anchors will be measured as a completed unit. There will be no individual measurements for the length or number of anchors installed for the Basis of Payment.

4.2 Concrete facing will be measured by the projected face to the nearest square foot, of wall satisfactorily installed, as determined by the elevations shown on the plans. No measurement for wall returns or projections are included.

4.3 Reinforcing steel for the concrete facing shall be subsidiary to the concrete facing and will not be measured.

Basis of Payment

5.1 Soil anchors will be paid for as lump sum at the contract unit price and shall include full compensation for all resources, labor, materials, equipment, and incidentals required to complete the work.

5.1.1 No specific payment will be made for verification or proof anchor testing, which shall be considered incidental to production anchor installation. There will be a minimum of one (1) successful verification test per abutment (two total), and a minimum of three (3) production anchors successfully proof tested per abutment (six total). Failed verification test anchors or verification test anchors installed to verify alternative anchor installation methods proposed by the Contractor shall be considered incidental to production anchor installation.

5.2 The accepted quantity of the concrete facing will be paid for at the contract unit price per square foot. complete in place. The payment shall be full compensation for all labor, equipment, materials, material tests, field tests, and incidentals necessary to acceptably install the concrete facing, including the placement of shotcrete or formwork, reinforcing steel, and weep holes, in accordance with all requirements of the Contract.

Pay Items and Units:

505.6	Soil Anchors	Lump Sum
505.7	Concrete Facing	Square Foot

12/4/2023

EXETER
LINDEN STREET BRIDGE 081/046

December 4, 2023

S P E C I A L P R O V I S I O N

AMENDMENT TO SECTION 544 -- REINFORCING STEEL

544.3 – Reinforcing Steel (Contractor Detailed)
544.31 – Reinforcing Steel, Epoxy Coated (Contractor Detailed)
544.311 – Reinforcing Steel, Epoxy Coated Mechanical Connectors (Contractor Detailed)

This special provision requires that the Contractor prepare the shop plans for the fabrication and field layout of the reinforcing steel. The plans shall include quantities and the bending schedule. The cost of preparing reinforcing steel shop plans and bar schedules shall be included.

Amend 3.1 Bar list to read:

3.1 Shop Plans and Bar Schedule.

3.1.1 The Contractor shall prepare the reinforcing steel shop plans from the typical design details shown on the Contract Plans. For the fabrication and field layout of the reinforcing steel, the shop plans shall be complete in detail including bar marks, bar location and spacing, splice length, and splice locations. The shop plans shall have a bar list, bending diagrams, bar weight by size, and bar quantity grand total.

3.1.2 The shop plans shall be prepared on Department-standard full-size sheets (22 inches by 34 inches). The sheets may be vellum or archival-quality mylar material. The shop plans shall be properly titled as to project location and bridge components (as Abutment A, Pier, Deck, etc.) similar to the Contract Drawing title box.

3.1.3 The shop plans and bar schedule shall be submitted to the Engineer in accordance with 105.02. The Contractor shall allow sufficient time for review. No payment shall be made for any delay caused by the shop plan review process due to ordering, preparation, review, revisions or shop plan errors.

3.1.4 The Contractor shall attempt to maximize reinforcing bar lengths by minimizing the number of splices.

3.1.5 Original tracings of corrected shop drawings shall be delivered to the Department before final payment will be made.

3.1.6 The reinforcing steel quantities as shown on the Contract Plans may vary approximately 10% plus or minus from the required quantity.

Add to Method of Measurement:

4.1.1 Reinforcing Steel (Contractor Detailed); Reinforcing Steel, Epoxy Coated (Contractor Detailed); and Reinforcing Steel, Epoxy Coated Mechanical Connectors (Contractor Detailed) will be measured by the pound of reinforcing steel placed as shown on the plans or ordered.

Add to Basis of Payment:

5.1.2 The accepted quantity of Reinforcing Steel (Contractor Detailed); Reinforcing Steel, Epoxy Coated (Contractor Detailed); and Reinforcing Steel, epoxy Coated Mechanical Connectors (Contractor Detailed) will be paid for at the Contract unit price per pound complete in place.

Add to pay items and units:

544.3	Reinforcing Steel (Contractor Detailed)	Pound
544.31	Reinforcing Steel, Epoxy Coated (Contractor Detailed)	Pound
544.311	Reinforcing Steel, Epoxy Coated Mechanical Connectors (Contractor Detailed)	Pound

12/4/2023

EXETER
LINDEN STREET BRIDGE 081/046

December 4, 2023

S P E C I A L P R O V I S I O N

AMENDMENT TO SECTION 563 -- BRIDGE RAIL

Item 563.99 – Timber Bridge Rail (TL-4)

This special provision provides for Timber Bridge Rail (TL-4) and neither amends nor modifies the provisions of this section except as stated herein.

Add to Description:

1.4 The Contractor shall install Timber Bridge Rail (TL-4) in conformity with details shown on the plans or ordered.

Amend 2.1 to read:

2.1 Materials used for the Timber Bridge Rail (TL-4) shall be in conformity with the details shown on the plans.

Add to pay items and units:

563. 99 – Timber Bridge Rail (TL-4)	Linear Foot

12/4/2023
SSD: 03/17/10, 03/11/13, 02/18/14, 03/27/14, 09/17/14, 07/21/23

EXETER
LINDEN STREET BRIDGE 081/046

December 4, 2023

S P E C I A L P R O V I S I O N

AMENDMENT TO SECTION 606 -- GUARDRAIL

Item 606.18001 – 31" W-Beam Guardrail with 8" Offset Block (Steel Post)
Item 606.18002 – 31" W-Beam Guardrail without Offset Block (Steel Post)
Item 606.18011 – 31" W-Beam Guardrail with 8" Offset Block (8' Steel Post)
Item 606.18012 – 31" W-Beam Guardrail without Offset Block (8' Steel Post)
Item 606.18021 – 31" W-Beam Guardrail with 8" Offset Block (9' Steel Post)
Item 606.18041 – 31" W-Beam Guardrail with 8" Offset Block (11' Steel Post)
Item 606.18_ - 31" W-Beam Guardrail Long Span (_'-_")
Item 606.28001– 31" Double Faced W-Beam Guardrail with 8" Offset Block (Steel Post)

This special provision provides for mid-way splice guardrail. All requirements as set forth in the Standard Specifications are applicable except as modified o changed herein for these items only.

Add to Materials:

2.14 31" W-Beam Guardrail. Materials/components required for installation shall be as shown in the plans or as ordered.

2.14.1 Long Span. Refer to detail for offset block sizing.

Add to Construction Requirements:

3.9 31" W-Beam Guardrail. Construction requirements shall be as shown in the plans or as ordered.

Add to pay items and units:

606.18001	31" W-Beam Guardrail with 8" Offset Block (Steel Post)	Linear Foot
606.18002	31" W-Beam Guardrail without Offset Block (Steel Post)	Linear Foot
606.18011	31" W-Beam Guardrail with 8" Offset Block (8' Steel Post)	Linear Foot
606.18012	31" W-Beam Guardrail without Offset Block (8' Steel Post)	Linear Foot
606.18021	31" W-Beam Guardrail with 8" Offset Block (9' Steel Post)	Linear Foot
606.18041	31" W-Beam Guardrail with 8" Offset Block (11' Steel Post)	Linear Foot
606.181	31" W-Beam Guardrail Long Span (12'-6")	Unit
606.182	31" W-Beam Guardrail Long Span (18'-9")	Unit
606.183	31" W-Beam Guardrail Long Span (25')	Unit
606.28001	31" Double Faced W-Beam Guardrail with 8" Offset Block (Steel Post)	Linear Foot

12/4/2023

EXETER
LINDEN STREET BRIDGE 081/046

December 4, 2023

S P E C I A L P R O V I S I O N

AMENDMENT TO SECTION 619 – Maintenance of Traffic

Item 619.1 – Maintenance of Traffic

This special provision provides for Maintenance of Traffic and neither amends nor modifies the provisions of this section except as stated herein.

Add to Description:

1.3 Work under this item shall include Traffic Signals (Temporary), Portable Changeable Message Sign, Uniformed Officers with Vehicle, Portable Concrete Barrier for Traffic Control, and Temporary Pavement Markings per the applicable Description, Materials, and Construction Requirements sections of 606, 616, 618, and 619 of NHDOT Standard Specifications. Other incidentals include engineered detour plans as noted on the plans and all other incidentals required to design, furnish, install, and remove the work related to detouring and maintaining traffic during construction.

1.4 Work under this item shall also include and is amended by Section 01570 of this Specification.

12/4/2023

EXETER
LINDEN STREET BRIDGE 081/046

December 4, 2023

S P E C I A L P R O V I S I O N

SECTION 1008 – ALTERATIONS AND ADDITIONS AS NEEDED

Item 1008.9 – Testing of Materials

Description

1.1 The Contractor shall employ an independent, qualified testing laboratory approved by the Engineer for conducting all required initial tests of concrete, structural steel inspection and weld testing, trench backfill and embankment compaction and other like materials as specified and directed by the Engineer. Test results and laboratory recommendations shall immediately be made available to the Engineer. Three (3) certified copies of the test results bearing the name of the testing company, type of test, test number, date and location test was conducted, are to be presented to the Engineer promptly enabling the Engineer to make his determination of the acceptability or unacceptability of the material to meet these specifications.

1.2 All additional tests necessitated by the failure of initial tests as determined by the Engineer shall be conducted as directed by the Engineer. The Contractor shall take immediate corrective measures as suggested by the testing laboratory and/or directed by the Engineer to make the materials meet or exceed these specifications.

Construction Requirements

2.1 Concrete Testing

2.1.1 All concrete to be used in the work shall be subject to testing to determine whether it conforms to the requirements of the specifications. The methods of testing shall conform to Section 520 of the Standard Specifications. The place, time, frequency and method of sampling will be determined by the Engineer in accordance with the particular conditions of this project.

2.1.1.1 Field tests of concrete for compressive strength shall be taken, cured and tested by the approved testing laboratory as directed by the Engineer. A minimum of four (4) test specimens shall be made for each test. One specimen shall be broken at 7 days, one at 14 days, the other at 28 days. Specimens shall be made and tested in accordance with AASHTO T 22, AASHTO T 23 and AASHTO T 141 as specified in Section 520. Where there is any question as to the quality of the concrete in the structures, the Engineer will require the Contractor at his expense, to have tests made by an approved independent testing and inspection laboratory. Such tests shall be in accordance with the

"Standard Methods of Securing, Preparing and Testing Specimens of Hardened Concrete for Compressive and Flexural Strengths" (ASTM Designation C42) or Sections 202 and 203 of the current A.C.I. Building Code for Reinforced Concrete (A.C.I.318) as may be required. The criteria for acceptability of the concrete under the latter shall be that given therein. Concrete failing to meet the specification requirements shall be removed and replaced at the Contractor's expense.

2.2 Structural Steel Inspection and Weld Testing

2.2.1 All fabricated structural steel and field welding to be used in the work shall be subject to testing to determine whether it conforms to the requirements of the specifications. The methods of testing shall conform to Section 550 of the Standard Specifications. The place, time, frequency and method of sampling will be determined by the Engineer in accordance with the particular conditions of this project and as defined in Section 550.

2.3 Trench Backfill, Roadway Bases & Embankment Compaction Testing

2.3.1 The Contractor shall provide samples of each backfill material from the proposed sources of supply. The Contractor shall allow sufficient time for testing and evaluation of results before material is needed. Samples from alternate sources shall be submitted if required. The Engineer will be the sole and final judge of the suitability of all materials. The requirements of Section 203.3.8 apply to this section. When dual specifications are present or conflict, the more stringent shall govern.

2.3.2 Materials in question pending tests results shall not be used. Any materials rejected shall be removed and replaced with new acceptable materials whether in stockpiles or in place.

2.3.3 Compaction shall continue until the unit dry weight of the fill reaches a value of not less than the specified maximum unit dry weight attained in a laboratory compaction test performed under the specifications of ASTM D1557-64T, Method "A" (Backfill material of a stony nature shall be tested under Method "C" or "D" of the same ASTM Designation) or other approved ASTM or AASHTO Specifications. Such tests shall also be used for establishing the optimum moisture content of the material. The in-place dry unit weight of the compacted material shall be determined by methods specified under ASTM "D" 1556-58T or other approved ASTM of AASHTO Specifications. The in-place compaction test to be consistent with the approved laboratory compaction test.

2.3.4 At least one laboratory compaction test shall be performed for each distinctive type of material to be incorporated. These laboratory tests to be taken at the suggestion of the testing laboratory and/or as directed by the Engineer. A minimum of two (2) in-place moisture-density determinations shall be made for each 100 linear feet of trench backfilled, roadway base constructed per 2 lifts of granular backfill installed. The actual number of

compaction tests, their locations and depth shall be determined by the Engineer. The percentage compaction of the fill at the point of the in-place moisture-density test shall be computed as follows:

Percentage compaction = DF x 100 / DL in which:

DF= Unit dry weight in pound/cubic feet of sample in field moisture density determinations.

DL= Maximum unit dry weight in pound/cubic feet obtained in the specified laboratory compaction test on a sample of the same type of material.

2.3.5 If the percentage compaction at any point is found to be unacceptable, additional compaction with or without modification of the field moisture content as directed shall be performed and additional moisture-density determinations made. This procedure shall be repeated until satisfactory compaction is obtained.

2.3.6 The Contractor will cooperate with the testing laboratory in obtaining field samples of in-place materials after compaction. Also, incidental field labor and equipment necessary to dig and backfill test holes shall be furnished by the Contractor.

Basis of Payment

3.1 All payment for initial testing of concrete, granular bridge backfill, trench backfill, roadway bases and embankment compaction and other like materials as specified and directed by the Engineer will be made by the Owner to the Contractor based on and in the amount of submitted invoices from the testing firm. The Contractor shall not be entitled to any mark-up on the submitted invoices.

3.2 All additional tests necessitated by the failure of initial tests as determined by the Engineer shall be conducted as directed by the Engineer and all costs incurred from these additional tests shall be borne by the Contractor.

3.3 All work performed by the Contractor in connection with this Section shall be considered incidental to other contract items bid.

Pay Items and Units:

1008.9	Alternations and Additions as Needed – Testing of Materials	Dollar

The allowance for Item 1008.9 on this project has been set at $5,000.00.

12/4/2023

EXETER
LINDEN STREET BRIDGE 081/046

December 4, 2023

S P E C I A L P R O V I S I O N

SECTION 1008 – ALTERATIONS AND ADDITIONS AS NEEDED

Item 1008.91 – Deck Repairs

Description

1.1 This work shall consist of repairing areas of the existing timber deck following the removal of the existing timber bridge rail and existing bridge pavement. Anticipated areas of repair include plugging the holes from the existing bridge rail penetrations and deteriorated deck boards.

Materials

2.1 **Structural Timber:** Structural timber shall conform to the requirements of AASHTO M 168, and shall be Southern Yellow Pine Select Structural and graded according to ASTM D 245.

2.2 **Timber Treatment:** All structural timber shall be treated. Preservation materials, type and method of treatment, and minimum net retention of preservatives shall conform to the requirements of AASHTO M 133.

2.3 **Hardware:** All hardware (as required) shall be in accordance with NHDOT Standard Specification Section 568 – 2.1.

Construction Requirements

3.1 Structural timber dowels shall be used to repair existing holes within the timber deck following the removal of the existing bridge rail. Timber dowels shall be sized slightly bigger than the hole and driven into place. Dowels shall match the grain of the adjacent timber deck boards.

4.2 Structural timber members used to replace existing deck boards shall match the existing size and grain direction of the adjacent timber deck boards.

4.3 Meetings and Site Visits

4.3.1 A pre-installation meeting with the Contractor, Engineer, and other stakeholders deemed appropriate shall be held after removal of the existing timber bridge rail and existing bridge pavement. Topics for discussion shall include the following:

4.3.1.1 Field review of existing timber deck to assess the soundness of the existing timber deck boards to remain. The soundness of the existing timber deck boards to remain are solely to be determined by the Engineer.

4.3.1.2 Review of accepted shop drawings and installation procedure(s).

4.3.2 A meeting will be held at the completion of the installation with the Contractor, Engineer, and Owner to review the completed installation.

4.3 Treatment and Inspection: Treatment and inspection shall be in accordance with NHDOT Standard Specification Section 568 – 3.1.

4.4 Handling and Storage: Handling and storage shall be in accordance with NHDOT Standard Specification Section 568 – 3.2.

4.5 Workmanship: Workmanship shall be in accordance with NHDOT Standard Specification Section 568 – 3.3.

Method of Measurement

4.1 Deck repairs will not be measured.

Basis of Payment

5.1 All payment for deck repairs as specified and directed by the Engineer will be made by the Owner to the Contractor based on and in the amount of submitted invoices from the Contractor based on time and materials.

Pay Items and Units:

1008.91	Alternations and Additions as Needed – Deck Repairs	Dollar

The allowance for Item 1008.91 on this project has been set at $5,000.00.

12/4/2023

EXETER
LINDEN STREET BRIDGE 081/046

December 4, 2023

S P E C I A L P R O V I S I O N

SECTION 1008 – ALTERATIONS AND ADDITIONS AS NEEDED

Item 1008.92 – Concrete Class F

Description

1.1 This work shall consist of filling voids in the backfill behind the existing timber facing as required. Voids are anticipated along the western wingwalls, localized near the interface with abutment breastwalls. Work shall conform with New Hampshire Department of Transportation (NHDOT) Standard Specification for Road and Bridge Construction, 2016 Edition, Section 520 – Portland Cement Concrete for Concrete Class F.

Materials

2.1 Materials shall conform with New Hampshire Department of Transportation (NHDOT) Standard Specification for Road and Bridge Construction, 2016 Edition, Section 520 – Portland Cement Concrete for Concrete Class F.

Construction Requirements

3.1 Construction requirements shall conform with New Hampshire Department of Transportation (NHDOT) Standard Specification for Road and Bridge Construction, 2016 Edition, Section 520 – Portland Cement Concrete.

3.2 Contractor is responsible for the stability of the timber facing during concrete placement and shall brace the facing as required.

Method of Measurement

4.1 Concrete Class F will not be measured.

Basis of Payment

5.1 All payment for Concrete Class F as specified and directed by the Engineer will be made by the Owner to the Contractor based on and in the amount of submitted invoices from the Contractor based on time and materials.

EXETER
LINDEN STREET BRIDGE 081/046

December 4, 2023

Pay Items and Units:

1008.92	Alternations and Additions as Needed – Concrete Class F	Dollar

The allowance for Item 1008.92 on this project has been set at $7,500.00.

APPENDIX C
Boring Logs

GM2 Associates, Inc.
115 Glastonbury Blvd.
Glastonbury, CT 06033
Telephone: 860-659-1416
Fax: 860-657-2926

BORING NUMBER B-1

CLIENT Wright-Pierce
PROJECT NAME Linden Street Bridge Evaluation
PROJECT NUMBER 41114.00
PROJECT LOCATION Exeter, New Hampshire
DATE STARTED 7/25/23 **COMPLETED** 7/25/23
GROUND ELEVATION 38.5 ft NGVD 1988 **HOLE SIZE** 3 inches
DRILLING CONTRACTOR Terracon Consultants Inc.
GROUND WATER LEVELS:
DRILLING METHOD 3-inch Casing
▽ **AT TIME OF DRILLING** 16.00 ft / Elev 22.50 ft
LOGGED BY L.Dwyer **CHECKED BY** L.Dwyer
AT END OF DRILLING ---
NOTES Water level measured from bridge deck
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		4.5 Inches of Bituminous Concrete					
		POORLY GRADED SAND WITH SILT, (SP-SM) light brown, fine to medium grained, medium dense, trace fine gravel (Fill)	SS 1	50	9-10-9-9 (19)		
5			SS 2	33	8-6-9-8 (15)		
10			SS 3	33	8-12-16-14 (28)		
15		▽ SANDY SILT, (ML) gray, medium dense (Alluvium)	SS 4	33	11-5-6-11 (11)		
20		SILTY SAND WITH GRAVEL, (SM) brown, fine to medium grained, dense (Glacio-Marine)	SS 5	33	15-17-19-47 (36)		
		Roller bit through cobbles from 23.5 to 24.5					
25							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

(Continued Next Page)

GM2 Associates, Inc.
115 Glastonbury Blvd.
Glastonbury, CT 06033
Telephone: 860-659-1416
Fax: 860-657-2926

BORING NUMBER B-1

CLIENT Wright-Pierce **PROJECT NAME** Linden Street Bridge Evaluation

PROJECT NUMBER 41114.00 **PROJECT LOCATION** Exeter, New Hampshire

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
25		SILTY SAND WITH GRAVEL, (SM) brown, fine to medium grained, dense (Glacio-Marine) *(continued)*	SS 6	50	18-16-25-33 (41)			
30		Roller bit through weathered rock to hard resistance at about 28.5 feet. Continued with roller bit to 30 ft and tried to sample. (Bedrock)						
		Bottom of borehole at 30.0 feet.	SS 7		50/0"			

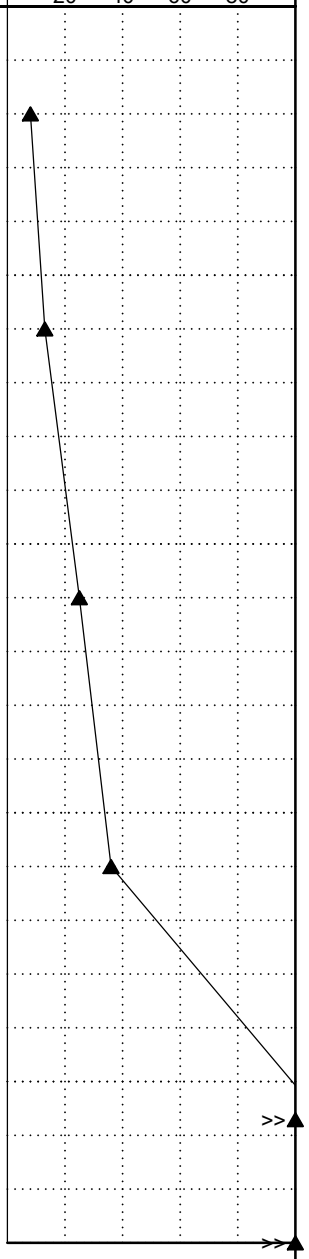
GM2 Associates, Inc.
115 Glastonbury Blvd.
Glastonbury, CT 06033
Telephone: 860-659-1416
Fax: 860-657-2926

BORING NUMBER B-2

CLIENT Wright-Pierce
PROJECT NAME Linden Street Bridge Evaluation
PROJECT NUMBER 41114.00
PROJECT LOCATION Exeter, New Hampshire
DATE STARTED 7/25/23 **COMPLETED** 7/25/23
GROUND ELEVATION 36.5 ft NGVD 1988 **HOLE SIZE** 3 inches
DRILLING CONTRACTOR Terracon Consultants Inc.
GROUND WATER LEVELS:
DRILLING METHOD 3-inch Casing
▽ **AT TIME OF DRILLING** 14.00 ft / Elev 22.50 ft
LOGGED BY L.Dwyer **CHECKED BY** L.Dwyer
AT END OF DRILLING ---
NOTES Water level measured from bridge deck
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		5 Inches of Bituminous Concrete					
		POORLY GRADED SAND WITH SILT, (SP-SM) light brown to brown, fine to medium grained, medium dense to loose, trace gravel (Fill)	SS 1	50	5-4-4-5 (8)		
5			SS 2	33	4-6-7-9 (13)		
10			SS 3	13	12-13-12-12 (25)		
15		▽ SILTY SAND, (SM) grayish brown, fine to medium grained, dense, with gravel (Fill)	SS 4	33	21-19-17-7 (36)		
		SANDY SILT, (ML) gray, fine to medium grained, dense (Alluvium)					
		Roller bit grinding from 18 to 20 ft.					
20		SILTY GRAVEL, gray, angular (Weathered Bedrock)	SS 5	35	39-45-50/5"		
		Roller bit through weathered rock to hard resistance at 23 ft. and tried to sample. (Bedrock)					
		Bottom of borehole at 23.0 feet.	SS 6		50/0"		

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



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Engineering a Better Environment