

**Newmarket Elementary School
Playground
Route 152, 243 South Main
Street**

Newmarket School District – SAU 31

March 29, 2023

**Newmarket Elementary School Playground
Newmarket School District – SAU 31
Route 152/South Main Street**

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SECTION 00200

INSTRUCTIONS TO BIDDERS

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ARTICLE 1 DEFINED TERMS

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

ARTICLE 2 COPIES OF BIDDING DOCUMENTS

- 2.1 Refer to Advertisement for Bids for information on examination and procurement of documents.
- 2.2 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.3 Owner and Engineer in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

ARTICLE 3 QUALIFICATIONS OF BIDDERS

- 3.1 Bidders shall be experienced in the kind of Work to be performed, shall have the necessary equipment, and shall possess sufficient capital to properly execute the Work within the time allowed. Bids received from Bidders who have previously failed to complete Work within the time required, or who have previously performed similar Work in an unsatisfactory manner, may be rejected. A Bid may be rejected if Bidder cannot show that he has the necessary ability, plant and equipment to commence the Work at the time prescribed and thereafter to prosecute and complete the Work at the rate or within the time specified. A Bid may be rejected if Bidder is already obligated for the performance of other Work which would delay the commencement, prosecution or completion of the Work.
- 3.2 Bidders shall have a minimum of 5 years of experience and shall have successfully completed projects of similar scope within the past 3 years. Submit with the bid a summary of experience and representative projects to show compliance with these qualifications.
- 3.3 Bidders may be investigated by Owner to determine if they are qualified to perform the Work. All Bidders shall be prepared to submit within five days of Owner's or Engineer's request, written evidence of such information and data necessary to make this determination. The investigation of a Bidder will seek to determine whether the organization is adequate in size, is authorized to do business in the jurisdiction where the project is located, has had previous experience and whether available equipment and financial resources are adequate to assure Owner that the Work will be completed in accordance with the terms of the Agreement. Owner reserves the right to reject any Bid if the evidence submitted by, or investigation of such Bidder fails to satisfy Owner that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein.
 - A. Bidders may be required to provide a letter stating that the Bidder is in good financial standing. The letter must:
 1. Be provided by a financial institution or certified public accountant having a relationship with the Bidder;
 2. Be on the bank or accountant's letterhead;
 3. Include name and contact information for the bank or accountant including address, email and telephone number;
 4. Identify the account holder(s), whose names must match the name of the Bidder, the type and length of business relationship, and the historical status of the accounts (i.e. good standing, timely payments, no overdrafts, etc.); and
 5. NOT include account numbers, account amounts, or lines of credit.

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

4.1 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 are to be obtained and paid for by Contractor.

4.2 Existing Site Conditions

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

B. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated conditions appear in paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work appear in paragraph 5.06 of the General Conditions.

4.3 Site Visit and Testing by Bidders

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

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

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

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

4.4 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 for which a Bid is to be submitted. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access

to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 5 BIDDER'S REPRESENTATIONS

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

- A. examine and carefully study the Bidding Documents, including any Addenda, data, and referenced items identified in the Bidding Documents;
- B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, or performance of the Work;
- D. carefully study all reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or adjacent to the Site which have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and carefully study all reports and drawings relating to a Hazardous Environmental Condition, if any, at or adjacent to the Site which have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;
- E. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on 1) the cost, progress, and performance of the Work; 2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, , and 3) Bidder's safety precautions and programs;
- F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of the Work to be performed by others at the site that relates to the Work as indicated in the Bidding Documents;
- H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;
- I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and finishing of the Work; and
- J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 PRE-BID CONFERENCE

- 6.1 A pre-bid conference will be held at the time and location stated in the invitation or advertisement to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are required to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 7 INTERPRETATIONS AND ADDENDA

- 7.1 All questions about the meaning or intent of the Bidding Documents shall be submitted in writing to the Engineer via the Tighe & Bond website for bidding document distribution at:
http://www.tighebond.com/Projects_Out_to_Bid.php
- 7.2 Prospective bidders must be registered users of the web site to submit questions regarding the project. In order to receive consideration, questions must be received by Engineer at least five days prior to the date fixed for the opening of Bids. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda to all parties recorded by Engineer as having received the Bidding Documents not later than three days prior to the date fixed for the opening of Bids. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 7.3 Addenda may be issued to clarify, correct, supplement or change the Bidding Documents. Such Addenda, if any, will be issued in the manner and within the time period stated in paragraph 7.2.
- 7.4 The Bidder must acknowledge receipt of each Addendum, if any, in the space provided on the Bid Form.

ARTICLE 8 CONTRACT TIMES

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

ARTICLE 9 LIQUIDATED DAMAGES

- 9.1 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

- 10.1 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.
- 10.2 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as

supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

ARTICLE 11 PREPARATION OF BID

- 11.1 A Bid must be made on the Bid form included with the Project Manual. The Bid form shall not be altered in any way.
- 11.2 The Bid form must be completed in ink. Blank spaces in the Bid form must be filled in correctly where indicated, and the Bidder must state, both in words and numerals, the prices for which he proposes to complete each and every item of Work. Ditto marks shall not be used.
- 11.3 A Bidder shall execute his Bid as stated below.
 - A. A Bid by an individual shall show the Bidder’s name and official address.
 - B. 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 shall be shown.
 - C. A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature) and must be accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the corporate secretary. The state of incorporation and the official corporate address shall be shown.
 - D. A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.
 - E. A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
 - F. All names must be printed in ink below the signature.
- 11.4 The Bid shall contain an acknowledgment of the receipt of all Addenda in the space provided on the Bid form.
- 11.5 Postal and email addresses and telephone number to which communications regarding the Bid are to be directed shall be shown.
- 11.6 The Bid shall contain evidence of Bidder’s authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder’s state contractor license number, if any, shall also be shown on the Bid Form.
- 11.7 In order to be considered for selection, the Bidder must submit a complete bid package in accordance with these Bidding Documents. Partial Bids will not be accepted. Refer to the Bid Form for a list of documents that shall be submitted in addition to the Bid Form.
- 11.8 Any deviations in completion of the Bid Form and accompanying documents from the instructions provided in this Article may be cause for rejection of the Bid.

ARTICLE 12 BASIS OF BID

12.1 Lump Sum

- A. Bidders shall submit a Bid on a lump sum basis as set forth in the Bid Form and include a separate price for each alternate described in the Bidding Documents as provided for in the Bid form.
- B. The award will be based on the lowest eligible Bid.

ARTICLE 13 SUBMITTAL OF BID

- 13.1 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement for Bids and shall be enclosed in an opaque sealed envelope plainly marked with the Project title, the name and address of Bidder, and shall be accompanied by the Bid deposit and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate envelope plainly marked on the outside with the notation "BID ENCLOSED". When using the mail or other delivery system, the Bidder is totally responsible for the mail or other delivery system delivering the Bid at the place and prior to the time indicated in the Advertisement for Bids. A mailed Bid shall be addressed to Owner at the address in the Advertisement for Bids.
- 13.2 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 14 MODIFICATION OR WITHDRAWAL OF BID

14.1 Withdrawal Prior to Bid Opening

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

14.2 Modification Prior to Bid Opening

- A. If a Bidder wishes to modify its Bid prior to the Bid opening, Bidder must withdraw its initial Bid in the manner specified in paragraph 14.1.A and submit a new Bid prior to the date and time for the opening of Bids.

ARTICLE 15 OPENING OF BIDS

- 15.1 Bids will be opened as indicated in the Advertisement for Bids and publicly read aloud.
- 15.2 In order to be considered for selection, Bids must arrive at the designated location on or before the date and time specified in the Advertisement for Bids. Bidders mailing their Bids should allow for normal mail delivery time to ensure timely receipt of their Bids by Owner.
- 15.3 Bids received by mail or otherwise after the time specified for the opening of Bids will not be accepted and will be returned to the Bidder unopened.
- 15.4 No responsibility will attach to Owner, its employees or the Engineer for premature opening of a Bid not properly addressed and identified in accordance with the Bidding Documents.

ARTICLE 16 DISQUALIFICATION OF BIDDERS

16.1 More than one Bid for the same Work from an individual, or a firm, partnership, corporation or an association under the same or different names will not be considered. Reasonable grounds for believing that any Bidder is interested in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder is interested.

ARTICLE 17 BIDS TO REMAIN SUBJECT TO ACCEPTANCE

17.1 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 deposit prior to the end of this period.

ARTICLE 18 EVALUATION OF BIDS AND AWARD OF CONTRACT

18.1 Owner reserves the right to reject any and all Bids, to waive any and all informalities, and the right to disregard all nonconforming, nonresponsive or conditional Bids.

18.2 Owner reserves the right to reject any Bid not accompanied by specified documentation.

18.3 Owner reserves the right to reject any Bid if it shows any omissions, alterations of form, additions not called for, conditions or qualifications, or irregularities of any kind.

18.4 Owner reserves the right to reject any Bid that, in their sole discretion, is considered to be unbalanced or unreasonable as to the amount bid for any lump sum or unit price item.

18.5 Owner reserves the right in its sole discretion to accept the Bid that Owner determines is in the best interests of the District even though the proposer may not submit the lowest bid.

18.6 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

18.7 In evaluating whether a Bidder is responsible, Owner will consider the qualifications 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.

18.8 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.

18.9 If the Owner awards the Contract for the Work, such award shall be to the responsible Bidder (who has neither been disqualified nor rejected pursuant to Article 16 or this Article 18) submitting the lowest responsive Bid.

18.10 Contents of the Bid of the Successful Bidder will become part of any contract awarded.

ARTICLE 19 CONTRACT SECURITIES

19.1 Performance and payment bonds shall be furnished by the successful Bidder. The amounts of and other requirements for performance and payment bonds are stated in Article 6 of the General Conditions. Performance and payment bonds submitted shall be posted by a recognized surety company having an A.M Best rating of A+, XII or higher and a place of business in the State of New Hampshire. All performance and payment bonds signed by an agent must be accompanied by a certified copy of the authority to act. Performance Bonds and Payment Bonds shall be submitted on the forms included in Sections 00610 and 00615, respectively, of the Contract Documents. Additional requirements may be stated in the General or Supplementary Conditions.

- 19.2 Within 15 days from the date of the Notice of Award, the Successful Bidder shall deliver to Owner and Engineer, for review and approval, the performance bond and the payment bond he proposes to furnish at the time of the execution of the Agreement.
- 19.3 The required contract securities will become part of the Contract Documents.

ARTICLE 20 CONTRACT INSURANCE

- 20.1 Certificates of insurance and policy endorsements shall be filed with the SAU #31 Office prior to the effective date of the contract and shall be subject to approval by SAU #31 and its insurance carrier for adequacy of protection. The Contractor shall file updated insurance certificates as coverage becomes effective. Insurance shall not be cancelable without thirty (30) days prior written notice to the District. The District is to be named as an additional insured. The Contractor agrees to maintain insurance in the following minimum amounts:
- A. Workman's Compensation Insurance – As Required by law.
 - B. General Liability (Contractor's) \$1,000,000/Occurrence/\$2,000,000 General Aggregate
 - C. Umbrella Liability (Contractor's) \$1,000,000 Occurrence/\$2,000,000 General Aggregate
 - D. Certification of insurance acceptable to the District shall be prior to the commencement of work and not later than fifteen (15) calendar days from notice of contract award. Insurance shall remain enforce during the full term of the contract.
 - E. During the term of the contract, the Contractor agrees to maintain Workmen's Compensation insurance on all employees engaged in the performance of the contract.
- 20.2 Within 15 days from the date of the Notice of Award, the Successful Bidder shall deliver evidence of required insurance to Owner and Engineer.
- 20.3 The required insurance certificates will become part of the Contract Documents.

ARTICLE 21 SIGNING OF AGREEMENT

- 21.1 The Owner will transmit the required number of unsigned Agreements to the Successful Bidder with the Notice of Award. Within 15 days of the date of the Notice of Award, the Successful Bidder shall sign the Agreements and return them to the Owner. The Owner will return one executed Contract to the Successful Bidder.

END OF SECTION

SECTION 00410

FORM FOR GENERAL BID

PROJECT IDENTIFICATION:

1. Newmarket Elementary School Playground

TABLE OF ARTICLES

2. Bid Recipient
3. Bidder's Acknowledgements
4. Bidder's Representations
5. Bidder's Certifications
6. Basis of Bid
7. Time of Completion
8. Attachments to This Bid
9. Bid Submittal

ARTICLE 1 - BID RECIPIENT

- 1.1 This Bid is submitted to:

Newmarket School District, SAU-31

186A Main St.

Newmarket, NH 03857

603-292-7984

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

ARTICLE 2 - BIDDER'S ACKNOWLEDGEMENTS

- 2.1 Bidder accepts all of the terms and conditions of the Advertisement for Bids and Instructions to Bidders. The Bid will remain subject to acceptance for 30 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 - BIDDER'S REPRESENTATIONS

- 3.1 In submitting this Bid, Bidder represents, as set forth in the Agreement, that:
 - A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents and hereby acknowledges the receipt of all Addenda.

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

ARTICLE 4 - BASIS OF BID

41 Bidder proposes to furnish all labor and materials required for construction of the Newmarket Elementary School Playground in accordance with the accompanying Bidding Documents prepared by Tighe & Bond, Inc., for the Contract Price specified below, subject to additions and deductions according to the terms of the Bidding Documents.

42 This Bid includes Addenda numbered_____.

43 The proposed Contract Price is:

_____dollars

(words)

(\$_____)

(figures)

ARTICLE 5 - TIME OF COMPLETION

- 5.1 Bidder agrees that the Work will be substantially 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.
- 5.2 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times as stated in the Agreement.

ARTICLE 6 - BID SUBMITTAL

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

By: _____
[Signature]

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

Attest: _____
[Signature]

[Printed name]

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

Bidder's License No.: _____
(where applicable)

END OF SECTION

SECTION 00520

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION
CONTRACT

This Agreement is by and between the Newmarket School District, hereinafter called Owner and _____ hereinafter called Contractor.

Owner and Contractor hereby agree as follows:

ARTICLE 1 WORK

1.1 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described with the following title: "Newmarket Elementary School Playground".

ARTICLE 2 ENGINEER

2.1 The part of the Project that pertains to the Work has been designed by Tighe & Bond, Inc.

ARTICLE 3 CONTRACT TIMES

3.1 Time of the Essence

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

3.2 Substantial Completion and Final Payment

A. The Work will be substantially completed within 90 days from the date of the Notice to Proceed and completed and ready for final payment in accordance with paragraph 15.06 of the General Conditions within 120 days from the date of the Notice to Proceed.

ARTICLE 4 CONTRACT PRICE

4.1 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount equal to the prices stated in Contractor's Bid, attached hereto as an exhibit. Notwithstanding anything else to the contrary herein, the Contract Sum shall not be exceeded under any circumstances unless the Owner gives prior written approval to the Work and the additional cost of the Work prior to the Contractor undertaking work or purchasing materials that would cause the budget for the agreed Work to be exceeded. Accordingly, no course of conduct or dealings between the parties, nor any expressed or implied acceptance of alterations or additions to the Work, unless it is in writing, signed by an authorized representative of the Owner as designated hereunder, and no claim that the Owner has been unjustly enriched by any alterations or additions to the Work, whether or not there is, in fact, any unjust enrichment to the Work, shall be the basis of the claim to an increase in the amounts due.

ARTICLE 5 PAYMENT PROCEDURES

5.1 Owner shall make progress payments on account of the Contract Price on the basis of processed Applications for Payment monthly during construction, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All progress payments will be measured by the Schedule of Values established as

provided in the General Conditions, or in the event there is no schedule of values, as provided elsewhere in the Contract.

5.2 Owner shall retain from progress payments 10 percent of the value of Work completed.

5.3 Final Payment

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

ARTICLE 6 CONTRACTOR'S REPRESENTATIONS

6.1 Contractor makes the following representations:

- A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.
- B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.
- F. 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.
- G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. Contractor's entry into this Contract constitutes an incontrovertible representation by

Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 7 CONTRACT DOCUMENTS

7.1 Contents

- A. The Contract Documents consist of the following:
 - 1. This Agreement (pages 00520-1 to 00520-7, inclusive);
 - 2. Performance Bond (pages 1 to 3, inclusive);
 - 3. Payment Bond (pages 1 to 3, inclusive);
 - 4. General Conditions (title pages, table of contents, and pages 1 to 65, inclusive);
 - 5. Supplementary Conditions (pages 00800-1 to 00800-6, inclusive);
 - 6. Specifications (Divisions 1 through 16);
 - 7. Drawings (not attached but incorporated by reference) consisting of a cover sheet and sheets numbered C-101 through C-503, inclusive, with each sheet bearing the following general title: Newmarket Elementary School Playground;
 - 8. Addenda as issued;
 - 9. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages 00410-1 to 00410-4, inclusive);
 - 10. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Notice to Proceed;
 - b. Work Change Directives;
 - c. Change Order(s);
 - d. Field Orders
- B. The documents listed in Paragraph 7.1.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 General Conditions.

ARTICLE 8 MISCELLANEOUS

8.1 Terms

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

8.2 Assignment of Contract

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation,

money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

8.3 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.

8.4 Severability

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

8.5 Contractor 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 8.5:
 - 1. “corrupt practice” means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 - 2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 - 4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.6 Other Provisions

Owner stipulates that the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, published by the Engineers Joint Contract Documents Committee®, and Owner has plainly shown all

modifications to the standard wording of such published document to the Contractor in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this agreement. This agreement will be effective on _____, _____ (which is the effective date of the contract).

OWNER:

CONTRACTOR:

By: _____
Title: _____

By: _____
Title: _____

[CORPORATE SEAL]

[CORPORATE SEAL]

Attest: _____
Title: _____

Attest: _____
Title: _____

Address for giving notices:

Address for giving notices:

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

License No.: _____
(Where applicable)

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

Certified as to the availability of funds:
Date: _____

Signed: _____
Title: _____

END OF SECTION

PERFORMANCE BOND

CONTRACTOR *(name and address)*:

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

OWNER *(name and address)*:

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*:

BOND

Bond Number:

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

Amount:

Modifications to this Bond Form: None See Paragraph 16

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

CONTRACTOR AS PRINCIPAL

SURETY

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

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

By: _____
Signature

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

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

14. Definitions

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

payments made to or on behalf of the Contractor under the Construction Contract.

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

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

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

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

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

16. Modifications to this Bond are as follows:

PAYMENT BOND

CONTRACTOR *(name and address)*:

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

OWNER *(name and address)*:

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*:

BOND

Bond Number:

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

Amount:

Modifications to this Bond Form: None See Paragraph 18

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

CONTRACTOR AS PRINCIPAL

SURETY

(seal)
Contractor's Name and Corporate Seal

(seal)
Surety's Name and Corporate Seal

By: _____
Signature

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

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

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

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

Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

- 16.1 **Claim:** A written statement by the Claimant including at a minimum:
1. The name of the Claimant;
 2. The name of the person for whom the labor was done, or materials or equipment furnished;
 3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 4. A brief description of the labor, materials, or equipment furnished;
 5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 7. The total amount of previous payments received by the Claimant; and
 8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

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

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

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

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

18. Modifications to this Bond are as follows:

SECTION 00800

SUPPLEMENTARY CONDITIONS

PART 1 AMENDMENTS TO GENERAL CONDITIONS

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

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

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

ARTICLE 3 –DOCUMENTS: INTENT, REQUIREMENTS, REUSE

SC-3.01 Replace paragraph 3.01E with the following paragraph:

3.01E In the event of conflicts, inconsistencies or discrepancies among the Contract Documents, to the extent applicable, the better quality or greater quantity of work shall be provided without change to the Contract Price. In the event of such conflicts, inconsistencies or discrepancies which do not relate to the quality or quantity of work, the Contractor shall request clarifications or interpretations from the Engineer as provided herein.

SC-3.01 Add the following new paragraph immediately after paragraph 3.01E:

3.01F Each and every provision of law and clause required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion.

SC-3.03A(3) After “actual knowledge” add “or should have known”.

SC-3.04A In the last sentence replace “Engineer” with “Owner”.

SC-3.04B At the end of the sentence delete everything after “Change Proposal”.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01 Delete paragraph 4.01A in its entirety and insert the following in its place:

4.01A The Contract Times will commence to run on the date specified in the Notice to Proceed.

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

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

- 5.06A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to the Owner.
- 5.06B. Not used.
- 5.06I Delete paragraph 5.06I in its entirety.

ARTICLE 6 - BONDS AND INSURANCE

SC-6.01A Change “one year” to “two years” and add at the end of the paragraph the following:

Each bond must display the sureties bond number. Also, a rider including the following provisions shall be attached to each bond: Surety hereby agrees that it consents to and waives notice of any addition, alteration, omission, change, or other modification of the Contract Documents. Any addition, alteration, omission, change, extension of time, or other modification of the Contract Documents, or a forbearance on the part of either the Owner or the Contractor to the other, shall not release the surety of its obligations hereunder, and notice to the surety of such matters is hereby waived.

SC-6.07A Delete “act as fiduciary for other insureds, and”.

SC-6.07B Delete “and as fiduciary for other insureds”.

SC-6.03 Add the following new paragraph immediately after paragraph 6.03B.3:

6.03B.4 Insurance certificate(s) shall also contain the following:

1. Confirmation that the General Liability policy covers only the Work under this Contract, with project specific limits.
2. Confirmation that automobile insurance covers all Scheduled, Hired and Non-Owned vehicles.
3. Names of all additional insureds as specified herein.

SC-6.03 Add the words “and Paragraph 6.04” after the words “Paragraph 6.03” in Paragraph 6.03I.

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

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

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

State: Statutory

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

2. Contractor’s Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:
 Per Occurrence \$ 1,000,000
 Products – Completed Operations Aggregate \$ 1,000,000
 Personal and Advertising Injury \$ 1,000,000
 Each Occurrence (Bodily injury & Property Damage) \$1,000,000
 General Aggregate \$ 2,000,000

3. Automobile Liability Insurance:
 Bodily Injury
 a. Each person \$ 1,000,000
 b. Each Accident \$ 2,000,000
 Property Damage
 a. Each Accident \$ 1,000,000
[or]
 A Combined Single Limit of \$ 2,000,000

4. Excess or Umbrella Liability:
 Per Occurrence \$ 1,000,000
 General Aggregate \$ 2,000,000

5. Contractor’s Pollution Liability:
 Each Occurrence \$ N/A
 General Aggregate \$ N/A

If box is checked, Contractor is not required to provide Contractor’s Pollution Liability insurance under this Contract

6. Additional Insureds: Owner and Engineer,

SC 6.05 Delete Section 6.05 in its entirety and insert the following in its place:
6.05 Not Used

SC-6.06 Delete Section 6.06 in its entirety.

ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES

SC-7.02 Add the following new paragraph immediately after paragraph 7.02B.

7.02C Whenever Owner shall notify Contractor in writing that any person on the Work appears to be incompetent, disorderly, or otherwise unsatisfactory, such person shall be removed from the Project and shall not again be employed on it except with the consent of Owner.

SC-7.05A In the first sentence after "Engineer" add "and Owner".

SC-7.05D Delete the paragraph in its entirety.

SC-7.05F In the first sentence after "Engineer" add "and Owner", and change "approves" to "approve".

SC-7.07B Delete the paragraph in its entirety.

ARTICLE 8 - OTHER WORK AT THE SITE

SC-8.01 Add the following new paragraph immediately after paragraph 8.01.D:

8.01E The Owner intends to purchase and install playground equipment and Fibar resilient surface using a pre-approved vendor.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

SC-9.01A Delete the paragraph in its entirety.

SC-9.01B In the first sentence delete everything after "Engineer".

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 Add the following:

A. On this project, by agreement with the owner, Engineer will not furnish a Resident Project Representative to represent Engineer at the Site or assist Engineer in observing the progress and quality of the work.

SC-10.07A Delete the last sentence.

SC-10.08D In the fourth line delete "generally".

SC-11.06 and 11.07 Delete the Sections in their entirety and add the following language:
Newmarket Elementary 00800-7 Supplementary Conditions
School Playground

SC-11.06 Change Orders

- 11.06A Notwithstanding anything else to the contrary herein, the Contract Sum shall not be exceeded under any circumstances unless the Owner gives prior written approval to the Work and the additional cost of the Work prior to the Contractor undertaking work or purchasing materials that would cause the budget for the agreed Work to be exceeded. Accordingly, no course of conduct or dealings between the parties, nor any expressed or implied acceptance of alterations or additions to the Work, unless it is in writing, signed by an authorized representative of the Owner as designated hereunder, and no claim that the Owner has been unjustly enriched by any alterations or additions to the Work, whether or not there is, in fact, any unjust enrichment to the Work, shall be the basis of the claim to an increase in the amounts due.
- 11.06B Agreement on any Change Order shall constitute a final settlement of all claims of the Contractor relating to the change in Work that is subject of the Change Order, including, but not limited to, all indirect and direct costs associated with such change and any and all adjustments to the Contract Sum and the construction schedule.

ARTICLE 13 - COST OF THE WORK; ALLOWANCES; UNIT PRICEWORK

SC-13.01 Delete the word “superintendents,” in the second sentence after the word “limitation,” in paragraph 13.01B.1.

SC-13.01 Delete paragraph 13.01B.5.c in its entirety and replace with the following:

13.01B.5.c The fair rental and operating cost of all machinery and equipment used on the extra work for the period of such use. The fair rental and operating cost for all machinery and equipment shall be based upon the most recent edition of “Rental Rate Bluebook for Construction Equipment” (the “Bluebook”), published by Equipment Watch (equipmentwatch.com), or a similar publication approved by Engineer and adjusted for regional and age adjustments as specified in the “Bluebook.” Rental periods corresponding to the overall period of use shall be used, except if a piece of equipment used on extra work is already on the job, or has previously been rented for a long period of time (months), then the long-term rental rate (monthly) shall be used in determining costs. The hourly rental rate for long-term rental equipment will be determined by the monthly rental rate divided by 176.

For the situation where equipment is on the job and available for use but cannot be used due to a delay or suspension of a portion or all of the Contract activities, a rental standby rate may be paid if the Contractor can conclusively demonstrate to the satisfaction of the Engineer that: (1) the equipment cannot be used elsewhere on the Project or demobilized and remobilized at a cost lower than the cost of standby time, (2) that the equipment cannot be put in use due to factors beyond the Contractor’s control, and (3) the equipment on standby would have been used as part of the Work that is suspended or put on hold. The standby rate will be calculated as no more than 50% of the rental rate as listed in the “Bluebook” and adjusted for regional and age adjustments. Lesser standby rates may apply if the Owner or Engineer can demonstrate that the Contractor’s standby cost is less than this rate. The standby rate will not include operating costs. A standby rate will not be paid for equipment

which is being employed for portions of the Work which are still underway. A standby rate will also not be paid for equipment which is readily demobilized including construction equipment categorized as “shop tools” or “miscellaneous” in the “Bluebook.” Standby rates for durations of less than four hours will not be considered.

SC-13.01 Insert in the first sentence after the word “architects,” the word “superintendents,” in paragraph 13.01C.1

SC-13.01 Add the following new paragraph immediately after paragraph 13.01C.5:

13.01C.6 Costs of or rental of small tools; costs of or rental of buildings.

SC-13.02D Delete the paragraph in its entirety.

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

SC-14.02 Insert after the word “notice” the words “(minimum 24 hours)” in paragraph 14.02A.

SC-14.03 Delete paragraph 14.03B in its entirety and replace with the following:

14.03B *Engineer’s Authority:* At any time during the progress of the Work, Engineer shall have the authority to determine whether Work is defective, and reject defective Work, even though such work has been previously inspected and paid for.

SC-14.06 Add the following new paragraph immediately after paragraph 14.06A.

14.06B If Owner stops work under Paragraph 14.06, Contractor shall not be entitled to an extension of Contract Time nor to an increase in Contract Price.

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

SC-15.01C(1) Delete in the first paragraph “that to the best of Engineer’s knowledge, information and belief.”

SC-15.01 Delete paragraph 15.01 D.1 in its entirety and insert the following in its place:
15.01 D.1 Thirty 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 will be paid by Owner to Contractor.

SC-15.03C Delete the last sentence.

SC-15.06A(2) Add a new paragraph as follows:

15.06A(2)(f) All warranties relating to the work.

ARTICLE 16 - SUSPENSION OF WORK AND TERMINATION

SC-16.02A1 Delete “persistent”.

SC-16.02A4 Delete “repeated”.

SC-16.02E In the second last sentence after “so approved by Engineer” add “and Owner”.

SC-16.03A Delete everything after the first sentence and add the following:

Contractor shall be paid for work satisfactorily completed to the date of termination as Contractor’s sole remedy.

SC-16.04A Delete the paragraph in its entirety.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

SC-17.02 Add the following paragraph after paragraph 17.01:

17.02 Venue

A. Any suit by either party arising under this Contract shall be brought only in the Superior Court in the county where the Project is located. The parties hereto waive any argument that this venue is improper or that the forum is inconvenient.

END OF SECTION

SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Work of the Contract is shown and described in Drawings and Project Manual entitled:

Newmarket Elementary School Playground
Route 152/South Main Street
Newmarket School District – SAU 31

Tighe & Bond, Inc.
Consulting Engineers
Portsmouth, New Hampshire

2. The Work includes the following major items:
 - a. Earthwork to lines and grades shown in the plans.
 - b. Concrete pre-cast curb.
 - c. Subsurface Drainage.
 - d. Basketball court and Four Square play area.
 - e. Chainlink Fences.
 - f. Irrigation water line.
 - g. New sidewalks for access to playground area.
 - h. Establishment of grass in new lawn areas and repair of disturbed areas.
 - i. Coordinate with Owner's playground equipment vendor during their installation of playground equipment, site furnishings and resilient surfacing.

1.2 SUBMITTALS

A. Informational Submittals

1. Submit copies of permits or approvals required for the Work, prior to initiating the Work.
2. Submit detailed cost breakdown of the Work, prior to initiating the Work.

1.3 EXISTING DESCRIPTION

- A. The existing project area contains a basketball court, fences and playground area with mulch base.

1.4 PROJECT/SITE CONDITIONS

A. Permits

1. Obtain the permits and approvals listed below:
 - a. Permits and licenses of a temporary nature necessary to perform the Work.
 - b. Permits for disposal of construction wastes including disposal of cleared and grubbed materials.
 - c. Other permits or licenses required for the Contractor's operations or required elsewhere in the Contract Documents and not included herein.
 2. Obtain required time extensions to permits obtained by the Contractor, if construction authorized by permits has not been completed by the expiration date noted on these permits.
 3. Permits require that a representative of the permitting authority or the Owner be present on site during construction or given the opportunity to observe conditions prior to backfilling or otherwise proceeding with construction. Notify the Owner, Engineer, and the permitting authority prior to performing Work that is governed by the permit.
 4. Obtain permits and approvals from appropriate jurisdictional agencies and property owners for use of premises not furnished by the Owner, and for all off-site areas.
 5. Submit copies of permits prior to performance of Work authorized by permits.
- B. Existing Conditions
1. Use of Premises and Off-site Work
 - a. The Work shall occur on the Owner's property within the limits of Work shown on the Drawings.
 - b. Land owned by the Owner is available for staging and shall be coordinated with the Owner.
 - c. Obtain permits and approvals for use of any land and access thereto that is deemed necessary for the Work, where such land is not available for use by the Owner, including land for temporary construction facilities, access and egress, or for storage of materials. Confine apparatus and storage to such additional areas.
 - d. Obtain permits and written approvals from appropriate jurisdictional agencies for the use of premises not available for use by the Owner, including all offsite staging areas, borrow pits and waste areas. Submit copies of all permits and approvals to the Owner prior to using areas.
 - e. Provide for the disposal of waste materials off-site in accordance with all applicable laws.
 - f. Adhere to the limits of Work as indicated, to minimize obstruction to traffic and inconvenience to the Owner, general public, and residents in the vicinity of the Work, and to protect people and property. Keep fire hydrants on or adjacent to the Work accessible to fire fighting equipment at all times.

- g. Make temporary provisions for the use of sidewalks and maintain functioning gutters, stormwater systems, drainage ditches, and culverts.
- h. Maintain public access to businesses and residences including driveways and parking lots at all times during the Work.
- i. Observe required setback from existing cemetery adjacent to the project area as shown in the Drawings.

PART 2 PRODUCTS

2.1 MATERIALS FURNISHED BY OWNER

- A. The Owner will not furnish any materials, labor or equipment under this Contract.

PART 3 EXECUTION – NOT USED

END OF SECTION

SECTION 01140

WORK RESTRICTIONS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Work Schedule
 - 2. Construction Constraints
 - 3. Vehicle Access
 - 4. Available Work Area
 - 5. Site Usage Plan
- B. Related Requirements
 - 1. Section 01310 - Coordination
 - 2. Section 01325 - Scheduling of Construction

1.2 SUBMITTALS

- A. Incorporate the requirements of this Section in the project schedule submitted under Section 01325.
- B. Action Submittals
 - 1. Submit site usage plan within 30 days of the Notice to Proceed.

1.3 WORK SCHEDULE

- A. Conduct the Work during daylight hours on Monday through Friday, and within the time between 7:00 a.m. and 5:00 p.m. No work is to be done on Owner's holidays, Saturdays, Sundays or outside of the work hours described above. No equipment or machinery may be started at the sites before 8:00 a.m. and all equipment must be shut off by 4:00 p.m.
- B. Cutting of paved surfaces, excavation within any paved roadway, or pavement resurfacing activities is not allowed from November 15th to April 1st.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CONSTRUCTION CONSTRAINTS

- A. The following are constraints for the Work. Incorporate these constraints into the schedule required to be submitted under Section 01325.
 - 1. All components of the existing facility must remain in operation throughout construction of the new playground area unless otherwise specified herein or in Section 01310.

3.2 AVAILABLE WORK AREA

- A. Limits of construction are defined on the Drawings. No work will be permitted to be performed outside these boundaries.

3.3 SITE USAGE PLAN

- A. Submit a site usage plan showing all proposed staging areas, locations of all office and storage trailers, and material laydown areas. The site usage plan should be a drawing showing the proposed locations and shall include on-site traffic modifications and temporary utilities as may be applicable.

END OF SECTION

SECTION 01310

COORDINATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Project Management
 - 2. Coordination
 - 3. Project Meetings
- B. Related Requirements
 - 1. Section 01325 - Scheduling of Construction
- C. Related Work Not Included
 - 1. Operation of existing facilities will be performed by the Owner unless otherwise specified. The Owner will assist in arranging operation of any existing facilities or equipment required by the Contractor to connect to existing facilities, and the Contractor shall not operate existing valves or equipment. Only the Owner will operate Owner valves.

1.2 SUBMITTALS

- A. Informational Submittals
 - 1. Submit to the affected utility company, the Owner, and the Engineer, in writing, all requests for temporary shutdowns of facilities or interruption of operations. No shutdowns of the water system or interruptions to existing operations will be permitted except as outlined in this Section. Submit requests at least 2 weeks prior to the beginning of the Work requiring shutdown or interruption. No shutdown shall occur without the approval of the utility company or the Owner.
 - 2. At the pre-construction conference, supply to the Owner the cell phone number of a responsible person who may be contacted during off-hours for emergencies 24 hours a day, seven days a week.
 - 3. Prepare a contact list of phone numbers, including cell phone numbers, and emails for all Project personnel and submit to the Engineer at the pre-construction conference. Include Contractor, Owner, Engineer, and Town of Newmarket personnel including police, fire, and ambulance.
 - 4. Submit to the Owner and Engineer, in writing, all requests for valve operations at least 2 weeks prior to commencing operation.

1.3 PROJECT MANAGEMENT

- A. Retain a full-time Superintendent, satisfactory to the Owner and Engineer. The Superintendent shall not be changed except with the consent of the Owner and Engineer. The Superintendent shall be in full charge of the Work.

- B. Complete the Work in a continuous uninterrupted operation. Use sufficient personnel and adequate equipment to complete the Work within the Contract Time.

1.4 COORDINATION

- A. Do not interfere with the operation of the existing facilities.
- B. Perform all coordination necessary to complete connections to the existing water line.
- C. Perform all coordination necessary to facilitate installation of play equipment and site furnishings by Owner's vendor.
- D. Coordinate with appropriate utility companies, as well as with the Owner, where the Work crosses or is adjacent to existing utilities.

1.5 PROJECT MEETINGS

- A. Pre-Construction Conference
 - 1. The Contractor shall be prepared to discuss the following subjects at the Pre-Construction Conference. Documentation for these items is required to be submitted within the time frames included in individual specification sections.
 - a. Project scheduling
 - b. Sequencing of critical path Work items
 - c. Shop Drawing procedures
 - d. Project changes and clarification procedures
 - e. Use of sites, access to Work areas, office and storage areas, security and temporary facilities
 - f. Contractor safety plan and representative
 - g. Progress payments and procedures
 - h. Required documentation
 - i. Project personnel contact list
- B. Progress Meetings
 - 1. Progress meetings will be held every 2 weeks and at other times as requested by the Owner or as required by the Progress of the Work.
 - 2. The Contractor's Superintendent shall attend all progress meetings.
 - 3. At a minimum, progress meetings will review Work progress, schedule, Shop Drawing submission schedule, Applications for Payment, and other matters needing discussion and resolution.
 - 4. Review the schedule with all parties to be affected by upcoming work.

PART 2 PRODUCTS - NOTUSED

PART 3 EXECUTION

3.1 GENERAL

- A. Notify DIGSAFE at 811 at least 72 hours prior to any digging, trenching, rock removal, demolition, borings, backfill, grading, landscaping, or any other earth moving operations.

3.2 COORDINATION WITH THE OWNER'S OPERATIONS

- A. Notify the Owner and Engineer, in writing, a minimum of 1 week in advance of commencing Work on site. Work on site shall not occur until all necessary permits are obtained.
- B. Notify the Owner and Engineer, in writing, a minimum of 1 week before commencing any work which may affect the Owner's operations.
- C. Perform all construction activities so as to avoid interference with operations of the facility and the work of others.

3.3 SEQUENCE OF CONSTRUCTION

- A. Constructing the proposed improvements while maintaining existing operations will require a specific sequence of construction. The Contractor will be allowed reasonable flexibility in scheduling the construction activities. Provide a detailed construction schedule as required in Section 01325.

END OF SECTION

SECTION 01420

REFERENCES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Standards referenced in the Contract Documents.

1.2 GENERAL

A. Comply with the requirements of standards referenced in the Contract Documents.

1.3 ABBREVIATIONS

A. Abbreviations used in the Specifications are defined as follows:

1. AA – Aluminum Association
2. AABC – Associated Air Balance Council
3. AASHTO – American Association of State Highway and Transportation Officials
4. ACI - American Concrete Institute
5. ACOE - U.S. Army Corps of Engineers
6. ADA – Americans with Disabilities Act
7. ADC – Air Diffusion Council
8. AFBMA – Antifriction Bearing Manufacturers Association
9. AGA – American Gas Association
10. AGC – Associated General Contractors of America
11. AGMA - American Gear Manufacturer Association
12. AI – Asphalt Institute
13. AIA – American Institute of Architects
14. AISC – American Institute of Steel Construction
15. AISI - American Iron and Steel Institute
16. AITC - American Institute of Timber Construction
17. AMCA – Air Movement and Control Association
18. ANSI – American National Standards Institute
19. APA – American Plywood Association
20. API – American Petroleum Institute
21. ARI – Air Conditioning and Refrigeration Institute

22. ASCE – American Society of Civil Engineers
23. ASHRAE – American Society of Heating, Refrigeration and Air Conditioning Engineers
24. ASME – American Society of Mechanical Engineers
25. ASPA – American Sod Producers Association
26. ASTM – American Society for Testing and Materials
27. AWG – American Wire Gauge
28. AWI - Architectural Woodwork Institute
29. AWPA – American Wood Preservers’ Association
30. AWS – American Welding Society
31. AWWA – American Water Works Association
32. BIA – Brick Institute of America
33. CDA – Copper Development Association
34. CLFMI – Chain Link Fence Manufacturer’s Institute
35. CPM - Critical Path Method
36. CPVC – Chlorinated Polyvinyl Chloride
37. CRSI – Concrete Reinforcing Steel Institute
38. CI – Cast Iron
39. DHI – Door and Hardware Institute
40. DI – Ductile Iron
41. EJCDC – Engineers’ Joint Contract Documents Committee
42. EJMA – Expansion Joint Manufacturers Association
43. EPDM – Ethylene Propylene Diene Monomer
44. EPT – Electrical Plastic Tubing
45. EVT – Equiviscous Temperature
46. FGMA - Flat Glass Marketing Association
47. FM – Factory Mutual
48. FS – Federal Specifications
49. GA – Gypsum Association
50. GFCI – Ground Fault Circuit Intempter
51. GPR - Ground Penetrating Radar
52. GPS – Global Positioning System

53. HVAC – Heating, Ventilating and Air Conditioning
54. IBC – International Building Code
55. IBR – Institute of Boiler and Radiator Manufacturers
56. ICBO – International Conference of Building Officials
57. ICS – Industrial Control and Systems
58. IEEE – Institute of Electrical and Electronics Engineers
59. IMI – International Masonry Institute
60. ISA – Instrument Society of America
61. JIC – Joint Industrial Council
62. LCD – Liquid Crystal Display
63. MBMA – Metal Building Manufacturer’s Association
64. MEC – Massachusetts Electric Code
65. MFMA Maple Flooring Manufacturers Association
66. ML/SFA – Metal Lath/Steel Framing Association
67. MSDS – Material Safety Data Sheets
68. MSS – Manufacturer’s Standardization Society
69. NAAMM – National Association of Architectural Metal Manufacturers
70. NAVD – North American Vertical Datum
71. NCMA – National Concrete Masonry Association
72. NEBB – National Environmental Balancing Bureau
73. NEC – National Electrical Code
74. NECA – National Electrical Contractors Association
75. NEMA – National Electrical Manufacturers Association
76. NFPA – National Fire Protection Association
77. NRCA – National Roofing Contractors Association
78. NRS – Non-rising Stem
79. NSF – National Sanitation Foundation
80. NSWMA – National Solid Waste Management Association
81. NWMA – National Woodwork Manufacturers Association
82. O&M – Operation and Maintenance
83. OSHA – Occupational Safety and Health Administration
84. PCA – Portland Cement Association

85. PCI – Precast/Prestressed Concrete Institute
86. PDOP – Positional Dilution of Precision
87. PLC – Programmable Logic Controller
88. PS – Product Standard
89. PVC – Polyvinyl Chloride
90. QA/QC – Quality Assurance/Quality Control
91. RCP – Reinforced Concrete Pipe
92. RCSHSB – Red Cedar Shingle and Handsplit Shake Bureau
93. RIS – Redwood Inspection Service
94. RTU – Remote Telemetry Unit
95. SCADA – Supervisory Control and Data Acquisition
96. SDI – Steel Deck Institute
97. TCA – Tile Council of America
98. UL – Underwriter’s Laboratories
99. UPS – Uninterruptable Power Supply
100. USCS – Unified Soil Classification System
101. USDA – United States Department of Agriculture
102. WCLIB – West Coast Lumber Inspection Bureau
103. WOG – Water, Oil, Gas
104. WWPA – Western Wood Products Association

END OF SECTION

SECTION 01560
TEMPORARY BARRIERS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Temporary Fencing System

1.2 SUBMITTALS

A. Informational Submittals

1. Submit information regarding the proposed temporary fencing system, including material of construction, plan layout, spacing of components, and anchorage.

1.3 SITE SECURITY

- A. Provide 6-foot high chain link temporary fencing system to prevent unauthorized access to construction areas. The location of the temporary fence is shown on the drawings.
- B. Do not move the fence system under any circumstances until the construction activities are complete.
- C. Remove the temporary fencing system after the completion of the Work.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Site security fencing shall be a 6 foot high chain link fence supported by steel posts a minimum of 8 feet on center. Fence shall conform to the following requirements:

1. Posts, Rails, and Framework

- a. All pipes shall be galvanized cold-formed steel conforming to ASTM Designation A120, Schedule 40 latest requirements, and galvanized in conformance with ASTM A123 latest requirements.
- b. Member sizes for 6 foot fence are as follows:

	Nominal Size	O.D.	Weight/ Lin. Ft.
Terminal, corner posts	3 in.	2.875	5.79 lbs.
Line posts	2-1/2 in.	2.375	3.65 lbs.

2. Fence Fabric: The fabric shall be woven aluminum-coated steel chain link conforming to ASTM Designation A491 in its entirety. The fabric shall be 9 gauge, 2 inch square mesh.

PART 3 EXECUTION

3.1 FENCE INSTALLATION

- A. Install fence according to manufacturer's instructions at locations specified in Paragraph 1.4 above.

END OF SECTION

SECTION 01770

CLOSEOUT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Documentation required for the transfer of the completed Work to the Owner
2. Final Cleaning

1.2 SUBMITTALS

A. Closeout Submittals

1. As-built drawings
2. Evidence of payment and release of liens
3. List of Subcontractors, service organizations, and principal vendors

1.3 SUBSTANTIAL COMPLETION

- A. Refer to Article 15.03 in 00700, General Conditions, for procedures relating to obtaining Substantial Completion. Refer to 00520, Agreement, for Contract Times.

1.4 PROJECT CLOSEOUT DOCUMENTS

- A. As-Built Drawings - Submit as-built drawings for review, approval, or comment. Owner shall own all as-built documents and instruments of service. The as-built drawings shall show the completed work, including all deviations from the original Drawings. As-built drawings shall depict the work under this Contract, as well as field changes. Take swing ties to all underground work from a minimum of two horizontal locations. Vertical dimensions to all below grade work shall also be obtained. All fittings, bends, valves and other appurtenances shall be shown. At a minimum, the following information shall be shown on the as-built drawings.

1. Ties to all buried fittings (including tees, crosses, bends, reducers, wyes, offsets, adapters, sleeves, caps, plugs), valves, services and structures from two horizontal measurements to permanent surface reference points, and depth below permanent grade. Permanent surface reference points are manholes, catch basins, power poles, and above-grade structures.
2. Ties to all surface structures (including manholes, catch basins, vaults, valve boxes, hydrants, curb stops, cleanouts, wet wells, outlets, etc.) from two horizontal measurements to permanent surface reference points. Re-station surface structures if stationed on Drawings.
3. Ties to other utility crossings, abandoned pipelines, and sewer service stubs, from two horizontal measurements to permanent surface reference points include depth below permanent grade and spacing between crossing utilities.
4. Changes to pipe size and materials.

- B. Provide warranties and bonds for items so listed in pertinent sections of the Project Manual.
- C. Provide evidence of compliance with requirements of governmental agencies having jurisdiction.
- D. As specified in Article 15.06.A of Section 00700, provide evidence that all Work, materials and equipment will pass to Owner free and clear of any Liens or other title defects upon final payment. Such evidence may take the form of receipts or releases from all Subcontractors and Suppliers and an affidavit from Contractor as to the completeness of the receipts and releases as described in Section 00700 Article 15.06.A.3.
- E. Provide list of Subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service at all times including nights, weekends, and holidays.

1.5 FINAL PAYMENT

- A. Refer to Article 15.05 and 15.06 in 00700, General Conditions, for procedures relating to final inspection and payment.
- B. The Contract shall be considered complete and final payment made, only when:
 - 1. All provisions of the Contract Documents have been strictly adhered to.
 - 2. The project and premises have been left in good order, including removal of all temporary construction, Contractor-owned and extraneous materials.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CLEANING

- A. Remove and entirely dispose of material or debris that has washed, flowed or has been placed in existing watercourses, ditches, gutters, drains, pipe, or structures, for work done under the Contract work limits. Leave ditches, channels, drains, pipes, structures, and watercourses in a clean and neat condition upon completion of the Work.
- B. Restore or replace any public or private property damaged or removed during the course of the Work. Property shall be returned to a condition at least equal to that existing immediately prior to the beginning of operations. Complete all highway or driveway, walk, and landscaping work using suitable materials, equipment and methods. Perform restoration of existing property, signs or structures promptly as work progresses; do not leave restoration work until the end of the Contract Time.

END OF SECTION

SECTION 02200

SITE PREPARATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes
 - 1. Clearing and grubbing
 - 2. Grading
 - 3. Stripping and stockpiling of soil and sod

1.2 SUBMITTALS

- A. Submit construction methods and equipment that will be utilized for the clearing, grubbing, and waste material disposal specified within this Section.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

- A. Except as otherwise directed, cut, grub, remove and dispose of all trees, stumps, brush, shrubs, roots and any other objectionable material within the limits of the Work on the site and where required to construct the work.
- B. Protect trees or groups of trees, designated by the Engineer to remain, from damage by all construction operations by erecting suitable barriers, or by other approved means. Conduct clearing operations to prevent falling trees from damaging trees designated to remain.
 - 1. All damage done to the trees by the Contractor's operation shall be trimmed and painted where cut as directed or as necessary to provide adequate vertical clearance for construction activities. The dressing or paint shall be applied no later than two days after the cuts are made.
 - 2. Use all necessary precautions to prevent injury to other desirable growth in all areas. Contractor shall assume full responsibility for any damage.
- C. Protect areas outside the limits of clearing from damage. No equipment or materials shall be stored in these areas.
- D. No stumps, trees, limbs, or brush shall be buried in fills or embankments.

3.2 DISPOSAL OF MATERIALS

- A. Remove all tree trunks, limbs, roots, stumps, brush, foliage, other vegetation and objectionable material from the site and dispose of in a legal manner.
- B. Burning or direct burial of cleared and grubbed materials on-site will not be permitted.

3.3 GRADING

- A. In preparation for placing loam and appurtenances, perform grading to the lines, grades and elevations shown on the Drawings, and otherwise directed by the Engineer and perform in such a manner that the requirements for formation of embankments can be followed. All material encountered, regardless of its nature, within the limits indicated, shall be removed and disposed of as directed. During the process of grading, maintain the subgrade in such condition that it will be well drained at all times. Install temporary drains and drainage ditches to intercept or divert surface water that may affect the work when necessary.
- B. If at the time of grading it is not possible to place material in its final location, stockpile material in approved areas for later use. No extra payment will be made for the stockpiling or double handling of excavated material.
- C. The right is reserved to make minor adjustments or revisions in lines or grades if found necessary as the work progresses.
- D. Stones or rock fragments larger than 4 inches in their greatest dimensions will not be permitted in the top 12 inches of the finished subgrade of all fills or embankments except along the access roadways and rip-rap where shown on the Drawings.
- E. In cuts, loose or protruding rocks on the excavated slopes shall be barred loose or otherwise removed to line or finished grade of slope. Cut and fill slopes shall be uniformly dressed to the slope, cross-section and alignment shown on the Drawings or as directed by the Engineer.

3.4 DUTCH ELM WOOD

- A. Dutch Elm diseased wood shall be disposed of in accordance with any local regulations.
- B. Where the work includes the removal of elm trees or the limbs of elm trees, such trees or limbs thereof shall be disposed of immediately after cutting or removal and in such a manner as to prevent the spread of Dutch Elm disease. This shall be accomplished by covering them with earth to a depth of at least 6 inches in areas outside the right-of-way locations where the Contractor has arranged for disposal.
- C. Where the work includes the removal and disposal of stumps of elm trees, such stumps shall be completely disposed of immediately after cutting in the manner specified above.

END OF SECTION

SECTION 02220

DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Demolition of the existing playground equipment, including swings and mulched playground area, chain-link fence, bituminous concrete.
2. Demolition of ancillary structures and items within the Limit of Work indicated on the Drawings, but not specifically shown such as swings and basketball hoop.
3. Removal and lawful disposal of miscellaneous debris and solid waste located within the Limit of Work indicated on the Drawings.

B. Related Sections

1. Section 02315 - Excavation, Backfill, Compaction and Dewatering
2. Section 02920 – Lawns and Grasses

1.2 DEFINITIONS

- A. Demolish – To tear down, segregate waste streams and lawfully recycle or dispose of all debris generated in the process including structure contents.
- B. Limit of Work – Area delineated on Drawings that defines the extent of demolition work under the Contract.

1.3 SUBMITTALS

A. Informational Submittals

1. Methods of demolition and equipment proposed to demolish structures. This submittal should be sufficient to demonstrate a thorough understanding of the Work to be completed and the means that will be implemented to safely complete the demolition within the Contract Time without damage to surrounding structures or resources.
2. Waste Management Plan to indicate the types of wastes to be generated and the proposed disposal or recycling locations. Include back-up disposal facilities.
3. Copies of any authorizations and permits required to perform the Work, including disposal/recycling facility permits.

1.4 REGULATORY REQUIREMENTS

- A. Contractor is solely responsible for obtaining permits or approvals which may be required to perform the work of this section, including all costs, fees and taxes required or levied, except for the following permits that will be obtained by the Owner:
- B. Notify and obtain such permits or approvals from agencies having jurisdiction over demolition prior to starting work.

- C. Comply with all applicable federal, state, and local environmental, safety and health requirements regarding the demolition of structures and other site features and recycling or disposal of demolition debris, as applicable.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 PROJECT MANAGEMENT

- A. Provide a full-time Project Superintendent who shall serve as a direct communication among the Contractor, subcontractors, and the Owner.
- B. Require all subcontractors to provide a foreman or superintendent. That individual must be on site at all times that the subcontractor is working.

3.2 EXAMINATION

- A. Verify site conditions before proceeding with demolition work. Field check the accuracy of the Drawings and inspect structures and utilities prior to start of work and notify the Engineer in writing, of any hazardous conditions and/or discrepancies. Primary structures and other site features are shown on the Drawings; other smaller structures, including, but not limited to, concrete walks and pads, miscellaneous signs, lamp posts, railings, and fencing may not be shown on the Drawings, but may exist within the Limit of Work and shall be demolished.
 - 1. Unknown Site Conditions - The information provided on the Drawings and in the Specifications is believed accurate. Field verify all information. Bear full responsibility for obtaining all locations of underground structures, utilities and their connections. Maintain services to buildings outside the limits of work.

3.3 PREPARATION

- A. Remove and/or stabilize all overhead hazards, prior to commencing work near any building. Where hazards cannot be stabilized, mark and control areas below hazards to prohibit access below the hazards. This shall be performed with caution tape, saw horses, safety fence or other types of barricades as determined by applicable safety codes. Similarly, all holes through the floors or weak sections of the floor shall either be covered or clearly marked to prohibit entry. Floor coverings shall be capable of supporting heavy equipment use.

3.4 HAZARDOUS MATERIALS

- A. Oil and Hazardous Material Contamination
 - 1. There is no known soil contamination at the site. However, contaminated soil may be encountered during excavation. In the event that contaminated soil is encountered, handle such material in accordance state and local regulations.

3.5 DEMOLITION

- A. Demolish playground equipment and related appurtenances by methods that will not cause damage to surrounding structures, underground and overhead utilities, or other existing items and structures that are to remain in place.

- B. Promptly and properly manage all debris as the demolition progresses. Construct and/or prepare material staging/stockpile areas at locations approved by the Engineer.
 - 1. Barricade work area as necessary to protect workers and general public from falling debris.
 - 2. Do not leave unstable structures unattended. Plan the workday so that all structures are stable at the end of each work day.
- C. Foundations
 - 1. Demolish all playground foundations.
- D. Miscellaneous Site Structures and Features
 - 1. Fences and Other Structures – Demolish all fences, play structures, clotheslines, sheds, within the Limit of Work, whether or not they are specifically shown on the Drawings, unless specifically noted to remain.
 - 2. T rees – Trees are an important resource and shall be treated as such. Unless specifically noted to be demolished, protect all trees and obtain approval of the Engineer prior to removing or pruning any other trees.

3.6 BITUMINOUS CONCRETE PAVEMENT REMOVAL OR RECLAMATION

- A. Remove or reclaim bituminous concrete pavement within Limit of Work as indicated on the Drawings. Legally dispose of bituminous concrete pavement underlain with concrete off site along with the underlying concrete.
- B. If reclamation is selected, where indicated on the Drawings, at interface of pavement to remain with pavement to be removed, where directed, saw cut existing pavement to its full depth. No jacking shall be acceptable when cutting existing pavement unless otherwise directed by the Owner. All cut lines shall be straight with a minimum of damage to pavement outside of saw cutting area. Saw cuts for bituminous parking areas shall be made at the back edge of the sidewalk, or if no sidewalks are present, 2 feet from the sideline of the street.
- C. Reclaim the bituminous concrete pavement by processing/grinding to a minimum depth of 12 inches and compacting in place.
- D. After the reclamation process, the reclaimed base material shall conform to the following gradation requirements:

Sieve Size	Required Grading Range
2"	100
1"	70 – 100
½"	50 – 85
#4	35 – 70
40	10 – 35
200	2- 10

Asphalt Content	1.0 Min.
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- E. The equipment to be used must be able to effectively pulverize bituminous concrete pavements to produce a crushed material. The equipment must have the capability to adjust the crushers and screen to allow minor adjustments if the gradation of the crushed material does not fall within the gradation requirements during the crushing process. No culling out of oversized material will be permitted.
- F. After pulverizing, the reclaimed base course shall be evenly spread and thoroughly compacted by rolling. Rolling shall continue until the base material has been compacted to 98% density. Blading and rolling shall be done alternately, as required to obtain a smooth, even and uniformly compacted base.
- G. Do not perform work on the base course during freezing temperatures nor when the subgrade is wet. If the aggregate contains frozen materials or when the underlying course is frozen, the construction will be stopped.
- H. Hauling equipment may be routed over completed portions of the base course, provided that no damage results and provided that such equipment is routed over the full width of the base course to avoid rutting or uneven compaction.
- I. Contractor is responsible for quality control during construction. Sample materials from the project area and test for the following: optimum lab density, material gradation, residual asphalt content, field density and percent compaction. Conduct testing program at intervals representative of each 3,000 square yards of asphalt stabilized base course.
- J. After being notified by the Contractor that a particular section/phase of the project is ready to be tested, the Owner may elect to perform his own quality assurance tests as a check. Any costs incurred as a result of failed tests or canceled tests shall be borne by the Contractor.

3.7 DISPOSAL

- A. Legally dispose of or recycle all materials from demolition as well as equipment and other materials that are within the buildings. The disposal site shall be permitted to accept the waste stream by the applicable State Agency. Perform the loading of demolition materials in a manner that prevents materials and activities from generating excessive dust and ensures minimum interference with roads, sidewalks and streets both onsite and offsite.
- B. Provide evidence that the demolition materials have been received at a legal disposal, recycle, reuse or salvage location. Such proof may include truck weigh slips from an approved disposal facility or documentation of transfer of title. Transport of all materials off site shall be in accordance with applicable Department of Transportation Regulations. All materials leaving the site shall become the property of the Contractor.

3.8 SITE RESTORATION

- A. Prior to any backfilling, document the location of any structures that remain in place through construction by photographing and by obtaining swing ties to and elevations of any structures to be buried. Progress payments may be withheld if current documentation is not maintained.

- B. Backfill foundation areas and areas from which structures were removed to match the surrounding grade or to achieve the final grades indicated on the Drawings. Backfilling shall be conducted in accordance with Section 02315.
- C. Restore damaged areas of the site or neighboring and stabilize slopes in accordance with the erosion and sedimentation control requirements of the Contract.
- D. Loam and seed all disturbed areas in accordance with Section 02920.

END OF SECTION

SECTION 02230

SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Clearing and Grubbing
 - 2. Stripping and Stockpiling of Soil and Sod

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

- A. Confine all work to the limits of construction as indicated in the Drawings, as well as any temporary easements obtained for the Work.
- B. Carry out all clearing and grubbing in accordance with the Contract Documents. Minimize removal of all vegetation with particular care to protect all trees. In residential yard areas, remove only those trees specifically identified by Engineer.
- C. Prior to commencing Work, all temporary erosion and pollution control devices shall be installed at locations shown on the Drawings or as ordered.
- D. Burning of trees, brush, and stumps will not be permitted. Provide a satisfactory method of disposal.
- E. If sufficient quantities of material are available on-site, a chipper may be used for branches, limbs, etc. obtained during clearing, to produce woodchips. The chips shall be the property of the Contractor and shall be removed from the Site by the Contractor.
- F. In all cleared areas and under all embankments, grub and remove stumps of all trees, brush and major roots.
- G. For tree trimming and pruning, painting with an approved tree dressing or paint will be required on all cuts 2 inches or over in diameter. Apply the dressing or paint no later than two days after the cuts are made. All limbs and branches which require removal and all stubs, regardless of age, must be cut flush either to a union with the next larger sound limb or branch or flush to the trunk of the tree. The cutting shall be performed by experienced arborist. Trained tree climbers are required for pruning of tall growth. Take care not to damage major root systems of trees and shrubs to remain during grading operations. Repair an injury to limbs, bark or roots of such plants, or replace the plants at no additional cost to the Owner. If within one (1) year of the acceptance of the Project, any tree affected by the Work dies, replace it with a tree of equal value as determined by the Engineer.
- H. All trees and branches 4 inches to 12 inches in diameter shall be cut in 4 foot lengths and stockpiled on a site designated by the Engineer and removed and disposed of off site. Satisfactorily dispose of all remaining wood, stumps, brush, twigs, leaves, roots

and trash as soon as practicable and in such a manner as not to detract from the appearance of the area.

3.2 STRIPPING TOPSOIL AND UNSUITABLE MATERIAL

- A. As necessary to properly complete the work, and in areas to be excavated, all stumps, roots, foreign matter and unsuitable earth shall be stripped from the ground surface. Topsoil and loam which is deemed suitable by the Engineer shall be stockpiled and used, where possible, for finished surfacing and to construct earth beams and graded mounds.
- B. Keep stockpile of salvage material separate from the other stockpiles of excavated material.
- C. Excess topsoil is the property of the Contractor and shall be legally disposed of off-site.
- D. Unsuitable earth, stumps, roots and foreign matter shall be legally disposed of off-site by the Contractor.

3.3 DISPOSAL OF CLEARED AND GRUBBED MATERIALS

- A. All cleared and grubbed unsuitable materials unless otherwise noted shall become the property of the Contractor and shall be removed from the Site and disposed of in compliance with Federal, State and local Laws and Regulations.
- B. Dutch Elm Wood
 - 1. Dispose of Dutch Elm diseased wood in accordance with the provisions of Massachusetts General Law, Chapter 87, Section 5 and Chapter 132, Sections 8 and 11, as amended; and in accordance with any additional local Regulations.
 - 2. Dispose of elm trees or limbs immediately after cutting or removal and in such a manner as to prevent the spread of Dutch Elm disease. Accomplish by covering them with earth to a depth of at least 6 inches in areas outside the right-of-way locations where the Contractor has arranged for disposal.
 - 3. Where the work includes the removal and disposal of stumps of elm trees, completely dispose of such stumps immediately after cutting in the manner specified above.

3.4 CLEANING UP

- A. During construction, maintain the Project Site and adjacent areas clean and free of all rubbish, debris, surplus materials and unnecessary construction equipment.
- B. Where material or debris has washed, flowed or in any way accumulated in watercourses, ditches, gutters, drains, pipes or structures during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of as necessary, and upon completion of the work shall be cleaned, flushed and left in neat conditions to the satisfaction of the Engineer.
- C. Restore or replace, when and as directed, any public or private property damaged by the Work to a condition at least equal to that existing immediately prior to the beginning of operations. All drainage structures, curbstones, signs, guardrails, fences and stone walls which are removed or damaged as a result of the work under this contract shall be reset or replaced as required.

3.5 PROTECTION

- A. Save trees and shrubs that are specifically designated by the Engineer not to be cut, removed, destroyed or trimmed from harm and injury. All damage done to trees by the Contractor's operation and all branches of trees extending within the roadway shall be trimmed and painted where cut or as necessary to provide adequate vertical clearance for construction, including selective trimming of such trees as directed.
- B. Use all necessary precautions to prevent injury to other desirable growth in all areas. If the existing ground in the area is disturbed by any of the Work or equipment, rough-grade, loam and seed the disturbed areas. After removal, dispose of all stumps including the major root systems where the material will not cause obstructions to streams and will not detract from the appearance of the roadside.

END OF SECTION

SECTION 02300

EARTHWORK

PART 1 GENERAL

1.1 REFERENCES

- A. Refer to other divisions of these specifications, other sections in this division, and drawings for related work, which may affect the work of this section.
- B. The Contract Drawings indicate and show limits of construction for this project. These specifications specify material and work requirements for this project. Both are complimentary to each other, and both shall be followed to properly complete the work.
- C. All sitework included or ordered under this contract shall be done in conformity with the applicable provisions of the State of New Hampshire Department of Transportation “Standard Specifications for Road and Bridge Construction”, including all the latest revisions, addenda and supplements, hereinafter referred to as “Standard Specifications” and the Town of Newmarket rules, regulations, codes, ordinances and specifications, and utility companies’ specifications.

1.2 SCOPE OF WORK

- A. Provide all labor, materials, equipment, and services, etc. and perform all operations necessary for earthwork required for the execution of all construction as indicated on the drawings, specified herein, or otherwise required for a complete and proper job.
- B. Without limiting the generality thereof, the scope of work under this section shall include, but shall not necessarily be limited to, the following items:
 - 1. Excavation and stockpiling of materials suitable for reuse in an on-site location approved by the Owner.
 - 2. Removing existing material and replacing that material in a suitable manner in accordance with the requirements of the drawings and these specifications.
 - 3. Removal and off-site disposal of existing pavements, foundations, and utilities, which may be encountered, and backfilling to the grades shown on the plans.
 - 4. Excavation, fill, refill, backfill, subgrade preparation, and compaction as indicated or required, including, but not necessarily limited to, all work related to utilities, walks, pavements, yards, fields, as well as general earthwork.
 - 5. Excavation and disposal (off-site) of unsuitable or excess materials. Excavation of all traces of rock, loam, peat or other unsuitable materials to depths necessary to provide suitable bearing, including granular refill and compaction.
 - 6. Proofrolling subgrade for all construction areas.
 - 7. Trench and pit excavations, beddings, fills and backfills, including compaction.
 - 8. Base and sub-base course material under walks and pavements including compaction.
 - 9. Rough and finish grading. (Note: The Owner's Representatives authorization shall be required prior to proceeding with finish grading.)
 - 10. Dewatering and control of water for all construction operations.

11. Protection of existing trees, pavements, walks, utilities, buildings, landscaping, etc. to remain.
12. Dust, erosion, siltation, and environmental controls.
13. Sheeting, shoring and bracing of all excavations and as otherwise required.
14. Protection of excavated subgrade areas including diverting surface runoff from excavations. Note subgrade soils which become wet or unstable after excavation shall be replaced with crushed stone underlain with a woven geotextile. This work is considered subsidiary and will not be paid for as extra work.

1.3 LAW AND REGULATIONS

- A. All work shall be accomplished in accordance with regulations of local, county and state agencies and national or local utility company standards as they apply.

1.4 SITE INVESTIGATION

- A. The Contractor acknowledges that they have satisfied themselves as to the nature and location of the work, the general and local conditions, particularly those bearing upon transportation, disposal, handling, and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, ground water table or similar physical conditions at the site, the confirmation of subsurface materials to be encountered, the character of equipment and facilities needed prior to and during the prosecution of the work and all other matters which can in any way affect the work or the cost thereof under this contract. Any failure by the Contractor to acquaint themselves with all information concerning these conditions will not relieve them from responsibility for estimating properly the difficulty or cost of successfully performing the work.

1.5 JOB CONDITIONS

A. Dust Control

1. Use all means necessary to control dust on and near the work and on and near all off-site borrow areas if such dust is caused by the Contractor's operations during performance of the work or if resulting from the condition in which the Contractor leaves the site. Thoroughly moisten all surfaces as required to prevent dust from being a nuisance to the public, neighbors, and concurrent performance of other work on the site.

B. Protection

1. Use all means necessary to protect all materials of this section before, during, and after installation and to protect all objects designated to remain. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's Representative and at no additional cost to the Owner.

C. Bracing

1. Properly support all trenches and all other excavations in strict accordance with all pertinent rules and regulations. Brace, sheet, and support trench walls and other

excavations in such a manner that they will be safe and that the ground alongside the excavation will not slide or settle, and that all existing improvements of every kind, whether on public or private property, will be fully protected from damage. In the event of damage to such improvements, immediately make all repairs and replacements necessary to the approval of the Owner's Representative and at no additional cost to the Owner.

1.6 SUBMITTALS

- A. Representative Samples of borrow materials taken from the source. Tag, label, and package the Samples as requested by Engineer. Provide access to the borrow site for field evaluation and inspection.
- B. Provide sieve analysis (ASTM C136) and permeability analysis (ASTM D2434) from certified soils testing laboratory for all borrow materials. Take and test a sample, at no additional cost to the Owner for each 1,500 c.y. of borrow material placed.
- C. Provide modified proctor analysis (ASTM D1557) from certified soils testing laboratory for all borrow materials.
 - 1. All other borrow materials shall be tested once unless more frequent testing is deemed necessary by the Engineer or Owner due to material variation.
- D. The Engineer reserves the right to require more frequent testing than that which is specified above should the borrow characteristics change.

1.7 QUALITY ASSURANCE

- A. No borrow shall be placed prior to the approval of Samples by the Engineer.

PART 2 PRODUCTS

2.1 FILL MATERIAL, GENERAL

- A. Approval Required
 - 1. All fill material shall be subject to the review of the Owner's Representative. Qualified materials shall not change in source or character unless requalified. The Owner's Representatives review of a material shall not in any way diminish the Contractor's responsibility to fulfill all requirements of the specifications.
- B. Notification
For approval of fill materials, the Contractor shall:
 - 1. Notify the Owner's Representative at least four (4) working days in advance of intention to import material.
 - 2. Sources shall be accessible to the Owner, or his agent, for inspection or additional sampling.

2.2 IMPORTED FILL MATERIAL

A. Gravel Borrow (NHDOT 304.2)

- E. Gravel Borrow shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings, and deleterious materials. The coarse aggregate shall have a percentage of wear, by the Los Angeles Abrasion Test, of not more than 50.

Gradation requirements for Gravel Borrow shall be determined by AASHTO-T11 and T27 and shall conform to the following:

Sieve	Percent Passing
6"	100
No. 4	25-70
No. 200	0 - 12

Maximum size of stone in Gravel Borrow shall be 2 inches.

B. Crushed Gravel (NHDOT 304.3)

- Crushed Gravel Borrow to be used for pavement base, or other area where a firm, free-draining subgrade is needed shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials. The coarse aggregate shall have a percentage of wear, by the Los Angeles Abrasion Test, of not more than 50.

- Gradation requirements shall conform to the following:

Sieve	Percent Passing
3"	100
2"	95 – 100
1"	55 – 85
No. 4	27 – 52
No. 200	0 - 12

- Stockpile the processed materials in such a manner to minimize segregation of particle sizes. All processed gravel shall come from approved stockpiles.

C. Granular Fill

- Granular Fill to be used as fill material to achieve gravel base grade beneath structures, pavement, or other area requiring structural fill shall consist of inert material that is hard, durable stone and sand, free from loam and clay, surface coatings and deleterious materials. The coarse aggregate shall have a percentage of wear, by the Los Angeles Abrasion Test, of not more than 50.

- Gradation requirements for Granular Fill shall conform to the following:

Sieve Size	Percent by Weight Passing Through	
	Minimum	Maximum
2/3rds loose lift thickness	100	--
No. 10	30	95
No. 40	10	70
No. 200	0	15

D. Stone Borrow

1. Crushed Stone Borrow

- 1) Crushed stone borrow shall consist of one of the following materials:
- 2) Durable crushed rock consisting of the angular fragments obtained by breaking and crushing solid or shattered natural rock, and free from a detrimental quantity of thin, flat, elongated or other objectionable pieces. A detrimental quantity will be considered as any amount in excess of 15% of the total weight. Thin stones shall be considered to be such stones whose average width exceeds 4 times their average thickness. Elongated stones shall be considered to be stones whose average length exceeds 4 times their average width.
- 3) Durable crushed gravel stone obtained by artificial crushing of gravel boulders or fieldstone with a minimum diameter before crushing of 8 inches.
- 4) The crushed stone shall be free from clay, loam or deleterious material and not more than 1.0% of satisfactory material passing a No. 200 sieve will be allowed to adhere to the crushed stone.

b. The crushed stone shall have a maximum percentage of wear as determined by the Los Angeles Abrasion Test (AASHTO-T-96) as follows:

- | | |
|----------------------------------|---------|
| 1) For Class 1 Bit. Conc. | 30% ** |
| 2) For Cement Concrete Aggregate | 45% *** |
| 3) Crushed Stone for Subbase | 45% |

**Crushed stone for this use shall consist of crushed or shattered natural rock only. Crushed gravel stone will not be permitted.

***Except for 5000 psi or greater cement concrete and prestressed concrete which shall be 30%.

¾" Crushed Stone		
1"	100	--
¾"	90	100
½"	10	50
3/8"	0	20
No. 4	0	5

PART 3 EXECUTION

3.01 GENERAL

A. Familiarization

1. Prior to all work of this section, the Contractor shall become thoroughly familiar with the site and site conditions, and all portions of the work covered by this section. The Contractor shall satisfy themselves, by actual examination of the site of the work, as to the existing conditions, contours and the elevations and the amount of work required under this section.

B. Material Encountered

1. Material encountered in the excavation may include pipe, storm drains, or other utility services, lumber, masonry, and other materials from previous constructions. Material may also include loam, or other unsuitable organics. The Contractor shall make their own investigations to determine the presence of such materials.

C. Protection

1. The Contractor shall protect existing utilities, the location of which may be shown approximately on the drawings, or which are located in the field by the Contractor or others. Utilities whose location is not known shall be protected insofar as possible. All costs for repair of utilities broken or damaged by the Contractor or his Subcontractor shall be the responsibility of the Contractor.
2. Take precautions for preventing injuries to persons or damage to property in or about the Work.
3. Provide safe access for the Owner and Engineer at site during construction.
4. Do not obstruct site drainage, natural watercourses or other provisions made for drainage.

D. Inspection and Tests

1. Do not allow or cause any of the work performed or installed to be covered up or enclosed by work of this section prior to all required inspections, tests, and approvals. Should any of the work be so enclosed or covered up before it has been approved, uncover all such work at no additional cost. After the work has been completely tested, inspected and approved, make all repairs and replacements necessary to restore the work to the condition in which it was found at the time of uncovering, all at no additional cost to the Owner.

3.2 STRIPPING UNSUITABLE OR EXCESS MATERIALS

- A. All unsuitable or excess materials shall be stripped to their entire depths from areas of new construction or regrading. Materials suitable for use shall be stored in designated locations that will not interfere with building or utility operations. Topsoil shall be

stripped and stored before any underlying excavating is begun. Stripped topsoil approved by the Owner's Representative to be reused shall be free from clay, stones larger than 1" diameter and debris. Excess materials and all materials not suitable for reuse shall be legally disposed of off-site. All excavations shall be performed in a manner to minimize the disturbance of underlying natural ground to remain and existing structures to remain.

- B. The Contractor shall excavate all unsuitable material to suitable subgrade soils in sidewalk and pavement areas in the manner specified below and as directed by the Owner's Representative.
- C. Unsuitable materials are defined as existing fill material, topsoils, existing soils containing organic, decomposable material, or any material not meeting the gradation requirements or having unsuitable bearing capacity for uses specified herein that are below subgrade limits. Over excavation and removal of unsuitable materials is considered subsidiary and will not be paid for as Extra Work.
- D. The Contractor shall follow a construction procedure which permits visual identification of subgrade soils. In the event that groundwater is encountered, the size of the open excavation shall be limited to that which can be handled by the Contractor's chosen method of dewatering and allow visual observation of the bottom and placement of crushed stone and backfill in the dry.
- E. The Contractor shall avoid trafficking the site with heavy equipment when the site soils are wet. If subgrade soils become loose and saturated, the Contractor shall be required to remove the soils and replace with crushed stone. Stabilization of areas which become disturbed due to construction traffic, surface runoff, subsurface seepage pressures, etc. is considered subsidiary and will not be paid for as Extra Work.
- F. Over Excavation Correction
 - 1. Excavation beyond indicated or authorized limits shall be refilled with structural fill or other approved suitable granular soil material. Refills shall be compacted to 95 percent (Modified Proctor) of the maximum dry density at optimum moisture content. Refills shall be provided as required by the Owner's Representative and at no additional cost to the Owner.

3.03 GRADES AND ELEVATIONS

- A. The drawings indicate, in general, the alignment and finished grade elevations of site structures. The Owner's Representative, however, may make such adjustments in grades and alignment as are found necessary in order to avoid interferences and other special conditions encountered. Grading between indicated final grades shall provide smooth, even surfaces, except as otherwise required.

3.4 SITE EXCAVATION, FILL AND BACKFILL

- A. Pavement Subgrade Preparation

1. All vegetation, topsoil, organic material, existing pavement and uncontrolled fill shall be removed to expose the top of the existing inorganic fill in proposed pavement areas. Existing asphalt pavement may be pulverized to produce Reclaimed Pavement Borrow that meet the specifications herein. The resulting subgrade shall be compacted with minimum ten (10) ton vibratory equipment providing at least four (4) passes. During the proofrolling process, the subgrade shall be observed by a qualified person. Unstable areas and exposed silt layers shall be replaced with Structural Fill or Granular Fill. All excess excavated material shall be legally disposed of off-site.
2. Once proofrolling is finished, subgrade fills, where required, may be placed in loose lifts not exceeding 12 inch thickness and compacted to at least 95 percent of the maximum dry density as determined by ASTM D-1557. Pavement subgrade fill may consist of compacted common fill.
3. The groundwater table shall be maintained at least three (3) feet below finish pavement grade.

B. Unpaved and Landscaped Area Preparation

1. Surficial topsoil and fill may be left in place in landscape and unpaved areas. Ordinary fill, where required, may be placed in 12 inch thick lifts and compacted to at least 90 percent of the maximum dry density as determined by ASTM D-1557.

3.6 SITE DEWATERING

- A. The Contractor shall be required to maintain a dewatered and stable subgrade during construction. Surface water should be diverted away from the excavation.
- B. The Contractor shall provide, at his own expense, adequate pumping equipment (including standby) and drainage facilities to keep the excavated site areas sufficiently dry from groundwater and/or surface runoff so as not to adversely affect site construction procedures or cause excessive disturbance of underlying natural ground. The drainage of all water resulting from pumping shall be discharged into existing drainage system or courses so as not to cause damages to adjacent property.
- C. The Contractor shall secure all necessary permits, and satisfy all local, state and federal environmental conservation and water control requirements for discharge of groundwater to surface waters.

3.7 SHEETING, SHORING AND BRACING

- A. Provide shoring, sheeting, and/or bracing of excavations as required to assure complete safety against collapse of earth at side of excavations. Alternatively, lay back excavations to a stable slope.
- B. Excavations shall be adequately sheeted, shored and braced as necessary to permit proper execution of the work and to protect all slopes and earth banks until new structures are cured and acceptable for backfill. Sheet piling shall be installed if required to prevent cave-ins or settlement and to protect workmen and utilities. Shoring and bracing may be removed as the backfilling progresses, but only when banks are safe against caving, taking all necessary precautions to prevent collapse of excavation sides.

1. The installation of sheeting, shoring, and bracing shall comply with the safety precautions as outlined in the Associated General Contractors of America "Manual of Accident Prevention in Construction," and all local and state regulations. Dewatering shall be performed as required for all excavations below ground water level.
- C. The Contractor should be aware that slope height, slope inclination, or excavation depths (including utility trench excavations) should in no case exceed those specified in local, state, or federal safety regulations (i.e., OSHA Health and Safety Standards for Excavations, 29 CFS Part 1926, or successor regulations). Such regulations are strictly enforced and, if they are not followed, the Owner, Contractor, and/or earthwork and utility subcontractors could be liable for substantial penalties.
- D. As a safety measure, it is recommended that all vehicles and spoil piles be kept a minimum lateral distance from the top of excavations equal to no less than 100 percent of the slope height. Exposed slope faces should be protected against the elements.
- 3.08 PLACING SITE FILL
- A. Base courses for pavements and sidewalks shall be made with materials indicated on the drawings and specified herein.
- B. Frost
1. Do not excavate to full indicated depth when freezing temperatures may be expected, unless fill material or structures can be constructed immediately after the excavation has been completed. Protect the excavation from frost if placing of fill or structure is delayed.
 2. Fill shall not be placed over frozen soil. Soil that is frozen shall be removed prior to placement of compacted fill. Remove all frozen uncompacted soil prior to placing additional fill for compaction.
- C. Protect fill area by grading to drain and providing a smooth surface which will readily shed water. Grade the surface of the areas in such a manner as to prevent ponding of surface runoff water in areas to receive compacted fill.
- D. To the extent that it is practicable, each layer of fill shall be compacted to the specified density the same day it is placed.
- E. Fill that is too wet for proper compaction shall be diced, harrowed or otherwise dried to the proper moisture content for compaction to the required density. If the fill material cannot be dried within 48 hours of placement, it shall be removed and replaced with drier fill.
- F. Fill that is too dry for proper compaction shall receive water uniformly applied over the surface of the loose layer. Sufficient water shall be added to allow compaction to the required density.

- G. Fill shall be placed in horizontal layers not to exceed thicknesses previously specified. Where the horizontal layer meets a natural rising slope, the layer shall be keyed into the slope by cutting a bench.
- H. The subgrade areas to be fine graded for loaming and seeding, mulching and landscaping shall be raked to remove all stones larger than 1” diameter and other unsatisfactory material and shall then be rolled. Any depressions, which may occur during the rolling, shall be filled with additional suitable material and the surface regraded and rerolled until true to the lines and grades required. Care shall be taken not to affect the line or grade of walls and footings during grading and rolling operations.
- I. All fill materials shall be spread uniformly by acceptable methods over the areas required to be covered so that the required thickness after compaction shall be obtained. The material shall be thoroughly consolidated by vibratory tampers, hand tamping or other approved means, to the final compacted grades as required. In no case shall the fill materials be placed in excess of 12 inches for each lift before compaction.

3.9 COMPACTION

- A. Fills, refills and backfills within the pavement areas and sidewalks, and the various areas listed below shall be compacted to not less than the following specified maximum dry densities as determined by ASTM D-1557. Allow the Engineer sufficient time to make necessary observations and density testing.

B. Compaction Requirements

Areas	Minimum Degree of Compaction
1. Below Pavement	95%
2. Trench Bedding Material and Sand Blanket Backfill	95%
3. Below Grassed or landscaped areas	90%

- C. Methods: The compaction guidelines given are stated to provide minimum compaction standards only and in no way relieves the Contractor of his obligation to achieve the above specified degree of compaction by whatever additional effort is necessary.
- D. Compaction requirements specified herein for all soils shall be in accordance with ASTM maximum dry densities as determined by ASTM D-1557 for soils that exhibit a well- drained moisture density relationship and in accordance with ASTM D-2049 for soils which do not exhibit a well-drained moisture density relationship.
- E. The in-place soil density shall be determined in accordance with ASTM Standard Method of Density of Soil and Soil Aggregate in Place by Nuclear Methods (shallow depth), Designation D-2922.
- F. Minimum compaction testing shall not be less than one (1) compaction test for every 2,500 square foot per lift in pavement areas and not less than one compaction test for every 10,000 square foot of disturbed site area per lift.

3.11 GRADING

A. General

1. Perform all rough and finish grading required to attain the elevations shown on the drawings, or as otherwise directed by the Owner's Representative or required for a complete and proper job.

B. Rough Grading

1. Proper allowances shall be made for paving, or other finish surfaces. Rough grading shall be reasonably even and free from irregularities, and shall provide positive drainage away from structures without ditching or pools.

C. Fine Grading

1. Any depressions, which may occur, shall then be filled with additional suitable materials and the surface then regraded until true to the lines and grade required. Areas to be fine graded for loaming and seeding shall be raked to remove all stones and other unsatisfactory materials and shall be suitably compacted.

D. Treatment After Completion of Grading

1. After grading is completed, permit no further excavating, filling, or grading. Use all means necessary to prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

3.12 EARTHWORK IN WET ENVIRONMENTS

- A. During wet environment, the underlying soils may be unsuitable for reuse or may require stabilization methods on subgrades as recommended herein.

3.13 DUST, EROSION AND ENVIRONMENTAL CONTROLS

- A. Dust control shall be maintained constantly throughout the construction period and shall be accomplished by the uniform application of calcium chloride at the rate of 1 1/2 pounds per square yard by means of a lime spreader or other approved method. Water may also be used for dust control and applied by sprinkling with water trucks with distributors for that purpose as required or directed by the Owner's Representative to maintain dust control.

- B. The Contractor shall be responsible for exercising every precaution to prevent erosion and siltation of lower elevations and existing drainage systems and water courses throughout the construction period. All damage caused by inadequate erosion control measures shall be repaired at the Contractor's expense. Erosion control and siltation of lower elevations and existing drainage systems shall be effectively controlled by the construction and continual use of baled hay or straw, or filter fabric barriers as shown on drawings and as directed by the Owner's Representative.

- C. All environmental controls shall be performed in accordance with all applicable rules and regulations of local, county and state agencies having jurisdiction.

END OF SECTION

SECTION 02317

UNDERGROUND WARNING TAPE

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Underground Warning Tape

1.2 SUBMITTALS

- A. Shop Drawing Submittals
 - 1. Product Data

PART 2 PRODUCTS

2.1 MATERIALS

- A. Metallic warning tape for underground piping shall be polyethylene tape with metallic core for easy detection and location of piping with a metal detector.
- B. Tape shall be 6 inches wide.
- C. Tape shall be as manufactured by Seton Name Plate Corp., New Haven, CT; Presco Detectable Underground Warning tape, Sherman, Texas; Blackburn Manufacturing, Neligh, NE; Mercotape, Hachensach, NJ; or equal.
- D. The warning tape shall be heavy gauge 0.004 inch polyethylene and shall be resistant to acids, alkalis and other soil components. It shall be highly visible in the following colors with the associated phrases stamped in black letters and repeated at a maximum interval of 40 inches.

Type of Utility	Color	Warning Message
Sanitary Sewer	Green	CAUTION - SANITARY SEWER BURIED BELOW
Storm Drain	Green	CAUTION - STORM DRAIN BURIED BELOW
Water	Blue	CAUTION – WATER LINE BURIED BELOW
Electric	Red	CAUTION – ELECTRIC LINE BURIED BELOW
Telephone / Communications	Orange	CAUTION – TELEPHONE LINE BURIED BELOW
Gas	Yellow	CAUTION – GAS LINE BURIED BELOW

- E. The tape shall be of the type specifically manufactured for marking and locating utilities.

PART 3 EXECUTION

3.1 INSTALLATION

- A. All buried pipe and fittings shall be installed with metallic-lined underground warning tape located no more than 24 inches below final grade to allow detection by a metal detector.

END OF SECTION

SECTION 02515

POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. PVC Gravity Pipe and Fittings
 - 2. Perforated PVC Drain Pipe
- B. Related Sections
 - 1. Section 02300 - Earthwork

1.2 REFERENCES

- A. ASTM D2241 - Specification for Polyvinyl Chloride (PVC) Plastic Pipe (SDR-PR)
- B. ASTM D2412 - Standard Test Method for External Loading Properties of Plastic Pipe by Parallel-Plate Loading
- C. ASTM D2444 - Standard Test Method for Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)
- D. ASTM D3034 - Specification for Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings
- E. ASTM D3139 - Standard Specifications for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
- F. ASTM D3212 - Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- G. ASTM F477 - Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- H. ASTM F679 - Specification for Polyvinyl Chloride (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings
- I. ANSI/AWWA C110/A21.10, Ductile Iron and Grey Iron Fittings 3" through 48" for Water and Other Liquids
- J. ANSI/AWWA-C153/A21.53, Ductile Iron Compact Fittings Water Service
- K. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 in. through 12 in., For Water Distribution

1.3 SUBMITTALS

- A. Submit specifications and shop drawings for materials and equipment furnished under this Section.
- B. Prior to first shipment of pipe, submit certified test reports that the pipe for this Contract was manufactured and tested in accordance with the ASTM Standards specified herein.

1.4 QUALITY ASSURANCE

- A. Each type of PVC pipe and fittings shall be from a single manufacturer. Alternatively, the pipe manufacturer shall provide certification that the fittings are suitable for installation with the pipe.
- B. Inspection of the pipe will also be made by the Owner after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the Specification requirements. Pipe rejected after delivery shall be marked for identification and shall immediately be removed from the job site.

PART 2 PRODUCTS

2.1 MATERIALS

A. Gravity Pipe

- 1. Polyvinyl chloride (PVC) pipe shall be of the size indicated on the Drawings or as specified and shall conform to the latest revision of ASTM D3034, Type SDR 35 for diameters less than or equal to 15 inch diameter and ASTM F679 for pipe greater than 15 inch diameter. Standard laying lengths shall not exceed 14.0 feet.
- 2. Joints shall be elastomeric gasket joints and shall provide a watertight seal. Gaskets shall be in accordance with ASTM F477. Assembly of joints shall be in accordance with ASTM D3212.
- 3. The minimum "pipe stiffness" (load divided by change in inside diameter in direction of load application) at 5% deflection shall be at least 46 psi for pipe tested in accordance with ASTM D2412.
- 4. No shattering or splitting shall be evident when 150 ft.-lbs. and 210 ft.-lbs. is impacted on 4 inch and 6 inch diameter pipe, respectively, in accordance with ASTM Method of Test D2444.
- 5. Pipe lengths and fittings to be used on the project shall be clearly marked on the outside in bold type with the name of the manufacturer, pipe size, pipe material, pipe class, and ASTM designation.

B. Perforated Pipe

- 1. Perforated polyvinyl chloride pipe shall be Type PS-46 PVC and conform to ASTM F758. Perforated pipe shall be furnished in lengths of not more than 20 feet.
- 2. Alternately, perforated polyvinyl chloride pipe shall conform to ASTM D3034 in sizes 4 through 15 inch. Perforations shall be two rows of ½ inch diameter holes spread longitudinally, 6 inch (maximum) apart and shall be oriented 120 degrees apart (60 degrees either side of the pipe bottom). A maximum tolerance of ¼-inch on hole spacing and size will be allowed. The top of pipe shall be marked for ease of installation.

PART 3 EXECUTION

3.1 HANDLING PIPE AND FITTINGS

- A. Take care in loading, transporting, and unloading to prevent injury to the pipe. Do not drop pipe or fittings. Examine pipe and fittings before installing, and no piece shall be installed that is found to be defective.
- B. If any defective pipe is discovered after it has been installed, remove and replace it with a sound pipe in a satisfactory manner. Thoroughly clean pipe and fittings before installing, keep clean until they are used in the work, and conform to the lines, grades and dimensions required when installed.
- C. Pipe ends requiring cutting shall be cut square without damage to the remaining pipe. Bevel cut pipe ends 1/8 inch at approximately 30 degrees to provide proper assembly of the joint. Beveling can be done with a coarse file or portable grinder.
- D. Support stored pipe from below at not more than 3 foot intervals to prevent deformation. Do not stack pipe higher than 6 feet. Store pipe and fittings in a manner which will keep them at ambient outdoor temperatures. Provide temporary shading as required to meet this requirement. Simply covering of the pipe and fittings which allows temperature buildup when exposed to direct sunlight will not be permitted.

3.2 INSTALLATION

- A. No single piece of pipe shall be laid unless it is generally straight. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than 1/16 inch per foot of length. If a piece of pipe fails to meet this required check for straightness, it shall be rejected and removed from the site. Laying instructions of the manufacturer shall be explicitly followed.
- B. Install piping and fittings true to alignment and grade. If necessary, each length of pipe shall be cleaned out before installation.
- C. Excavation, trenching and back filling procedures shall be in accordance with Section 02315.
- D. All PVC gravity pipe shall be installed on a bed of 3/4-inch crushed stone borrow meeting the requirements of Section 02320 and have a minimum depth of 6 inches. The 3/4-inch crushed stone borrow shall also completely encase the pipe and cover the pipe to a grade 6 inches over the top of the pipe for the entire width of the trench. Bell holes shall be made in the 3/4-inch crushed stone borrow bedding such that the pipe shall be uniformly supported throughout the entire length of the barrel section.
- E. Deflections in Pipe Alignment
 - 1. Wherever it is necessary to deflect pipe from a straight line, either in the vertical or horizontal plane, to avoid obstructions or where long-radius curves are permitted, the amount of deflection allowed shall not exceed that required for satisfactory making of the joint, and shall be approved by the Engineer.
 - 2. Prior to deflecting the pipeline, the spigot of the pipeline should be marked flush with the bell end to assure that the spigot is not withdrawn excessively as the result of the deflection. After the pipe is deflected, an adequate depth of jointing material must remain on the side where the spigot is away from home and an

adequate width of caulking space must remain on the opposite side of the pipe at the face of the bell.

3. The maximum deflection recommended by the manufacturer when using any pipe system must be observed when deflecting a pipeline.
4. In general, all radius curves called for on the Drawings or permitted at the time of construction are to be made using full lengths of pipe. The use of short lengths of pipe and extra joints in order to make a smaller radius turn will not be allowed without the written approval of Engineer.

F. Unsuitable Laying Conditions

1. No pipe shall be laid in water, in an unsuitable trench or during unsuitable weather conditions.

END OF SECTION

SECTION 02535

BREAKING INTO EXISTING MANHOLES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Breaking through the walls and inverts of existing manhole.
 - 2. Connecting new pipes to existing structures.
 - 3. Ancillary work associated with making the new connections to the existing structures.

1.2 REFERENCES

- A. ASTM C443 – Standard Specification for Joints for Circular Concrete Sewer and Culvert Piping Using Rubber Gaskets.
- B. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.

1.3 SUBMITTALS

- A. Submit shop drawings showing pipe connection details.

1.4 QUALITY ASSURANCE

- A. Personnel shall have confined space entry training as appropriate for the work to be performed.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Flexible Pipe-to-Structure Connectors
 - 1. The flexible connectors shall be designed to provide a positive seal between the connector and the structure wall and between the connector and the pipe.
 - 2. The flexible boot shall be manufactured of EPDM synthetic rubber in accordance with ASTM C443 and C923 and shall be 3/8 inch thick or greater.
 - 3. The external bands shall be made entirely of 304 series non-magnetic stainless steel.
 - 4. The flexible connectors shall be provided with a wedge-type or toggle-type expander to secure the pipe in the structure opening.
 - 5. The flexible connectors shall meet the following criteria, in accordance with ASTM C923:
 - a. Shall not leak when subjected to a head pressure of 10 psi for 10 minutes.
 - b. Shall have the ability to deflect 7 degrees in any direction without leakage under the head pressure conditions described above.
 - c. Shall not leak when subject to a load of 150 lbs./in. pipe diameter and the head pressure conditions described above.

B. Non-shrink, water-proof grout

1. Non-shrink, water-proof grout shall be Hallemite; Waterplug; Embecco; or equal.

PART 3 EXECUTION

3.1 INSTALLATION

A. General

1. Core drill into existing structures in such a fashion as to make an opening of suitable size to accommodate the connecting pipe without excessive damage to the existing structure.

B. Manholes

1. For manholes, break out and rebuild existing inverts as required to provide an adequate base under the new channels being installed, and shaped to provide smooth continuous hydraulic flow through the manhole.
2. Control existing flows as required during the period of construction. No drainage will be permitted to flow directly against concrete or other masonry work until it is at least 48 hours old.
 - a. Temporary handling of drainage flows may be accomplished by inserting pipes from the inlet to the outlet of the manhole and by using temporary plugs, where appropriate, provided that such pipes do not interfere with satisfactory completion of the work and shaping of the inverts, nor cause excessive backing-up in the existing system upstream of the diversion. In cases where this type of temporary handling of flows is not possible, provide the necessary dams, plugs, etc., as required in upstream manholes, and pump the flow around the structure under construction.

C. Pipe Connections

1. Rebuild and tightly close existing manhole walls and inverts to provide an integral, water-tight structure around the new pipes.
2. For pipes with smooth exterior surfaces (PVC, ductile iron, HDPE, steel, etc), use flexible pipe-to-structure connectors.
3. Where flexible pipe-to-structure connectors cannot be used, such as pipes with rough, irregular or corrugated exterior surfaces (concrete, corrugated metal or HDPE, etc):
 - a. After the new pipe has been set in place, completely fill the hole around the new pipe and structure with non-shrink, water-proof grout.
 - b. Place a 6 inch thick concrete encasement a total of 12 inches in length around the pipe stub adjacent to the exterior wall of the structure. Concrete shall have a 28 day compressive strength of 3,000 psi.

END OF SECTION

SECTION 02620

SUBSURFACE DRAINAGE

PART 1 – GENERAL

1.1 SUMMARY

A. Related Sections:

1. Section 02515 – Polyvinyl Chloride (PVC) Pipe and Fittings

1.2 REFERENCES

- A. Refer to other divisions of these specifications, other sections in this division, and drawings for related work, which may affect the work of this section.
- B. The Contract Drawings indicate and show limits of construction for this project. These specifications specify material and work requirements for this project. Both are complementary to each other, and both shall be followed to properly complete the work.

1.3 Scope of Work

- A. Without limiting the generality thereof, the work under this section consists of furnishing all labor, equipment, supplies, services and materials and performing all operations in connection with the installation of the building underdrainage systems and the storm drainage system, including piping, pipe end sections, and connection to building roof drains, and all related work required for the storm drainage system as indicated on the drawings and as specified herein.

1.4 SUBMITTALS

- A. Submit shop drawings for all storm drainage items, described or indicated on the drawings for approval prior to ordering.

PART 2 – PRODUCTS

2.1 MANUFACTURED UNITS

A. Acceptable manufacturers:

1. Products specified as standard of quality (J-DRain MVP-12) manufactured by:

JDR ENTERPRISES, INC., 292 South Main Street, Suite 200,
Alpharetta, Georgia 30009. Telephone: 800-843-7569 or
770-442-1461. Fax: 770-664-7951. Website: www.j-drain.com

2. J-DRain Fittings and Connections:

- a. Splice Connector: For splicing J-DRain MVP-12
- b. End Cap: For covering ends or terminations.

3. Physical Properties – Drainage Core
 - a. Flow Rate: 30 gpm/ft width @ gradient = .1
 - b. Compressive Strength: 11,400 psf

4. Physical Properties – Geotextile
 - a. Puncture: 65 lbs.
 - b. Mullen Burst: 210 psi
 - c. AOS: 70 U.S. Sieve
 - d. Permeability of geotextile: 140 gpm/sf
 - e. Ultraviolet resistance: 70% at 500 hours

5. Roll properties:
 - a. Roll Length: 165 ft.
 - b. Roll Width: 12 in.
 - c. Roll Weight: 60 lbs.

PART 3 – EXECUTION

3.1 CONSTRUCTION

1. Perform all pavement replacement, repair and patching, as specified under bituminous pavement sawcut and patch.
2. Trench widths shall be sufficient to permit proper installation of the work, and bottoms of trenches shall be evenly graded. The maximum allowable width of trenches for pipe shall be as indicated on the details. Excavations below required depths shall be refilled with crushed stone and compacted. Immediately after trench excavations have been carried to the required grades, the exposed surface of the existing bottom shall be cleaned of all loose disturbed materials. Where the trench bottom is below the water level or within saturated earth materials, bedding below the storm drain shall be made with a minimum of six (6) inches of crushed stone. Pipe beds in bedding material shall be rounded to accommodate the bottom quadrant of the pipe and to provide full support and uniform bearing for the entire length of the pipe barrel.
3. Control and pitch the grading to prevent water from running into the excavated areas of the site or drain, or to prevent damage to other structures or work already accomplished.
4. Furnish all pumping and other dewatering equipment necessary to keep excavated areas dry during construction. Water shall not be conducted onto adjacent property except in existing water courses.
5. After piping and structures have been installed, tested, inspected and approved by the Owner's Representative, crushed stone bedding material as specified shall be carefully hand placed and hand tamped in six (6) inch layers, under, around and to the spring line of the pipe. After this, the blanket material shall be carefully placed in six (6) inch layers to a level one (1) foot above the top of the piping. The remaining excavation shall be backfilled with approved backfill materials, compacted in six (6) inch layers loose measure. Backfill shall be compacted to not less than 95 percent of the ASTM maximum dry densities as specified herein.

6. Obtain information from the Owner and proper authorities concerning locations of existing utilities within the scope of this work in order to avoid damage to such utilities. The Owner will not be responsible for any such damage. Restore any structure and repair any resultant damage without additional cost to the Owner.
7. Excavations shall be adequately sheeted, shored and braced as necessary to permit proper execution of the work and to protect all slopes and earth banks. Sheet piling shall be installed if required to prevent cave-ins or settlement and to protect workmen, adjacent structures and utilities. Shoring and piling may be removed as the backfilling progresses, but only when banks are safe against caving.
8. Excavation of earth, boulders of rock beyond indicated or authorized limits shall be refilled at no additional expense to the Owner with gravel compacted to 95 percent of the maximum dry density at optimum moisture content, or crushed stone, as required by the Owner's Representative.

END OF SECTION

SECTION 02771

PAVING AND CURBS

PART 1 GENERAL

1.01 REFERENCES

- A. Refer to other divisions of these specifications, other sections in this division, and drawings for related work, which may affect the work of this section.
- B. The Contract Drawings indicate limits of construction for this project. These specifications specify material and work requirements for this project. Both are complementary to each other, and both shall be followed to properly complete the work.
- C. All sitework included or ordered under this contract shall be done in conformity with the applicable provisions of the State of New Hampshire Department of Transportation “Standard Specifications for Roads and Bridge Construction”, including all the latest revisions, addenda and supplements, hereinafter referred to as “Standard Specifications” and the Town of Newmarket rules, regulations, codes, ordinances and specifications; and utility companies’ specifications.

1.02 SCOPE OF WORK

- A. Without limiting the generality thereof, the work under this section consists of furnishing all labor, equipment, supplies and materials and performing all operations in connection with the placing and compacting of gravel subbase and base, bituminous concrete base and wearing courses, cleaning and sweeping areas within the work under this contract and all other operations and incidental work pertaining thereto; all to be in accordance with these specifications and drawings.
- B. The Contractor shall schedule a pre installation meeting with the Owner prior to the installation of pavement, curbs, and walks.

1.03 RELATED WORK IN OTHER SECTIONS

- A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:
 - 1. Section 02230 – Site Clearing.
 - 2. Section 02300 – Earthwork.
 - 3. Section 02620 – Subsurface Drainage.

1.04 GRADES AND ELEVATIONS

- A. The drawings indicate, in general, the alignment and finish grade elevations. The Owner's Representative, however, may make such adjustment in finish grades alignment as is found necessary.

PART 2 PRODUCTS**2.01 PRODUCTS****A. Base Courses**

1. Aggregate subbase and base courses shall be in accordance with the applicable paragraphs of the Standard Specifications and as shown on the Drawings.

B. Bituminous Concrete Pavement

1. Bituminous concrete pavement shall be in accordance with the applicable paragraphs of the Standard Specifications and as shown on the Drawings. Bituminous concrete pavement shall be supplied from only NHDOT approved asphalt mix plants.

C. Curbs

1. Curbs shall be constructed in accordance with the applicable paragraphs of the Standard Specifications and as shown on the Drawings.

PART 3 EXECUTION**3.01 PREPARATION****A. Subgrades**

1. Do all necessary regrading and fine grading to bring subgrades to the required grades and section, including compaction of the subgrade surface prior to placing the gravel base courses.
2. Compact the existing subgrade as specified in Section 02300 – Earthwork.

B. Adjustment of Existing Castings to Remain

1. All cast iron manhole frames and covers, catchbasin frames/grates, valve boxes, and all other castings located within the areas of new pavements and replacement areas shall be adjusted to the new pavement surface prior to commencing paving.

3.02 CONSTRUCTION**A. Gravel Subbase and Base Courses**

1. Place and compact the gravel subbase and crushed gravel base courses in accordance with the applicable paragraphs of the Standard Specifications.
2. The base courses shall be compacted as specified in Section 02300 - Earthwork.

3. It is the intent of these compaction requirements that the minimum in-place dry density of the compacted materials resulting from passes of the compaction equipment will be equal to or greater than the minimum percentages specified herein. Additional passes of the specified equipment will be required if the minimum percentages of ASTM in-place dry densities as specified are not obtained. Moisture conditioning by wetting or drying shall be used as required or directed to obtain the required compaction results.

B. Pavement Binder and Wearing Courses

1. Paving shall consist of a bituminous concrete base course pavement and wearing course as shown on the drawings and details. Paving shall be constructed in accordance with the applicable paragraphs of the Standard Specifications.

C. Curbs

1. Curbs shall be constructed as shown on the drawings and details, and in accordance with the applicable paragraphs of the Standard Specifications.

END OF SECTION

SECTION 02820

CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Installation of fence framework, fabric, and accessories; excavation for post bases; concrete foundations for posts and center drop for gates; and manual gates and related hardware as shown on the plans and specified herein.

1.2 REFERENCES

- A. ASTM A53 - Specification for Pipe, Steel, Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless
- B. ASTM A123 – Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products
- C. ASTM A153 - Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- D. ASTM A428 – Test Method for Weight of Coating on Aluminum-Coated Iron or Steel Articles
- E. ASTM B429 – Aluminum-Alloy Extruded Structural Pipe and Tube
- F. ASTM C94 – Ready Mixed Concrete
- G. ASTM F567 – Practice for Installation of Chain Link Fence
- H. ASTM F668 – Poly (Vinyl Chloride) (PVC) Coated Steel Chain Link Fence Fabric
- I. ASTM F900 – Industrial and Commercial Swing Gates
- J. ASTM F934 – Standard Colors for Polymer-Coated Chain Link Fence
- K. CLFMI (Chain Link Fence Manufacturers institute) – Product Manual

1.3 SUBMITTALS

- A. Shop drawings showing the plan layout, spacing of components, post foundation dimensions, hardware anchorage, and a schedule of components.
- B. Data indicating compliance with these specifications for the fabric, posts, accessories, fittings and hardware.

1.4 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Supply material in accordance with CLFMI – Product Manual.
- C. Perform installation in accordance with ASTM F567.

- D. Furnish a 10-year factory warranty against corrosion and rust for the entire fencing system.

1.5 PRODUCT HANDLING

- A. Deliver fence fabric and accessories in packed cartons or firmly tied rolls.
- B. Packages shall be labeled with the manufacturer's name.
- C. Store fence fabric and accessories in a secure and dry place.

PART 2 PRODUCTS

2.1 MATERIALS

- A. General - Material furnished shall be new and first quality and shall not have been painted. Steel shall be copper bearing, containing not less than 0.2% pure copper. Materials are to be galvanized, then PVC coated - color to be black.
- B. Framing (Steel): ASTM F1083 Schedule 40 galvanized steel pipe, welded construction, minimum yield strength of 25 ksi; coating conforming to ASTM F1043 Type A on pipe exterior and interior.

2.2 COMPONENTS

- A. Line Posts: 2.375-inch diameter.
- B. Corner and Terminal Posts: 3.5inch.
- C. Gate Posts: 3.5-inch diameter.
- D. Top and Brace Rail: 1.66-inch diameter, plain end, sleeve coupled.
- E. Fabric: 1 3/4-inch diamond mesh interwoven wire, 6 gage thick, top selvage knuckle end closed, bottom selvage, knuckle end closed.
- F. Fastener Hardware: ASTM A307

2.3 ACCESSORIES

- A. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; galvanized steel, with PVC coating.

2.4 FINISHES

- A. Components and Fabric: Vinyl coating, black, color in accordance with ASTM F934 over galvanized coating to ASTM A53; ASTM A123; ASTM A153, ASTM A653 for components;
- B. Vinyl Components: color to match fabric.
- C. Accessories: Same finish as framing, fabric.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install fence with posts vertical and components to line and grade shown on Drawings.

- B. Excavate holes for posts to diameter and spacing indicated on Drawings without disturbing underlying materials.
- C. Post holes shall have a plan diameter 12 inches for line posts and 18-inches for end posts and a minimum depth of 42 inches for line posts and 66-inches for end posts. Holes shall be clean and free of loose soil and debris.
- D. Line Post Footing Depth Below Finish Grade: ASTM F567.
- E. Terminal Post Footing Depth Below Finish Grade: ASTM F567, Set chain link fence posts in air-entrained 3,000 psi, $\frac{3}{4}$ inch concrete. Embed posts a minimum of 3'-0". Concrete shall be placed continuously in one operation and tamped or vibrated for consolidation.
- F. Center and align posts. Place concrete around posts and vibrate or tamp for consolidation. Verify vertical and top alignment of posts and make necessary corrections.
- G. Extend concrete footings 3-inch below grade, and trowel, forming crown to shed water.
- H. Fill gate posts with the above specified concrete prior to the installation of gates.
- I. Where solid rock is encountered line posts shall be set to a minimum depth of 12-inches, and end, corner, gate and intermediate post to a minimum of 18-inches in the solid rock. The hole shall have a minimum width or diameter 1 inch greater than the largest dimension of the post section to be set. After the post is set and plumbed the hole shall be filled with grout consisting of one part Portland Cement and one part clean, well graded sand. The grout shall be thoroughly worked into the hole so as to leave no voids.
- J. Rails, Bracing, and Fabric - Concrete shall attain 75% of the 28-day strength before rails, tension wires and/or fabric is installed. A minimum of 7 days shall pass before installation of the above items. Fabric shall not be stretched and tensioned or gates hung until the concrete attains full strength. Fabric shall be installed with two-inches clear space to finish grade.
- K. Set intermediate, terminal, gate, posts plumb, in concrete footings with top of footing 3 inches below finish grade. Slope top of concrete for water runoff.
- L. Line post spacing shall be a maximum of 10'-0" center to center.
- M. Brace each corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gate posts.
- N. Terminal posts are to be braced horizontally and diagonally. The braces are to extend over one adjacent panel. Changes in line of 30 degrees or more shall be considered as corners.
- O. Install top rail through line post tops and splice with 6-inch rail sleeves.
- P. Install framework, fabric, gates, and accessories in accordance with ASTM F567.
- Q. Place fabric on inside of posts and rails.

- R. Install nuts for tension bands and hardware bolts on the side of the fence opposite the fabric.
- S. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.
- T. Position bottom of fabric 2 inches above finished grade.
- U. Fasten fabric to top rail, line posts, braces, and bottom rail at maximum 14-inches on centers.
- V. Attach fabric to end posts with tension bars and tension bar clips.
- W. Provide concrete center drop to footing depth and drop rod retainers at center of double gate openings.
- X. Miscellaneous - Install nuts for tension bands and hardware bolts on the side of the fence opposite the fabric. Repair galvanized coating where damaged using hot- applied repair compound applied in accordance with the manufacturer's recommendations.

Repair damage to galvanized coating using hot-applied repair compound in accordance with the manufacturer's recommendations.

3.2 ERECTION TOLERANCES

- A. Maximum Variation from Plumb: $\frac{1}{4}$ inch in 8-feet.
- B. Maximum Offset from Indicated Position: 1-inch.

END OF SECTION

SECTION 02920

LAWNS AND GRASSES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Restoration of all vegetated areas disturbed during construction including:
 - a. Lawn areas
 - 2. New loam and seed areas

1.2 SUBMITTALS

- A. Lawn seed mixture including percent by weight of each seed type, and manufacturer/Supplier name.
- B. Suitable laboratory analysis of the topsoil to determine the quantity of fertilizer and lime to be applied.
- C. Lime and starter fertilizer application rates based on laboratory soil tests.
- D. A sworn certificate indicating each variety of seed, weed content, germination of seed, net weight, date of shipment and manufacturer's name shall accompany each seed shipment.

1.3 QUALITY ASSURANCE

- A. Place seed only between the periods from April 15th to June 1st, and from August 15th to October 1st, unless otherwise approved by the Engineer.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Loam
 - 1. Loam from offsite, as required for Work, shall be taken from a well-drained, arable site, and shall be free of subsoil, large stones, earth clods, sticks, stumps, clay lumps, roots or other objectionable, extraneous matter or debris. Loam shall also be free of quack-grass rhizomes, Agropyron Repens, and the nut-like tubers of nutgrass, Cyperus Esculentus, and all other primary noxious weeds. Loam shall not be delivered or used for planting while in a frozen or muddy condition. Topsoil as delivered to the Site or stockpiled shall have pH between 6.0 and 7.0 and shall contain not less than 5 percent or more than 8 percent organic matter as determined by loss of ignition of moisture-free Samples dried at 100 degrees Celsius.
 - 2. Onsite loam may be available from stripping of onsite topsoil. Onsite topsoil shall be tested as specified below and shall be amended as necessary to meet Specification requirements for loam.

3. Soil Analysis: The Contractor shall submit representative Samples of loam, which he intends to bring onto the Site, and Samples of loam from onsite sources, to a Soil and Plant Testing Laboratory acceptable to the Engineer. All reports shall be sent to the Engineer for approval. Samples of loam to be brought to the Site must be approved prior to delivery of soil. Deficiencies in the loam shall be corrected by the Contractor, as directed by the Engineer after review of the testing agency report by a soils consultant. Testing reports shall include the following tests and recommendations.
 - a. Mechanical gradation (sieve analysis) shall be performed and compared to the USDA Soil Classification System.
 - b. The silt clay content shall be determined by a Hydrometer Test.
 - c. Percent of organics shall be determined by an Ash Burn Test or Walkley/Black Test.
 - d. Chemical analysis shall be undertaken for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Soluble Salts, and acidity (pH).
 - e. Soil analysis tests shall show recommendations for soil additives to correct soils deficiencies as necessary, and for additives necessary to accomplish particular lawn and planting objectives noted.
 - f. All tests shall be performed in accordance with the current standards of the Association of Official Agriculture Chemists.
4. Loam for General Lawn and Site Restoration Areas: Loam shall conform to the following grain size distribution for material passing the #10 sieve:

U.S. Sieve Size Number	Percent Passing	
	Minimum	Maximum
10	100	----
18	84	100
35	63	72
140	26	40
270	22	34
0.002 mm	2	5

¹The ratio of the particle size for 80% passing (D_{80}) to the particle size for 30% passing (D_{30}) shall be 6 or less ($D_{80}/D_{30} < 6$).

²Maximum size shall be one-inch largest dimension. The maximum retained on the #10 sieve shall be 20% by weight of the total sample.

³Tests shall be by combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition.

⁴The organic content shall be between 4.0 and 6.0 percent.

B. Typical Sand Amendment

1. Sand to be mixed with topsoil shall meet the following requirements. The material shall be uniformly graded coarse sand consisting of clean, inert, rounded grains of quartz or other durable rock and free from loam or clay, surface coatings, mica, other deleterious materials with the following gradation.

U.S. Sieve Size Number	Percent Passing	
	Minimum	Maximum
10	100	----
18	60	80
35	35	55
60	8	20
140	0	8
270	0	3
0.002 mm	0	0.3

¹Maximum size shall be one-inch largest dimension. The maximum retained on the #10 sieve shall be 10% by weight of the total sample.

²The ratio of the particle size for 70% passing (D_{70}) to the particle size for 20% passing (D_{30}) shall be 3.0 or less ($D_{70}/D_{20} < 3.0$).

³Tests shall be combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition.

C. Starter Fertilizer

1. Starter fertilizer shall bear the manufacturer’s name and guaranteed statement of analysis, and shall be applied in accordance with the manufacturer’s directions.
2. Starter fertilizer shall be Scott’s Starter Fertilizer, or equal, with timed nitrogen release to prevent burning.

D. Lime

1. Lime shall be pelletized type for prolonged time release to soil.
2. Lime shall be applied at the rates recommended in the soil analysis.

E. Seed

1. Seed shall be of the previous year's crop.
2. Required properties:
 - a. Purity > 90%
 - b. Germination > 80%
 - c. Crop < 0.5%
 - d. Weed < 0.3%
 - e. Noxious Weed – 0%
 - f. Inert < 8%

3. Grass seed shall conform to the following mixture in proportion by weight and weed content and shall pass the minimum percentages of purity and germination as indicated for same.

Lawn Area Seed Mix	% Weight
“Rebel II” Tall Fescue	70%
“Baron” Kentucky Bluegrass	10%
“Palmer” Perennial Ryegrass	20%

4. All seed shall comply with State and Federal seed Laws and Regulations.

PART 3 EXECUTION

3.1 RESTORATION

- A. In locations where the Work passes through existing grass, weed brush or tree-surfaced areas that are not covered by a specific lawn repair item, surface restoration shall be as follows:
 1. After completion of backfilling, the existing loam and organic ground cover materials that were salvaged during excavation shall be returned to the top of the trench.
 2. After natural settlement and compaction has taken place, the trench surface shall be harrowed, dragged and raked as necessary to produce a smooth and level surface.
 3. The area is then to be sowed with “orchard grass” or “rye grass” or other such materials to hold the soil and produce a growth similar to that existing prior to construction.

3.2 PREPARATION

- A. After rough grading of the subgrade has been completed and approved, the subgrade surface shall be scarified to a depth of four (4) inches. Then furnish and install a layer of loam providing a rolled four (4) inch thickness. Any depressions which may occur during rolling shall be filled with additional loam, regraded and rerolled until the surface is true to the finished lines and grades. All loam necessary to complete the Work under this section shall be supplied by the Contractor.
- B. The ground surface shall be fine graded and raked to prepare the surface of the loam for lime, fertilizer and seed.
- C. The loam shall be prepared to receive seed by removing stones and grading to eliminate water pockets and irregularities prior to placing seed. Finish grading shall result in straight uniform grades and smooth, even surfaces without irregularities to low points.
- D. All stones over one-half (1/2) inch in diameter remaining on the surface after raking shall be removed.
- E. Shape the areas to the lines and grades required. The Contractor's attention is directed to the scheduling of Loaming and Seeding of graded areas to permit sufficient time for the stabilization of these areas.

- F. All areas disturbed by construction within the property lines and not covered by structures, pavement, or bark mulch shall be loamed and seeded.
- G. Limestone shall be thoroughly incorporated into the loam layer at a minimum rate of 3 ton per acre or more as recommended by the loam analysis in order to provide a pH value of 5.5 to 6.5.
- H. Fertilizer shall be spread on the top layer of loam at the minimum rate of 500 pounds per acre or more as recommended by the loam analysis and worked into the surface

3.3 LOAM AND SEED AREAS

- A. For temporary protection of disturbed areas, seed shall be applied at the following rates:

Winter Rye (fall seeding)	2.5 pounds per 1,000 square feet
Oats (spring seeding)	2.5 pounds per 1,000 square feet
Mulch	1.5 tons per acre
- B. The seed mixtures shall be applied at a minimum rate of 200 pounds per acre, or 4.5 pounds per 1,000 square feet.
- C. Seed shall be sown at the rates indicated above by rotary or drop spreader. Sowing shall be done on a calm, dry day. Immediately before seeding, the soil shall be lightly raked. One half the seed shall be sown in one direction and the other half at right angles to the original direction. It shall be lightly raked into the soil to a depth not over 1/4 inch and rolled with a hand roller weighing not over 100 pounds per linear foot of width.
 - 1. Straw mulch shall be applied immediately after seeding at a rate of 1.5 to 2 tons per acre. Mulch that blows or washes away shall be replaced immediately and anchored using appropriate techniques.
 - 2. The surface shall be watered and kept moist with a fine spray as required, without eroding the soil, until the grass is well established. Any areas, which are not satisfactorily covered with grass, shall be reseeded, and all noxious weeds shall be removed.
- D. Unless otherwise approved, seeding shall be done between the periods from April 15th to June 1st, and August 1st to October 1st, when soil conditions and weather are suitable for such Work.

3.4 TEMPORARY PLANTINGS

- A. For temporary plantings after September to early Spring and for temporary protection of disturbed areas.
 - 1. Fertilizer shall be spread and worked into the surface at a rate of 600 pounds per acre.
 - 2. Mulching shall be applied at the rate of three (3) tons/acre.
 - 3. Follow above seeding rates and procedures.

3.5 MAINTENANCE

- A. Maintenance shall include watering, weeding, removal of stones and other foreign objects over one half (1/2) inch in diameter, cutting the grass until final acceptance. Mow

at least weekly, removing no more than 30-40 percent of the leaf tissue using well sharpened blades. Mow grass between one (1) and two (2) inches high in the spring and fall. Mowing heights shall be an additional one-half to an inch in the summer to reduce temperature stress. Leave the clippings in place to help recycle essential plant nutrients needed for growth. All bare or dead spots which become apparent shall be properly prepared, re-loamed, limed, aerated, fertilized, and reseeded as many times as necessary to secure a good growth. The entire area shall be maintained, watered and cut until final acceptance of the lawn installation.

- B. The dressed and seeded areas shall be sprinkled with water as necessary from time to time. Signs and barricades should be placed to protect the seeded areas.
- C. To be acceptable, seeded areas shall consist of a uniform stand without bare or dead spots of at least 90 percent established permanent grass species, with uniform count of at least 200 plants per square foot.
- D. The Engineer shall determine whether maintenance shall continue in any part.
- E. After all necessary corrective Work and clean-up has been completed, and maintenance instructions have been received by the Owner, the Engineer will certify in writing the acceptance of the lawns.

END OF SECTION