PROJECT MANUAL

SAINT MARIE-GREENHALGH SPORTS COMPLEX RUNNING TRACK RENOVATION

TOWN OF PUTNAM, CONNECTICUT

June 2026

CHA PROJECT #: 099163

Prepared for:

TOWN OF PUTNAM
PUTNAM, CONNECTICUT

Prepared by:

CHA
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SAINT MARIE-GREENHALGH SPORTS COMPLEX
RUNNING TRACK RENOVATION

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SECTION 00100 – ADVERTISEMENT FOR BIDS

SAINT MARIE-GREENHALGH SPORTS COMPLEX
RUNNING TRACK RENOVATION

PUTNAM, CONNECTICUT

The Town of Putnam invites sealed bids for furnishing the following items in accordance with plans and specifications prepared by CHA: Town of Putnam, Connecticut, Saint Marie-Greenhalgh Sports Complex Running Track Renovation. The project consists of the replacement of the Saint Marie-Greenhalgh Sports Complex running track and D zones. The estimated construction cost is $1,600,000.

Bids will be received on behalf of the Town of Putnam at the Office of Town Administrator, Town Hall, 200 School Street, Putnam, Connecticut 06260, until 11:00 AM, prevailing time, Thursday, August 6, 2026. Bids will be opened and read aloud in Conference Room 101.

A mandatory Pre-Bid Meeting shall be held on-line on July 15, 2026 at 11:00 AM. Contact Chuck Eaton at ceaton@chasolutions.com to request a link to the Pre-Bid Meeting.

Electronic copies of the plans, specifications and bid forms may be obtained by emailing Chuck Eaton at ceaton@chasolutions.com to request a link to the download site. Documents will be available on July 2, 2026.

Each Bid must be accompanied by a bid security consisting of a BID BOND, CASHIER's, TREASURER's or CERTIFIED CHECK issued by a responsible bank or trust company in the amount of 10% of the bid price. Bid bonds shall be issued by a company qualified to do business in the State of Connecticut.

The successful bidder must furnish a performance bond and a payment bond, each in an amount equal to one hundred percent (100%) of the Contract Price from a surety company qualified to do business in the State of Connecticut, for the faithful performance of the contract.

Bidders shall certify that they do not, and will not maintain or provide for their employees any facility that is segregated on the basis of race, color, creed, or national origin.

As per C.G.S. Sec. 31-53c, prevailing wage rates are to be paid under this contract.

The contractor who is selected to perform this State project must comply with CONN. GEN. STAT. §§ 4a-60, 4a-60g, and 46a-68b through 46a-68f.

State law requires a minimum spending allocation goal of twenty-five (25%) percent of the state-funded portion of the contract for award to subcontractors holding current certification from the Connecticut Department of Administrative Services ("DAS") under the provisions of CONN. GEN. STAT. § 4a-60g. (25% of the total state-funded value with DAS-certified Small Businesses and 6.25% of the total state-funded value with DAS-certified Minority-, Women-, and/or Disabled-owned Businesses.) The contractor must demonstrate good faith effort to meet the spending allocation goals.

Bidders must comply with C.G.S. Sec. 4b-91 and be pre-qualified by the State of Connecticut Department of Administrative Services (DAS).

Selection of the contractor will be based upon bidder qualifications, including evidence of past performance in similar projects, and bid price. The contract will be awarded to the bidder deemed by the awarding authority to be the lowest responsible and eligible bidder.

The bidder agrees that its bid shall be good and may not be withdrawn for a period of 30 days, Saturdays, Sundays and legal holidays excluded, after the opening of the bids.

The Town reserves the right to waive any informalities to accept or reject, in whole or in part any or all bids, or take whatever other action may be deemed as in its best interest.

The Town of Putnam is an Affirmative Action/Equal Opportunity Employer. Minority/Women's Business Enterprises are encouraged to apply. This contract is subject to state set-aside and contract compliance. requirements.

Town of Putnam
Elaine Sistare, Town Administrator

SECTION 00200 – INSTRUCTIONS TO BIDDERS

1. Receipt and Opening of Bids

The Town of Putnam, Connecticut, herein called the Owner, will receive sealed bids for the Town of Putnam, Connecticut, Saint Marie-Greenhalgh Sports Complex Running Track Renovation. Such bids addressed to the Town Administrator, Town of Putnam, Town Hall, 200 School Street, Putnam, Connecticut 06260. The outside of the sealed bid shall be endorsed "Bid for Saint Marie-Greenhalgh Sports Complex Running Track Renovation". Bids will be received at the Town Administrator's Office until 11:00 AM prevailing time, on Thursday, August 6, 2026, at which time said bids will be publicly opened and read aloud in Conference Room 101.

Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified will not be considered. The bidder agrees that this bid shall be good and may not be withdrawn for a period of 30 days, Saturdays, Sundays, and legal holidays excluded, after the opening of bids.

2. Location and Work to be Done

The work consists of the Saint Marie-Greenhalgh Sports Complex Running Track Renovation located at Wicker Street, Putnam, Connecticut 06260 for removal and replacement of existing track and D zones with associated drainage and fencing replacement, as more specifically described in the attached contract specifications.

The Contractor shall furnish all labor, services, materials, equipment, plant, machinery apparatus, appliances, tools, supplies, and all other things necessary to do all work required for the completion of each item of the Work and as herein specified.

The Work to be done and paid for under any item shall not be limited to the exact extent mentioned or described but shall include all incidental work necessary or customarily done for the completion of that item.

The Contractor shall provide the Town of Putnam with a "red line" plan and/or field measurements depicting the locations and depths of all utilities installed, sufficient to create an accurate as built drawing for the Town's records.

4. Preparation of Bid

Each bid must be submitted on the prescribed form. All blank spaces for bid prices must be filled in, in ink or typewritten, in both words and figures. In the event of a discrepancy between figures and words, the amount(s) indicated by the words shall prevail. In an event of a discrepancy between the total stated Bid Price and the sum of the individual Bid Items, the sum of the individual items shall prevail.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, his address, and endorsed with the name of the project as specified in Receipt and Opening of Bids, above.

If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in Receipt and Opening of Bids, above.

5. Bid Opening Procedures

The following list of requirements shall apply to each filed bid. Bids not meeting all the requirements for timeliness and security will be rejected without opening; bids not meeting signature and addenda requirements will be rejected.

Bids shall be filed at the place and before the time specified in Receipt and Opening of Bids, above.

Properly executed bid security shall accompany the Bid.

Bid signatures will be checked.

All addenda will be sent by certified mail, e-mail or fax, with return receipt requested, to all prospective bidders and the last of which will be mailed or sent not later than five days prior to the date established for submission of bids. All bidders shall include with their bids the written acknowledgment form provided in Section 00410, FORM OF GENERAL BID.

The total dollar amount of each bid will be read, all bids will be taken under advisement. All those present at the bid opening may examine all bids after the bid opening and after the reading of the low bids.

6. Ability and Experience of Bidder

No award will be made to any bidder who cannot satisfy the Owner that he has sufficient ability and experience in this class of work and sufficient capital and plant to enable him to prosecute and complete the work successfully within the time named. The Owner's decision or judgment on these matters will be final, conclusive, and binding.

The Owner may make such investigations as he deems necessary, and the bidder shall furnish to the Owner, under oath if so required, all such information and data for this purpose as the Owner may request.

7. Conditions of Work

Each bidder must be fully familiar with the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his obligation to furnish all material and labor necessary to carry out the provisions of his contract. Insofar as possible the Contractor, in carrying out his work, must employ such methods or means as will not cause any interruption of or interference with the work of any other Contractor.

8. Addenda and Interpretations

No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally. All information given to bidders other than by means of the plans, specifications, or by addenda, as described below, is given informally and shall not be used as the basis of a claim against the Owner.

Every request for such interpretation should be directed in writing to Mr. Chuck Eaton, P.E., CHA, 400 Capital Boulevard, Suite 301, Rocky Hill, CT 06067, ceaton@chasolutions.com. To be given consideration such request must be received at least six (6) days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, when issued, will be sent by certified mail, e-mail, or fax, with return receipt requested to all prospective bidders (at the respective address furnished by them for such purposes), not later than five days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

9. Security for Faithful Performance

Simultaneously with the delivery of the executed Contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor and materials under this contract as specified in Section 00700, GENERAL CONDITIONS included herein. The surety on such bond or bonds shall be a surety company qualified to do business under the laws of the State of Connecticut and satisfactory to the Owner. The bonds shall remain in force for one year after final acceptance of the work by the Owner, unless the Owner, in writing, releases the Contractor from the obligation sooner.

10. Power of Attorney

Attorneys-in-fact who sign Contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

11. Laws and Regulations

The bidder's attention is directed to the fact that all applicable State laws municipal ordinances or Bylaws, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full. Attention is directed to other applicable sections of this specification.

12. Liquidated Damages for Failure to Enter into Contract

The successful bidder, upon his failure or refusal to execute and deliver the Contract and bonds required within 10 calendar days after he/she has received notice of the acceptance of his/her bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, a portion of security deposited with his/her bid but the amount forfeited shall not exceed the difference between his/her bid price and the bid price of the next lowest responsible and eligible bidder. In case of death, disability, bona fide clerical or mechanical error of a substantial nature, or other similar unforeseen circumstances affecting the bidder, his/her bid deposit will be returned.

13. Obligation of Bidder

At the time of the opening of bids each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the Contract Documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect of his bid.

14. Information Not Guaranteed

All information given in the Contract Documents relating to subsurface and other conditions, natural phenomena, existing pipes, and other structures is from the best sources at present available to the Owner. All such information is furnished only for the information and convenience of bidders and is not guaranteed.

It is agreed and understood that the Owner does not warrant or guarantee that the subsurface or other conditions, natural phenomena, existing pipes, or other structures encountered during construction will be the same as those indicated in the Contract Documents.

It is further agreed and understood that no bidder or Contractor shall use or be entitled to use any of the information made available to him or obtained in any examination made by him in any manner as a basis of or ground for any claim or demand against the Owner or the Engineer, arising from or by reason of any variance which may exist between the information made available and the actual subsurface or other structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.

15. Bid Security

Each bid must be accompanied by a certified check, a bid bond, cash, a treasurer's or cashier's check, payable to the Owner, in the amount stated in Section 00100, INVITATION TO BID. Such checks will be returned to all except the three lowest responsible and eligible bidders within five days, Saturdays, Sundays, and legal holidays excluded, after the opening of bids, and the remaining checks will be returned promptly after the Owner and the accepted bidder have executed the Contract, or if no notice of intent to award has been presented to the selected contractor within 30 days, Saturdays, Sundays and holidays excluded, after the date of the opening of bids upon demand of the bidder at any time thereafter.

16. Right to Reject Bid

The Owner reserves the right to waive any informalities or reject any and all bids, should the Owner deem it to be in the public interest to do so.

The Owner may also reject bids which in its sole judgment are either incomplete, conditional, obscure or not responsive or which contain additions not called for, erasures not properly initialed, alternations, or similar irregularities, or the Owner may waive such omissions, conditions or irregularities.

17. Time for Completion

All work of the contract must be completed on or within the time period stated in the Form of General Bid. Bidders shall be prepared to commence the work of the contract within thirty (30) days of a Notice of Contract Award.

18. Comparison of Bids

Bids will be compared on the basis of the quantities and unit and lump sum price set forth in the bid forms.

In the event that there is a discrepancy in Section 00410, FORM OF GENERAL BID between prices written in words and figures, the prices written in words will govern.

The Owner agrees to examine and consider each FORM OF GENERAL BID submitted in consideration of the qualifications of the bidder and the bidder's agreements, as herein above set forth and as set forth in Section 00410, FORM OF GENERAL BID.

Discrepancies between the individual sum of any column of figures and the correct sum will be resolved in favor of the correct sum.

19. Award of Contract

The Contract will be awarded to "the lowest responsible and eligible bidder based on the price of the Base Bid". Such a bidder shall possess the skill, ability and integrity necessary for the faithful performance of the work, shall be able to furnish labor that can work in harmony with all other elements of labor employed, or to be employed, in the work, and shall otherwise comply with all applicable provisions of law.

The lowest responsible and qualified bidder means the bidder whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary to faithfully perform the work based on objective criteria considering past performance and information.

21. Prevailing Wage Rates

Prevailing Wage Rates as determined by the Connecticut Department of Labor apply to the project. It is the responsibility of the contractor, before bid opening, to request if necessary, any additional

information on Prevailing Wage Rates for those trades people who may be employed for the proposed work under this contract.

23. Insurance

The Contractor shall carry and continuously maintain until completion of the Contract, insurance as specified in the Supplemental General Conditions and in such form as shall protect him performing work covered by the Contract, or the Town of Putnam and its employees, agents and officials, from all claims and liability for damages for bodily injury, including accidental death, and for property damage, which may arise from operations under this Contract. The Contractor covenants and agrees to hold the Town and its employees, agents and officials harmless from loss or damage due to claims for personal injury and/or property damage or damage due to claims for personal injury and/or property damage arising from, or in connection with operations under this Contract.

24. Affirmative Action/Equal Employment Opportunity Laws and Regulations

Putnam is an affirmative action/equal opportunity owner/purchaser. The bidder's attention is directed to all applicable State Laws, Town Bylaws, and rules and regulations regarding affirmative action/equal employment opportunity requirements. Failure of the bidder to comply with any such law, bylaw, rule or regulation shall constitute grounds for the Town to reject a bid or to otherwise reject or terminate the award of the contract pursuant to these contract documents.

Any contract resulting from this Invitation shall obligate the Contract or Subcontractor not to discriminate in employment practices.

Bidders must, if requested, submit compliance reports concerning their employment practices and policies in order to maintain their ability to receive award of the contract. Bidders, must, if requested, submit a list of all subcontractors who will perform work on this contract together with a signed "Certification of Bidder Regarding Equal Employment Opportunity."

25. Conflict Between Specifications

Wherever conflicts exist between these specifications and State of Connecticut laws, rules or regulations, the laws or rules or regulations of the State shall prevail.

26. Laws and Regulations

The Bidders attention is directed to the fact that all applicable Federal, State and municipal laws, regulations and ordinances shall apply to the contract as though they were written out in full.

27. Severability

If any provision of this Agreement or portion of such provision or application thereof to any person, entity, or circumstances is held invalid, the remainder of the Agreement (or remainder of such provision) and the application of other person, entities or circumstances shall not be affected thereby so long as such remaining or modified provisions reflect the intent of the parties.

28. Connecticut Sales and Use Tax

Materials and equipment purchased for permanent installation in this project will be exempt from the Connecticut Sales and Use Tax. The exemption certificate will be furnished to the Contractor. Each Bidder shall take this exemption into account in calculating their Bid for the work.

29. Power of Attorney

Attorneys-in-fact who sign contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

30. Termination Due to Lack of Funds

This project and Contract Agreement shall be terminated in the event of cancellation, revocation, suspension or termination of grant funds from the funding sources, in the case of this contract the grantor agency is Department of Economic and Community Development (DECD) and the Town of Putnam.

31. Labor, Safety and Health Regulations.

The successful bidder shall comply with the Department of Labor Safety and Health Regulations for Construction promulgated under the Occupational Safety and Health Act of 1970 (PBS-91-596).

The successful bidder shall have a competent person or persons, as required under the Occupational Safety and Health Act, on the Site to inspect the work and to supervise the conformance of the work with the regulations of the Act.

32. Permits

The Contractor shall be responsible for obtaining all permits needed to commence and complete the Work. The Town of Putnam shall waive all permit fees under its jurisdiction. See Section 00890, Permits.

END OF SECTION

SECTION 00410 – FORM OF GENERAL BID

Bid of _____ (hereinafter called "Bidder")

(_____) a corporation, organized and existing under the laws of the state of _____

(_____) a partnership

(_____) a joint venture

(_____) an individual doing business as _____

To the Town of Putnam, Connecticut (hereinafter called "Owner").

Gentlemen:

The Bidder, in compliance with your invitation for bids for the Saint Marie-Greenhalgh Sports Complex Running Track Renovation, having examined the plans and specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the contract documents within the time set forth below, and at the price stated below. This price is to cover all expenses incurred in performing the work required under the contract documents, of which this proposal is a part.

The Bidder hereby agrees to commence work under this contract on or before a date to be specified in written "Notice to Proceed" of the Owner, and to fully complete the project within 150 consecutive calendar days thereafter. The Bidder further agrees to pay as liquidated damages the sum of Five-Hundred-Fifty ($550.00) Dollars for each consecutive calendar day thereafter as hereinafter provided in Section 00700 GENERAL CONDITIONS.

Bidder acknowledges receipt of the following addenda:

No. _____
Dated: _____

No. _____
Dated: _____

No. _____
Dated: _____

No. _____
Dated: _____

LUMP SUM BID PRICE

BASE PROPOSAL: Bidder agrees to perform all of the work described in the specifications and shown on the plans for the following lump sum price:

Amount shall be in both words and figures. In case of discrepancy, the amount shown in words will govern.

Item quantities are assumed for comparison of bids.

SAINT MARIE-GREENHALGH SPORTS COMPLEX RUNNING TRACK RENOVATION:

Item No.	Quantity	Description
1	LS	Base Bid

Lump Sum Price _____
(dollars)

and _____
(cents)

($ _____)

ADD ALTERNATE No. 1:

Item No.	Quantity	Description
2	LS	10’ High Retractable Ball Netting System

Lump Sum Price _____
(dollars)

and _____
(cents)

($ _____)

ADD ALTERNATE No. 2:

Item No.	Quantity	Description
3	LS	Upgrade to Sandwich System Track Surfacing

Lump Sum Price _____
(dollars)

and _____
(cents)

($ _____)

The above prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance etc. to cover the finished work of the several kinds called for. Changes shall be processed in accordance with the General Conditions.

Bidder understands that the owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The bidder agrees that this bid shall be good and may not be withdrawn for a period of thirty (30) days, excluding Saturdays, Sundays and Holidays, after the scheduled closing time for receiving bids.

The undersigned agrees that, if he is selected as the contractor, he will, within ten calendar days after presentation thereof by the awarding authority, execute a contract in accordance with the terms of this bid and furnish a performance bond and also a labor and materials or payment bond, each of a surety company qualified to do business under the laws of the State of Connecticut and satisfactory to the awarding authority and each in the sum of the contract price, the premiums for which are to be paid by the general contractor and are included in the contract price.

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.

The undersigned further certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

Respectfully submitted:

Date: _____ By: _____
(Signature)

_____
(Name of Bidder)

(SEAL - if bid is by a
Corporation)

SIMILAR WORK REFERENCES

The Bidder is requested to state below what work of a similar character to that included in the proposed contract he has done, and give references that will enable the Owner to judge his experience, skill and business standing (add supplementary page if necessary). ***Bidders must disclose any instances in the last 10 years where they have been terminated and identify all pending litigation and arbitration and all litigation and arbitration settled in the last 10 years.***

Completion Date	Project Name	Contract Amount	Design Engineer	Reference Name	Telephone Number

CHECKLIST OF ITEMS TO BE SUBMITTED WITH BID

Form of General Bid

Bid Bond or Bid Security (Contractor-provided)

Certificate as to Corporate Vote (as applicable)

Certification of Payment of State Taxes

Certificate of Non-Collusion

Bidder's Reference Form (Contractor-provided)

Complete, sign, and return the "CHRO Contract Compliance Regulations Notification to Bidders" form with the bid submission

CERTIFICATE OF CORPORATE VOTE OF AUTHORIZATION

I, _____, Clerk-Secretary of _____ hereby certify that, at a meeting of the Board of Directors of said Corporation duly held on _____, which date is earlier than the contract to which this certificate is incorporated by reference, at which a quorum was present and voting throughout, the following vote was duly passed and is now in full force and effect:

"Voted: That _____ be and hereby is authorized, directed and empowered for, in the name of and on behalf of this corporation, to sign, seal with the corporate seal, execute, acknowledge and deliver other obligations of this Corporation; the execution of any such bid, contract, bond or obligation by such _____ to be valid and binding upon this Corporation for all purposes, and that a certificate of the Clerk-Secretary of this Corporation setting forth this vote shall be delivered to the Town of Putnam as the Awarding Authority; and that this vote shall remain in full force and effect unless and until the same has been altered, amended or revoked by a subsequent vote of such directors and a certificate of such later vote attested by the Clerk-Secretary of this Corporation is delivered to the Awarding Authority."

I, further certify that _____ is the duly-elected _____of said corporation.

Signed: _____
CLERK-SECRETARY

Countersigned: _____
TITLE:

Place of Business: _____

Date of Contract: _____

AFFIX CORPORATE SEAL

In the event that the Clerk or Secretary is the same person as the Officer authorized to sign that contract or other instrument for the Corporation, this Certificate must be counter signed by another officer of the Corporation. If there is no other Officer of the Corporation to attest, then this Certification must be notarized.

On this _____ day of _____ 2026, before me, the undersigned Notary Public, personally appeared _____, as _____ and proved to me through satisfactory evidence of identification, which was _____, that he is the person whose name is signed on the foregoing document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

_____
Notary Public
My Commission Expires:

CERTIFICATION OF PAYMENT OF STATE TAXES

I certify under the penalties of perjury that I, to the best of my knowledge and belief, have filed all state tax returns and paid all state taxes required under law.

_____
Name of Company

_____ _____
Federal Identification Number Signature and Title

_____
Date

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this Proposal or Bid has been made and submitted in good faith and without collusion or fraud with any other person, business, partnership, corporation, union committee, club or other organization, entity or group of individuals.

_____ Date _____

Signature of individual submitting proposal

_____

Printed Name of Signatory

_____

Name of Business

_____

Street Address of Business

_____

Town/City State Zip Code

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

NOTICE OF AWARD

Date of Issuance:

Owner:	Town of Putnam	Owner's Contract No.:	
Engineer:		Engineer's Project No.:	99163.000
Project:	Saint Marie-Greenhalgh Sports Complex Running Track Renovation	Contract Name:	

Bidder:

Bidder's Address:

TO BIDDER:

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

_____ .

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

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

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

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

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

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

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

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

Owner**:**

Authorized Signature

By:

Title:

Copy: Engineer

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

THIS AGREEMENT is by and between The Town of Putnam ("Owner") and

("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents.

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Saint Marie-Greenhalgh Sports Complex Running Track Renovation.

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by CHA.

3.02 The Owner has retained CHA ("Engineer") to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

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

4.02 *Contract Times:*

A. The Work will be substantially completed within a time period as specified in the Form of General Bid. The project shall be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 30 days after the date of substantial completion.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

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1. Substantial Completion: Contractor shall pay Owner $550.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.

4.04 *Special Damages*

A. In addition to the amount provided for liquidated damages, Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.

B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

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

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

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

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

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

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 30th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions.

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

a. 95% percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as

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long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

b. 50% percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

c. CGS 46a-68e requires that 2% retainage be withheld until all compliance reporting is completed and CHRO authorizes its release.

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

6.03 *Final Payment*

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

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall bear interest at the rate of 3% percent per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

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

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

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

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

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

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

F. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

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

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

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

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement.
2. Performance bond.
3. Payment bond.
4. General Conditions.
5. Supplementary Conditions.
6. Specifications as listed in the table of contents of the Project Manual.
7. Drawings (not attached but incorporated by reference) consisting of 10 sheets with each sheet bearing the following general title: Putnam High School Track & Field Replacement
8. Addenda (numbers ___ to ___, inclusive).
9. Exhibits to this Agreement (enumerated as follows):
    a. Contractor's Bid.
10. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.
    c. Change Orders.
    d. Field Orders.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

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

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ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

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

10.02 *Assignment of Contract*

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

10.03 *Successors and Assigns*

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

10.04 *Severability*

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

10.05 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

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10.06 *Other Provisions*

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

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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:
Town of Putnam	
By: Elaine Sistare, PE, BCEE	By:
Title: Town Administrator	Title:
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest:	Attest:
Title:	Title:
Address for giving notices:	Address for giving notices:
200 School Street	
Putnam, CT 06260	
	License No.: *(where applicable)*

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

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NOTICE TO PROCEED

Owner:	Town of Putnam	Owner's Contract No.:	
Contractor:		Contractor's Project No.:	
Engineer:	CHA	Engineer's Project No.:	99163.000
Project:	Saint Marie-Greenhalgh Sports Complex Running Track Renovation	Contract Name:	
		Effective Date of Contract:	

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [_____, 2026]. *[see Paragraph 4.01 of the General Conditions]*

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

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

Owner**:**

Authorized Signature

By:

Title:

Date Issued:

Copy: Engineer

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ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

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**
_____ *(seal)*	_____ *(seal)*
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	**By:** _____
Signature	Signature *(attach power of attorney)*
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	**Attest:** _____
Signature	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.

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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.

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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:

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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

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

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

SURETY

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

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

_____
Print Name

_____
Title

Attest: _____
Signature

_____
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.

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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.

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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:

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Contractor's Application for Payment No.

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

Application For Payment

Change Order Summary

Approved Change Orders		
Number	Additions	Deductions
TOTALS		
NET CHANGE BY CHANGE ORDERS		

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

Contractor's Certification

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

Contractor Signature

By:	Date:

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

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

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

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

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

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Progress Estimate - Lump Sum Work

Contractor's Application

For (Contract):	Application Number:
Application Period:	Application Date:

			Work Completed		E	F		G
A		B	C	D				
Specification Section No.	Description	Scheduled Value ($)	From Previous Application (C+D)	This Period	Materials Presently Stored (not in C or D)	Total Completed and Stored to Date (C + D + E)	% (F / B)	Balance to Finish (B - F)
	Totals							

EJCDC® C-620 Contractor's Application for Payment
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EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer:	Engineer's Project No.:
Project:	Contract Name:

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

☐ All Work ☐ The following specified portions of the Work:

Date of Substantial Completion

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

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

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

Amendments to Owner's responsibilities: ☐ None ☐ As follows

Amendments to Contractor's responsibilities: ☐ None ☐ As follows:

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

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

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

PREVAILING WAGE RATES

The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in subsection (i) of section 31-53, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair project is being undertaken. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer, or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

Minimum Rates and Classifications for
Heavy/Highway Construction

ID#: 26-7175

Connecticut Department of Labor
Wage and Workplace Standards Division

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number:
Project Town: Putnam
State#:
FAP#:
Project: Saint Marie-Greenhalgh Sports Complex Running Track Renovation

CLASSIFICATION	Hourly Rate	Benefits
1) Boilermaker	50.21	30.01
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	46.09	36.29
2) Carpenters, Piledrivermen	44.48	29.74
2a) Diver Tenders	44.48	29.74
2b) Divers Effluent	67.52	29.74
3) Divers	52.94	29.74
03a) Millwrights	45.14	30.24
03b) Carpenter-Welder	44.98	29.74
03c) Carpenter: Working with creosote lumber or acid	45.48	29.74

As of: June 26, 2026

4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	61.85	27.65
4a) Painters: Brush and Roller	41.17	27.65
4b) Painters: Spray	44.17	27.65
4bc) Painters: Spray Helper	42.17	27.65
4c) Painters: Steel Only	43.17	27.65
4d) Painters: Blast	46.17	27.65
4de) Painter: Blast Helper	42.17	27.65
4e) Painters: Tanks, Tower and Swingstage etc.	43.17	27.65
4f) Elevated Tanks (60 feet and above)	50.17	27.65
5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	50.25	37.47+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	45.25	46.62 + a
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9)	52.08	36.80
----LABORERS---- -		
8) Group 1: General Laborers and concrete specialist	37.0	30.47

As of: June 26, 2026

8) Group 1a: Acetylene Burners (Hours worked with a torch)	38.0	30.47
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	37.25	30.47
10) Group 3: Pipelayers	37.5	30.47
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	37.5	30.47
12) Group 5: Toxic waste removal (non-mechanical systems)	39.0	30.47
13) Group 6: Blasters	38.75	30.47
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	40.0	30.47
Group 8: Traffic control signalmen	22.2	30.47
Group 9: Hydraulic Drills	37.75	30.47
Group 10: Toxic Waste Removers A or B With PPE	40.0	30.47
----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----		
13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	39.23	30.47 + a
13b) Brakemen, Trackmen, Miners' Helpers and all other men	38.26	30.47 + a

As of: June 26, 2026

----CLEANING, CONCRETE AND CAULKING TUNNEL----		
14) Concrete Workers, Form Movers, and Strippers	38.26	30.47 + a
15) Form Erectors	38.59	30.47 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers, Miners Helpers	38.26	30.47 + a
17) Laborers Topside, Cage Tenders, Bellman	38.15	30.47 + a
18) Miners	39.23	30.47 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----		
18a) Blaster	45.72	30.47 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	45.52	30.47 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	43.54	30.47 + a
21) Mucking Machine Operator, Grout Boss, Track Boss	46.31	30.47 + a
----TRUCK DRIVERS----(*see note below)		
Block Truck	39.98	33.00 + a

2 Axle	38.66	33.00 + a
Helpers	36.16	33.00 + a
Three Axle Trucks; Two Axle Mixer	38.77	33.00 + a
Three Axle Mixer	38.83	33.00 + a
Four Axle	38.89	33.00 + a
Four Axle Mixer	40.69	33.00 + a
5 Axle	38.89	33.00 + a
5 Axle Mixer	40.69	33.00 + a
Heavy Duty Trailer (40 tons and over)	41.16	33.00 + a
Heavy Duty Trailer (up to 40 tons)	39.89	33.00 + a
Snorkle Truck	39.04	33.00 + a
Swivel Dump and Tack Truck	38.89	33.00 + a
Euclids and Semi Trailer	38.94	33.00 + a

----POWER EQUIPMENT OPERATORS----

Group 1: Crane Handling or Erecting Structural Steel or Stone, Hoisting Engineer (2 drums or over), Caisson Drilled Shaft over 14". (Trade License Required)	60.66	30.95 + a
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and over.	55.6	30.95 + a
Group 2: Cranes (100 ton rate capacity and over). (Trade License Required)	60.24	30.95 + a
Group 2a: Cranes (under 100 ton rated capacity), Magni Type-360 Rotating Forklift.	59.2	30.95 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver ($3.00 premium when operator controls hammer), HF-1 Forklift, Drills with self contained power units, Micropile up to 14 inches helical pile.	55.17	30.95 + a
Group 3: Excavator; Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	54.13	30.95 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper), Goldhofer.	53.61	30.95 + a
Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" mandrel)	52.78	30.95 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller, Geothermal Drill.	52.78	30.95 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	52.35	30.95 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under Mandrel)	51.89	30.95 + a

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Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine, Rigger Foreman.	51.34	30.95 + a
Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder), Vacuum Excavation Truck and Hydrovac Excavation Truck (27 HG pressure or greater).	50.74	30.95 + a
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	47.91	30.95 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	47.91	30.95 + a
Group 12: Wellpoint Operator.	47.82	30.95 + a
Group 13: Compressor Battery Operator.	47.04	30.95 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	45.45	30.95 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	44.89	30.95 + a
Group 16: Maintenance Engineer and Articulating End Dump.	43.99	30.95 + a
Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator., Portable Grout Plant Operator, Portable Water Filtration Plant Operator.	49.95	30.95 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license), Rigger, Signalman.	46.6	30.95 + a
Surveyor: Chief of Party	50.21	30.95 + a

As of: June 26, 2026

Surveyor: Assistant Chief of Party	46.3	30.95 + a
Surveyor: Instrument Man	44.55	30.95 + a
Surveyor: Rodman or Chairman	38.34	30.95 + a

**NOTE: SEE BELOW

----LINE CONSTRUCTION----(Railroad Construction and Maintenance)----

20) Lineman, Cable Splicer, Technician	59.91	34.00
21) Heavy Equipment Operator	53.92	31.88
22) Equipment Operator, Tractor Trailer Driver, Material Men	50.92	30.84
23) Driver Groundmen	44.93	28.47
23a) Groundman Experienced	32.95	13.99

----OUTSIDE LINE CONSTRUCTION----

24) Driver Groundmen	43.78	28.42
25) Groundmen	32.1	13.95
26) Heavy Equipment Operators	52.53	31.83

27) Linemen, Cable Splicers, Dynamite Men	58.37	33.94
28) Material Men, Tractor Trailer Drivers, Equipment Operators	49.61	30.79
29) Technician	56.12	32.85
----COMMUNICATION----		
Sales & Service Technician: To include but not limited to: Installation, Repair, Splicing and Maintenance	52.07	20.62
----DREDGING----		
Class A1: Mechanical Dredge Operator	48.48	17.32+a+b
Class B1: Maintenance Engineer	41.93	16.87+a+b
Class C1: Mate/Welder	38.38	16.62+a+b
Class D: Deckhand	30.86	16.09+a+b

Welders: Rate for craft to which welding is incidental.
Surveyors: Hazardous material removal: $3.00 per hour premium.
*Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.
**Note: Hazardous waste premium $3.00 per hour over classified rate.
Truck Drivers: Trainers Premium: $3.00 over wage rate.
Truck Drivers: Night Premium - Mixer Drivers: $2.00 over wage rate.

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

As of: June 26, 2026

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work ~~

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.
Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.
The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.
The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.
All subsequent annual adjustments will be posted on our Web Site for contractor access.
Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: June 26, 2026

CHRO CONTRACT COMPLIANCE

The contractor who is selected to perform this State project must comply with CONN. GEN. STAT. §§ 4a-60, 4a-60g, and 46a-68b through 46a-68f.

State law requires a minimum spending allocation goal of twenty-five (25%) percent of the state-funded portion of the contract for award to subcontractors holding current certification from the Connecticut Department of Administrative Services ("DAS") under the provisions of CONN. GEN. STAT. § 4a-60g. (25% of the total state-funded value with DAS-certified Small Businesses and 6.25% of the total state-funded value with DAS-certified Minority-, Women-, and/or Disabled-owned Businesses.) The contractor must demonstrate good faith effort to meet the spending allocation goals.

COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES
CONTRACT COMPLIANCE REGULATIONS
NOTIFICATION TO BIDDERS
(Revised 09/17/07)

The contract to be awarded is subject to contract compliance requirements mandated by Sections 4a-60 and 4a-60a of the Connecticut General Statutes; and, when the awarding agency is the State, Sections 46a-71(d) and 46a-81i(d) of the Connecticut General Statutes. There are Contract Compliance Regulations codified at Section 46a-68j-21 through 43 of the Regulations of Connecticut State Agencies, which establish a procedure for awarding all contracts covered by Sections 4a-60 and 46a-71(d) of the Connecticut General Statutes.

According to Section 46a-68j-30(9) of the Contract Compliance Regulations, every agency awarding a contract subject to the contract compliance requirements has an obligation to "aggressively solicit the participation of legitimate minority business enterprises as bidders, contractors, subcontractors and suppliers of materials." "Minority business enterprise" is defined in Section 4a-60 of the Connecticut General Statutes as a business wherein fifty-one percent or more of the capital stock, or assets belong to a person or persons: "(1) Who are active in daily affairs of the enterprise; (2) who have the power to direct the management and policies of the enterprise; and (3) who are members of a minority, as such term is defined in subsection (a) of Section 32-9n." "Minority" groups are defined in Section 32-9n of the Connecticut General Statutes as "(1) Black Americans . . . (2) Hispanic Americans . . . (3) persons who have origins in the Iberian Peninsula . . . (4)Women . . . (5) Asian Pacific Americans and Pacific Islanders; (6) American Indians . . ." An individual with a disability is also a minority business enterprise as provided by Section 4a-60g of the Connecticut General Statutes. The above definitions apply to the contract compliance requirements by virtue of Section 46a-68j-21(11) of the Contract Compliance Regulations.

The awarding agency will consider the following factors when reviewing the bidder's qualifications under the contract compliance requirements:

(a) the bidder's success in implementing an affirmative action plan;
(b) the bidder's success in developing an apprenticeship program complying with Sections 46a-68-1 to 46a-68-17 of the Administrative Regulations of Connecticut State Agencies, inclusive;
(c) the bidder's promise to develop and implement a successful affirmative action plan;
(d) the bidder's submission of employment statistics contained in the "Employment Information Form", indicating that the composition of its workforce is at or near parity when compared to the racial and sexual composition of the workforce in the relevant labor market area; and
(e) the bidder's promise to set aside a portion of the contract for legitimate minority business enterprises. See Section 46a-68j-30(10)(E) of the Contract Compliance Regulations.

INSTRUCTIONS AND OTHER INFORMATION

The following BIDDER CONTRACT COMPLIANCE MONITORING REPORT must be completed in full, signed, and submitted with the bid for this contract. The contract awarding agency and the Commission on Human Rights and Opportunities will use the information contained thereon to determine the bidders compliance to Sections 4a-60 and 4a-60a CONN. GEN. STAT., and Sections 46a-68j-23 of the Regulations of Connecticut State Agencies regarding equal employment opportunity, and the bidder's good faith efforts to include minority business enterprises as subcontractors and suppliers for the work of the contract.

1) Definition of Small Contractor

Section 4a-60g CONN. GEN. STAT. defines a small contractor as a company that has been doing business under the same management and control and has maintained its principal place of business in Connecticut for a one year period immediately prior to its application for certification under this section, had gross revenues not exceeding ten million dollars in the most recently completed fiscal year, and at least fifty-one percent of the ownership of which is held by a person or persons who are active in the daily affairs of the company, and have the power to direct the management and policies of the company, except that a nonprofit corporation shall be construed to be a small contractor if such nonprofit corporation meets the requirements of subparagraphs (A) and (B) of subdivision 4a-60g CONN. GEN. STAT.

2) Description of Job Categories (as used in Part IV Bidder Employment Information) (Page 2)

MANAGEMENT: Managers plan, organize, direct, and control the major functions of an organization through subordinates who are at the managerial or supervisory level. They make policy decisions and set objectives for the company or departments. They are not usually directly involved in production or providing services. Examples include top executives, public relations managers, managers of operations specialties (such as financial, human resources, or purchasing managers), and construction and engineering managers.

BUSINESS AND FINANCIAL OPERATIONS: These occupations include managers and professionals who work with the financial aspects of the business. These occupations include accountants and auditors, purchasing agents, management analysts, labor relations specialists, and budget, credit, and financial analysts.

MARKETING AND SALES: Occupations related to the act or process of buying and selling products and/or services such as sales engineer, retail sales workers and sales representatives including wholesale.

LEGAL OCCUPATIONS: In-House Counsel who is charged with providing legal advice and services in regards to legal issues that may arise during the course of standard business practices. This category also includes assistive legal occupations such as paralegals, legal assistants.

COMPUTER SPECIALISTS: Professionals responsible for the computer operations within a company are grouped in this category. Examples of job titles in this category include computer programmers, software engineers, database administrators, computer scientists, systems analysts, and computer support specialists

ARCHITECTURE AND ENGINEERING: Occupations related to architecture, surveying, engineering, and drafting are included in this category. Some of the job titles in this category include electrical and electronic engineers, surveyors, architects, drafters, mechanical engineers, materials engineers, mapping technicians, and civil engineers.

OFFICE AND ADMINISTRATIVE SUPPORT: All clerical-type work is included in this category. These jobs involve the preparing, transcribing, and preserving of written communications and records; collecting accounts; gathering and distributing information; operating office machines and electronic data processing equipment; and distributing mail. Job titles listed in this category include telephone operators, bill and account collectors, customer service representatives, dispatchers, secretaries and administrative assistants, computer operators and clerks (such as payroll, shipping, stock, mail and file).

BUILDING AND GROUNDS CLEANING AND MAINTENANCE: This category includes occupations involving landscaping, housekeeping, and janitorial services. Job titles found in this category include supervisors of landscaping or housekeeping, janitors, maids, grounds maintenance workers, and pest control workers.

CONSTRUCTION AND EXTRACTION: This category includes construction trades and related occupations. Job titles found in this category include boilermakers, masons (all types), carpenters, construction laborers, electricians, plumbers (and related trades), roofers, sheet metal workers, elevator installers, hazardous materials removal workers, paperhangers, and painters. Paving, surfacing, and tamping equipment operators; drywall and ceiling tile installers; and carpet, floor and tile installers and finishers are also included in this category. First line supervisors, foremen, and helpers in these trades are also grouped in this category..

INSTALLATION, MAINTENANCE AND REPAIR: Occupations involving the installation, maintenance, and repair of equipment are included in this group. Examples of job titles found here are heating, ac, and refrigeration mechanics and installers; telecommunication line installers and repairers; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; security and fire alarm systems installers; electric/electronic repair, industrial, utility and transportation equipment; millwrights; riggers; and manufactured building and mobile home installers. First line supervisors, foremen, and helpers for these jobs are also included in the category.

MATERIAL MOVING WORKERS: The job titles included in this group are Crane and tower operators; dredge, excavating, and lading machine operators; hoist and winch operators; industrial truck and tractor operators; cleaners of vehicles and equipment; laborers and freight, stock, and material movers, hand; machine feeders and offbearers; packers and packagers, hand; pumping station operators; refuse and recyclable material collectors; and miscellaneous material moving workers.

PRODUCTION WORKERS: The job titles included in this category are chemical production machine setters, operators and tenders; crushing/grinding workers; cutting workers; inspectors, testers sorters, samplers, weighers; precious stone/metal workers; painting workers; cementing/gluing machine operators and tenders; etchers/engravers; molders, shapers and casters except for metal and plastic; and production workers.

3) Definition of Racial and Ethnic Terms (as used in Part IV Bidder Employment Information) (Page 3)

White (not of Hispanic Origin)- All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East. Black(not of Hispanic Origin)- All persons having origins in any of the Black racial groups of Africa. Hispanic- All persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.	Asian or Pacific Islander- All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes China, India, Japan, Korea, the Philippine Islands, and Samoa. American Indian or Alaskan Native- All persons having origins in any of the original peoples of North America, and who maintain cultural identification through tribal affiliation or community recognition.

BIDDER CONTRACT COMPLIANCE MONITORING REPORT

PART I - Bidder Information

Company Name Street Address City & State Chief Executive	Bidder Federal Employer Identification Number_____ Or Social Security Number_____
Major Business Activity (brief description)	Bidder Identification (response optional/definitions on page 1) -Bidder is a small contractor. Yes__ No__ -Bidder is a minority business enterprise Yes__ No__ (If yes, check ownership category) Black___ Hispanic___ Asian American___ American Indian/Alaskan Native___ Iberian Peninsula___ Individual(s) with a Physical Disability___ Female___ - Bidder is certified as above by State of CT Yes__ No__
Bidder Parent Company (If any)	
Other Locations in Ct. (If any)	

PART II - Bidder Nondiscrimination Policies and Procedures

1. Does your company have a written Affirmative Action/Equal Employment Opportunity statement posted on company bulletin boards? Yes__ No__	7. Do all of your company contracts and purchase orders contain non-discrimination statements as required by Sections 4a-60 & 4a-60a Conn. Gen. Stat.? Yes__ No__
2. Does your company have the state-mandated sexual harassment prevention in the workplace policy posted on company bulletin boards? Yes__ No__	8. Do you, upon request, provide reasonable accommodation to employees, or applicants for employment, who have physical or mental disability? Yes__ No__
3. Do you notify all recruitment sources in writing of your company's Affirmative Action/Equal Employment Opportunity employment policy? Yes__ No__	9. Does your company have a mandatory retirement age for all employees? Yes__ No__
4. Do your company advertisements contain a written statement that you are an Affirmative Action/Equal Opportunity Employer? Yes__ No__	10. If your company has 50 or more employees, have you provided at least two (2) hours of sexual harassment training to all of your supervisors? Yes__ No__ NA__
5. Do you notify the Ct. State Employment Service of all employment openings with your company? Yes__ No__	11. If your company has apprenticeship programs, do they meet the Affirmative Action/Equal Employment Opportunity requirements of the apprenticeship standards of the Ct. Dept. of Labor? Yes__ No__ NA__
6. Does your company have a collective bargaining agreement with workers? Yes__ No__ 6a. If yes, do the collective bargaining agreements contain non-discrim ination clauses covering all workers? Yes__ No__ 6b. Have you notified each union in writing of your commitments under the nondiscrimination requirements of contracts with the state of Ct? Yes__ No__	12. Does your company have a written affirmative action Plan? Yes__ No__ If no, please explain. 13. Is there a person in your company who is responsible for equal employment opportunity? Yes__ No__ If yes, give name and phone number. _____ _____

Part III - Bidder Subcontracting Practices (Page 4)

1. Will the work of this contract include subcontractors or suppliers? Yes__ No__

1a. If yes, please list all subcontractors and suppliers and report if they are a small contractor and/or a minority business enterprise. (defined on page 1 / use additional sheet if necessary)

1b. Will the work of this contract require additional subcontractors or suppliers other than those identified in 1a. above? Yes__ No__

PART IV - Bidder Employment Information Date:

JOB CATEGORY *	OVERALL TOTALS	WHITE (not of Hispanic origin)		BLACK (not of Hispanic origin)		HISPANIC		ASIAN or PACIFIC ISLANDER		AMERICAN INDIAN or ALASKAN NATIVE	
		Male	Female	Male	Female	Male	Female	Male	Female	male	female
Management											
Business & Financial Ops											
Marketing & Sales											
Legal Occupations											
Computer Specialists											
Architecture/Engineering											
Office & Admin Support											
Bldg/ Grounds Cleaning/Maintenance											
Construction & Extraction											
Installation , Maintenance & Repair											
Material Moving Workers											
Production Occupations											
TOTALS ABOVE											
Total One Year Ago											
FORMAL ON THE JOB TRAINEES (ENTER FIGURES FOR THE SAME CATEGORIES AS ARE SHOWN ABOVE)											
Apprentices											
Trainees											

*NOTE: JOB CATEGORIES CAN BE CHANGED OR ADDED TO (EX. SALES CAN BE ADDED OR REPLACE A CATEGORY NOT USED IN YOUR COMPANY)

PART V - Bidder Hiring and Recruitment Practices (Page 5)

1. Which of the following recruitment sources are used by you? (Check yes or no, and report percent used)				2. Check (X) any of the below listed requirements that you use as a hiring qualification (X)		3. Describe below any other practices or actions that you take which show that you hire, train, and promote employees without discrimination
SOURCE	YES	NO	% of applicants provided by source			
State Employment Service					Work Experience	
Private Employment Agencies					Ability to Speak or Write English	
Schools and Colleges					Written Tests	
Newspaper Advertisement					High School Diploma	
Walk Ins					College Degree	
Present Employees					Union Membership	
Labor Organizations					Personal Recommendation	
Minority/Community Organizations					Height or Weight	
Others (please identify)					Car Ownership	
					Arrest Record	
					Wage Garnishments	

Certification (Read this form and check your statements on it CAREFULLY before signing). I certify that the statements made by me on this BIDDER CONTRACT COMPLIANCE MONITORING REPORT are complete and true to the best of my knowledge and belief, and are made in good faith. I understand that if I knowingly make any misstatements of facts, I am subject to be declared in non-compliance with Section 4a-60, 4a-60a, and related sections of the CONN. GEN. STAT.

(Signature)	(Title)	(Date Signed)	(Telephone)

NON-DISCRIMINATION CONTRACT LANGUAGE

Pursuant to Connecticut General Statutes Section 4a-60 and except as provided in section 10a-151i of the General Statutes, every contract to which a state agency or political subdivision of the state, including a municipality or quasi-public agency, is a party to shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, sexual orientation, gender identity or expression, status as a veteran, status as a victim of domestic violence, status as a victim of sexual assault or status as a victim of trafficking in persons, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the state of Connecticut; and the contractor further agrees to take affirmative action to ensure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, sexual orientation, status as a veteran, status as a victim of domestic violence, status as a victim of sexual assault or status as a victim of trafficking in persons, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved;

(2) The contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an “affirmative action-equal opportunity employer” in accordance with regulations adopted by the Commission on Human Rights and Opportunities;

(3) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

(4) The contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, 46a-68e, 46a-68f and 46a-86; and

(5) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor as relate to the provisions of this section and section 46a-56.

Good Faith Efforts Plan
Long Form

Effective 10/1/2025

COVER PAGE

Company Name: _____

Company Address: _____

Telephone No.: _____

Facsimile No.: _____

Email Address: _____

Web Site Address: _____

Date Submitted: _____

GFE Plan Prepared by: _____

Name and Title of Head of Company: _____

This Good Faith Efforts Plan is submitted for (Name of project): _____

State Contract/Project No.: _____

Awarding Authority: _____

Total Contract Value:

M/W/DisBE Value as Assigned by the Awarding Authority: _____ % $ _____

SBE Value as Assigned by the Awarding Authority: _____ % $ _____

Table of Contents

Note: A Good Faith Efforts Plan (GFEP) meeting all the requirements of the following sections must be filed for *each* state-funded project

Note: A submission that does not adhere to this formatting may be rejected before it is reviewed. Any section that does not include a response to said section and/or its subsections herein will not be in compliance.

Section Number and Title — Page Number

Section 1: Affirmative Action/Equal Employment Policy Statement 3

Section 2: Internal Communications 3

Section 3: External Communications 3

Section 4: Assignment of Responsibility 3

Section 5: Organizational Analysis 4

Section 6: Workforce Analysis 5

Section 7: Availability and Utilization Analysis 10

Section 8: Project Description, Timeline, and Trades Involved 20

Section 9: Employment Analysis 22

Section 10: Apprenticeship Training Program 25

Section 11: Subcontractor Availability Analysis 26

Section 12: Minority Business Enterprise Goals and Timetables 29

Attachment III 30

Section 13: Minority Business Enterprise Assistance and Innovative Programs 32

Section 14: Close Out Documentation Notice 33

Section 15: Concluding Statement 34

Note For All Plans Filed and Reviewed After October 1, 2025:

The Good Faith Efforts Plan (GFEP) is an updated version reflective of recent Connecticut legislation that will be effective as of October 1, 2025. Any GFEP filed after that date will no longer require submissions for the following sections:

Section 1: Affirmative Action/Equal Employment Policy Statement

Section 2: Internal Communications

Section 3: External Communications

Section 4: Assignment of Responsibility

Any plan filed prior to October 1st that is still under review by the CHRO at that time will not receive a disapproval on account of any deficiencies in these sections.

Documentation Requirements

The following documentation is required to accompany this plan submission for all plans. Additional documentation requests may be made during the course of the review process in order to determine whether good faith efforts were made to comply with the statutory requirements:

- **A copy of the bid document for the public works contract**
  Please attach a copy of the contract's bid document (project manual, ITB, etc.) that specifies all the trades-related work, non-trades related work, and all materials required for the work on this project. Only include the portions necessary to verify your company's responses. *Please do not provide the full document*.

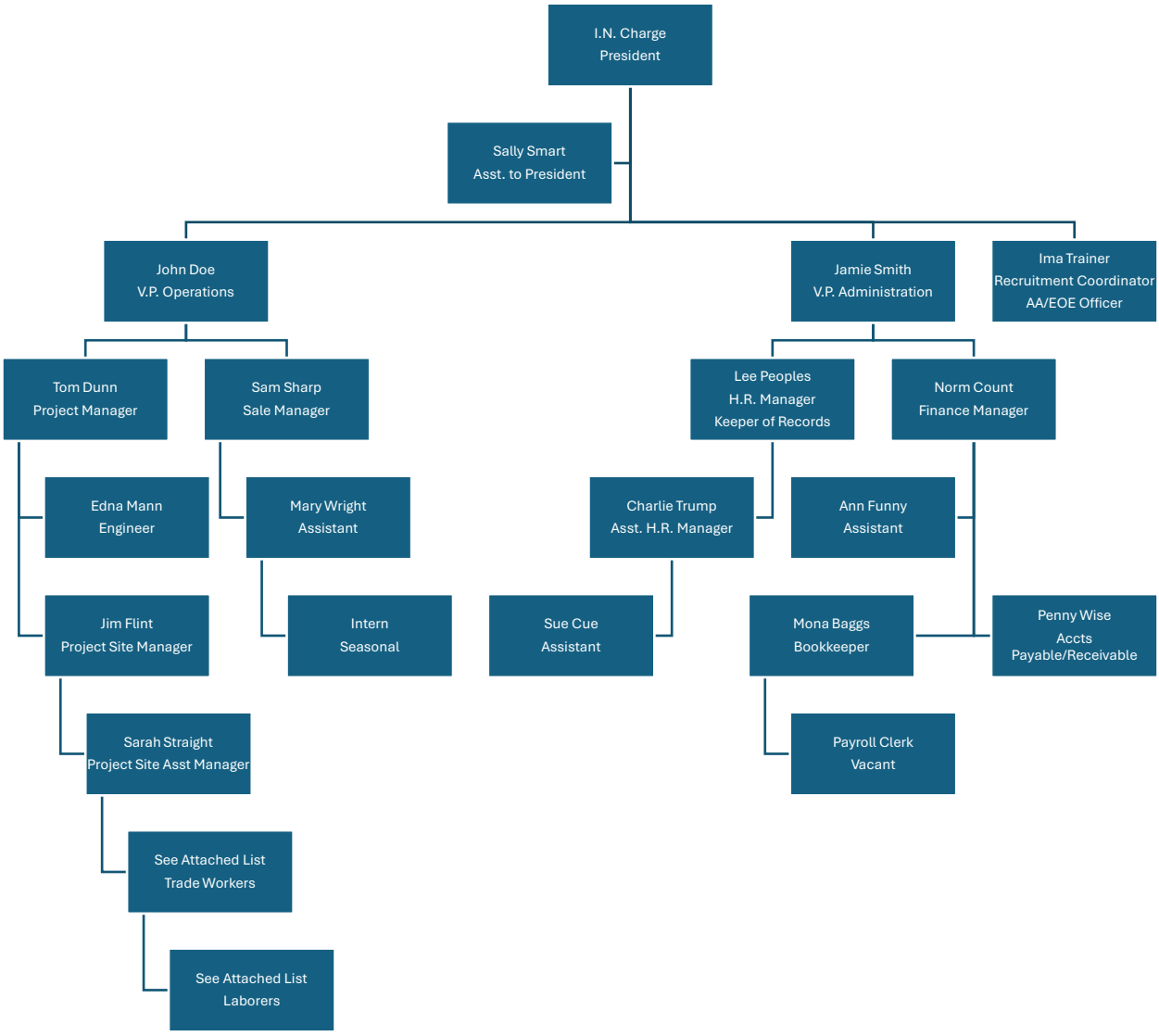
- **DAS Supplier Diversity Certifications**
  Please provide a copy of the Dept. of Administrative Services (DAS) Supplier Diversity Certificate for any subcontractor hired by you to work on this project.

- **Bid Tabulations**
  For any subcontract awarded to a non-DAS certified contractor/vendor awarded a subcontract, please provide the bid tabulations for all bids received for that subcontract using the form available on our website.

Section 5: Organizational Analysis

Please create an organizational chart for those employees on your day-to-day payroll. Each box should contain a job title and the name of each employee who holds that job title. Please do not attempt to fit more than four names into a box. Instead, attach a list of names for the people who hold the same job title.

Example:



Section 6: Workforce Analysis

Please fill out the attached Workforce Analysis Form in its entirety. Use the job titles listed in Section 5's Organizational Analysis to complete the Job Title Column (first column).

To calculate the *% of Females*, divide the number of females in that job title by the total number of employees (add up both male and female) in that job title and multiply by 100.

To calculate *Subtotal Minority Males*, add up the number of males listed under Black, Hispanic, or Other Races for that job title.

To calculate *% of Minority Males*, divide the subtotal minority males in that job title by the total number of employees (add up both male and female) in that job title and multiply by 100.

NOTE: The job titles in this section must be identical to the job titles listed on the O*rganizational Analysis*. Similarly, the number of names provided in the *Organizational Analysis* must be identical to total number of employees listed in this section.

COMPANY EMPLOYMENT STATISTICS REPORT

STATE OF CONNECTICUT
COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES

COMPANY NAME	STREET ADDRESS	CITY, STATE, ZIP CODE
COMPANY OFFICIAL	TITLE	TELEPHONE NUMBER
PROJECT #:	PROJECT LOCATION	DATE

This report should show the number of employees on your payroll on date of submission.

JOB TITLE	TOTAL # OF EMPLOYEES		% OF FEMALES	TOTAL # OF WHITE EMPLOYEES		TOTAL # OF BLACK EMPLOYEES		TOTAL # OF HISPANIC EMPLOYEES		# OF OTHER RACE EMPLOYEES		SUBTOTAL MINORITY MALES	% OF MINORITY MALES
	Male	Female		Male	Female	Male	Female	Male	Female	Male	Female		

SECTION 6 CONT'D

COMPANY EMPLOYMENT STATISTICS REPORT

COMPANY NAME _____

PROJECT # _____

JOB TITLE	TOTAL # OF EMPLOYEES		% OF FEMALES	TOTAL # OF WHITE EMPLOYEES		TOTAL # OF BLACK EMPLOYEES		TOTAL # OF HISPANIC EMPLOYEES		# OF OTHER RACE EMPLOYEES		SUBTOTAL MINORITY MALES	% OF MINORITY MALES
	Male	Female		Male	Female	Male	Female	Male	Female	Male	Female		
Total # of Employees:			**XXXX**										**XXXXXX**

SAMPLE

COMPANY EMPLOYMENT STATISTICS REPORT

STATE OF CONNECTICUT
COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES

COMPANY NAME	STREET ADDRESS	CITY, STATE, ZIP CODE
ACME CORP.	1263 Equal Opportunity Lane	Fair Dealing, CT 06000
COMPANY OFFICIAL	**TITLE**	**TELEPHONE NUMBER**
Ima Trainer	AA/EOE Officer	860-555-5555
PROJECT #:	**PROJECT LOCATION**	**DATE**
BI-29990-BI	University of Diversity Campus 1010 All Are Welcomed Drive New Haven, CT 06222	01/01/2009

This report should show the number of employees on your payroll on date of submission.

JOB TITLE	TOTAL # OF EMPLOYEES		% OF FEMALES	TOTAL # OF WHITE EMPLOYEES		TOTAL # OF BLACK EMPLOYEES		TOTAL # OF HISPANIC EMPLOYEES		# OF OTHER RACE EMPLOYEES		SUBTOTAL MINORITY MALES	% OF MINORITY MALES
	Male	Female		Male	Female	Male	Female	Male	Female	Male	Female		
President	1					1						1	100%
Asst. to Pres		1	100%		1								
V.P. Operat.	1			1									
Proj. Manager	1							1					100%
V.P. Admin		1	100%								1 (Chinese)		
AA/EOE Off.		1			1								
Finance Man.	1					1							100%
Sales Manager	1									1			100% (Pakistani)
H.R. Manager	1			1									
Assistant		3	100%				3						

COMPANY EMPLOYMENT STATISTICS REPORT

COMPANY NAME ACME CORP.

PROJECT # BI-29990-BI

JOB TITLE	TOTAL # OF EMPLOYEES		% OF FEMALES	TOTAL # OF WHITE EMPLOYEES		TOTAL # OF BLACK EMPLOYEES		TOTAL # OF HISPANIC EMPLOYEES		# OF OTHER RACE EMPLOYEES		SUBTOTAL MINORITY MALES	% OF MINORITY MALES
	Male	Female		Male	Female	Male	Female	Male	Female	Male	Female		
Asst. H.R. Manager	1			1									
Engineer		1	100%				1						
Proj. Site Manager	1							1				1	100%
Proj. Site Asst. Man.		1	100%								1 (Native Amer.)		
Bookkeeper		1	100%						1				
Accts Pay/Rec.		1	100%		1								
Trade Workers	27	10	27%	10	5	10	5	7				17	45%
Laborers	18	9	33%	3	2			9	4	6 (3 Asian)	3 (Indian)	15	55%
Total # of Employees: 82	53	29	XXXXXXX	16	10	12	9	18	5	7	5	34	XXXXXXX

Section 7: Availability and Utilization Analysis

On this page of the CHRO's format, you will find three columns. In the first column labeled *Job Titles*, you must list the job titles, from Sections 5 and 6 (i.e., employees on your regular day-to-day payroll), you will have working at the project site.

In the second column (labeled *Number of Employee*), list the number of company employees (on the day-to-day payroll and accounted for in Section 5 and Section 6) who will be on the project site. Include the job titles of the employees.

In the third column (labeled *Job Category*), consult the *Description of Job Categories* below. For each of the job titles listed in the first column, determine the category in which that job title belongs.

The job categories (not job titles) listed in the third column and the number of employees listed on this page must correspond to the numbers listed on the next page's *Availability Worksheet*. This serves to convert job titles into job categories.

It is imperative that the CHRO sees this progression of job titles and number of employees from Section 5 carry over into Section 6 and Section 7.

CONVERSION CHART

Job Title	Number of Employees	Job Category

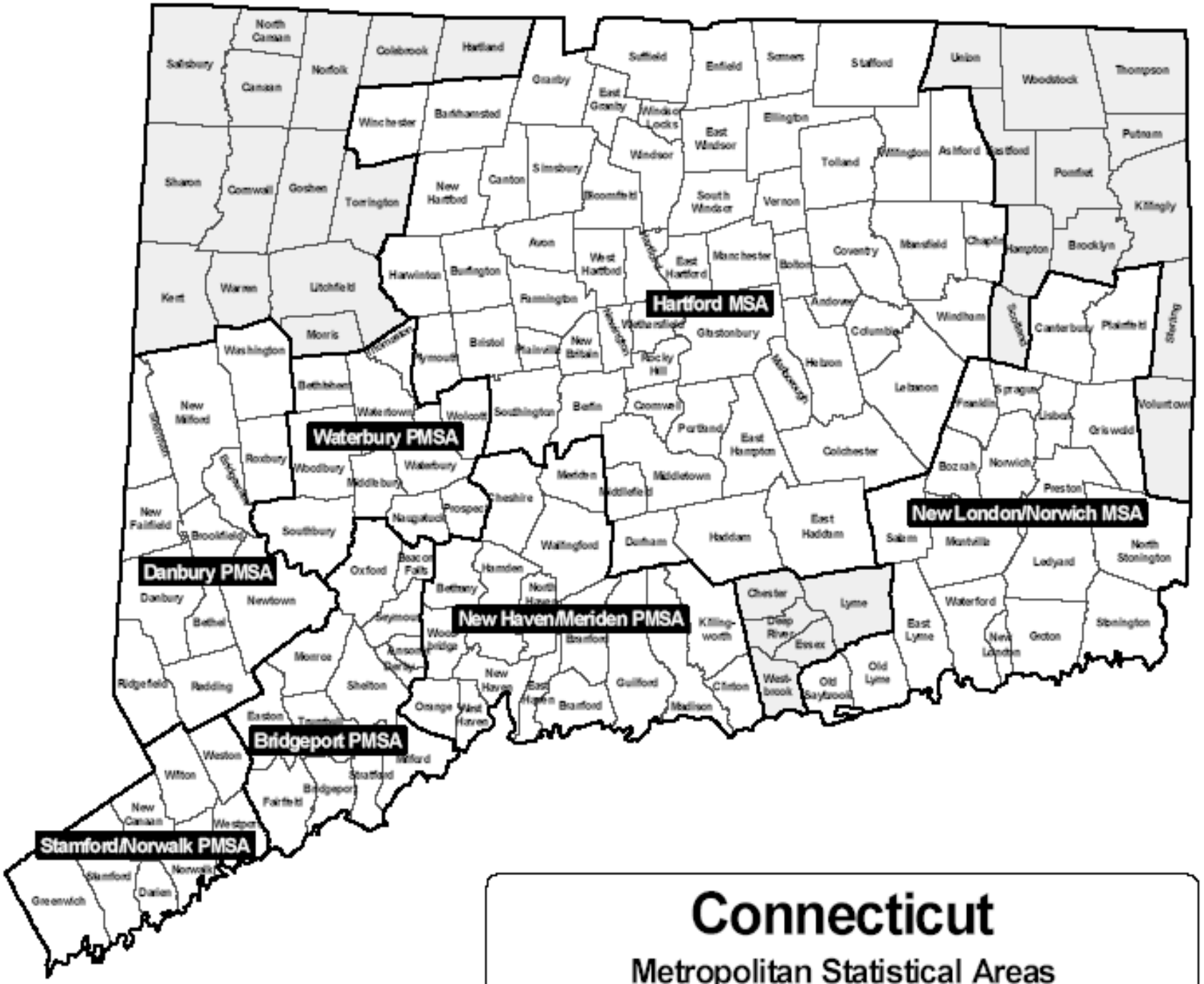
NOTE: To complete Section 7, the Contractor should submit this page and the *Availability Worksheet*.

SAMPLE

CONVERSION CHART

Job Title	Number of Employees	Job Category
President	1	Management
Project Manager	1	Management
Project Site Manager	1	Construction & Extraction
Trade Workers	30	Construction & Extraction
Laborer	20	Construction & Extraction

CHRO CONTRACT COMPLIANCE



CHA PROJECT NO. 099163
SECTION 00640

DESCRIPTION OF JOB CATEGORIES

MANAGEMENT: Managers plan, organize, direct, and control the major functions of an organization through subordinates who are at the managerial or supervisory level. They make policy decisions and set objectives for the company or departments. They are not usually directly involved in production or providing services. Examples include top executives, public relations managers, managers of operations specialties (such as financial, human resources, or purchasing managers), and construction and engineering managers.

BUSINESS AND FINANCIAL OPERATIONS: These occupations include managers and professionals who work with the financial aspects of the business. These occupations include accountants and auditors, purchasing agents, cost estimators, management analysts, labor relations specialists, and budget, credit, and financial analysts.

COMPUTER SPECIALISTS: Professionals responsible for the computer operations within a company are grouped in this category. Examples of job titles in this category include computer programmers, software engineers, database administrators, computer scientists, systems analysts, and computer support specialists.

ARCHITECTURE AND ENGINEERING: Occupations related to architecture, surveying, engineering, and drafting are included in this category. Some of the job titles in this category include electrical and electronic engineers, surveyors, architects, drafters, mechanical engineers, materials engineers, mapping technicians, and civil engineers.

BUILDING AND GROUNDS CLEANING AND MAINTENANCE: This category includes occupations involving landscaping, housekeeping, and janitorial services. Job titles found in this category include supervisors of landscaping or housekeeping, janitors, maids, grounds maintenance workers, and pest control workers.

OFFICE AND ADMINISTRATIVE SUPPORT: All clerical-type work is included in this category. These jobs involve the preparing, transcribing, and preserving of written communications and records; collecting accounts; gathering and distributing information; operating office machines and electronic data processing equipment; and distributing mail. Job titles listed in this category include telephone operators, payroll clerks, bill and account collectors, customer service representatives, files clerks, dispatchers, shipping clerks, secretaries and administrative assistants, computer operators, mail clerks, and stock clerks.

CONSTRUCTION AND EXTRACTION: This category includes construction trades and related occupations. Job titles found in this category include boilermakers, masons (all types), carpenters, construction laborers, electricians, plumbers (and related trades), roofers, sheet metal workers, elevator installers, hazardous materials removal workers, paperhangers, and painters. Paving, surfacing, and tamping equipment operators; drywall and ceiling tile installers; and carpet, floor and tile installers and finishers are also included in this category. First line supervisors, foremen, and helpers in these trades are also grouped in this category.

INSTALLATION, MAINTENANCE AND REPAIR: Occupations involving the installation, maintenance, and repair of equipment are included in this group. Examples of job titles found here are heating, ac, and refrigeration mechanics and installers; telecommunication line installers and repairers; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; security and fire alarm systems installers; electric/electronic repair, industrial, utility and transportation equipment; millwrights; riggers; and manufactured building and mobile home installers. First line supervisors, foremen, and helpers for these jobs are also included in the category.

MATERIAL MOVING WORKERS: The job titles included in this group are crane and tower operators; dredge, excavating, and lading machine operators; hoist and winch operators; industrial truck and tractor operators; cleaners of vehicles and equipment; laborers and freight, stock, and material movers, hand; machine feeders and off bearers; packers and packagers, hand; pumping station operators; refuse and recyclable material collectors; and miscellaneous material moving workers.

PART B:

To Complete Part B: Contractors should provide the following information on the *Availability Worksheet* located in this plan.

1. In column 1, list each job category (not job title) from the Conversion Chart.
2. In column 2, determine how many employees within the job category will be at the project site.
3. In column 3, determine how many employees within the job category are minority males.
4. In column 4, determine the % of minority males. To do so, first divide the total minority males in that job category by the total number of employees (in column 2) within the job title. Then, multiply by 100.
5. In column 5, determine how many female employees within the job category will be at the project site.
6. In column 6, determine the % of females. To do so, divide the total minority females in that job category by the total number of employees (in column 2) within the job title. Then, multiply by 100.
7. In columns 7 and 8, insert the PMSA/MSA minority male and female percentages.

NOTE: Examples are included in this section for instructional purposes only. Your company's plan submission should not include these pages.

AVAILABILITY WORKSHEET

STATE PROJECT NUMBER:

_____

Circle the project location identified in Part A:

Bridgeport PMSA	New London/Norwich CT-RI MSA
Danbury PMSA	Stamford/Norwalk PMSA
New Haven/Meriden PMSA	Waterbury PMSA
Hartford MSA	Balance of State of Connecticut

JOB CATEGORIES	**PROJECT STATISTICS (employees on site)**					**CT SITE STATISTICS (Insert PMSA/MSA)**	
	Total # of Employees	Total # of Minority Males	% of Minority Males	Total # of Females	% of Females	% of Minority Males*	% of Females *
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**

NOTE: By comparing the % from columns 4 & 6 with the % from columns 7 & 8 within each Job Category, your company can determine whether (a) the workforce is at parity; (b) there is underutilization (i.e., the company's % are lower than the area %); or (c) there is an overutilization (the company's % are higher than the area %).

If your company has fewer than 25 employees who are on the day-to-day payroll and who will work at the project site, your company need not discuss the differences.

Where there is a significant difference, your company's statement should also discuss action that the company may take to move toward greater parity within its workforce. The statement must bear the signatures of the head of the company. These signatures must be original and dated.

CONNECTICUT OCCUPATIONAL STATISTICS
PRIMARY METROPOLITAN STATISTICAL AREAS AND
METROPOLITAN STATISTICAL AREAS

OCCUPATION CATEGORIES	BRIDGEPORT PMSA		DANBURY PMSA		NEW HAVEN/ MERIDEN PMSA		HARTFORD MSA	
	Minority Male Workers	Female Workers	Minority Male Workers	Female Workers	Minority Male Workers	Female Workers	Minority Male Workers	Female Workers
Management	6.5	36.7	4.5	30.4	6.9	35.5	5.4	36.9
Business & Financial Operations	6.4	51.2	3.3	44.7	4.9	52.6	4.8	54.8
Computer Specialist	14.6	30.3	14.2	25.8	13.7	29.5	9.3	33.0
Architecture & Engineering	11.6	9.3	7.4	11.1	11.4	12.4	10.1	11.6
Building & Grounds Cleaning & Maintenance	27.4	34.1	22.9	32.9	24.0	33.3	21.1	31.3
Office & Administrative Support	7.0	76.1	3.2	77.2	6.5	74.2	6.1	74.5
Construction & Extraction	22.7	1.4	18.1	2.6	17.9	3.1	13.7	2.1
Installation Maintenance & Repair	22.6	4.1	10.7	3.8	14.9	5.1	14.1	4.4
Material Moving Workers	31.8	24.2	24.1	18.2	35.7	23.7	25.8	20.2

NOTE: Balance of State Statistics are an average of the statistics from Litchfield, Middlesex, and Windham Counties, the three counties that encompass the major areas not included within MSA or PMSA.

CONNECTICUT OCCUPATIONAL STATISTICS
PRIMARY METROPOLITAN STATISTICAL AREAS AND
METROPOLITAN STATISTICAL AREAS

OCCUPATION CATEGORIES	NEW LONDON/NORWICH CT-RI MSA		STAMFORD/ NORWALK PMSA		WATERBURY PMSA		BALANCE OF THE STATE	
	Minority Male Workers	Female Workers	Minority Male Workers	Female Workers	Minority Male Workers	Female Workers	Minority Male Workers	Female Workers
Management	3.8	37.3	7.4	33.7	3.6	35.2	3.1	37.9
Business & Financial Operations	2.6	54.0	6.5	42.5	2.8	44.4	2.0	55.3
Computer Specialist	5.9	28.4	19.9	31.4	14.8	24.5	7.0	30.2
Architecture & Engineering	5.9	11.7	13.8	15.8	9.1	8.4	3.6	14.0
Building & Grounds Cleaning & Maintenance	14.4	36.7	38.4	38.1	18.6	30.8	6.4	32.6
Office & Administrative Support	2.7	75.7	8.2	74.2	5.1	73.6	2.0	76.5
Construction & Extraction	7.4	3.1	33.2	2.1	12.4	1.6	4.3	1.8
Installation Maintenance & Repair	9.5	4.2	31.4	3.1	12.4	2.8	5.3	3.0
Material Moving Workers	14.0	20.5	38.6	29.5	25.9	26.2	8.3	23.1

NOTE: Balance of State Statistics are an average of the statistics from Litchfield, Middlesex, and Windham Counties, the three counties that encompass the major areas not included within MSA or PMSA.

SAMPLE

AVAILABILITY WORKSHEET

STATE PROJECT NUMBER BI-29990-BI

Circle the project location identified in Part A:

Bridgeport PMSA	New London/Norwich CT-RI MSA
Danbury PMSA	Stamford/Norwalk PMSA
New Haven/Meriden PMSA	Waterbury PMSA
Hartford MSA	Balance of State of Connecticut

JOB CATEGORIES	PROJECT STATISTICS (employees on site)					CT SITE STATISTICS (Insert PMSA/MSA)	
	Total # of Employees	Total # of Minority Males	% of Minority Males	Total # of Females	% of Females	% of Minority Males*	% of Females *
Management	2	2	100%	0	0%	6.9%	35.5%
Construction & Extraction	51	24	47%	4	7.8%	17.9%	3.1%

Section 8: Project Description, Timeline, and Trades Involved

This section of the GFEP must detail everything that will be needed to perform the work of this specific project. If the question is not relevant to the project, a response of "N/A" is acceptable.

1. In 1–3 sentences, briefly describe the project and the work involved.

2. Estimate (mm/dd/yyyy) when construction will commence. If the project has already begun, provide the actual project mobilization date (mm/dd/yyyy). Specify whether the date provided is actual or estimated.

3. Estimate (mm/dd/yyyy) when construction will be completed. If the project is complete, provide the project end date (mm/dd/yyyy). Specify whether the date provided is actual or estimated.

4. List all of the types of trades-related for which your company will be hiring a subcontractor(s). Do not provide the name of the subcontractor(s). Only identify the specific work, not the type of worker.

5. List all specific types of materials to be used for this project that your company will be purchasing. Do not provide the name of the vendor(s).

6. List all specific types of non-trades-related services to be used for this project that your company will hire a service company to provide. Do not provide the name of the company.

   Ex: Portable toilets
   Trucking, Driver Only – No labor involved

7. List all trades-related services that will be self-performed by your company's employees. Only identify the specific work, not the type of worker.

8. List all supplies that will be manufactured by your company for use on this project.

Section 9: Employment Analysis

PART A: After a comprehensive review of your company's employment process, the Contractor should identify examples for each of the practices listed below for both union and nonunion personnel, as well as office and field staff.

NOTE: If any of the following company policies or practices, subtitled 1-8 in this section, are administered by the union(s) your company utilizes, then please provide a statement signed and dated by the head of your company and by your company's AA/EOE Officer declaring the company will not knowingly do business with any union(s) that discriminates in the administration of its employment practices and/or day-to-day operations. The signatures on the statement must be original and dated.

For Questions 1 and 2 below, identify the job/position title with the most incumbent employees, and then provide the following information for this job/position title.

1. **Job Qualifications** – Identify the job/position incumbent's required skills, experience, job/position-related certifications, and/or educational degrees. Also identify position specific requirements such as special license(s) (for example: a craft license, E2, OSHA 30, commercial driver's license), and/or physical requirements of the job/position (for example: the ability to lift 30 pounds and the ability to bend and reach), and any and all other requirements related to this job/position.

2. **Job Specifications** – Include a brief summary of the job/position. Identify this job/position's duties and responsibilities. Identify the position the incumbent reports to. If this job/position includes supervisory or managerial duties and responsibilities, identify the names of the job/position title(s) that report to this position.

3. **Recruitment Practices** –

    a. How do you recruit new employees?

    b. Explain in brief detail what resources your company utilizes to recruit new employees (not subcontractors/vendors). Where does your company

post its vacancies to ensure a diverse group of candidates applies for the vacancy posted?

1) Provide a complete list of comprehensive and diverse recruitment resources such as newspapers, unions, technical schools, organizations, professional recruiters and other types of recruitment resources your company utilizes or will utilize in the future to post its job vacancies. Each recruitment resource listed must include its name, address, contact person, contact number, and website.

NOTE: The Connecticut Department of Labor's American Job Centers and CTHires.com must be on this list.

4. **Personnel Policies** – Please attach copies of 3–4 of your company's personnel policies from your Employee Handbook. If your company does not have an Employee Handbook then please briefly, describe 3–4 of your personnel policies, specifically compensation (e.g., salaried or hourly wages); benefits (e.g., vacations or holidays); and work environment (e.g., hours of work).

5. **Job Structuring** – does the company have jobs that require the tasks be performed in a specific way? For example, a material handler must grasp material by the right hand and arm, balance it on the right shoulder, and use the left hand/arm to balance the material.

6. **Training and Apprenticeship Programs** –

   a. Does your company offer on-the-job training or participate in apprenticeship and other training programs with unions, technical schools, or other work force training programs?

Attach additional sheets, if necessary.

7. **Subcontracting Practices** – Please briefly explain when and how your company solicits S/M/W/DisBEs to utilize for subcontracting/vending. Provide a complete list of comprehensive and diverse subcontracting/vending sources such as newspapers, unions, technical schools, organizations, professional recruiters and other media that help members of the protected classes find work as a subcontractor/vendor. Each

resource listed must include its name, address, contact person, contact number, and website if applicable.

NOTE: The Department of Administrative Services (DAS) Supplier Diversity Program must be included on your list.

8. **Layoff and Termination Policies** – Please attach a copy of your company's layoff and termination policies from your Employee Handbook. If you do not have an Employee Handbook please briefly describe what criteria is used by your company to determine how and who is laid off and terminated? For example, does your company use the "last in, first out" approach to layoffs?

***PART B*:** If any barrier(s) to protected classes are found in any of your company's preceding employment practices and policies and/or day-to-day operations, then please indicate:

1. If any barriers were found within your company's employment and business practices.

2. If so, how the barrier(s) will be eliminated, and

The estimated time needed to eliminate the barrier(s) and establish a new policy or practice.

Section 10: Apprenticeship Training Program

FOR STATE CONTRACTS VALUED IN EXCESS OF $10.0 MILLION AND A PROJECTED DURATION OF EIGHTEEN (18) MONTHS OR MORE

A Contractor to be awarded a state contract valued in excess of $10 million and with projected duration of eighteen (18) months or more must report:

1. Whether the Company has, or is a signatory to, a collective bargaining agreement that sponsors a state registered apprenticeship program; and,

2. What "good faith effort" the Company will make to include registered apprentices in its direct workforce and/or in the workforce of project subcontractors during the course of the project.

Section 11: Subcontractor Availability Analysis

PART A: Before filling out the rest of this section, please check the DAS Supplier Diversity Program Database to confirm that every Small Business Enterprise (SBE), Minority-Business Enterprise (MBE), Women-Owned Business Enterprise (WBE), and Disabled Person-Owned Business Enterprise (DisBE) has an active certificate.

Follow this link to access the DAS Supplier Diversity Program Database.

PART B: List every SBE/MBE/WBE/DisBE subcontractor and/or vendor that your company solicited to bid on ***this*** contract, as shown in the example below.

For each subcontractor, indicate the trades-related work for which it was solicited. For each vendor, indicate the non-trades-related work or the materials for which it was solicited.

For example:

Company Name	DAS-Certification Type	Type of Trade/Vendor
ABC Construction	SBE	Rough Carpentry
Carpenter's LLC	DisBE	Rough Carpentry
Hard Knocks Woodwork	MBE	Rough Carpentry
Rumor Mill	MBE	Mill Work
The Mill Worm	MBE	Mill Work
Piece Mill	WBE	Mill Work
XYZ Material Suppliers	WBE	Hardwood Supplier
Best Floor Co.	DisBE	Hardwood Supplier
Got 2 Go	SBE	Portable toilets
Number 1	MBE	Portable toilets
When Nature Call	SBE	Portable toilets

PART C: Indicate the bid outcome for each company listed in Part B. Your company must be able to explain and document to the CHRO the reason(s) why your company did not award a subcontract to each of the companies solicited in Part B. An overly vague response, such as "Bid Received," "Called/Left Message," "Said Will Bid" etc., is insufficient. For those companies that you will utilize for this project, use "Awarded" as the bid result.

For example:

Company Name	DAS Certification Type	Type of Trade/Vendor
ABC Construction	Rough Carpentry	Bid Incomplete
Carpenter's LLC	Rough Carpentry	Bid Too High
Hard Knocks Woodwork	Rough Carpentry	Bid Too High
Rumor Mill	Mill Work	Awarded
The Mill Worm	Mill Work	Bid Too High
XYZ Material Suppliers	Hardwood Supplier	Bid Too High
Best Floor Co.	Hardwood Supplier	Declined To Bid
Got 2 Go	Portable toilets	Declined To Bid
Number 1	Portable toilets	Bid Too High
When Nature Call	Portable toilets	Scheduling Conflict

Company Name	DAS Certification Type	Type of Trade/Vendor

PART D: List all non-S/M/W/DisBE companies (i.e., companies not already accounted for in Part B & Part C) that your company will use on this project. This list must inform CHRO of all trade-related work, materials, and/or non-trades-related services that the companies listed will provide. Any company performing a specialized trade or supplying specialized materials/services must be indicated and accompanied by a letter attesting to such from (i.e., signed) by the awarding agency. See the example below.

For example:

Company Name	Non-S/M/W/DisBE Companies
Color Coded Painting, LLC	Rough Carpentry
Pristine Port-a-lets	Portable toilets
Boltz, Inc.	High and Low Voltage Installation*

*The electrical portion of this project is specialized and can only be performed by Boltz, Inc. Please see the attached letter verifying such, in detail, from the project manager at the awarding agency.

Company Name	Non-S/M/W/DisBE Companies

Section 12: Minority Business Enterprise Goals and Timetables

On Attachment III:

- Provide all the information requested in the Attachment III.
- List all the MBEs, WBEs, and DisBEs you designated in Section 11–Part C as "Awarded" in the top portion ("A") of Attachment III.
- List all the SBEs you designated in Section 11–Part C as "Awarded" in the bottom portion ("B") of Attachment III.
- Input all percentages requested in the Attachment III.

Once your company's Plan is approved, your company may not add or delete any of the companies nor alter any of the contract values as listed on the Attachment III of your company's approved Plan, except as follows. After your company's Plan is approved, Attachment III may be altered only if your company submits the following items:

I) A cover letter that
   A) Requests acknowledgement of the change and
   B) Details the reason(s) why the CHRO should grant the change.

II) Documentation that verifies the reason(s) for removal or addition
   A) For removal: confirmation that the business is closed, a change order from the owner that eliminates a subcontractor's portion of the project, etc.
   B) For addition: a copy of the company's current DAS S/M/W/DisBE certification;

II) A Revised Attachment III listing the date of the revision (in mm/dd/yyyy format) and incorporating the requested change.

NOTE: Upon a project's completion, only those companies that are listed on the latest approved Attachment III, and who have maintained a current DAS Supplier Diversity certification throughout the duration of the project, will be utilized in the CHRO's final calculations of actual goal achievement upon the project's completion.

The CHRO encourages your company to not just meet its spending allocation goals, but to surpass them in order to ensure project circumstances (e.g., delays, change orders, decrease between estimate amount and contract amount) do not cause your company to fall below the spending allocation goals as projected in its approved Good Faith Efforts Plan.

A current copy of the DAS certificate must be attached to this section for each subcontractor/vendor listed on Attachment III. ***Without a current copy of each company's valid DAS Supplier Diversity certification, the value of the contract will not be taken into account for the determination of whether your company has met its spending allocation goals.***

Attachment III

A. Please identify MBE/WBE/DisBE subcontractors/vendors who will participate on the project.

Company Name	Address	DAS Certification Type (MBE/WBE/DisBE)	DAS Certification Expiration Date	Contract Value
			Total amount of MBE, WBE, & DisBE contract values: $	(Total amount of MBE, WBE, & DisBE contract values ÷ project value **x** 100) %

B. Please identify SBE contractors/vendors who will participate on the project.

Company Name	Address	DAS Certification Type (SBE)	DAS Certification Expiration Date	Contract Value
			Total amount of SBE contract values: $	Total amount of SBE contract values ÷ project value **x** 100= %
Total amount of all contract values listed in A & B =			$	Total amount of all contract values listed in A & B ÷ project value **x** 100 = %

C. Please identify all non-DAS certified contractors/vendors who will participate on the project.

Company Name	Address	Contract Value

		Total amount of non-certified companies contract values ÷ project value **x** 100= %

Total amount of all contract values listed in A & B & C ÷ project value **x** 100 = %

Please use additional sheets if necessary

Section 13: Minority Business Enterprise Assistance and Innovative Programs

Contractors should discuss any actions taken to help small and minority owned businesses. This can be a formal program or it can be an informal policy, such as helping MBE and WBE complete paperwork related to state contracts or certification from DAS. Other possibilities include co-signing for rental of equipment for the project or allowing small contractors to order supplies with your discount rate.

Response:

Section 14: Close Out Documentation Notice

Please note that this section no longer requires monthly compliance forms to be filed. This is a change from the previous plan format.

Contractors are required to provide the following documentation within forty-five (45) days from the date of substantial completion. Failure to submit this documentation may result in an enforcement action being brought.

Within 45 days of substantial completion, please provide:

- Notice of Substantial Completion from the project owner.
- A full and complete list of all subcontractors/vendors/service providers awarded for the project.
- Lein waivers for all of the awarded subcontractors/vendors/service providers awarded for the project.

If you have any questions, please contact the Contract Compliance unit for assistance.

☐ **I understand my obligations to provide the above documentation within forty-five (45) days of my company's substantial completion date.**

Section 15: Concluding Statement

I have read and pledge my full support to all sections of this Good Faith Efforts Plan, and that the commitments therein, are true and correct to the best of my knowledge. I pledge my "best good faith efforts" to achieve the objectives of the Plan within the established time frames.

Furthermore, this company will comply with any request by the Commission for records and documents. It understands that failure to do so may subject this company to enforcement action by the Commission.

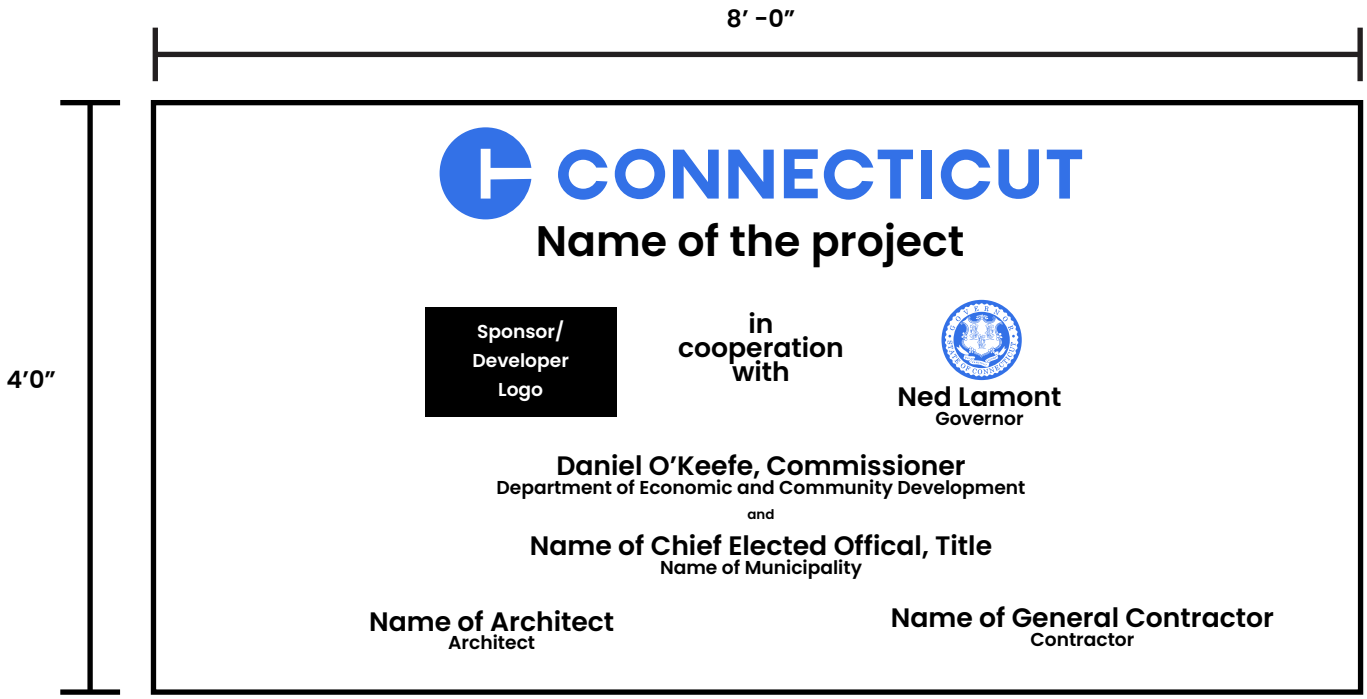
Click or tap to enter a date.
Date

Head of Company's Signature

Printed Name and Title

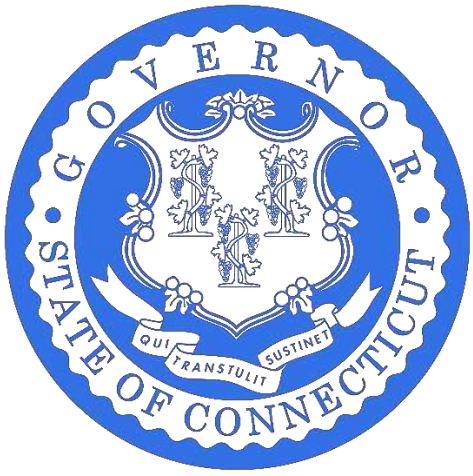
CONNECTICUT

Department of Economic and Community Development Project Sign



Sign Panel	¾” MDO-EXT-APA PLYWOOD SUPPORTED WITH (2) 4X4 TREATED WOOD COLUMNS AND SECURED 4’ INTO GRADE. TOP OF SIGN AT 8’-0” ABOVE GRADE
Colors	ALL LETTERS AND SYMBOLS ARE TO BE BLACK. THE BACKGROUND WILL BE WHITE ENAMEL. BACK OF PLYWOOD AND SUPPORT STRUCTURE SHALL BE PAINTED MATTE BLACK
Typeface	POPPINS SEMI-BOLD. NAME OF PROJECT IS TO BE BIGGER THAN ANY NAMES. TITLES OF LEADERS IS TO BE SMALLER THAN THEIR NAMES. FONT IS ATTACHED.
Colors	ALL LETTERS AND SYMBOLS ARE TO BE BLACK. THE BACKGROUND WILL BE WHITE ENAMEL. BACK OF PLYWOOD AND SUPPORT STRUCTURE SHALL BE PAINTED MATTE BLACK
Location	SIGN MUST BE LOCATED WHERE IT IS CLEARLY VISIBLE TO THE PUBLIC
Timing	INSTALL AT THE START OF CONSTRUCTION AND REMOVE AT CONSTRUCTION COMPLETION
State & Governor Logo	ATTACHED

STATE SEAL



DECD LOGO



SECTION 00650 – CERTIFICATE OF INSURANCE

This is to certify that the _____ (Company) has issued the policies listed below, that these polices are written in accordance with the Company's standard policies and endorsements, except as indicated below or as noted in the attachments hereto, which policies and endorsements will be made available to OWNER upon request, that they provide coverage and limits of liability shown with respect to the insurance indicated, that they are in force on this date, that all deductible amounts are indicated below, and that this Certificate is furnished in accordance with and for the purpose of satisfying the requirements of OWNER in connection with the award and performance of a contract or agreement between the Town of Putnam (OWNER) and

1. Name of Insured_____
2. Address of Insured_____
3. Location and Description of Work_____
   _____ Project Contract No. _____

_____

			Coverage and Limits of Liability (at least as shown below)			
			Bodily Injury	Liability	Property Damage Liability	
Policy Number	Effective Date	Expiration Occurrence	Each Aggregate	Each Occurrence	Aggregate	
A.	Owners Protective Liability has been issued at the expense of Above Insured to _____ (Owner)					
	_____	_____	_____	$1,000,000	$1,000,000	$1,000,000 $1,000,000
B.	Comprehensive General Liability					
	_____	_____	_____	$1,000,000	$1,000,000	$1,000,000 $1,000,000
	Including: 1. Operations/Premises 2. XCU 3. Products/Completed Operations 4. Contractual as Below 5. Independent Contractors 6. Broad Form Property Damage 7. Personal Injury					
C.	Auto Liability		Each Person		Each Accident	Each Accident
	Including: 1. All Owned 2. Hired 3. Non-owned		$1,000,000		$1,000,000	$1,000,000
	_____	_____	_____			
D.	Workman's Compensation				Compensation Statutory State(s)	
	_____	_____	_____		Coverage B Limit $1,000,000 if Applicable	
E.	Umbrella Liability		_____	_____	_____	$1,000,000 Aggregate
F.	Builder's Risk Insurance - "All Risk" Completed Value Form					
_____	_____	_____	(Face Amount of Contract As Specified in Contractor Agreement)			

CONTRACTUAL LIABILITY

To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify, and hold harmless OWNER and its consultants, agents and employees from and against all claims, damages, losses and expenses, direct indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) arising out of or resulting from performance of the Work, provided that any such claim, damage, loss or expense(s) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by Law and Regulations regardless of the negligence of any such party.

In any and all claims against OWNER or any of its consultants, agents or employees by any employee of CONTRACTOR, and subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation under the above paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such subcontractor or other person or organization under workers' or workmen's compensation acts, disability benefit acts or other employee benefits acts.

Policies B, C, D and E shall remain in effect during the one year correction period.

Such insurance as is herein certified applies to all operations of the insured in connection with, and necessary and incidental to, the work herein described at the locations stated.

It is hereby understood and agreed that the above policies will not be restrictively amended, materially changed nor canceled without 30 days advance notice by registered mail to OWNER.

_____

_____ _____

Authorized Representative Signature
(Include Evidence of Authorization)

Address

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

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ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

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ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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

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

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

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

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

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

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

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

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

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

10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer

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

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

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

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

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

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

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

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

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

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

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

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

22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

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

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

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

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

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

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

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

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

31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

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

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

34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.

35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

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

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

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

39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

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

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

44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

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

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

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

1.02 *Terminology*

A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*:

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

C. *Day*:

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

D. *Defective*:

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

a. does not conform to the Contract Documents; or

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

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

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

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

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3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

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

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

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

2.02 *Copies of Documents*

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

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

2.03 *Before Starting Construction*

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

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

2. a preliminary Schedule of Submittals; and

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

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

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

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

2.05 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

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

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

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

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or

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

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

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

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

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

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

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

3.02 *Reference Standards*

A. Standards Specifications, Codes, Laws and Regulations

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

2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*:

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

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

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

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

B. *Resolving Discrepancies*:

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

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

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

3.04 *Requirements of the Contract Documents*

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

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

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

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3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

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

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

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

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

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

4.02 *Starting the Work*

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

4.03 *Reference Points*

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

4.04 *Progress Schedule*

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

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

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

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

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

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

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

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

2. abnormal weather conditions;

3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and

4. acts of war or terrorism.

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

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

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

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

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

5.01 *Availability of Lands*

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

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

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

5.02 *Use of Site and Other Areas*

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

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

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part

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

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

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

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

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

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

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

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

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5.04 *Differing Subsurface or Physical Conditions*

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

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

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

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

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

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

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

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

D. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

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

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

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c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

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

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

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

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

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

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

5.05 *Underground Facilities*

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

1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

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

b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;

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

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

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after

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

C. *Engineer's Review*: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

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

E. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;

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

    c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and

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

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

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

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5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

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

2. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

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

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

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

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

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

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

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

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.

H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

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

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

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

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ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

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

B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

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

D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.

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

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

6.02 *Insurance—General Provisions*

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

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

C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is

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

D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

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

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

G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.

H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.

J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

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4. Foreign voluntary worker compensation (if applicable).

B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.

2. claims for damages insured by reasonably available personal injury liability coverage.

3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:

a. Such insurance shall be maintained for three years after final payment.

b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.

3. Broad form property damage coverage.

4. Severability of interest.

5. Underground, explosion, and collapse coverage.

6. Personal injury coverage.

7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.

8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.

E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.

F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result

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

G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:

1. include at least the specific coverages provided in this Article.

2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.

3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.

4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.

5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.

J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

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6.04 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

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

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."

2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

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5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).

6. extend to cover damage or loss to insured property while in transit.

7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

8. allow for the waiver of the insurer's subrogation rights, as set forth below.

9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.

10. not include a co-insurance clause.

11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.

12. include performance/hot testing and start-up.

13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.

B. *Notice of Cancellation or Change*: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.

F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

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6.06 *Waiver of Rights*

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

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

6.07 *Receipt and Application of Property Insurance Proceeds*

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

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

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

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

7.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

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

B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and

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

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

7.04 *"Or Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

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

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

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

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

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

4) it is not objectionable to Owner.

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

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

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

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

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

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

E. *Treatment as a Substitution Request*: If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

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

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

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

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

a. shall certify that the proposed substitute item will:

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

2) be similar in substance to that specified, and

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

b. will state:

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

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

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

c. will identify:

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

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

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

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

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

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

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

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.

B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.

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

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

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

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

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

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

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

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

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

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

N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

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O. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor

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

7.07 *Patent Fees and Royalties*

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

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

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

7.08 *Permits*

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

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7.09 *Taxes*

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

7.10 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

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

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

7.11 *Record Documents*

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

7.12 *Safety and Protection*

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

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

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

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

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

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

7.13 *Safety Representative*

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

7.14 *Hazard Communication Programs*

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

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

7.15 *Emergencies*

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

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements*:

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

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

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

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

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

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

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

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

1. *Shop Drawings*:

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

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to

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

2. *Samples*:

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

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

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

C. *Other Submittals*: Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.

D. *Engineer's Review*:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

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

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

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

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

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

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

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

E. *Resubmittal Procedures*:

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

2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

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

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

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

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

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

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

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

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

6. the issuance of a notice of acceptability by Engineer;

7. any inspection, test, or approval by others; or

8. any correction of defective Work by Owner.

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

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.

B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop

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

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

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

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

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

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

C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

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8.02 *Coordination*

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

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

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

3. the extent of such authority and responsibilities.

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

8.03 *Legal Relationships*

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

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

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

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

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

9.03 *Furnish Data*

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

9.04 *Pay When Due*

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

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

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

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

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

9.06 *Insurance*

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

9.07 *Change Orders*

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

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9.08 *Inspections, Tests, and Approvals*

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

9.09 *Limitations on Owner's Responsibilities*

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

9.10 *Undisclosed Hazardous Environmental Condition*

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

9.11 *Evidence of Financial Arrangements*

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

9.12 *Safety Programs*

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

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

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

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

10.02 *Visits to Site*

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

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during

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

10.03 *Project Representative*

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

10.04 *Rejecting Defective Work*

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

10.05 *Shop Drawings, Change Orders and Payments*

A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.

C. Engineer's authority as to Change Orders is set forth in Article 11.

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

10.06 *Determinations for Unit Price Work*

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

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

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

10.08 *Limitations on Engineer's Authority and Responsibilities*

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

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B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

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

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

11.01 *Amending and Supplementing Contract Documents*

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

1. *Change Orders*:

a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. *Work Change Directives*: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an

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

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

11.02 *Owner-Authorized Changes in the Work*

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

11.03 *Unauthorized Changes in the Work*

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

11.04 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

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

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

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on

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

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

1. a mutually acceptable fixed fee; or

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

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

b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

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

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

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

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

1. *Procedures*: Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. *Engineer's Action*: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

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

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

11.07 *Execution of Change Orders*

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

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

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

3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

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

11.08 *Notification to Surety*

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

ARTICLE 12 – CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:

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

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

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

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

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

D. *Mediation*:

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

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

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

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

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

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

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

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

13.01 *Cost of the Work*

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

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

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

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable

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

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

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

5. Supplemental costs including the following:

    a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

    c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

    d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

    e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

    f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes

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

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

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

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

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

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

13.02 *Allowances*

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

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B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

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

E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

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

14.01 *Access to Work*

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

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

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

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to

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

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

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

14.05 *Uncovering Work*

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

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B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

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

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will

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

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

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

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*:

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

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a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

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

D. *Payment Becomes Due*:

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

E. *Reductions in Payment by Owner*:

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. the Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. the Contract Price has been reduced by Change Orders;

i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

l. there are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount

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

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

15.02 *Contractor's Warranty of Title*

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

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

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

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

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E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.

2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

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

15.06 *Final Payment*

A. *Application for Payment*:

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

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

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

   d. a list of all disputes that Contractor believes are unsettled; and

   e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

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

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

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

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

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

15.07 *Waiver of Claims*

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;

2. correct such defective Work;

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

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

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses,

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

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for

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

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

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

1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

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

18.03 *Cumulative Remedies*

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

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18.04 *Limitation of Damages*

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

18.05 *No Waiver*

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

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Headings*

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

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SECTION 00800 – SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (No. C-700, 2007 Edition) and other provisions of the Contract Documents as indicated below. All provisions that are not so amended or supplemented remain in full force and effect.

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

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SC-1.01.A.3. Add the following language to the end of Paragraph 1.01.A.3:

The Application for Payment form to be used on this Project is EJCDC No. C-620. The Engineer must approve all Applications for Payment before payment is made.

SC-1.01.A.9. Add the following language to the end of Paragraph 1.01.A.9:

The Change Order form to be used on this Project is EJCDC No. C-941. Engineer approval is required before Change Orders are effective.

SC-1.01.A.16. Add the following language to the end of Paragraph 1.01.A.16:

Contractor is an independent contractor with sole and exclusive responsibility for and control over the means and methods of its performance.

SC-1.01.A.19. Add the following language to the end of Paragraph 1.01.A.19:

The Engineer's Consultant on this project is: CHA

SC-2.01.A. Add the following language to the end of Paragraph 2.01A.:

Delivery of said documents and maintenance of the bonding evidenced thereby is an EXPRESS CONDITION PRECEDENT to Contractor's right - but not its obligation - to perform Work and any delays caused by Contractor's failure to comply with this provision will be non-excusable and non-compensable.

SC-2.01.B. Add the following language to the end of Paragraph 2.01B.:

Delivery of said documents and maintenance of the bonding evidenced thereby is an EXPRESS CONDITION PRECEDENT to Contractor's right - but not its obligation - to perform Work and any delays caused by Contractor's failure to comply with this provision will be non-excusable and non-compensable.

SC-2.02. Delete Paragraph 2.02 in its entirety and insert the following:

Owner shall furnish to Contractor copies of the Drawings and Project Manual upon request at the cost of reproduction.

SC-4.06. Delete Paragraphs 4.06.A and 4.06.B in their entirety and insert the following:

A. No reports or drawings of Hazardous Environmental Conditions at or contiguous to the Site are known to the Owner or Engineer.

B. Not used.

SC-5.04. Add the following new paragraph immediately after Paragraph 5.04.B:

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

(a) Workmen's Compensation and Employer's Liability Insurance:

The Contractor shall procure and shall maintain during the life of this contract Workmen's (Worker's) Compensation Insurance as required by applicable State law for all of its employees to be engaged in work at the site of the project under this contract and, in case of any such work, sublet, the Contractor shall require the subcontractor similarly to provide Workmen's (Worker's) Compensation Insurance for all of the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the Contractor's Workmen's (Worker's) Compensation Insurance. In case any class of employees engaged in hazardous work on the project under this contract is not protected under the Workmen's Compensation Statute, the Contractor shall provide and shall cause each subcontractor to provide adequate employer's liability insurance for the protection of such of his/her employees as are not otherwise protected. Contractor's Workmen's Compensation policy shall show Connecticut as a covered state and strictly comply with all statutory requirements.

The Contractor shall procure and maintain throughout the life of this Contract Employer's Liability Insurance with minimum limits of $1,000,000 per employee, $1,000,000 per accident, and $1,000,000 aggregate.

(b) Scope of Insurance and Special Hazards:

The insurance required hereunder shall provide adequate protection or the Contractor and its subcontractors, respectively, against damage claims which may arise from operations under this contract, whether such operations be by the insured or by anyone directly or indirectly employed by it and, also against any of the special hazards which may be encountered in the performance of this contract as enumerated elsewhere in this document.

(c) Proof of Carriage of Insurance:

The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates and dates of expirations of policies. Such certificates shall also contain substantially the following statement; "The insurance covered by this certificate will not be canceled or materially altered, except after thirty (30) days written notice has been received by the Owner."

(d) Contractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance:

The Contractor shall secure and maintain during the life of the Contract such insurance policies as will protect himself, his Subcontractors and the Owner from claims for bodily injuries, death or property damage which may arise from operations under the Contract whether such operations be by himself or any Subcontractor or anyone employed by them directly or indirectly.

A. For insurance purposes, the site of work and/or the project site includes not only the limited physical work areas involved but also certain other areas of operations set up for utility, sanitary, electrical, water, pollution control, disposal and cleaning purposes; to furnish materials for the work including storage and stock pile areas and all routes between and among them.

B. Comprehensive Automobile Liability and Property Damage Insurance. The Contractor shall provide comprehensive automobile liability insurance with a single provision, written on an occurrence basis, covering all owned vehicles, hired vehicles, leased out, or non-owned vehicles for all personal and property damages arising out of bodily injuries, death or destruction of property and subject to minimum limits below.

C. The Town and its elected and appointed officials, volunteers, employees, and agents shall be named as an additional insured on all policies of liability insurance as well as the excess/umbrella liability insurance.

D. State of Connecticut shall be listed as additionally insured under the following coverages:

    1. Commercial General Liability - $1M per occurrence
    2. General Aggregate - $2M
    3. Umbrella Liability – If it is provided to the grantee.

E. The “Hold Harmless” Indemnification endorsement of the insurance shall include the interest of the municipality, its elected and appointed officials, volunteers, employees and agents, and the State of Connecticut. The Contractor and Subcontractors and other interests shall be so named.

F. All required coverages are minimums and Owner and other additional insureds shall be entitled to the benefit of coverage amounts carried in excess of stated minimums.

G. Contractor's insurance shall be primary and non-contributory, including with respect to any deductible. Insurance carried by Owner or the other additional insureds shall be secondary.

H. All policies of insurance shall be on an occurrence basis.

The minimum limits of liability of such insurance shall be as follows:

1) General Liability of at least $1,000,000 Bodily Injury and Property Damage Liability, Combined Single Limit with a $3,000,000 Annual Aggregate Limit. The Town should be named as an "Additional Insured".

2) Automobile Liability (applicable for any contractor who has an automobile operating exposure) of at least $1,000,000 Bodily Injury and Property Damage per accident. The Town should be named as an "Additional Insured"

3) Workers' Compensation Insurance as required by law.

4) Property Coverage for materials and supplies being transported by the contractor, as the Town's Property Contract provides coverage for personal property within 1000 feet of the premises.

5) Umbrella Liability of at least $2,000,000/ occurrence, $2,000,000/aggregate. Umbrella Liability shall follow form and be at least as broad as the underlying coverage.

All policies shall be so written that the Owner will be notified of cancellation or restrictive amendment at least thirty (30) days prior to the effective date of such cancellation or amendment. A certificate from the Contractor's Insurance Carrier showing at least the coverage and limits of liability specified above and expiration date shall be filed with the Owner before operations are begun.

Such certificates shall not merely name the types of policy provided, but shall specifically refer to this Contract and shall state that such insurance is required by this Contract. The Contractor shall make no claims against the Town of Putnam or its officers for any injury to any of his officers or employees or for damage to his trucks or equipment, arising out of work contemplated by this Contract.

Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance:

The Contractor shall either (1) require each of his Subcontractors to procure and to maintain during the life of his subcontract, Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified below, or (2) ensure the activities of his policy, specified in subparagraph (b) hereof.

SC-6.01.E. Add the following language to the end of Paragraph 6.01.E.:

If Owner elects not to terminate and to allow Contractor to procure the required bond and/or insurance any delay to the Work caused by Contractor's exclusion shall be non-excusable and any damages suffered by Contractor shall be non-compensable.

SC-6.02.G. Add the following language to the end of Paragraph 6.02.G.:

If Owner elects not to terminate and to allow Contractor to procure the required bond and/or insurance any delay to the Work caused by Contractor's exclusion shall be non-excusable and any damages suffered by Contractor shall be non-compensable.

SC-6.06.B Delete Paragraph 6.06.B. in its entirety and insert the following:

To the fullest extent permitted by law, Contractor hereby waives against Engineer, Owner, Owner's elected and appointed officials, Owner's volunteers, and the employees, subcontractors, consultants, and agents of any of them all rights of subrogation for all damages caused by fire or other causes of loss. This waiver of subrogation shall be effective as to a person or entity even though the person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged except as to such rights as Contractor may have to the proceeds of insurance held by any of the foregoing as trustee or fiduciary.

SC-6.06.C Delete Paragraph 6.06.C. in its entirety and insert the following:

All policies of insurance procured and maintained by Contractor shall contain waivers of subrogation in favor of Engineer, Owner, Owner's elected and appointed officials, Owner's volunteers, and the employees, subcontractors, consultants, and agents of any of them at least as broad as that provided by Contractor.

SC-6.06.D Delete Paragraph 6.06.D. in its entirety:

SC-6.06 Add a new paragraph immediately after Paragraph 6.06.G:

The Contractor shall not award work valued at more than fifty (50%) percent of the Contract Price to Subcontractor(s), without prior written approval of the Owner.

SC-6.10. Add a new paragraph immediately after Paragraph 6.10.A:

B. Owner is exempt from payment of sales and compensating use taxes of the State of Connecticut and of cities and counties thereof on all materials to be incorporated into the Work.

    1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.

    2. Owner’s exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

SC-7.01.A Delete Paragraph 7.01.A. in its entirety and insert the following:

Contractor acting as an independent contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely and exclusively responsible for the means, methods, techniques, sequences, and procedures of construction.

SC-7.04.C. Amend the paragraph by making two subparagraphs under the title C. Engineer's Evaluation. The paragraph text is retitled, 7.04.C.2 After Effective Date of Agreement. A new paragraph is added before this paragraph to read as follows:

During Bidding. The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, or "or-equal" materials and equipment as defined in paragraph 6.05 of the General Conditions, or those substitute materials and equipment approved by the Engineer and identified by Addendum. The materials and equipment described in the Bidding Documents establish a standard of required type, function, and quality to be met by any proposed substitute or "or-equal" item. Request for Engineer's clarification of materials and equipment considered "or-equal" prior to the Effective Date of the Agreement must be received by the Engineer at least 5 days prior to the date for receipt of Bids. No item of material or equipment will be considered by Engineer as a substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least 5 days prior to the date for receipt of Bids. Each request shall conform to the requirements of Paragraph 6.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon the Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any proposed substitute item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

SC-7.06 Add a new paragraph immediately after Paragraph 7.06.O:

P. Contractor is responsible for ensuring that all Subcontractors carry appropriate types and limits of insurance consistent with Contractor's obligations and that all Subcontractors provide written waivers of subrogation at least as broad as the waiver given by Contractor in favor of the parties with respect to whom Contractor has waived all rights of subrogation and that insurance policies provided by Subcontractors contain waivers of subrogation at least as broad as the waiver given by Contractor in favor of the parties with respect to whom Contractor has waived all rights of subrogation.

SC-7.10.A Delete Paragraph 7.10.A in its entirety and insert the following:

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work, including, but not limited to, Laws and Regulations pertaining to safety and the safe execution of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither

Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

SC-7.12.A Delete Paragraph 7.12.A. in its entirety and insert the following:

A. Owner hereby delegates and Contractor hereby accepts sole and exclusive responsibility for Project safety, the safe performance of the Work, the training and supervision of all persons employed by Contractor and its Subcontractors and compliance with all Federal, state, and local laws, codes, regulations, and ordinances pertaining to safety and/or the safe performance of the Work and Owner shall have no responsibility with respect thereto. Contractor shall be solely and exclusively responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;
2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

SC-7.12.B Delete Paragraph 7.12.B in its entirety and insert the following:

B. Contractor shall be solely and exclusively responsible for compliance with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

SC-7.12.C Delete Paragraph 7.12.C in its entirety and insert the following:

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work. Notwithstanding anything herein or in the Contract Documents to the contrary, Owner's safety programs, if any, shall in no way abrogate, reduce, and/or otherwise modify Contractor's sole and exclusive responsibility for

project safety nor shall it create any duty owed by Owner to any person with respect to safety.

SC-7.15.A Delete Paragraph 7.15.A in its entirety and insert the following:

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

SC-7.18 Delete SC-7.18 in its entirety and insert the following:

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Engineer, Owner, Owner's elected and appointed officials, Owner's volunteers, and the employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

B. In any and all claims against Engineer, Owner, Owner's elected and appointed officials, Owner's volunteers, and the employees, agents, consultants, and subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts and/or by the types and amounts of insurance carried by Contractor or any such Subcontractor, Supplier, or other entity.

C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
2. giving directions or instructions, or failing to give them, if that is the sole cause of the injury or damage.

SC-8.01.C Delete Paragraph 8.01.C in its entirety and insert the following:

C. Contractor shall be solely and exclusively responsible for affording each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

SC-9.03.A Add the following language at the end of paragraph 9.03.A:

The Engineer will provide Resident Project Representative services for this project.

SC-9.09.A Delete Paragraph 9.09.A in its entirety and insert the following:

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

SC-14.02.A.3. Add the following language at the end of paragraph 14.02.A.3:

No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage, or invest the retainage for the benefit of the Contractor.

SC-14.02.A.4. Add the following new Paragraph after Paragraph 14.02.A.3:

The Application for Payment form to be used on this Project is EJCDC No. C-620. The Engineer must approve all Applications for Payment before payment is made.

SC-18.09 Add the following new Section after Section 18.08:

Third Party Beneficiaries Nothing herein is intended to create or confer, nor shall anything herein been construed or interpreted so as to create or confer third party beneficiary status in favor of any person or entity.

End of Section

SECTION 00890 – PERMITS

1. General Requirements

A. The Contractor shall obtain and pay for the permits listed below, which are required for this project. The Contractor shall obtain and pay for all other permits required, as defined under the PERMITS subsection of Section 00700 GENERAL CONDITIONS.

B. The Contractor shall perform the work in accordance with the Contract Documents, including the referenced permits/Order of Conditions, and any applicable municipal requirements.

Permits by Owner	Status	Party Responsible for Fees, Bonding, Payment, etc.
Inland Wetlands Commission		Town
Permits by Contractor		
Building Permit		Contractor

The Town of Putnam will waive the fee for the Building Permit.

END OF SECTION

Change Order

No. _____

Date of Issuance: _____ Effective Date: _____

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

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

Description:

Attachments (list documents supporting change):

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

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____	By: _____	By: _____
Engineer (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable):

_____ Date: _____

SECTION 01014 – SCOPE OF WORK

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall provide all labor, material, and equipment necessary to complete the Saint Marie-Greenhalgh Sports Complex Running Track Renovation project as depicted on the project plans and as specified herein. The project consists of the replacement of the existing track, replacement and expansion of both D zones, a new perimeter concrete apron, with associated drainage and replacement of the existing chain-link mesh.

B. The Contractor shall coordinate their work around the scheduled Veterans Memorial Wall event scheduled for a Thursday thru Sunday at some point between September 1 and September 15, 2026. This event requires noise, light, and access restrictions for the project. Exact dates shall be provided to the Contractor once they are known.

C. The Contractor shall provide, install, and maintain a project sign as detailed in Section 00640. The sign location shall be coordinated with the Town.

D. The Contractor is required to obtain a Building Permit from the Putnam Building Department. Permit fees shall be waived.

E. The Contractor shall coordinate all work with all other Contractor's performing work within or in the vicinity of the track and High School. No claims for delays will be considered unless the Contractor has made a good faith effort to coordinate their schedules.

F. The Contractor shall provide to the Town an as-built drawing of all utilities constructed as part of this project.

G. Payment for the work described in the specifications shall be paid under the attached FORM OF GENERAL BID.

H. All work shall comply with Federal, State, and Local Laws and Regulations.

1.02 SITE SECURITY

The Contractor shall be required to isolate any excavation, trench, or dangerous conditions with the use of temporary construction fencing and/or barriers.

1.03 QUALITY ASSURANCE

All work shall be completed in accordance with all local, State and Federal laws, ordinances, rules, and regulations and within the guidelines of these specifications.

END OF SECTION

SECTION 01110 – CONTROL OF WORK AND MATERIALS

1. Hauling, Handling and Storage of Materials
2. Open Excavations
3. Maintenance of Traffic
4. Care and Protection of Property
5. Protection and Relocation of Existing Structures and Utilities
6. Maintenance of Flow
7. Rejected Materials and Defective Work
8. Sanitary Regulations
9. Site Investigation
10. Electric Service
11. Hazardous Waste

1. Hauling, Handling, and Storage of Materials

A. The Contractor shall, at his own expense, handle and haul all materials furnished by him and shall remove any of his surplus materials at the completion of the work.

B. The Contractor shall provide suitable and adequate storage for equipment and materials furnished by him that are liable to injury and shall be responsible for any loss of or damage to any equipment or materials by theft, breakage, or otherwise.

C. All excavated materials and equipment to be incorporated in the Work shall be placed so as not to injure any part of the Work or existing facilities and so that free access can be had at all times to all parts of the Work and to all public utility installations in the vicinity of the work. Materials and equipment shall be kept neatly piled and compactly stored in such location as will cause a minimum of inconvenience to public travel and adjoining owners, tenants and occupants.

D. The Contractor shall be responsible for all damages to the work under construction during its progress and until final completion and acceptance even though partial payments have been made under the Contract.

E. Unless approved by the Engineer, the use of easements for ease of access to and egress from other areas of the protect will not be permitted.

2. Open Excavations

A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The Contractor shall, at his own expense, provide suitable and safe means for completely covering all open excavations and for accommodating travel when work is not in progress. The Contractor shall submit a Pedestrian Safety Plan for approval by the Engineer and the Town prior to construction.

B. Bridges provided for access to private property during construction shall be removed when no longer required.

C. The length of open trench will be controlled by the particular surrounding conditions but shall always be confined to the limits prescribed by the Engineer.

D. If the excavation becomes a hazard, or if it excessively restricts pedestrian or vehicular traffic at any point, then special construction procedures shall be taken, such as limiting the length of trench and prohibiting stocking excavated material in traffic zones.

E. All excavations shall be completely closed at the end of each work day. Steel Plates will not be permitted unless the contractor receives written permission from the Town of Putnam.

3. Maintenance of Traffic

A. Unless permission to close the street or parking lot is received in writing from the proper authority, all materials shall be placed so that vehicular and pedestrian traffic may be maintained at all times.

B. Should the Owner deem it necessary, uniformed officers will be assigned to direct traffic. The Contractor shall make all arrangements in obtaining uniformed officers as required.

C. The Contractor shall at his own expense, as directed by the Owner, provide and erect acceptable barricades, barrier fences, traffic signs, and all other traffic devices not specifically covered in a bid item, to protect the work from traffic, pedestrians, and animals. He shall provide sufficient temporary lighting such as lanterns/flashers (electric battery operated) or other approved illuminated traffic signs and devices to afford adequate protection to the traveling public, at no additional cost to the Owner.

D. The Contractor shall furnish all construction signs that are deemed necessary by and in accordance with Part VI of the Manual on Uniform Traffic Control Devices as published by the U.S. Department of Transportation and the Town of Putnam standards. In addition, the Contractor may be required to furnish up to 128 square feet of additional special construction warning signs. Size and exact wording of signs shall be determined by the Engineer during construction.

E. Nothing contained herein shall be construed as relieving the Contractor of any of his responsibilities for protection of persons and property under the terms of the Contract.

F. Contractor shall maintain a minimum of one sidewalk passable at all times during construction.

4. Care and Protection of Property

The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be promptly restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, to the satisfaction of the Engineer.

5. Protection and Relocation of Existing Structures and Utilities

A. All existing buildings, utilities, pipes, poles, wires fences, curbings, property line markers and other structures which the Engineer decides must be preserved in place without being temporarily or permanently relocated, shall be carefully supported and protected from damage by the contractor. Should such property be damaged, it shall be restored by the Contractor, at no additional cost to the Owner.

B. The Contractor shall determine the location of all underground structures and utilities (including existing water services, drain lines, electrical lines, and sewers). Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by Contractor.

C. When fences interfere with the Contractor's operations, he shall remove and (unless otherwise specified) promptly restore them in accordance with the specifications.

D. Protection or temporary removal and replacement of existing utilities and structures as described in this Section shall be a part of the work under the Contract and all costs in connection therewith shall be included in the Total Price Bid in the FORM OF GENERAL BID.

E. On paved surfaces the Contractor shall not use or operate tractors, bulldozers, or other power-operated equipment with treads or wheels which are shaped so as to cut or otherwise damage such surfaces.

F. All property damaged by the Contractor's operations shall be restored to a condition at least equal to that in which it was found immediately before work was begun. Suitable materials and methods shall be used for such restoration.

G. Restoration of existing property and structures shall be carried out as promptly as practicable and shall not be left until the end of the construction period.

6. Maintenance of Flow

A. The Contractor shall at his own cost, provide for the flow of sewers and drains interrupted during the progress of the work, and shall immediately cart away and dispose of all offensive matter. The entire procedure of maintaining existing flow shall be fully discussed with the Engineer well in advance of the interruption of any flow.

B. All existing drainage facilities including, but not limited to; brooks, streams, canals, channels, ditches, culverts, catch basins and drainage piping shall be adequately safeguarded so as not to impede drainage or to cause siltation of downstream areas in any manner whatsoever. If the Contractor damages or impairs any of the aforesaid drainage facilities, he shall repair the same within the same day.

C. At the conclusion of the work, the Contractor shall remove all silt in drainage structures caused by his operations as described in Section 01740, SITE CLEANUP.

7. Rejected Materials and Defective Work

A. Materials furnished by the Contractor and condemned by the Engineer as unsuitable or not in conformity with the specifications shall forthwith be removed from the work by the Contractor, and shall not be made use of elsewhere in the work.

B. Any errors, defects or omissions in the execution of the work or in the materials furnished by the Contractor, even though they may have been passed or overlooked or have appeared after the completion of the work, discovered at any time before the final payment is made hereunder, shall be forthwith rectified and made good by and at the expense of the Contractor and in a manner satisfactory to the Engineer.

C. The Contractor shall reimburse the Owner for any expense, losses or damages incurred in consequence of any defect, error, omission or act of the Contractor or his employees, as determined by the Engineer, occurring previous to the final payment.

8. Sanitary Regulations

Sanitary conveniences for the use of all persons employed on the work, properly screened from public observation, shall be provided in sufficient numbers in such manner and at such locations as may be approved. The contents shall be removed and disposed of in a satisfactory manner as the occasion requires. The Contractor shall rigorously prohibit the committing of nuisances within, on or about the work. Any employees found violating these provisions shall be discharged and not again employed on the work without the written consent of the Engineer. The sanitary conveniences specified above shall be the obligation and responsibility of the Contractor.

9. Site Investigation

The Contractor acknowledges that they have satisfied themself as to the conditions existing at the site of the work, the type of equipment required to perform this work, the quality and quantity of the materials furnished insofar as this information is reasonably ascertainable from an inspection of the site, as well as from information presented by the drawings and specifications made a part of this contract. Any failure of the Contractor to acquaint themself with available information will not relieve them from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The Owner assumes no responsibility for any conclusion or interpretation made by the Contractor on the basis of information made available by the Owner.

10. Electric Service

A. The Contractor shall make all necessary applications and arrangements and pay for all fees and charges for electrical energy for power and light necessary for the proper completion of this contract during its entire progress. The Contractor shall provide and pay for all temporary wiring, switches, connections, and meters.

B. There shall be sufficient electric lighting so that all work may be done in a workmanlike manner where there is not sufficient daylight.

11. Hazardous Waste

Should the Contractor, while performing work under this contract, uncover hazardous materials he shall immediately notify the Engineer. The Contractor is not, and has no authority to act as, a handler, generator, operator or disposer of hazardous or toxic substances found or identified at the site, and the Owner shall undertake all such functions.

END OF SECTION

SECTION 01140 – SPECIAL PROVISIONS

1. Water for Construction Purposes
2. Pipe Location
3. Dimensions of Existing Structures
4. Occupying Private Property
5. Existing Utility Locations - Contractor's Responsibility
6. Coordination of Work
7. Time for Completion of Contract
8. Design of Equipment
9. Cutting, Fitting and Patching
10. Protection of Water Resources
11. Contractor's Representative
12. Hours of Construction Activity
13. Construction Crews
14. Compliance with Permits

1. Water for Construction Purposes

A. In locations where water is in sufficient supply, the Contractor may be allowed to use water without charge for jetting backfill and other construction purposes. The express approval of the Owner shall be obtained before water is used. Waste of water by the Contractor shall be sufficient cause for withdrawing the privilege of unrestricted use.

B. If no water is available, the Contractor shall supply water at no additional cost to the Owner.

2. Pipe Location

Pipe shall be located substantially as indicated on drawings. The Owner reserves the right, acting through the Engineer, to make such modifications as may be deemed desirable to avoid interference with existing structures or for other reasons.

3. Dimensions of Existing Structures

Where the dimensions and locations of existing structures are of critical importance in the installation or connections of new work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

4. Occupying Private Property

The Contractor shall not enter upon nor occupy with men, equipment or materials any property outside of the public highways or Owner's easements, except with the written consent of the property owner or property owner's agent.

5. Existing Utility Locations - Contractor's Responsibility

A. The location of existing underground services and utilities shown on the drawings is based on available records. It is not warranted that all existing utilities and services are shown, nor that

shown locations are correct. The Contractor shall be responsible for having the utility companies locate their respective utilities on the ground prior to excavating.

B. the Contractor shall, at least 72 hours, exclusive of Saturdays Sundays and holidays, prior to excavation in the proximity of telephone, gas, cable television and electric utilities, notify the utilities concerned by calling "CALL BEFORE YOU DIG" at telephone number: 1-800-922-4455 or using https://www.cbyd.com.

C. The Contractor shall coordinate all work involving utilities and shall satisfy himself as to the existing conditions of the areas in which he is to perform his work. He shall conduct and arrange his work so as not to impede or interfere with the work of other contractors working in the same or adjacent areas.

6. Coordination of Work

A. The General Contractor shall be responsible for coordinating his own work as well as that of any subcontractors. He shall be responsible for notification of the Engineer when each phase of work is expected to begin and the approximate completion date.

B. The Contractor shall be responsible for coordinating his work with town events and other town contractors such as refuse collection, water and sewer operations and maintenance.

7. Time for Completion of Contract

The time for completion of this contract is stipulated in the Form of General Bid. The Bidder shall base his bid on completing the proposed work by the completion date stipulated in Section 00410, FORM OF GENERAL BID.

8. Design of Equipment

Attention is directed to the fact that the layout of certain equipment is based on that of one manufacturer. If other equipment is submitted for approval, the Contractor shall prepare and submit for approval at his expense, detailed structural, mechanical and electrical drawings, equipment lists, maintenance requirements, and any other data required by the Engineer, showing all necessary changes and embodying all special features of the equipment he proposes to furnish. Such changes, if approved, shall be made at the expense of the Contractor.

9. Cutting, Fitting, and Patching

A. The Contractor shall do all cutting, fitting, or patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by work of other Contractors, as shown upon or reasonably implied by the drawings and the specifications for the completed structure, including all existing work.

B. The Contractor shall not endanger any work by cutting, digging, or otherwise and shall not cut or alter the work of any other Contractor, save with the consent of the Engineer.

C. All holes or openings required to be made in new or existing work, particularly at pipe, conduit, or other penetrations not covered by escutcheons or plates shall be neatly patched. All such holes shall be made completely watertight as approved by the Engineer.

D. Size and locations of holes required in steel, concrete, or other structural or finish materials for piping, wiring, ducts, etc., which have not been located and detailed on the drawings shall be approved by the Engineer prior to layout and cutting thereof. All holes shall be suitably reinforced as required by the Engineer.

E. Workmanship and materials of patching and repair work shall match the adjacent similar work and shall conform to the applicable sections of the specification. Patches and joints with existing work shall provide, as applicable in each case, visual, structural, and waterproofing continuity.

10. Protection of Water Resources

The Contractor's attention is directed to the fact that the construction area is located within the vicinity of water resources. The Contractor shall take extra precautions to ensure that no pollutants enter either surface water or groundwater resources from the construction area. The Contractor shall not store fuels or other hazardous materials or potential contaminants on the construction site. In the event of a spill, the Contractor shall immediately notify the Engineer.

11. Contractor's Representative

The Contractor shall designate a representative who will be available to respond to emergency calls by the Owner at any time day and night and on weekends and holidays should such a situation arise.

12. Hours of Construction Activity

A. The Contractor shall conduct all construction activity between 7:00 a.m. and 5:00 p.m. No construction work shall be allowed on Saturdays, Sundays or Holidays Written authorization from the Owner must be obtained for any deviation from this schedule.

13. Construction Crews

The Contractor shall not increase the number of construction crews assigned to the work without providing one week advance notice to the Engineer.

14. Compliance with Permits

The Contractor shall perform all work in conformance with requirements of the permits required by the Town of Putnam.

END OF SECTION

SECTION 01270 – MEASUREMENT AND PAYMENT

PART 1 - DESCRIPTION

1.01 GENERAL:

A. The following subsections describe the measurement of and payment for the work to be done under the items listed in Section 00410, FORM OF GENERAL BID.

B. All work performed as described in these contract documents shall be paid for under one or more of the items listed in Section 00410, FORM OF GENERAL BID. All other activities required in connection with the performance of the work, including all work required under Division 1, GENERAL REQUIREMENTS, whether described in the contract documents or mandated by applicable codes, permits and/or laws, will not be separately paid for unless specifically provided for in the FORM OF GENERAL BID, but will be considered incidental to performance of the overall project.

C. Each lump sum price stated in the Section 00410, FORM OF GENERAL BID shall constitute full compensation as herein specified for each item of work completed in accordance with the drawings and specifications.

D. The payment items listed herein and in Section 00410 (FORM OF GENERAL BID) are intended to provide full payment for the work shown on the drawings and specified herein. Any work called for or implied in the documents but not listed as a payment item shall be considered incidental to the overall project.

E. Unless otherwise noted, all earthwork shall be included under any item requiring excavation. Unless otherwise noted, each item specified or shown on the drawings shall be furnished and installed in accordance with the technical section whether a specific applicable payment item exists or not.

F. The prices for those items which involve excavation shall include compensation for disposal of surplus excavated material, and installation of all necessary sheeting and bracing.

G. In all items involving excavation, the price shall be based on doing the entire excavation in earth. Where rock is excavated, the price therefore shall be in addition to the cost of excavating the earth, and no deduction shall be made in the amount for earth excavation.

H. Raising and adjusting all utility castings shown on the drawings and/or uncovered during the roadway reconstruction shall be included in the lump sum prices stated in Section 00410, FORM OF GENERAL BID. Castings damaged by the contractor shall be replaced with new castings at no cost to the owner.

I. All required coordination with the Owner, their Representatives, Town Departments, and local utility providers shall be included in the lump sum prices stated in Section 00410, FORM OF GENERAL BID.

1.02 CURBING:

A. Curbing disturbed by the Contractor's operations outside payment limits shall be repaired to its original condition by the Contractor at no cost to the Owner.

1.03 PAVEMENT REPLACEMENT:

A. Pavement disturbed by the Contractor's operations outside payment limits shall be repaired to its original condition by the Contractor at no cost to the Owner.

1.04 ROCK EXCAVATION AND DISPOSAL:

A. Rock excavation and disposal if required shall be paid under a change order coordinated with the Contractor. It shall be measured per cubic yard within the trench limits. Payment shall include replacement of the excavated rock with gravel borrow.

B. Only boulders, ledge, and concrete structures greater than one cubic yard inside the pay limit area shown on the drawings shall be included for measurement and payment.

C. Where rock is encountered, it shall be uncovered but not excavated until measurements have been made by the Engineer, unless, in the opinion of the Engineer, satisfactory measurements can be made in some other manner.

D. The bidder shall include in the bid for items involving excavation, the cost of doing the entire excavation as earth.

E. When two or more pipes are installed parallel to one another and the trench payment limits overlap, rock excavation in the overlap section will only be paid once.

1.05 EARTHWORK:

A. Except as designated in Section 1.05, Paragraphs B and C, earthwork shall not be separately measured for payment, but shall be considered incidental to construction of the project.

B. Excavation and backfill of unsuitable material above normal grade:

1. If, in the opinion of the Engineer, the material at or above normal grade is unsuitable for use as backfill, it shall be removed and disposed of to such depths and widths within the limits of payment as he may order. Normal grade is defined as the elevation of the trench bottom, as shown on the drawings.

2. The quantity of excavation and backfill of unsuitable material above normal grade to be included for payment shall be the number of cubic yards of material ordered to be removed and measured by the Engineer within the normal trench limits shown on the contract drawings.

3. Removal of topsoil, paving materials, frozen material or ledge excavation above the normal grade of the trench excavation will not be considered for payment.

4. Payment for unsuitable materials shall be coordinated through a change order with the Contractor. It shall constitute full compensation for excavation of unsuitable material above normal grade, disposal of unsuitable material and furnishing, installing and compacting approved backfill materials, excluding materials noted in this Section or as specified in Section 312000 EARTH MOVING, of the Contract Documents.

   The Contractor will not be reimbursed for excavation of unsuitable material above grade, which has not been ordered by the Engineer.

C. Excavation and backfill of unsuitable material below normal grade:

1. If, in the opinion of the Engineer, the material at or below normal grade is unsuitable for use as foundation, it shall be removed and disposed of to such depths and widths as he may order. Normal grade is defined as the elevation of the trench bottom, as shown on the drawings.

2. Payment for unsuitable materials shall be coordinated through a change order with the Contractor. The quantity of earth excavation and backfill below normal grade to be included shall be the number of cubic yards of material ordered to be removed and measured by the Engineer within the normal trench width shown on the contract drawings.

3. The excavation and backfill of unsuitable material below normal grade shall constitute full compensation for excavation of unsuitable material below normal grade, disposal of unsuitable material and furnishing, installing and compacting approved backfill materials as specified in Section 312000 EARTH MOVING , of the Contract Documents.

4. The Contractor will not be reimbursed for excavation of unsuitable material below grade, which has not been ordered by the Engineer.

1.06 LANDSCAPING:

A. The extent of loaming and seeding required for the project is not indicated on the drawings. The Contractor shall be required to loam and seed all areas disturbed by their forces or their subcontractor's forces.

1.07 SITE PREPARATION AND DEMOLITION:

A. Unless otherwise indicated, required site preparation and/or demolition, including but not limited to removal and disposal of existing sidewalks and roadway pavements shall be considered incidental to the project and not separately measured for payment.

1.08 ENVIRONMENTAL PROTECTION:

A. Unless otherwise indicated, the work of this section shall not be separately measured for payment, but shall be considered incidental to the project.

1.09 RECORD DRAWINGS:

A. The Contractor shall provide record drawings as described in the specifications. The work of this section shall not be separately measured for payment, but shall be considered incidental to the project.

1.10 LAYOUT OF PROPOSED WORK:

A. The Contractor shall provide their own forces to layout the proposed project as depicted on the drawings. The work of this section shall not be separately measured for payment, but shall be considered incidental to the project.

1.11 SAW CUTTING:

A. The Contractor shall provide straight saw cut lines to the depth necessary to complete the required work, where indicated on the plans and at all other intersections between proposed reconstruction and existing work to remain. The work of this section shall not be separately measured for payment, but shall be considered incidental to the project.

1.12 TRACER TAPE:

A. The Contractor shall provide tracer tape above all underground utilities as depicted on the drawings and as specified herein. The work of this section shall not be separately measured for payment, but shall be considered incidental to the project.

1.13 PROJECT SIGN:

A. The Contractor shall provide, install, and maintain the project sign as detailed in the Contract Documents. The work of this section shall not be separately measured for payment, but shall be considered incidental to the project.

1.14 SUPPORT OF EXCAVATION:

A. Unless otherwise indicated, the work of this section shall not be separately measured for payment, but shall be considered incidental to the project.

B. No payment shall be made under this item for trench boxes, sheeting or steel plates used at the Contractor's option in the course of the work.

1.15 DEWATERING:

Dewatering shall be considered incidental to the project.

1.16 CONNECTIONS TO EXISTING SYSTEMS:

Unless otherwise indicated, the work of this section shall not be separately measured for payment, but shall be considered incidental to the project.

1.17 ABANDONMENT OF EXISTING MAINS AND STRUCTURES:

Unless otherwise indicated, the work of this section, including plugs, caps, concrete backing, or removal of all pipes, manholes, catch basins, valves, and valve boxes as required, shall not be separately measured for payment, but shall be considered incidental to the project.

1.18 FIELD CONCRETE:

Field concrete, where required, shall be considered incidental to the project.

1.19 RECONSTRUCTION OF EXISTING SEWERS AND DRAINS:

Reconstruction of existing sewers and drains damaged by the Contractor shall not be separately measured for payment, but shall be considered incidental to the project.

1.20 PEDESTRIAN SAFETY:

Labor and materials required for the protection of pedestrian traffic from excavations and construction activities, such as: construction fence, steel plating, flagmen, flashing barrels, temporary accessible entrance, etc., shall not be separately measured for payment, but shall be considered incidental to the project.

END OF SECTION

SECTION 01330 – SUBMITTALS

1. SHOP AND WORKING DRAWINGS

A. As required by the General Conditions, Contractor shall submit a schedule of shop and working drawing submittals.

B. In accordance with the accepted schedule, the Contractor shall submit promptly to the Engineer, through its authorized resident representative at the job site, or by mail/email, attention: Chuck Eaton, CHA, 400 Capital Boulevard, Suite 301, Rocky Hill, CT 06067, ceaton@chasolutions.com; shop or working drawings required as noted in the specifications, of equipment, structural details and materials fabricated especially for this Contract.

C. Such drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish of shop coat, grease fittings, etc., depending on the subject of the drawings. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for this Contract.

D. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from his subcontractors and returning reviewed drawings to them. All drawings shall be clearly marked with the names of the Owner, Project, Contractor and building, equipment or structure to which the drawing applies, and shall be suitably numbered.

E. Only drawings which have been prepared, checked and corrected by the fabricator should be submitted to the Contractor by his subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Contract Documents in all respects. Shop drawings shall be reviewed and marked with the date, checker's name and indication of the Contractor's approval, and only then shall be submitted to the Engineer. Shop drawings unsatisfactory to the Contractor shall be returned directly to their source for correction, without submittal to the Engineer. Shop drawings submitted to the Engineer without the Contractor's approval stamp and signature will be rejected. Any deviation from the Contract Documents indicated on the shop drawings must be identified on the drawings and in a separate submittal to the Engineer, as required under the General Conditions.

F. The Contractor shall be responsible for the prompt submittal and resubmittal, as necessary, of all shop and working drawings so that there will be no delay in the work due to the absence of such drawings.

G. The Engineer will review the shop and working drawings as to their general conformance with the design concept of the project and general conformance with the information given in the Contract Documents. Corrections of comments made on the drawings during the review do not relieve the Contractor from compliance with requirements of the Contract Documents. The Contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication process and techniques of construction; coordinating their work with that of all other trades; and performing their work in a safe and satisfactory manner. The review of the shop drawings is general and shall not relieve the Contractor of the responsibility for details of design, dimensions, code compliance, etc., necessary for interfacing with other components, proper fitting and construction of the work required by the Contract and for achieving the specified performance.

H. With few exceptions, shop drawings will be reviewed and returned to the Contractor within 30 days of submittal.

I. No material or equipment shall be purchased or fabricated especially for this Contract nor shall the Contractor proceed with any portion of the work, the design and details of which are dependent upon the design and details of equipment or other features for which review is required, until the required shop and working drawings have been submitted and reviewed by the Engineer as to their general conformance and compliance with the project and its Contract Documents. All materials and work involved in the construction shall then be as represented by said Drawings.

J. Two copies of the shop and working drawings and/or catalog cuts will be returned to the Contractor. The Contractor shall furnish additional copies of such drawings or catalog cuts when he needs more than two copies or when so requested.

2. SAMPLES

A. Samples specified in individual Sections include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and units of work to be used by the Engineer or Owner for independent inspection and testing, as applicable to the work.

B. The number of samples submitted shall be as specified. Submittal and processing of samples shall follow the procedures outlined for shop and working drawings unless the specifications call for a field submittal or mock-up.

C. Acceptance of samples will be acknowledged via a copy of the transmittal noting status. When samples are not acceptable, prompt resubmittal will be required.

END OF SECTION

SECTION 01562 – DUST CONTROL

1. Description

This section of the specification covers the control of dust via calcium chloride, complete.

2. Calcium Chloride

A. Calcium chloride shall conform to the requirements of AASHTO-M 144, Type I or Type II and the specification for calcium chloride, ASTM D98. The calcium chloride shall be packaged in moisture proof bags or in airtight drums with the manufacturer, name of product, net weight, and percentage of calcium chloride guaranteed by the manufacturer legibly marked on each container.

B. Calcium chloride failing to meet the requirements of the aforementioned specifications or that which has become caked or sticky in shipment, may be rejected by the Engineer.

3. Application

A. Calcium chloride shall be applied when ordered by the Engineer and only in areas which will not be adversely affected by the application. See Section 01570, ENVIRONMENTAL PROTECTION.

B. Calcium chloride shall be uniformly applied at the rate of 1½ pounds per square yard or at any other rate as directed by the Engineer. Application shall be by means of a mechanical spreader, or other approved methods. The number and frequency of applications shall be determined by the Engineer.

END OF SECTION

SECTION 01570 – ENVIRONMENTAL PROTECTION

1. Description
2. Notification
3. Implementation
4. Area of Construction Activity
5. Protection of Water Resources
6. Construction in Areas Designated as Wetlands on the Drawings
7. Protecting and Minimizing Exposed Areas
8. Location of Storage Areas
9. Protection of Landscape
10. Clearing and Grubbing
11. Discharge of Dewatering Operations
12. Dust Control
13. Separation and Replacement of Topsoil
14. Baled Hay or Straw
15. Silt Fence

1. Description

A. The work covered by this section of the specifications consists of furnishing all labor, materials, tools and equipment and performing all work required for the prevention of environmental pollution during and as a result of construction operations under this contract.

B. The requirements set forth in this section of the specifications apply to cross-country areas, river and stream crossings, and construction in and adjacent to wetlands, unless otherwise specifically stated.

2. Notification

The Engineer will notify the Contractor in writing of any non-compliance with the foregoing provisions. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails to act promptly, the Engineer may order stoppage of all or part of the work until satisfactory corrective action has been taken. No claim for an extension of time or for excess costs or damage incurred by the Contractor as a result of time lost due to any stop work orders shall be made unless it was later determined that the Contractor was in compliance.

3. Implementation

A. Prior to commencement of work, the Contractor shall meet with representatives of the Engineer to develop mutual understandings relative to compliance of the environmental protection program.

B. The Contractor shall submit for approval details and literature fully describing environmental protection methods to be employed in carrying out construction activities within 100 feet of wetlands or across areas designated as wetlands.

4. Area of Construction Activity

Insofar as possible, the Contractor shall confine his construction activities to those areas defined by the plans and specifications. All land resources within the project boundaries and outside the limits of permanent work performed under this contract shall be preserved in their present condition or be

restored to a condition after completion of construction at least equal to that which existed prior to work under this contract.

5. Protection of Water Resources

A. The Contractor shall not pollute streams, lakes or reservoirs with fuels, oils, bitumens, calcium chloride, acids or other harmful materials. It is the Contractor's responsibility to comply with all applicable Federal, State, County and Municipal laws regarding pollution of rivers and streams.

B. Special measures should be taken to insure against spillage of any pollutants into public waters.

6. Construction in Areas Designated as Wetland on the Drawings

A. Insofar as possible, the Contractor shall make every effort to minimize disturbance within areas designated as wetland.

B. The Contractor shall perform his work in such a way that these areas are left in the condition existing prior to construction.

C. The elevations of areas designated as wetland shall not be unduly disturbed by the Contractor's operations outside of the trench limits. If such disturbance does occur, the Contractor shall take all measures necessary to return these areas to the elevations which existed prior to construction.

D. Excavated materials shall not be placed or temporarily stored in areas designated as wetlands or wetland buffer. Temporary storage areas for excavated material shall be as directed by the Engineer.

E. During construction within the buffer a continuous haybale/siltation fence barrier shall be utilized as shown on the drawings.

7. Protecting and Minimizing Exposed Areas

A. The Contractor shall limit the area of land which is exposed and free from vegetation during construction. In areas where the period of exposure will be greater than two (2) months, temporary vegetation, mulching or other protective measures shall be provided as specified.

B. The Contractor shall take account of the conditions of the soil where temporary cover crop will be used to insure that materials used for temporary vegetation are adaptive to the sediment control. Materials to be used for temporary vegetation shall be approved by the Engineer.

8. Location of Storage Areas

A. The location of the Contractor's storage areas for equipment and/or materials shall be upon cleared portions of the job site or areas to be cleared as a part of this project, and shall require written approval of the Engineer. Plans showing storage facilities for equipment and materials shall be submitted for approval of the Engineer.

B. No excavated materials or materials used in backfill operations shall be deposited within a minimum distance of one hundred (100) feet of any watercourse or any drainage facility. Adequate measures for erosion and sediment control such as the placement of baled hay or straw around the downstream perimeter of stockpiles shall be employed to protect any downstream areas from siltation.

C. There shall be no storage of equipment or materials in areas designated as wetlands or wetland buffer.

D. The Engineer may designate a particular area or areas where the Contractor may store materials used in his operations.

E. Storage areas in cross-country locations shall be restored to pre-construction conditions with the planting of native species of trees and shrubs.

9. Protection of Landscape

A. The Contractor shall not deface, injure, or destroy trees or shrubs nor remove or cut them without written authority from the Owner. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorages unless specifically authorized by the Engineer. Excavating machinery and cranes shall be of suitable type and be operated with care to prevent injury to trees which are not to be removed, particularly overhanging branches and limbs. The Contractor shall, in any event, be responsible for any damage resulting from such use.

B. Branches, limbs, and roots shall not be cut except by permission of the Engineer. All cutting shall be smoothly and neatly done without splitting or crushing. When there is unavoidable injury to branches, limbs and trunks of trees, the injured portions shall be neatly trimmed and covered with an application of grafting wax or tree healing paint as directed.

C. Where, in the opinion of the Engineer, trees may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment or by his blasting or other operations, the Engineer may direct the Contractor to adequately protect such trees by placing boards, planks, poles or fencing around them. Any trees or landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition at the expense of the Contractor. The Engineer will decide what method of restoration shall be used, and whether damaged trees shall be treated and healed or removed and disposed of.

D. Cultivated hedges, shrubs, and plants which could be injured by the Contractor's operations shall be protected by suitable means or shall be dug up, balled and temporarily replanted and maintained. After construction operations have been substantially completed, they shall be replanted in their original positions and cared for until growth is re-established. If cultivated hedges, shrubs, and plants are injured to such a degree as to affect their growth or diminish their beauty or usefulness, they shall be replaced by items of a kind and quality at least equal to that existing at the start of the work.

10. Clearing and Grubbing

The Contractor shall clear and grub only on the Owner's land and only the area required for construction operations, as approved by the Engineer.

11. Discharge of Dewatering Operations

A. Any water that is pumped and discharged from the trench and/or excavation as part of the Contractor's water handling shall be filtered by an approved method prior to its discharge into a receiving water or drainage system.

B. Under no circumstances shall the Contractor discharge water to the areas designated as wetlands. When constructing in a wetlands area, the Contractor shall discharge water from dewatering operations directly to the nearest drainage system, stream, or waterway after filtering by an approved method.

C. The pumped water shall be filtered through baled hay, a vegetative filter strip or a vegetated channel to trap sediment occurring as a result of the construction operations. The vegetated channel shall be constructed such that the discharge flow rate shall not exceed a velocity of more than 1 foot per second. Accumulated sediment shall be cleared from the channel periodically.

12. Dust Control

A. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of streets as necessary, to minimize creation and dispersion of dust. If the Engineer decides it is necessary to use calcium chloride for more effective dust control, the Contractor shall furnish and spread the material, as directed. Calcium chloride shall be as specified under Section 01562, DUST CONTROL.

B. Calcium chloride shall not be used for dust control within a drainage basin or in the vicinity of any source of potable water.

13. Separation and Replacement of Topsoil

Topsoil shall be carefully removed from cross-country areas where excavations are to be made, and separately stored to be used again as directed. The topsoil shall be stored in an area acceptable to the Engineer and adequate measures shall be employed to prevent erosion of said material.

14. Baled Hay or Straw

To trap sediment and to prevent sediment from clogging drainage systems, baled hay or straw shall be used where shown on the drawings. Care shall be taken to keep the bales from breaking apart. The bales should be securely staked to prevent overturning, flotation, or displacement. All deposited sediment shall be removed periodically.

15. Silt Fence

A. Where indicated on the drawings or where directed by the Engineer, the Contractor shall erect and maintain a temporary silt fence. In areas designated as wetlands, the Contractor shall line the limits of the construction easement with a silt fence. The silt fence shall be used specifically to contain sediment from runoff water and to minimize environmental damage caused by construction.

B. The silt fence shall consist of a 3-foot wide continuous length sediment control fabric, stitched to a 22-foot wide, continuous length support netting, and stapled to preweathered oak posts installed as shown on the drawings. The oak posts shall be 1½ square inches (minimum dimension) by 48 inches and shall be tapered. The support netting shall be industrial strength polypropylene. The bottom edge of the sediment control fabric shall be buried as shown on the drawings. The sediment control fabric shall conform to the following properties:

Property	Value	Test Method
1. Filtring Efficiency (%)	75	
2. Grab Tensile Strength (lbs)	100	ASTM D-4632
3. Elongation at Failure (%)	15	ASTM D-4632
4. Mullen Burst Strength (psi)	250	ASTM D-3786
5. Puncture Strength (lbs)	50	ASTM D-4632
6. Equivalent Opening Size (U.S. Sieve)	No. 30	ASTM D-4571
7. Flow Rate (gal/sec/sf)	0.2	ASTM D-4491
8. Permitivity (1/min)	0.05	
9. UV Radiation Stability (%)	70	ASTM D-4355

END OF SECTION

SECTION 01740 – SITE CLEANUP

1. Description

A. The Contractor should be familiar with Section 00700 GENERAL CONDITIONS, Section 01110 CONTROL OF WORK AND MATERIALS, Section 01140 SPECIAL PROVISIONS, and Section 01570 ENVIRONMENTAL PROTECTION as they pertain to this section.

B. The Contractor must employ at all times during the progress of his work adequate cleanup measures and safety precautions to prevent injuries to persons or damage to property. The Contractor shall immediately, upon direction by the Engineer provide adequate material, equipment and labor to cleanup and make safe any and all areas deemed necessary, by the Engineer.

2. Daily Cleanup

A. The Contractor shall clean up, at least daily, all refuse, rubbish, scrap and surplus material, debris and unneeded construction equipment resulting from the construction operations and sweep the area. The site of the work and the adjacent areas affected thereby shall at all times present a neat, orderly and workmanlike appearance.

B. Upon written notification by the Engineer, the Contractor shall within 24 hours clean up those areas, which in the Engineer's opinion are in violation of this section and the above referenced sections of the specifications.

C. If in the opinion of the Engineer, the referenced areas are not satisfactorily cleaned up, all other work on the project shall stop until the cleanup is satisfactory.

3. Material or Debris in Drainage Facilities

Where material or debris has washed or flowed into or has been placed in existing watercourses, ditches, gutters, drains, pipes, structures, such material or debris shall be entirely removed and satisfactorily disposed of during progress of the work, and the ditches, channels, drains, pipes, structures, and work shall, upon completion of the work, be left in a clean and neat condition.

4. Removal of Temporary Buildings, Structures, and Equipment

On or before completion of the work, the Contractor shall, unless otherwise specifically directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools and machinery or other construction equipment furnished by him; shall remove all rubbish from any grounds which he has occupied; shall remove silt fences and hay bales used for trapping sediment; and shall leave the roads and all parts of the property and adjacent property affected by his operations in a neat and satisfactory condition.

5. Restoration of Damaged Property

The Contractor shall restore or replace, when and as directed, any property damaged by his work, equipment or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end, the Contractor shall do as required all necessary highway or driveway, walk and landscaping work. Materials, equipment, and methods for such restoration shall be as approved by the Engineer.

6. Final Cleanup

Before acceptance by the Owner, the Contractor shall perform a final cleanup to bring the construction site to its original or specified condition. This cleanup shall include removing all trash and debris of the premises. Before acceptance, the condition of the site shall be approved by the Engineer.

END OF SECTION

SECTION 01781 – PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

This Section includes administrative and procedural requirements for Project Record Drawings.

1.2 SUBMITTALS

Record Drawings: Comply with the following:

A. Number of Copies: Submit copies of Record Drawings as follows:

B. Initial Submittal: Submit one (1) set of marked-up Record Prints. Engineer will initial and date each print and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. Engineer will return prints for revisions, and final submittal.

C. Final Submittal: Submit one (1) set of revised Record Prints.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

B. Preparation: Mark Record Prints to show the actual installation. Require individual or entity who obtained record data, whether individual or entity is installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

1. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.

2. Accurately record information in an understandable drawing technique.

3. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

C. Content: Types of items requiring marking include, but are not limited to, the following:

1. Dimensional ties from underground utilities to permanent objects found on the original drawings and in the field.

2. Locations and depths of underground utilities.

3. Routing of piping and conduits.

4. Changes made by Change Order or Construction Change Directive.

5. Details not on the original Contract Drawings.

6. Field records for variable and concealed conditions.

7. Record information on the Work that is shown only schematically.

D. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.

E. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.

F. Mark important additional information that was either shown schematically or omitted from original Drawings.

G. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Engineer's reference during normal working hours.

END OF SECTION

SECTION 116833 – OUTDOOR SPORTS EQUIPMENT

PART 1 – GENERAL

1.1 WORK INCLUDED

A. Provide equipment and materials and do work necessary and construct or provide the following as indicated on the Drawings and as specified. Work shall include but shall not be limited to:
   1. Removable Ball Netting System.

1.2 SUBMITTALS

A. Shop Drawings:
   1. Show application to project.

B. Product Data: Submit manufacturer's product data and samples as noted for the following:
   1. Removable Ball Netting System.

C. Provide sealed structural drawings by the qualified professional engineer for goalpost footings and removal ball netting system footings.

1.3 QUALITY ASSURANCE

A. Installer of outdoor sports equipment the playing field shall be the same Contractor. All installed equipment shall be under the supervision of Owner's groundskeeper.

B. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code-Steel," and AWS D1.3, "Structural Welding Code – Sheet Steel."

1.4 WARRANTY

A. General Warranty: Special warranties specified in this Section shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Warranties:
   1. Equipment: Written warranties, executed by the manufacturer of each piece of equipment specified agreeing to repair or replace equipment or components that fail in materials or workmanship with specified warranty period.
   2. Windscreen Warranty: Minimum of three (3) years.

PART 2 – PRODUCTS

2.1 REMOVABLE BALL NETTING SYSTEM (ADD ALTERNATE 1)

A. General:
   1. Framing System:
      a. Removable posts and sleeves per the manufacturer.

b. Manufacturer Contractor to submit sealed engineering drawings verifying footing and upright post diameters/sizes.

2. Height:
   a. As per the Drawings.

B. Netting and Appurtenances:
1. 1 3/4" square mesh.
2. Twisted, knotted nylon netting.
3. Minimum Strength: 350 pounds.
4. Edge treatment: Hemmed with a 5/16-inch, three-strand twisted polyethylene rope spliced to the edge.
5. Weather treatment: UV Treated Flexa black or approved netting and cord.
6. Cables, pulleys, accessories, etc., per drawing and manufacturers recommendations.

C. Frame System and Netting Suppliers:
1. Sports Field Specialties, www.sportsfieldspecialties.com.
2. UCS, www.ucsspirit.com.
3. Gill Athletics, www.gillathletics.com.

PART 3 – EXECUTION

3.1 INSTALLATION

A. General: Install in accordance with manufacturers recommendations and approved shop drawings.

B. Removable Ball Netting System:
1. Sleeve and concrete footing installation to be coordinated with playing field system installation.
2. Verify installation of removable system in presence of Owner.
3. Install per manufacturer's recommendations.

END OF SECTION

SECTION 116833.43 – TRACK AND FIELD EQUIPMENT

PART 1 – GENERAL

1.1 SUMMARY

A. This section covers all labor and materials required to install the following:
   1. In-ground track and field equipment.
   2. In-ground power and communication boxes.
   3. Field Event Materials:
      a. Sand

B. The Contractor is responsible for the purchase and installation of all sports equipment. The Track & Field Synthetic Surfacing Contractor is responsible for installation of synthetic surface in, around and on top of the specified sports equipment.

1.2 CODES AND STANDARDS

A. Codes and standards follow the current guidelines set forth by the National Federation of State High School Associations (NFSHSA).

1.3 SUBMITTALS

A. The following information shall be submitted prior to installation of specified work.
   1. Standard printed specifications and diagrams or drawings depicting installation directions and dimensions for all in-ground sports equipment.
   2. Installation process and requirements for subbase (stone and asphalt) and any conditions that may limit the installation or affect quality of installation.
   3. Material safety data sheets on all products, as necessary.
   4. Contractor to supply Owner with a 1-gallon sample of field event material product(s) for visual inspection and testing.
   5. Shop drawings shall be prepared for the track and field protective netting system showing all pertinent information regarding materials, assembly and installation. Submit drawings showing sizes and details of all equipment component parts.

1.4 QUALITY ASSURANCE

A. The Contractor shall only accept bids from those vendors or manufacturers that have been pre-approved or identified as approved equivalent.

B. The Contractor shall only accept bids from those vendors or manufacturers that have been pre-approved, identified as approved equivalent or that meet the requirements as an equivalent product.

PART 2 – PRODUCTS

2.1 IN-GROUND TRACK & FIELD EQUIPMENT

A. The Contractor is responsible to provide and install all permanent, in-ground track & field event equipment as specified by these specifications and shown on the project drawings. The products must meet NFSHSA regulations.

B. The physical make-up of these products vary across the country; therefore, the Contractor shall use his best efforts to supply the Owner with a product that best meets the performance specifications listed below.

C. The in-ground track & field equipment is available from the following:
   1. Sportsfield Specialties: Contact: Matt Moyse (Northeast) Tel.: (607) 746-1462.
   2. UCS Spirit: Contact: Mike Chappell; Telephone: (800) 526-4856.
   3. Gill Athletics: Contact: Mike Cunningham; Telephone: (800) 637-3090.

D. In-ground Equipment (Based on Sportsfield Specialties Model # or Approved Equivalent)
   1. Track Equipment:
      a. One (1) cast aluminum pole vault box without the cover. Model # PVBCAW.
      b. Two (2) mesh covers for sand pits. Model # SPCVRMCSTM.

E. In-ground power boxes
   1. Power Boxes:
      a. Three (3) all weather electrical/power boxes, (2) at the common finish line and (1) at the home 50-yard line. Model: Legrand Wiremold Outdoor Ground Box
         1) Boxes to provide 2-gang, 20 amp duplex receptacles

2.2 FIELD EVENT MATERIALS

A. Sand:
   1. The sand shall be washed and sized as follows:
      a. 2008 IAAF Track & Field Facilities Manual (2.3.1.5):
         1) For the safety of the athletes, the sand must (to avoid hardening as a result of moisture) consist of washed river sand or pure quartz sand, without organic components, maximum 2mm granules, of which not more than 5% in weight is less than 0.2mm.
   2. Sand shall be free of trash, organic matter, clay, silt, and rocks.
      a. Top 6” (min.) of sand color to be white.
   3. Sand shall have the following technical data:
      a. Water permeability or filtration rate with a minimum of 20 inches/hour.
      b. Bulk density of 1.55 grams per cubic centimeter.
      c. Penetrometer Reading of 1.8 to 2.2 kg/cm^2.
      d. Sand shape of high sphericity and rounded.

PART 3 – EXECUTION

3.1 INSTALLATION OF SPORTS EQUIPMENT

A. The installation of the track and field equipment stated herein shall follow the directions of the manufacturer and/or vendor. Shop drawings must be submitted and approved prior to installation of equipment.

B. Sand:
   1. The sand should be one of the last items installed on the facility to maintain the physical properties.

2. Do not install the sand until drain pipe is installed and connected to drainage system.

3.2 ADJUSTING AND CLEANING

A. Upon completion of installation, test operation to demonstrate satisfactory operation acceptable to Owner.

B. Clean or replace unsuitable materials.

END OF SECTION

SECTION 310519.13 – GEOTEXTILES

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes the installation of separation/stabilization fabric as shown on the Drawings and as specified herein.

1.2 QUALITY ASSURANCE

A. The latest edition of the following standards, as referenced herein, shall be applicable.
   1. American Society for Testing and Materials (ASTM).

1.3 SUBMITTALS

A. Product Data:
   1. Submit Manufacturer's material specifications, product literature and installation instructions.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Delivery:
   1. Deliver sufficient materials to the site to prevent interruption of the work.
   2. All materials shall be inspected by Contractor upon delivery. Contractor shall notify Engineer of any damage. Products received at the site torn, with holes, deteriorated, or otherwise damaged will not be approved and shall be returned and replaced at no expense to the Owner.

B. Storage:
   1. All material shall be stored in strict accordance with the manufacturer's recommendations and as approved by the Engineer.
   2. Do not store products directly on ground. Ship and store geotextile with suitable wrapping for protection against moisture and ultraviolet exposure. Store geotextile in way that protects it from elements, if stored outdoors, elevate, and protect geotextile with waterproof cover.

C. Handling:
   1. All material shall be handled in strict accordance with the manufacturer's recommendations and as approved by the Engineer.

PART 2 – PRODUCTS

2.1 WOVEN GEOTEXTILE

A. Stabilization Fabric: To be used beneath roadways and walks.

B. Composed of polymeric yarn interlaced to form a planar structure with uniform weave pattern.

C. Calendared or finished so yarns will retain their relative position with respect to each other.

D. Polymeric Yarn: Long-chain synthetic polymers (polyester or polypropylene) with stabilizer or inhibitors added to make filament resistant to deterioration due to heat and ultraviolet light exposure.

E. Sheet Edges: Selvaged or finished to prevent outer material from separating from sheet.

F. Unseamed Sheet Width: Minimum 12 feet.

G. Physical Properties: Conform to requirements noted below:

PROPERTY	DESIGN VALUE	TEST METHOD
Tensile Strength	315 pounds	ASTM D4632
Elongation	12 percent	ASTM D4632
Trapezoidal Tear	113 pounds	ASTM D4533
CBR Puncture Strength	900 pounds	ASTM D6241
A.O.S.	40 (US Sieve)	ASTM D4751
Permittivity	.05 sec^{-1}	ASTM D4491

2.2 NONWOVEN GEOTEXTILE

A. Separation/Filtration Fabric: To be used in drainage ditches, haybale installation, culvert outfall installations, rip-rap outfall installations, and cover material separation

B. Pervious sheet of polyester, polypropylene, or polyethylene fabricated into stable network of fibers that retain their relative position with respect to each other. Nonwoven geotextile shall be composed of continuous or discontinuous (staple) fibers held together through needle-punching, spun-bonding, thermal-bonding, or resin-bonding.

C. Geotextile Edges; selvaged or otherwise finished to prevent outer material from pulling away from geotextile.

D. Unseamed Sheet Width: Minimum 12 feet.

E. Physical Properties: Conform to the requirements noted below:

PROPERTY	DESIGN VALUE	TEST METHOD
Tensile Strength	160 pounds	ASTM D4632
Elongation	50 percent	ASTM D4632
Trapezoidal Tear	60 pounds	ASTM D4533
CBR Puncture Strength	400 pounds	ASTM D6241
A.O.S.	70 (US Sieve)	ASTM D4751
Permittivity	1.4 sec^{-1}	ASTM D4491

PART 3 – EXECUTION

3.1 GENERAL

A. The Contractor shall be responsible for the installation and seaming of geotextile fabric in accordance with the specifications and the manufacturer's recommendations, as approved by the Engineer.

3.2 SUBGRADE PREPARATION

A. Surfaces to be covered with geotextile fabric shall be smooth and free of rocks, sticks, roots, sharp objects, and all debris that may damage the fabric. The surface to be covered shall be firm and unyielding, with no sudden changes or breaks in grade. There shall be no standing water or excessive moisture on the surface when the fabric is placed.

B. The compacted subgrade shall be maintained in a smooth, uniform, and compacted condition during installation of the fabric.

3.3 GEOTEXTILE INSTALLATION

A. The fabric shall be cleaned of all debris or other materials that may negatively affect the fabric's performance.

B. Mechanical equipment shall not be permitted to operate directly on the fabric unless authorized to do so by the manufacturer and approved by the Engineer.

C. Geotextile Placement:
   1. Fabric shall be placed as recommended by the manufacturer and approved by the Engineer on surfaces which have been prepared to conform with these Specifications and found acceptable for fabric installation.
   2. The fabric shall be placed as smooth and wrinkle-free as possible.
   3. When installing geotextile in trenches, swales, ditches, etc., overlap geotextile in the direction of flow.
   4. All areas of fabric damaged during installation as determined by the Engineer shall be repaired or replaced by the Contractor as specified at no additional cost to the Owner. Should the fabric be damaged during any step of the installation, the damaged section shall be repaired by covering it with a piece of fabric which extends at least 24 inches in all directions beyond the damaged area. The fabric shall be secured by sewing or bonding as approved by the Engineer.
   5. At time of installation, fabric will be rejected if it has defects, ribs, holes, flaws, deterioration, or damage incurred during manufacture, transportation, handling, or storage. Damaged materials shall be removed and replaced at no additional cost to the Owner.
   6. Fabric shall be placed with long dimension down slope.
   7. Fabric shall be protected at all times during construction from contamination by surface run-off and any fabric so contaminated shall be removed and replaced with uncontaminated fabric.

D. Seams and Overlaps of Geotextile:
   1. All overlaps shall be a minimum of 18 inches (450 mm).

3.4 COVER MATERIALS OVER GEOTEXTILES

A. Granular materials shall be placed on geotextiles as shown on the Drawings. During back dumping and spreading, a minimum depth of 6 inches of granular material shall be maintained at all times between the fabric and wheels of trucks or spreading equipment. All equipment used in spreading or traveling on the cover layer for any reason shall exert low ground pressures and shall be approved by the manufacturer and Engineer. Dozer blades, etc., shall not make direct contact with the fabric; however, if tears occur in the fabric during the spreading operation, the granular material shall be cleared from the fabric and the damaged area repaired as previously described.

B. The granular material shall be spread in the direction of fabric overlap. Large fabric wrinkles which may develop during the spreading operations shall be folded and flattened in the direction of the spreading. Occasionally, large folds may reduce the fabric overlap width. Special care shall be given to maintain proper overlap and fabric continuity.

C. All equipment spreading cover material or traveling on the cover layer shall avoid making sharp turns, quick stops, or quick starts.

D. Fabric shall be covered as soon as possible after placement to minimize exposure to sunlight. Fabric shall not be exposed for more than 5 days.

3.5 DISPOSAL OF SCRAP MATERIALS

A. On completion of installation, the Contractor shall legally dispose of all trash and scrap material off-site or in a location approved by the Owner and Engineer, remove equipment used in connection with the work herein, and shall leave the premises in a neat acceptable manner.

END OF SECTION

SECTION 311000 – SITE CLEARING

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Protecting existing trees, shrubs, groundcovers, plants, and grass to remain.
   2. Removing existing trees, shrubs, groundcovers, plants, and grass.
   3. Clearing and grubbing.
   4. Stripping and stockpiling topsoil.
   5. Removing above- and below-grade site improvements.
   6. Disconnecting, capping or sealing, and abandoning site utilities in place removing site utilities.

1.2 DEFINITIONS

A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches (50 mm) in diameter; and free of subsoil and weeds, roots, toxic materials, or other non-soil materials.

B. Tree Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

C. Grubbing: Removal of vegetation and other organic matter including stumps, buried logs, and roots.

1.3 MATERIAL OWNERSHIP

A. All excess topsoil to be removed from the site, except for excess stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.4 SUBMITTALS

A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.

1.5 QUALITY ASSURANCE

A. Stake limits of clearing, grubbing, and stripping, prior to commencing of work.

1.6 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.

2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction. Detour routes shall be identified by adequate signs in accordance with the MUTCD.

B. Protect areas outside limits of disturbance from encroachment by construction personnel or equipment, regardless of property Ownership. Access shall be by specific, written permission or easement only.

C. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
1. Do not proceed with work on adjoining property until directed by Owner's Representative.

D. Salvageable Improvements: Carefully remove items indicated to be salvaged and deliver to storage location defined on the plans or specified here in.

E. Utility Locator Service: Properly notify utility locator service for area where Project is located before site clearing in accordance with local protocol.

F. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

G. Contractor shall verify existing grades prior to performing work under this section. If existing grades are at variance with the drawings, notify the Owner and receive instructions prior to proceeding. No additional compensation will be considered resulting from grade variances once site clearing has commenced.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly flag, fence and protect trees and vegetation to remain or to be relocated.

C. Remove branches from trees that are to remain, if required to clear new construction and only if specifically approved by Owner's Representative.
1. Where directed by Engineer, extend pruning operation to restore natural shape of entire tree.
2. Cut branches and roots, if required, with sharp pruning instruments; do not break or chop.

D. Protect existing site improvements to remain from damage during construction.
1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TREE PROTECTION

A. Erect and maintain temporary fencing around tree drip line before starting site clearing. Remove fence when construction is complete.
1. Do not store construction materials, debris, or excavated material within fenced area.
2. Do not permit vehicles, equipment, or foot traffic within fenced area.
3. Maintain fenced area free of weeds and trash.

B. Do not machine excavate within tree drip line.

C. Where excavation for new construction is required within tree drip line, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

D. Do not allow exposed roots to dry out before permanent backfill is placed; provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in moist condition and temporarily support and protect from damage until permanently relocated and covered with earth.
   1. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
   2. Coat cut faces of roots more than 1-1/2 inches (38 mm) in diameter with an emulsified asphalt or other approved coating formulated for use on damaged plant tissues.
   3. Backfill with soil as soon as possible.
   4. Where trenching for utilities is required within drip line, tunnel under or around roots by hand digging. Do not cut main lateral roots or tap roots; cut only smaller roots that interfere with installation of new work. Cut roots with sharp pruning instruments; do not break or chop.

E. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Engineer and acceptable to the Owner.
   1. Employ an arborist, licensed in jurisdiction where Project is located, to submit details of proposed repairs and to repair damage to trees and shrubs.
   2. Replace trees that cannot be repaired and restored to full-growth status, as determined by Engineer and acceptable.

3.3 UTILITIES

A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing, when requested by Contractor.
   1. Verify that utilities have been disconnected and capped before proceeding with site clearing.

B. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.
   1. Arrange with utility companies to shut off indicated utilities.
   2. Owner will arrange to shut off indicated utilities when requested by Contractor.

C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Notify Engineer and owner not less than two days in advance of proposed utility interruptions.
   2. Do not proceed with utility interruptions without Engineer written permission.

D. Excavate for and remove underground utilities indicated to be removed.

3.4 CLEARING AND GRUBBING

A. Completely remove obstructions, trees, shrubs, stumps, roots, grass, and other vegetation to permit installation of new construction.
   1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
   2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
   3. Use only hand methods for grubbing within tree protection zone.

4. Chip removed tree branches and dispose of off-site.

B. Fill depressions caused by clearing and grubbing operations in accordance with Section "Earth Moving" unless further excavation or earthwork is indicated.
   1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm) and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Where trees are designated to remain, stop topsoil stripping and adequate distance from the trees to prevent damage to the main root system.

C. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
   1. Remove subsoil and non-soil materials from topsoil, including trash, debris, weeds, roots, and other waste materials.

D. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   1. Limit height of topsoil stockpiles to 72 inches (1800 mm).
   2. Do not stockpile topsoil within tree protection zones.
   3. Dispose of excess topsoil as specified for waste material disposal.

3.6 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
   1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.
   2. Paint cut ends of steel reinforcement in concrete to remain to prevent corrosion.

3.7 DISPOSAL

A. Burning of debris onsite is not permitted.

B. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
   1. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.
   2. Debris may be buried in designated onsite disposal areas to minimum depth of 3 feet below final grade. Only the following materials are suitable for on-site disposal:

C. Dispose of all diseased Elmwood within 4 days after cutting by burning or by other methods approved by the Department of Environmental Conservation.

END OF SECTION

SECTION 312000 – EARTH MOVING

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes the preparation of the site, protection, excavation, embankment, compaction, drainage, dewatering, for site grading, as shown on the Drawings, and as herein specified.

B. The Contractor shall accept the site in the condition in which it exists at the time of the award of the Contract.

C. The Contractor shall refer to the separately provided geotechnical report for all earth moving and site preparation direction not provided within this specification.

D. The Engineer shall determine the suitability of materials that are to be used in the work and should any materials encountered be unsatisfactory for the purpose intended, they shall be removed from the site at the Contractor's expense.

1.2 QUALITY ASSURANCE

A. Reference Standards:
   1. The latest edition of the following standards, as referenced herein, shall be applicable.
      a. CONNDOT Standard Specifications for Road and Bridge Construction
      b. "Standard Specifications for Highway Materials and Methods of Sampling and Testing, American Association of State Highway and Transportation Officials (AASHTO)."

B. The Contractor shall comply with the requirements for soil erosion and sedimentation control, and other requirements of governmental authorities having jurisdiction, including the State of Connecticut.

C. The Contractor shall provide and pay for all costs in connection with an approved independent testing facility to determine conformance of soils and aggregate with the specifications.

1.3 SUBMITTALS

A. Samples:
   1. The Contractor shall furnish earth materials to the testing laboratory for analysis and report, as directed by the Engineer, or as outlined in the specifications.

B. Test Results:
   1. The testing laboratory shall submit written reports of all tests, investigations, and recommendations to the Contractor and the Engineer.

1.4 PROJECT REQUIREMENTS

A. Notify the Engineer of any unexpected subsurface condition.

B. Protection of Existing Utilities:
   1. Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate support and protection during earthwork operations, comply with OSHA requirements.

2. Coordinate interruption and/or termination of utilities with the utility companies and the Owner.
3. Provide a minimum of 48 hours' notice to the Owner and receive written notice to proceed before interrupting any utility.
4. Demolish and completely remove from the site any existing underground utilities designated to be removed as shown on the Drawings.
5. Repair any damaged utilities as acceptable to the Engineer, at no additional cost to the Owner.

C. Protection of Persons and Property:
1. Barricade open excavations occurring as part of this work, and post with warning lights.
2. Operate warning lights as recommended by authorities having jurisdiction.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
4. Perform excavation within drip-line of large trees to remain by hand, and protect the root system from damage or dryout to the greatest extent possible. Maintain moist conditions for root system and cover exposed roots with burlap. Paint root cuts of 1-inch diameter and larger with emulsified asphalt tree paint.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Select Granular Material: Sound, durable, sand, gravel, stone or blends with these materials, free from organic, frozen, or other deleterious materials, conforming to the requirements of CTDOT and meeting the following gradation requirements:

SIEVE	PERCENT PASSING
2"	100
1/4"	30 - 65
No. 40	5 - 40
No. 200	0 - 10

B. Selected Fill: Sound, durable, sand, gravel, stone, or blends of these materials, free from organic, frozen or other deleterious materials.

SIEVE	PERCENT PASSING
4"	100
No. 40	0 - 70
No. 200	0 - 10

1. Fines passing No. 200 shall be non-plastic (PI<35).
2. Particle size analysis shall show no gap grading.
3. Minimum Standard Proctor (ASTM D-698) dry unit weight of 90 pcf.
4. Each soil type should be submitted to engineer for evaluation.

C. Structural Fill: Fill to raise grades in the proposed track and field areas, backfill for foundations and backfill for over excavations should be clean, non-frost susceptible sand and gravel meeting the following gradation requirements.

SIEVE	PERCENT PASSING
4"	100
3"	90 to 100
1/4"	25 to 90
No. 40	0 - 30
No. 200	0 - 6

PART 3 – EXECUTION

3.1 PRECONSTRUCTION MATERIAL QUALIFICATION TESTING

A. A 100-pound minimum representative sample shall be obtained from each potential borrow source. If different material gradations are known to exist in the pit, samples shall be obtained for each material. Each sample shall be mixed thoroughly and reduced to test specimen size, in accordance with AASHTO T87. The test shall be performed in the order shown. Failure to pass any test is grounds for disqualification and shall lead to cessation of the test program for that material.

1. Particle Size Analysis:
   a. Method: ASTM D422.
   b. Number of Tests: One (1) per potential source.
   c. Acceptance Criteria: Gradation within specified limits.
2. Maximum Density Determination:
   a. Method: ASTM D1557, Modified Proctor.
   b. Number of Tests: One (1) per potential source.
3. Re-establish gradation and maximum density of fill material if source is changed during construction.

3.2 PREPARATION

A. Establish required lines, levels, contours, and datum.

B. Maintain benchmarks and other elevation control points. Re-establish, if disturbed or destroyed, at no additional cost to the Owner.

C. Establish location and extent of utilities before commencement of grading operations.

3.3 EXCAVATION

A. All topsoil, organics, fill, pavement, remnant structures, foundations and debris must be completely removed from beneath the proposed foundations and backfilled with properly compacted structural fill. The extent of removal should extend 1 foot laterally outward from outside edge of perimeter footings for every 1 foot of excavation depth. Footings shall be excavated using a smooth edged bucket and footing shall be underlain by at least 6 inches of crushed stone.

B. All existing organics, relic topsoil and loose, undisturbed soils shall be removed from beneath the proposed track and synthetic turf field and backfilled with compacted structural fill or additional thickness of stone base material. The track subgrade shall be proof rolled with 3 to 5 passes of a vibratory roller compacter with a static weight of at least 10 tons. Areas which become soft or continue to yield after densification should be removed and backfilled with compacted structural fill.

C. Excavation shall consist, in general, of the excavation of whatever substance is encountered to the lines, grades, and sections shown on the Drawings including excavation as necessary for grading and other similar features.

D. All suitable materials removed in excavation shall be used in the construction of embankments, subgrade, shoulders, slopes, and at such other places as directed. The Engineer shall be the sole judge of what constitutes suitable material.

E. During construction, the grading operations shall be executed in such a manner that the excavation will be well drained at all times. All grading shall be finished on neat, regular lines conforming to the sections and contours shown on the Plans.

F. Removal of materials beyond the indicated subgrade elevations, without authorization by the Engineer, shall be classified as unauthorized excavation and shall be performed at no additional cost to the Owner.

G. Excavation shall be performed in proper sequence with all other associated operations.

H. Maintain the slopes of excavation in a safe condition until completion of the grading operation.

I. All excavation work shall be inspected and approved by the Engineer before proceeding with construction.

J. Any excess excavation shall be removed from the site to disposal areas at the Contractor's expense.

3.4 FILL

A. All site fill shall be “selected fill” unless otherwise shown on the Drawings or directed by the Engineer. “Select granular fill” shall be placed in lieu of selected fill where directed by the Engineer.

B. Before depositing fills, the surface of the ground shall be cleared of all refuse, brush, and large stones.

C. Prior to placing fill over undisturbed material, scarify to a minimum depth of 6 inches.

D. Where fills are made on hillsides or slopes, the slope of the original ground upon which the fill is to be placed shall be plowed or scarified deeply or where the slope ratio of the original ground is steeper than 2 horizontal to 1 vertical, the bank shall be stepped or benched.

E. The original ground shall be proof rolled until the underlying soil is thoroughly compacted to the satisfaction of the Engineer before any filling is begun. A steel-wheel tandem roller weighing 8 to 10 tons or equipment capable of obtaining the same effort shall be used to obtain a thoroughly compacted subgrade. Remove or recompact any soft or loose soils as determined by the Engineer prior to filling.

F. A thoroughly and satisfactorily subgrade is defined as having a minimum dry density of 95 percent of the maximum density of the material used. The subgrade material shall be compacted at a moisture content suitable for obtaining the required density.

G. Place backfill and fill materials in layers not more than 8 inches in loose depth unless shown otherwise on the Drawings. Lift height shall be governed by the ability of the compaction equipment to obtain the required compaction with 8 inches as a maximum lift height. Before compaction, moisten or aerate each layer as necessary to facilitate compaction to the required density. Do not

place backfill or fill material on surfaces that are muddy, frozen, or contain frost, ice, ponded water, or extraneous debris.

H. When work is suspended during periods of freezing weather, measures shall be taken to prevent fill already in place from freezing. Upon resumption of work after any inclement weather, prepare the exposed surface by proof rolling to identify any zones of soft/loose soils. Soft/loose materials or frozen soils shall be removed and replaced by compacted granular fill.

I. Moisture Control:
   1. Where fill or backfill must be moisture conditioned before compaction, uniformly apply water to the surface and to each layer of fill or backfill. Prevent ponding or other free water on surface subsequent to, or during, compaction operations.
   2. Remove and replace, or scarify and air dry, soil that is too wet to permit compaction to specified density. Soil that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a value which will permit compaction to the percentage of maximum density specified. Bid to include up to five (5) days of moisture conditioning.

J. All fill shall be thoroughly and satisfactorily compacted to 95 percent of the maximum density of material used.

3.5 GRADING

A. The present and finished grade lines are shown on the Drawings. Grade over the entire area, as shown on the drawings, shall be to the finished subgrade levels. Upon completion of this work, all debris shall be cleaned out and removed from the premises.

B. Final subgrade shall be established utilizing GPS-controlled grading equipment and shall mirror the final finish elevations shown on the plans.

C. All cutting, filling, backfilling and grading necessary shall be done to bring the area to the following grade or subgrade levels:
   1. For roadway surface areas to the finished subgrade levels specified on the contract drawings.
   2. For areas to be topsoiled and seeded to within 6 inches of the finished grade.
   3. For other surface treatments as detailed on the Drawings.

D. Sufficient grading must be done during the progress of the work so that the entire site shall be well drained and free from water pockets.

E. Finish grading, including dressing swales, cleaning up excess footing excavation, dressing terraces, disposing of excess material and all other work necessary to prepare the site for topsoil and seeding shall be done after construction of structures and roadway surface areas is substantially complete.

3.6 COMPACTION EQUIPMENT

A. Compaction equipment used for the Work is subject to approval by the Engineer. Any equipment not originally manufactured for compaction purposes and equipment which is not in proper working order will not be approved. Furnish manufacturer's specifications covering data not obvious from a visual inspection of the equipment and necessary to determine its classification and performance characteristics.

3.7 DRAINAGE AND DEWATERING

A. Prevent surface, subsurface or ground water from flowing into excavation and from flooding project area, as well as surrounding areas.

B. Do not allow water to accumulate in excavations. Remove water to prevent soil changes detrimental to the stability of subgrades.

C. Provide and maintain the pumps, well points, sumps, suction and discharge lines, and other dewatering components necessary to convey water away from excavations.

D. Provide and maintain temporary drainage ditches and other diversions outside excavation limits to convey rainwater and water removed from excavations by dewatering, to collection or run-off areas.

E. Dewatering operations shall be as directed by the Engineer and performed in accordance with Section 312319 "Dewatering."

3.8 FIELD QUALITY CONTROL

A. Notify the Engineer at least one (1) working day in advance of all phases of filling and backfilling operations.

B. Compaction testing shall be performed to ascertain the compacted density of the fill and backfill materials in accordance with the following methods:

1. In-place relative density:
    a. Method: AASHTO T310, Nuclear Method.
    b. Number of Tests: One (1) per 8-inch vertical lift.
        1) Paved and Bleacher/Pressbox Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one (1) test for every 2,000 square feet or less of paved area of concrete bleacher slab, but in no case fewer than three (3) tests.
2. Compaction Requirements:
    a. Bleacher and Pressbox Pad Areas: At least 95% of the material's Standard Proctor maximum dry density.
    b. Track Surface Areas: At least 95% of the material's Standard Proctor maximum dry density.
    c. Trench Lines: At least 95% of the material's Standard Proctor maximum dry density.
    d. Crushed stone should be compacted with 3 to 5 passes of a vibratory plate compacter having a static weight of at least 500 lbs.

C. The Engineer may direct additional tests to establish gradation, maximum density, and in-place density as required by working conditions, at the Contractor's expense.

D. Acceptance Criteria: The sole criterion for acceptability of in-place fill shall be in situ dry density. Minimum dry density for all fill or backfill shall be 95 percent of the maximum dry density. If a test fails to qualify, the fill shall be further compacted and retested. Subsequent test failures shall be followed by removal and replacement of the material.

3.9 CLEAN UP

A. Provide and maintain protections or newly filled areas against damage. Upon completion or when directed, correct all damaged and deficient work by building up low spots and remove temporary protections, fencing, shoring and bracing.

B. Remove all surplus excavated material not required for filling and backfilling and legally dispose of same away from premises.

C. Leave the premises and work in clean, satisfactory condition, ready to receive subsequent operations.

END OF SECTION

SECTION 312333 – TRENCHING AND BACKFILLING

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes the excavation of trenching, backfilling, compacting, dewatering, excavation support and disposal, as shown on the Contract Drawings, and as herein specified.

B. The Engineer will determine the suitability of materials that are to be used in the work and should any materials encountered be unsatisfactory for the purpose intended, they shall be removed from the site at the Contractor's expense.

1.2 QUALITY ASSURANCE

A. Reference Standards:
   1. The latest edition of the following standards, as referenced herein, shall be applicable.
      a. Standard Specifications for Highway Construction, ConnDOT.
      b. "Standard Specifications for Highway Materials and Methods of Sampling and Testing, American Association of State Highway and Transportation Officials (AASHTO)."
      c. American Society for Testing and Materials (ASTM).
      d. National Electric Code (NEC).

B. The Contractor shall comply with the requirements for soil erosion and sedimentation control and other requirements of governmental authorities having jurisdiction, including the State.

C. The Contractor shall provide and pay for all costs in connection with an approved independent testing facility to determine conformance of soils and aggregate with the specifications in accordance with Section "Quality Requirements."

1.3 SUBMITTALS

A. Samples:
   1. The Contractor shall furnish representative earth materials to the testing laboratory for analysis and report, as directed by the Engineer, or as outlined in the specifications.

B. Test Results:
   1. The testing laboratory shall submit written reports of all tests, investigations, findings, and recommendations to the Contractor and the Engineer.

1.4 PROJECT REQUIREMENTS

A. Notify the Engineer of any unexpected subsurface condition.

B. Protect excavations by shoring, bracing, sheet piling, or by other methods, as required to ensure the stability of the excavation. Comply with OSHA requirements.

C. Underpin or otherwise support structures adjacent to the excavation, which may be damaged by the excavation. This includes service lines.

D. Protection of Existing Utilities:
   1. Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations. Comply with OSHA requirements.
   2. Coordinate interruption and/or termination of utilities with the utility companies and the Owner.
   3. Provide a minimum of 48 hours' notice to the Owner and receive written notice to proceed before interrupting any utility.

E. Demolish and completely remove from the site any existing underground utilities designated to be removed, as shown on the Drawings or as specified.

F. Repair any damaged utilities as acceptable to the Owner, Engineer, and utility company at no additional cost to the Owner.

G. Contractor shall comply with maintenance and protection requirements as approved by the authority having jurisdiction.

H. Protection of Persons and Property:
   1. Barricade open excavations occurring as part of this work and post with warning lights, if required.
   2. Operate warning lights as recommended by authorities having jurisdiction.
   3. Protect structures, utilities, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
   4. Perform excavation within drip-line of trees to remain by hand and protect the root system from damage or dryout to the greatest extent possible. Maintain moist conditions for root system and cover exposed roots with burlap. Paint cut roots of 1-inch diameter and larger with emulsified asphalt tree paint.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Pipe Zone Bedding: Select mixture of graded crushed stone, free from organic, frozen or other deleterious materials, conforming to the requirements of ConnDOT and meeting the following gradation requirements:

SIEVE	PERCENT PASSING
1-1/2"	100
1"	90 – 100
1/2"	0 – 15

B. Pipe Zone Backfill: Sound, durable sand, gravel, stone or blends of these materials, free from organic, frozen or other deleterious materials, conforming to the requirements of ConnDOT and meeting the following gradation requirements:

SIEVE	PERCENT PASSING
2"	100
1/4"	30 – 65
No. 40	5 – 40
No. 200	0 – 10

C. Suitable Material: Sound, durable sand, gravel, stone or blends of these materials, free from organic, frozen or other deleterious materials, conforming to the requirements of ConnDOT and meeting the following gradation requirements:

SIEVE	PERCENT PASSING
4"	100
No. 40	0 – 70
No. 200	0 – 15

1. Run-of-trench material, meeting the above criteria, shall be considered suitable material and shall be used for trench backfill only after tested in accordance with Section "Quality Requirements" and approved by the Engineer. The Contractor shall pay for all additional testing required to determine the conformance of run-of-trench material, if at any time during the Work this material appears to be in non-conformance in the opinion of the Engineer.

PART 3 – EXECUTION

3.1 PRECONSTRUCTION MATERIAL QUALIFICATION TESTING

A. General:
1. Sufficient size samples shall be obtained from the potential borrow source to allow completion of tests listed in paragraph B below. Samples may be obtained from test borings, test pits, or from borrow pit faces provided that surficial dry or wet soil is removed to expose undisturbed earth. Tests listed below shall be performed on each sample obtained. A minimum of 3 representative samples from each potential borrow source shall be furnished to the testing laboratory for prequalification testing. Test data shall be provided to the Engineer a minimum of 2 weeks prior to construction for approval of borrow source. Three test reports completed within three months prior to construction may be submitted for commercial earth borrow sources or suppliers of stone products (crushed stone or graded stone products) in lieu of prequalification tests as approved by the Engineer.

B. Material Tests:
1. Particle Size Analysis:
   a. Method: ASTM D422.
   b. Number of Tests: One (1) per sample; three (3) per potential source.
   c. Acceptance Criteria: Gradation within specified limits.
2. Maximum Density Determination:
   a. Method: ASTM D1557 - Modified Proctor.
   b. Number of Tests: One (1) per sample; three (3) per potential source.
3. Re-establish gradation and maximum density of fill material if source is changed during construction.

3.2 PREPARATION

A. Establish required lines, levels, contours, and datum.

B. Maintain benchmarks and other elevation control points; re-establish if disturbed or destroyed at no additional cost to the Owner.

C. Establish location and extent of existing utilities prior to commencement of excavation.

3.3 EXCAVATION

A. All excavation shall be made to such depth as required and of the width shown on the Drawings to provide suitable room for building the structures and laying the pipe(s) they are to contain and for sheeting, shoring, pumping and draining as necessary, and for removing peat, silt, or any other materials which the Engineer may deem unsuitable. Hand trench excavation may be required to protect existing utilities and structures.

B. Trench excavation for pipes shall be made by open cut to accommodate the pipe or structure at the depths indicated on the Drawings. Excavation shall be made to such a depth and to the width indicated on the Drawings so as to allow a minimum of 8 inches of pipe zone bedding to be placed beneath the bottom of all structures and barrels, bells or couplings of all pipes installed unless otherwise specified on the Drawings.

C. The bottom of the trench shall be accurately graded to provide a uniform layer of bedding material as required for each section of pipe. Trim and shape trench bottoms and leave free of irregularities, lumps, and projections.

D. Stockpile excavated subsoil for reuse where directed or approved.

E. Over excavation/undercut: If, in the opinion of the Engineer, existing material below the trench grade is unsuitable for properly placing bedding material and laying pipe, the Contractor shall excavate and remove the unsuitable material and replace the same with an approved pipe zone bedding material properly compacted.

F. Stability of Excavation: Slope sides of excavations shall comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated. Maintain sides and slopes of excavation in safe condition until completion of backfilling.

G. Removal of materials beyond the indicated subgrade elevations, without authorization by the Engineer, shall be classified as unauthorized excavation and shall be performed at no additional cost to the Owner.

3.4 DEWATERING

A. The Contractor shall remove all water from the excavation promptly and continuously throughout the progress of the work and shall keep the excavation dry at all times until the work is completed and excavation is backfilled or have sufficient weight to resist uplift pressures. Groundwater levels shall be depressed to a minimum of 2 feet below excavation subgrade. No pipe or structure is to be laid in water and water shall not be allowed to rise on or flow over any pipe or structure until such time as approved by the Engineer.

B. Provide a suitable point of discharge from dewatering operations shall be conveyed in a non-erosive manner satisfactory to the Engineer.

C. Precautions shall be taken to protect uncompleted work from flooding during storms or from other causes. All pipe lines or structures not stable against uplift during construction or prior to completion shall be thoroughly braced or otherwise protected.

3.5 BEDDING AND BACKFILLING

A. All pipe trenches backfill (pipe zone bedding, pipe zone backfill and trench backfill) shall be compacted by tamping or rolling to achieve a minimum dry density of 90 percent of the modified

Proctor maximum dry density of the material used (ASTM D1557). Backfill in pipe trenches to be covered with pavement shall be compacted to a minimum of 95 percent of modified Proctor maximum dry density. Backfill materials shall be placed with water content within plus or minus 4 percent of optimum moisture content per the modified Proctor method (ASTM D1557). Any water used for compaction shall be provided by the Contractor at his own expense. The Contractor is responsible for the repair of any trench settlement at no expense to the owner.

B. Bedding and backfilling shall be accomplished in three stages unless otherwise specified on the Contract Drawings. The first stage shall involve placement of "pipe zone bedding" as a layer(s) of selected material required to support, or to stabilize unsound or unsatisfactory foundation conditions. The second stage shall involve placement of "pipe zone backfill" from the top of the bedding material up to 1 foot above the pipe. The third stage involves the placement of "trench backfill" in the remainder of the trench up to the surface of the ground or the bottom of any special surface treatment subgrade elevation.

C. The bedding material shall be placed in the trench after the trench has been excavated a minimum of 8 inches below the bell of the pipe to permit the placing of not less than 8 inches of bedding material unless otherwise specified on the Drawings. Where, in the opinion of the Engineer, more than 8 inches of bedding material shall be required, the excavation shall be performed, and bedding placed to the depth ordered by the Engineer.

D. Provide uniform bearing and support for each section of pipe at every point along the entire length except where necessary to excavate for bell holes, pipe joints, or other required connections. Dig bell holes and depressions for joints after trench bottom has been graded. Dig no deeper, longer, or wider than needed to make the joint connection properly.

E. The bedding material shall be placed to the full width of trench. The bedding material shall be placed in loose lifts not exceeding 6 inches to the elevation shown on the Drawings or directed by the Engineer. The bedding material shall be tamped and compacted to form a firm and even bearing surface.

F. Pipe zone backfill shall be placed to the elevation shown on the Drawings in loose lifts not-to-exceed 6 inches in thickness, before compaction. The backfill shall be placed on both sides of the pipe at the same time and to approximately the same elevation. Any pipe that is damaged or moved out of alignment, regardless of cause, shall be replaced or realigned at the Contractor's expense. Each layer shall be thoroughly compacted by hand-tamping or mechanical means being careful not to damage the pipe. When the pipe zone backfill reaches 1 foot over the top of the pipe, the entire surface shall be compacted by mechanical means.

G. The remainder, if any, of the trench above the pipe zone backfill shall be backfilled with suitable material in loose lifts not exceeding 6 inches in thickness before compaction. Each layer shall be thoroughly compacted by mechanical means.

3.6 BACKFILLING AROUND STRUCTURES

A. The Contractor shall not place backfill against any structure without obtaining the approval of the Engineer. No dumping shall be allowed where materials would flow against or around such structures. Backfill material shall be deposited in horizontal layers not exceeding 6 inches in loose thickness or as shown on the Drawings and thoroughly compacted by hand or by mechanical means to the satisfaction of the Engineer.

3.7 SUSPENSION OF WORK

A. Whenever the work is suspended, excavations shall be protected and the roadways, if any, left unobstructed. Within or adjacent to private property, material shall be stored at such locations as will not unduly interfere with traffic of any nature and in no case shall materials be stored in locations which will cause damage to existing improvements.

3.8 DISPOSAL OF MATERIAL

A. Excess and unsuitable materials shall be disposed of by the Contractor legally off- site at the Contractor's expense or on the site in an area approved by the owner.

3.9 FIELD QUALITY CONTROL

A. Notify the Engineer at least 3 working days in advance of all phases of filling and backfilling operations.

B. In-place density testing shall be performed to ascertain the compacted density of the fill and backfill materials in accordance with the following methods:
   1. In-place relative density:
      a. Method: AASHTO T310, Nuclear Method.

C. Perform initial density testing to verify that contractors proposed compaction effort will obtain the minimum required densities.

D. In-place density tests on trench backfills shall be provided for every 500 cubic yards of fill or in vertical lifts not exceeding 2 feet and at least once daily.

E. One particle size analysis (ASTM D422) and one modified Proctor compaction test (ASTM D1557) shall be competed for every 5,000 cubic yards of material placed.

F. The Engineer may direct additional tests to establish gradation, maximum density, and in-place density as required by working conditions, at the Contractor's expense.

G. Acceptance Criteria: The criteria for acceptability of in-place fill shall be in-situ dry density and moisture content. If a test fails to qualify, the fill shall be further compacted and re-tested. Subsequent test failures shall be followed by removal and replacement of the material.

END OF SECTION

SECTION 312500 – EROSION AND SEDIMENT CONTROL

PART 1 – GENERAL

1.1 SUMMARY

A. This Section covers work necessary for stabilization of soil to prevent erosion and sedimentation during and after construction and land disturbing activities. The work shall include the furnishing of all labor, materials, tools, and equipment to perform the work and services necessary as herein specified and as indicated on the Drawings. This shall include installation, maintenance, and final removal of all temporary soil erosion and sediment control measures. All erosion and sediment control methods and devices used shall conform to the latest requirements imposed by federal, state, and local authorities.

B. Comply with the latest version of the Connecticut Guidelines for Soil Erosion and Sedimentation Control.

C. The minimum areas requiring soil erosion and sediment control measures are indicated on the Drawings. The right is reserved to modify the use, location, and quantities of soil erosion and sediment control measures based on activities of the Contractor and as the Engineer considers to be the best interest of the Owner.

D. The Contractor shall be responsible for repair of any damage caused and shall be financially responsible for any penalties imposed.

1.2 QUALITY ASSURANCE

A. Soil erosion and sediment control measures shall be implemented in accordance with the requirements and procedures outlined in this Specification, Contract Drawings and documents, state standards or guidelines for soil erosion and sediment control, and all regulatory authorities having jurisdiction. Where conflicts between requirements exist, the more restrictive rules shall govern.

B. The Contractor shall provide all temporary control measures shown on the Drawings, or as directed by the Owner, Owner's representative, or soil conservation district for the duration of the contract. Erosion and sediment control Drawings are intended to be a guide to address the stages of work shown. Additional measures not specified on the Drawings may be necessary and shall be implemented to address intermediary stages of work and any conditions that may develop during construction at no cost to the Owner.

C. Temporary control provisions shall be coordinated with permanent erosion control features to the extent practical to assure economical, effective, and continuous erosion and sediment control throughout the construction and post-construction period.

D. Soil erosion and sediment control measures shall at all times be satisfactory to the Owner's Representative. Owner’s Representative will inform the Contractor of unsatisfactory construction procedures and operations if observed. If the unsatisfactory construction procedures and operations are not responded to and corrected within 48 hours, the Owner's Representative may suspend the performance of any or all other construction until the unsatisfactory condition has been corrected. Such suspension shall not be the basis of any claim by the Contractor for additional compensation nor for an extension of time to complete the work. Any complaints, fines, etc. relating to ineffective erosion control, shall be the sole responsibility of the Contractor.

E. The Contractor shall inspect all soil erosion and sediment control measures at least at the beginning and end of each day to ascertain that all devices are functioning properly during construction. Maintenance of all soil erosion and sediment control measures on the project site shall be the responsibility of the Contractor until final stabilization is complete, and until the permanent soil erosion controls are established and in proper working condition.

F. The Contractor shall protect adjacent properties and watercourses from soil erosion and sediment damage throughout construction.

1.3 GENERAL

A. Soil erosion stabilization and sediment control measures consist of the following elements:
   1. Maintenance of existing permanent or temporary storm drainage piping and channel systems, as necessary.
   2. Installation and maintenance of stabilized construction entrance(s).
   3. Construction of new permanent and temporary storm drainage piping and channel systems, as necessary.
   4. Construction of temporary erosion control facilities such as silt fences, check dams, etc.
   5. Topsoil and Seeding: Placement and maintenance of Temporary Seeding on all areas disturbed by construction. Placement of permanent topsoil, fertilizer, and seed, etc., in all areas not occupied by structures or pavement unless shown otherwise.
   6. Soil Stabilization Seeding: Placement of fertilizer and seed, etc., in areas as Specified hereinafter.

B. The Contractor shall he responsible for phasing Work in areas allocated for his exclusive use during this Project, including any proposed stockpile areas, to restrict sediment transport. This will include installation of any temporary erosion control devices, ditches, or other facilities.

C. The areas set aside for the Contractor's use during the Project may be temporarily developed to provide satisfactory working, staging, and administrative areas for his exclusive use. Preparation of these areas shall be in accordance with other requirements contained within these Specifications and shall he done in a manner to both control all sediment transport away from the area.

D. Stockpiles remaining in place longer than 14 calendar days shall be considered permanent stockpiles for purposes of erosion and sediment control.

E. All permanent stockpiles shall be seeded with soil stabilization seed and protected by construction of silt fences completely surrounding stockpiles and located within 10 feet of the toes of the stockpile slopes.

F. Sediment transport and erosion from working stockpiles shall be controlled and restricted from moving beyond the immediate stockpile area by construction of temporary toe-of-slope ditches and accompanying silt fences as necessary. The Contractor shall keep these temporary facilities in operational condition by regular cleaning, regrading, and maintenance.

G. The Contractor shall maintain all elements of the Soil Erosion Stabilization and Sedimentation Control systems and facilities to be constructed during this Project for the duration of his activities on this Project.

H. Formal inspections made jointly by the Contractor and the Engineer shall be conducted every 2 weeks to evaluate the Contractor's conformance to the requirements of these Specifications.

I. Replacement or repair of failed or overloaded silt fences, check dams, or other temporary erosion control devices shall be accomplished by the Contractor within 24 hours after receiving written notice from the Engineer.

J. If the Contractor has not complied with any of the above maintenance efforts to the satisfaction of the Engineer within 2 working days after receiving written notification from the Engineer, the Owner shall have the prerogative of engaging others to perform any needed maintenance or cleanup, including removal of accumulated sediment at constructed erosion control facilities, and deduct from the Contractor's monthly partial payment the costs for such efforts in accordance with the General Conditions of the Contract.

1.4 SUBMITTALS

A. Submittals shall he made in accordance with Section 013300 "Submittal Procedures."

B. Material Certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.

C. Results of all tests and investigations, including recommendations.

D. Submit product data, samples, specifications and manufacturer's installation procedures for approval as directed by Engineer prior to use.

PART 2 – PRODUCTS

2.1 GENERAL

A. Contractor shall provide all materials necessary to perform the work in accordance with the SWPPP or as shown on the Drawings or specified herein.

2.2 PERMANENT SEED

A. Refer to Section "Turf and Grasses."

2.3 SOIL STABILIZATION AND TEMPORARY SEED

A. Temporary Seed: Rye grass, cereal grasses, or other quick growing species suitable to the area as a temporary cover, which will not compete with the grasses specified for permanent cover or as specified in the SWPPP or on the Drawings.

2.4 TOPSOIL

A. Topsoil shall be as specified under Section "Soil Preparation."

2.5 FERTILIZER

A. Refer to Section "Turf and Grasses."

2.6 LIME

A. Ground dolomite limestone not less than 85 percent total carbonates and magnesium, ground so that 50 percent passes through a No. 100 mesh sieve and 90 percent passes a No. 20-mesh sieve. Coarser

material will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing the No. 100-mesh sieve.

2.7 STRAW MULCH

A. Threshed straw of oats, wheat, barley, or rye, free from seed of noxious weeds or clean salt hay.

2.8 EROSION CONTROL BLANKET

A. Erosion Control Blanket (ECB) shall be constructed with a layer of 70 percent straw and 30 percent coconut fiber stitched with degradable thread between a heavyweight UV stabilized polypropylene top net (3 pounds) and a lightweight photodegradable polypropylene bottom net (1.50 pounds). Both the netting and fiber material shall be green in color. Acceptable products shall include SC150 Double Net Straw-Coconut Blanket as manufactured by North American Green; Curlex Double Net (Curlex II) as manufactured by American Excelsior Company or an approved equal.

2.9 TURF REINFORCEMENT MATS

A. Permanent Synthetic Turf Reinforcement Mat (TRM) shall be constructed of UV stabilized polypropylene fiber (0.70 pounds per square yard) stitched with permanent polypropylene thread between heavyweight UV stabilized polypropylene top net (5 pounds per 1000 square feet approximate weight) and bottom net (3 pounds per 1000 square feet approximate weight). Both the netting and fiber material shall be green in color.

B. Acceptable products shall include P300 Permanent Turf Reinforcement Mat as manufactured by North American Green; Recyclex TRM by American Excelsior Company or an approved equal.

2.10 HAY BALE

A. Bales shall be tightly bound, staked with 1 inch by 1 inch hardwood stakes. Hay shall be from mowings of acceptable herbaceous growth free from noxious weeds.

2.11 STONE CHECK DAM

A. The gradation of stone check dam material identified on the plans shall meet the following requirements:

NCSA ROCK SIZE*	**PERCENT PASSING BY WEIGHT**
12"	100
6"	15 – 50
3"	0 – 15

*National Crushed Stone Association

B. Geotextile fabric for stone check dam shall meet the requirements non-woven fabric found in Section "Geotextiles."

2.12 SILT FENCE

A. Silt Fence (SF) shall consist of woven geotextile fabric, posts, wire mesh backing, and fasteners meeting the requirements shown on the Drawings.

B. The woven geotextile fabric shall meet the following specifications.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs.)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

2.13 COMPOST FILTER SOCK

Compost infill shall consist of decomposed (matured at least 3 months), weed-free, organic material that is aerobically composted, possess no odors, and contain less than 1%, by dry weight, of man-made material. The compost infill should meet the following specifications.

Organic Matter Content	25% - 100% (dry weight)
Organic Portion	Fibrous and elongated
pH	6.0 – 8.0
Moisture Content	30% - 60%
Particle Size	100% passing a 1” screen and 10-50% passing a 3/8” screen
Soluble Salt Concentration	5.0 dS/m (mmhos/cm) maximum

A. Compost filter sock fabric material shall meet the minimum requirements and specifications listed in the following tables.

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photodegradable	Photodegradable	Biodegradable	Photodegradable	Photodegradable
Sock Diameters	12”,18”	12”, 18”,24”, 32”	12”, 18”,24”, 32”	12”, 18”,24”, 32”	12”, 18”,24”, 32”
Mesh Opening	3/8”	3/8”	3/8”	3/8”	1/8”
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years

2.14 MANUFACTURED INSERT INLET PROTECTION

A. The sack structure shall consist of woven geotextile fabric equal to or exceeding the performance standard for the silt fence fabric.

PART 3 – EXECUTION

3.1 GENERAL

A. The Contractor shall review the soil erosion and sediment control Drawings as they apply to current conditions. Any deviation from the Drawings must be submitted for approval to the site Engineer in writing at least 72 hours prior to commencing that work.

B. Initial soil sediment and erosion control devices shall be in place prior to any land disturbing activity in their proper sequence and maintained until permanent protection is established.

C. The limit of the area of any earthwork operations in progress shall be commensurate with the Contractor's capability and progress in keeping the finished grading, mulching, seeding, and other such permanent control measures current and in accordance with the accepted schedule for construction phasing. Should seasonal limitations make such coordination unrealistic, as determined by the Owner's Representative, temporary erosion control measures shall be provided immediately by the Contractor at no expense of the Owner.

D. Temporary erosion control measures shall be used to correct conditions which develop during construction that are needed prior to installation of permanent control features, or that are temporarily needed to control erosion that develops during normal construction practices but are not associated with permanent control features on the project.

E. The Contractor shall incorporate all permanent erosion control features (stabilization) into the project at the earliest practical time to minimize the need for temporary controls.

F. A stabilized construction entrance (SCE) shall be installed and maintained at any point where construction vehicles enter a public right-to-way, street, or parking area. The SCE shall be used to eliminate mud from the construction area onto public right-of-way. The SCE shall be constructed as shown on the Drawings. Any mud or debris tracked on streets shall be cleaned up immediately.

G. Dust Control: The Contractor shall provide a commercial grade; enclosed broom mechanical street sweeper to control sediment and/or dust that is tracked on to the adjacent streets. The street sweeper shall be equipped with a water storage tank to wet the area prior to sweeping. Where on site controls do not prevent material from being tracked on to adjacent streets, the street sweeper shall be used to clean the adjacent streets immediately. In addition, at a minimum, the adjacent streets shall be swept at the end of each day or as directed by the Engineer.

H. Any disturbed or stockpiled areas that will be left exposed more than 14 days or less shall immediately receive temporary or permanent seeding. Mulch/straw shall be used if the season prevents the establishment of a temporary cover. Disturbed areas shall be limed and fertilized prior to temporary seeding.

I. Permanent vegetation shall be established as specified on all exposed areas within 7 days or less after final grading. Mulch as necessary for seed protection and establishment. Lime and fertilize seedbed prior to permanent seeding.

J. Slopes shall be permanently seeded and mulched. Any slopes that erode easily shall be temporarily seeded and mulched. Any slopes deeper than 3:1 or steeper or as indicated on Drawings shall be protected with Erosion Control Blanket per specifications.

K. All storm drainage outlets must be stabilized, as specified, before the discharge points become operational. Equip all inlets with inlet protection immediately upon construction.

L. Manufactured insert inlet protection shall be installed and anchored in accordance with the manufacturer's recommendations and design details. The Contractor shall maintain all manufactured insert inlet protection units until the project is stabilized and shall remove and dispose of the sediment accumulation properly when the units are more than 1/3 full. Replace and reinstall the unit if necessary.

M. Discharge from dewatering operations for the excavated areas shall not be directed to surface waters without first properly removing the suspended sediment through filtration and/or settlement. The Contractor shall obtain any required permits associated with dewatering activities.

N. Silt fence shall be installed at locations on the Drawings and any additional locations necessary for proper sediment control. The Contractor shall maintain the silt fence until the project is stabilized and shall remove and dispose of the silt fence and silt accumulation when 1/3 the height of the fence is reached.

O. Filter Socks shall be place at locations indicated on plans or as directed by the Engineer. They should be installed parallel to the base of the slope or other affected area. The Contractor shall maintain the Filter Socks and they shall be inspected weekly and after each rain event. If the Filter Sock requires repair, it shall be repaired in accordance with the manufacture's recommendations or replaced within 24 hours of inspection notification. Biodegradable filter socks shall be replaced after 6 months; photodegradable filter socks after 1 year. Polypropylene socks shall be replaced according to the manufacturer's recommendations.

P. Soil erosion and sediment control shall include but not be limited to the approved measures. The Contractor shall be responsible for providing all additional measures that may be necessary to accomplish the intent of the Drawings.

Q. Comply with all other requirements of authorities having jurisdiction.

R. Soil Stabilization and Temporary Seeding:
   1. Soil stabilization seeding shall consist of the application of the following materials in quantities as further described herein for stockpiles and disturbed areas left inactive for more than 14 days.
      a. Lime.
      b. Fertilizer.
      c. Seed.
      d. Mulch.
      e. Maintenance.
   2. Hydroseeding will be permitted as an alternative method of applying seed and associated soil conditioning agents described above. Should the Contractor elect to apply soil stabilization seeding by hydroseeding methods, he shall submit his operational plan and methods to the Engineer.
   3. Temporary Seeding is to be placed and maintained over all disturbed areas prior to Permanent Seeding. Maintain Temporary Seeding until such time as areas are approved for Permanent Seeding. As a minimum, maintenance shall include the following:
      a. Fix-up and reseeding of bare areas or re-disturbed areas.
      b. Mowing for stands of grass or weeds exceeding 6 inches in height.

S. Topsoil and Permanent Seeding: conform to the requirements of Section "Soil Preparation" and Section "Turf and Grasses."

END OF SECTION

SECTION 321116 – SUBBASE COURSES

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes provisions for prepared subbase courses for under walks and pavements.

B. Proof rolling of subgrade for walks and pavements is included in this Section.

C. Replacement of unsuitable subgrade materials is included in another Section.

D. Final grading of pavement subbase is specified in this Section.

1.2 REFERENCES

A. ConnDOT Standards.

B. Standard Specifications for Highway Materials and Methods of Sampling and Testing, American Association of State Highway and Transportation Officials (AASHTO).

C. American Society for Testing and Materials (ASTM).

1.3 SUBMITTALS

A. Source Quality Control Test Reports: Submit test reports directly to Engineer from the testing agency with copy to Contractor.

B. Field Testing Reports: Submit results of field testing directly to Engineer with copy to Contractor. Reference testing location to plan, and cross-reference to all retesting required to accept installed subbase material.
   1. Note action taken next to all sub-standard test results.

1.4 QUALITY ASSURANCE

A. Testing Laboratory Qualifications: To qualify for acceptance, the soil testing laboratory must demonstrate to Engineer's satisfaction, based on evaluation of laboratory-submitted criteria conforming to ASTM E 699, that it has the experience and capability to conduct the required testing without delaying the progress of the Work.

B. Field Testing and Inspection Service: Contractor shall retain the services of the same independent soil testing laboratory used for source qualification testing to provide soil testing during pavement subbase installation.

PART 2 – PRODUCTS

2.1 SOURCE QUALIFICATION TESTING

A. Contractor shall employ and pay for a qualified independent soil testing laboratory to perform soil testing services for source qualification.
   1. Obtain a 100-pound minimum representative sample from each potential aggregate source. Obtain samples for each different material gradation known to exist in the pit. Mix each

sample thoroughly in accordance with AASHTO T87, and submit to the testing laboratory for reduction to specimen size. The laboratory shall perform the following tests in the order shown. Each material shall pass all tests in order to qualify.

a. Particle Size Analysis:
   1) Method: ASTM D422.
   2) Number of Tests: 2 per potential source.
   3) Acceptance Criteria: Gradation within specified limits.

b. Plasticity Index Determination:
   1) Method: ASTM D424.
   2) Number of Tests: 1 particle size analysis on material passing no 40 mesh.
   3) Acceptance Criteria: Plasticity Index within specified limits.

c. Maximum Density Determination:
   1) Method: ASTM D1557 Modified Proctor.
   2) Number of Tests: 2 per potential source.

d. Magnesium Sulfate Soundness Loss Test:
   1) Method: State DOT Standard Test Method**.**
   2) Number of Tests: 2 per potential source.
   3) Acceptance Criteria: 4 cycle loss within specified limits.

2. Re-establish subbase material properties if source is changed during construction.

2.2 MATERIALS

A. Processed Gravel Subbase Course: Materials shall consist of sound, durable blast furnace slag, stone, sand, gravel or blends of these materials.

B. Crushed Rock Subbase Course: Materials shall consist solely of approved blast furnace slag or stone which is the product of crushing ledge rock**.**

C. All compacted pavement subbase aggregate materials shall be well graded from course to fine and free from organic or other deleterious materials, conforming to the requirements of ConnDOT Standards, and meeting the following gradation requirements:

SIEVE	PERCENT PASSING
1 1/2”	100
3/4"	55-90
No. 4	25-50
No. 50	5-20
No. 200	3-10

D. All AASHTO #57 materials shall be free from organic or other deleterious materials, conforming to the requirements of ConnDOT Standards, and meeting the following gradation requirements:

SIEVE	PERCENT PASSING
1 1/2”	100
1”	95-100
1/2"	25-60
No. 4	0-10
No. 8	0-5

1. Magnesium Sulfate soundness loss after 4 cycles shall be less than 20 percent.
2. Plasticity Index of material passing No. 40 sieve shall not exceed 5.0.
3. Not more than 30 percent, by weight, of the particles retained on a 1/2 inch sieve shall consist of flat or elongated particles. A flat or elongated particle is defined as one which has its greatest dimension more than 3 times its least dimension.
4. All material shall meet the specified gradation prior to placement. All processing shall be completed at the source.

2.3 PREPARATION

A. Establish required lines, levels, contours, and datum.

B. Maintain benchmarks and other elevation control points. Re-establish, if disturbed or destroyed, at no additional cost to Owner.

C. Proof-roll existing subgrade to the satisfaction of the Engineer and per the earth moving specification section. Should the subbase course become unstable at any time prior to the placement of the overlying course(s), correct the unstable condition to the satisfaction of the Engineer. Replace unstable or weak subgrade materials with suitable material as provided in the Specifications.

D. Place stabilization fabric in locations as directed on the plans and in accordance with Section “Geotextiles” after subgrade has been proof-rolled and accepted by the Engineer.

2.4 INSTALLATION

A. Place subbase material in uniform horizontal layers, with a maximum compacted thickness of 12 inches.

B. Place subbase in a manner to avoid segregation. Uncontrolled spreading shall not be permitted.

2.5 COMPACTION

A. Where subbase courses must be moisture-conditioned before compaction, uniformly apply water to the surface. Prevent free water from appearing on the surface during or subsequent to compaction operations.

B. Compact all portions of each layer to a density not less than 95 percent of the maximum density.

C. Final tolerances for the top surface of the subbase course requires that the surface does not extend more than 1/4 inch above nor more than 1/4 inch below the specified grade at any location.

2.6 TRAFFIC ON SUBBASE

A. The movement of vehicular traffic over the final surface of the subbase may be permitted at locations designated by, and under such restrictions as ordered by the Engineer, provided such movements take place prior to the final finishing of this course to the specified tolerance. The movement of construction equipment on this course may be permitted, at locations designated by and under such restrictions as ordered by the Engineer at locations where permission is granted for such movement, the temporary surface of the course upon which the construction traffic is running, shall be placed and maintained for at least 2 inches above the final surface of this course. Just prior to paving, and after all construction traffic not required for the removal has ceased, remove the 2 inch protective layer, prepare the exposed surface of the course, and compact to the specified tolerance.

B. Should the subbase become mixed with the subgrade or any other material, through any cause whatsoever, remove such mixture and replace it with the specified subbase material.

2.7 FIELD QUALITY CONTROL

A. Notify the Engineer at least 1 working day in advance of all phases of subbase installation.

B. Comply with the requirements of this Section for in-place relative density testing.
   1. In-place relative density:
      a. Method: AASHTO T238, Nuclear Method.
      b. Number of Tests: 1 per specified interval.
      c. Acceptance Criteria: Plus/minus 2 percent of specified percent compactions.
   2. Compaction tests shall be provided for every 1000 square yard of subbase placement. A minimum of 3 for each lift is required.
   3. The Engineer may direct additional tests to establish gradation, maximum density, and in-place density as required by working conditions.
   4. Acceptance Criteria: The sole criterion for acceptability of in-place subbase shall be in situ dry density. Minimum dry density for all subbase shall be 95 percent of the maximum dry density. If a test fails to qualify, the fill shall be further compacted and re-tested. Subsequent test failures shall be followed by removal and replacement of the material.

END OF SECTION

SECTION 321216.36 – ATHLETIC TRACK ASPHALT PAVING

PART 1 – GENERAL

1.1 SUMMARY

A. This section includes provisions for hot-mixed asphalt paving over prepared subbase on the track footprint.

B. This section includes provisions for replacing pavement removed during the course of the Work or damaged resulting from Contractor's operations.

1.2 REFERENCES

A. Applicable State or Provincial Department of Transportation Standard Specifications.

B. "Standard Specifications for Highway Materials and Methods of Sampling and Testing, American Association of State Highway and Transportation Officials (AASHTO)."

C. "American Society for Testing and Materials (ASTM)."

1.3 SUBMITTALS

A. Material Certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.
   1. Job mix formula shall include the theoretical maximum specific gravity (Gmm) in order for the third-party testing agency to accurately calculate the in-place compaction as a % of maximum.

B. Field Test Reports: Submit results of field testing directly to the Engineer.

C. Track & Field Paving Experience:
   1. On-site Project Manager/Superintendent Qualifications:
      a. Provide a list of completed facilities, minimum of 5 running tracks, in the past 5 years.
      b. The project manager/superintendent will be on-site during all track & field paving operations. Substitution of project manager/superintendent shall not be permitted.

D. Asphalt truck delivery tickets: Contractor to collect and submit all tickets within 48 hours of delivery.

1.4 SITE CONDITIONS

A. Weather Limitations: Apply tack coats when ambient temperature is above 50 DegF (10 DegC) and when temperature has not been below 35 DegF (1 DegC) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

B. Construct hot-mixed asphalt concrete surface course when atmospheric temperature is above 40 DegF (4 DegC) and when base is dry. Base course may be placed when air temperature is above 30 DegF (minus 1 DegC) and rising.

C. Grade Control: Establish and maintain required lines and elevations.

D. In no instance shall the materials and thicknesses of pavement and subbase courses replaced be less than that removed, unless approved by the Engineer.

1.5 SEQUENCING AND SCHEDULING

A. Coordinate the placement of asphalt concrete pavement with the completion of underground work by other trades.

B. The asphalt top/wearing course shall be allowed to cure for 28 days prior to application of resilient track surfacing.

PART 2 – PRODUCTS

2.1 MATERIALS

A. General: All hot mix asphalt shall be in accordance with applicable provisions of State or Provincial Department of Transportation Specifications, except as herein modified.
   1. No RAP (Reclaimed Asphalt Pavement) content will be permitted in the asphalt wearing/surface course.
   2. The RAP (Reclaimed Asphalt Pavement) content in the asphalt binder course shall be 20 percent or less.
   3. The joint sealant shall be a hot poured rubberized emulsified asphalt sealant meeting the requirements of Federal Specifications SS-S-1401 or SS-S-164.
   4. The tack coat shall be an asphalt emulsion, RS-1 if required, conforming to AASHTO M 140.
   5. Bituminous concrete pavements shall consist of Class 1 and Class 2 Bituminous Concrete or as required in the Contract Documents.
   6. Bituminous concrete mixtures shall be within the composition limits of base courses, binder courses, top courses and surface treatment, in accordance with M.04.03 – Bituminous Concrete Mixtures AC-20 of Form 816, with constituents that conform to Table A, below.

Standard Sieves (in.)	Class 1 (Binder Course)	Class 2 (Top Course)
2 ¼ in		
2 in		
1 ½ in		
1 in	100	
¾ in	90-100	100
½ in	70-100	
3/8 in	60-82	90-100
¼ in		
No. 4	40-65	55-80
No. 8	28-50	40-64
No. 30	10-32	16-36
No. 50	6-26	8-26
No. 100		
No. 200	3-8	3-8
Bitumen	5-6.5	5-8

Unless authorized by the Engineer, no Job-Mix Formula will be approved which specifies:
Less than 3% passing No. 200 for Top Course.
Less than 5% bitumen for Top Course.

B. Asphalt Tack Coat:
   1. The primer for application on asphalt surfaces (tack coat) shall be CRS-1.
      a. Tack coat material shall be in accordance with State or Provincial Department of Transportation Specifications.

PART 3 – EXECUTION

3.1 SURFACE PREPARATION

A. General: Remove loose material from compacted subbase surface immediately before commencing paving operations.

B. Proof-roll prepared subbase surface with a ten-ton static, steel-wheel roller to check for unstable areas and areas requiring additional compaction, witnessed by the Engineer at least 48 hours prior to scheduled paving operations.

C. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive paving.

D. Sawcut edges of existing pavement to achieve straight line transitions between old and new pavement. Make a second sawcut through the top course of existing pavement 18 inches from the first cut to provide a staggered joint.

E. Tack Coat: Apply to contact surfaces of previously constructed asphalt or Portland cement concrete and surfaces abutting or projecting into asphalt concrete pavement. Distribute at rate of 0.03 to 0.07 gallons per square yard of surface.

F. Allow to dry until at proper condition to receive paving.

G. Exercise care in applying bituminous materials to avoid smearing of adjoining surfaces. Remove and clean damaged surfaces.

H. Do not commence pavement replacement operations until all buried work beneath pavement repair has been completed to the satisfaction of the Engineer.

I. Where trench dimensions preclude the use of proof rolling equipment, demonstrate the stability of the subgrade and subbase through other means, as acceptable to the Engineer.

3.2 PLACING AND COMPACTING MIX

A. General: Place and compact asphalt pavement courses in accordance with applicable state or provincial department of transportation specifications unless otherwise specified. This, however, shall not relieve the Contractor of his responsibility to provide a well densified pavement. It shall be the Contractor's obligation to recognize difficulties in compacting the mix, and to make appropriate corrections.

B. Compaction: Compact asphalt pavement courses with a static steel wheel roller only, unless otherwise approved by the Engineer, based upon work conditions.

C. Place inaccessible and small areas by hand and compact with hot hand tampers or vibrating plate compactors.

D. Chamfer edges of walks at 45-degree angle where walks do not abut curb.

E. Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density, and smoothness as other sections of asphalt concrete course. Clean contact surfaces and apply tack coat.

F. Place tack coat between successive courses if more than 48 hours have elapsed after placing the preceding course. Apply tack coat at a rate of 0.03 to 0.07 gallons per square yard of surface.

G. Remove and patch areas of any asphalt concrete course deemed unsatisfactory by the Engineer at the Contractor's expense. Remove hardened or set asphalt by saw cutting.

H. Roll and compact the asphalt concrete course until the finished surface is free from depressions, waves or other defects that would prevent proper drainage. The finished surface shall be uniform in texture and appearance.

I. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

J. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.3 FIELD QUALITY CONTROL

A. General: Testing in-place asphalt concrete courses for compliance with requirements for thickness, surface smoothness and compaction will be done by Third Party (paid for by Contractor) testing laboratory. Repair or remove and replace unacceptable paving as directed by Engineer.

B. Thickness: Testing agency to measure loose asphalt thickness during paving operations and compacted asphalt thickness after rolling. Above thickness measurements or in-place compacted thickness tested in accordance with ASTM D3549 will not be acceptable if exceeding following allowable variations:
   1. Binder and Surface Course: Plus or minus 1/4 inch.
   2. Cumulative Thickness Tolerances: Plus or minus 1/4 inch for nominal cumulative thicknesses less than or equal to 4 inches. Plus or minus 1/2 inch for nominal cumulative thicknesses greater than 4 inches.

C. Surface Smoothness: Test finished surface of each asphalt concrete course for smoothness, using 10-foot straightedge applied parallel with and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness:
   1. Binder Course Surfaces: 1/4 inch.
   2. Wearing Course Surface: 3/16 inch.
   3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

D. Compaction:
   1. The average sub-lot (daily or 400 tons, whichever is less) in-place density measurement for asphalt surface course mixture shall be at least 94% of the theoretical maximum density at optimum with no single value less than 92%. Acceptable average measurements shall be made by use of a correlated nuclear density gauge per ASTM D2950. Additional testing shall be performed on any given day once 400 tons of asphalt is placed on that day.

2. In-place density tests shall be in accordance with state standards for frequency and methods where the work being performed is done with a minimum of testing meeting the above compaction requirements.

E. Check surface areas at intervals as directed by Engineer.

F. Scuff Resistance: If, in the opinion of the Engineer, the pavement does not demonstrate reasonable resistance to deformation by punching loads and scuffing under horizontally applied shearing loads, after the pavement has cooled and hardened, the Engineer may require laboratory testing of cored pavement samples to determine the properties of the pavement; including aggregate gradation, asphalt content, air void ratio, density and any others deemed appropriate. If laboratory testing indicates that any parameters substantially deviate from the design mix tolerances specified by applicable state or provincial department of transportation, replace the affected areas of pavement at no additional cost, and reimburse the Owner for all costs incurred in procurement and testing of cores.

3.4 TRACK REQUIREMENTS

A. Flood Testing:
1. The completed asphalt surface that will receive track synthetic surfacing must be flood tested in the presence of the track synthetic surfacing contractor to determine if any depressions require remediation prior to the installation of the track synthetic surfacing.

B. Track & Field Slope Requirements (NFSHSA (High School):
1. Oval: Maximum slope across the track from the outside lane to the inside lane shall not exceed 2:100 (2.0%).
2. High Jump: Maximum slope of the approach and take-off area shall not exceed 1:100 (1.0%) downward toward the center of the crossbar.
3. Long/Triple Jump, Javelin, and Pole Vault Runways:
   a. Direction of running/jumping, maximum slope 1:1000 (0.1%).
   b. Cross / lateral slope (perpendicular to runway lines), 2:100 (2.0%) maximum.

END OF SECTION

SECTION 321613.16 – CAST-IN-PLACE CONCRETE CURBING

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes the installation of concrete curbing as shown on the Drawings or as specified herein.

B. The materials and methods specified herein are directly intended for placement of "new" concrete curbing. Where existing curbing is removed and replaced during construction, modifications to these specifications to match existing conditions shall be made as directed by the Engineer.

1.2 QUALITY ASSURANCE

A. Reference Standards:
   1. The latest edition of the following standards, as referenced herein, shall be applicable.
      a. ConnDOT – Highway Division Standard Specifications for Highways and Bridges.
      b. American Society of Testing and Materials (ASTM).
      c. American Concrete Institute. (ACI).

B. The Contractor shall provide and pay for all costs in connection with an approved independent testing facility to determine conformance of materials with the specifications, if at any time during the Work, materials appear unsuitable in the opinion of the Engineer.

1.3 SUBMITTALS

A. Concrete:
   1. The Contractor shall furnish the name and location of the concrete supplier.
   2. Submit the design mix for each class of concrete prior to use in the Work.

B. Product Data:
   1. Submit manufacturer's catalog cuts, specifications, and installation instructions.

C. Test Results:
   1. The testing laboratory shall submit written reports of all tests, investigations, and recommendations to the Contractor and Engineer.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Concrete:
   1. All cast-in-place concrete shall be ready mixed concrete meeting the following criteria:
      a. 28-day compressive strength: 4000 psi.
      b. Air entrainment: 4% to 8%.
      c. Slump: 2 to 4 inches. For machined formed curb 1-1/2 inches maximum.
   2. Concrete shall be proportioned using methods 1 or 2 as outlined in ACI-301.

3. The approved mix design shall be used throughout this project unless changes are ordered or approved by the Engineer.

B. Pre-moulded Expansion Joint Filler:
   1. Concrete curbing shall be provided with a 1/2-inch pre-moulded expansion joint filler conforming to ASTM D1751.
   2. The pre-moulded expansion joint filler shall be "pre-cut" to match the concrete curbing cross-sectioned dimensions as detailed on the Drawings.

C. Curing Materials:
   1. Impervious Sheeting: ASTM C171.
   2. Liquid Membrane Curing Compound: ASTM C309, compound shall be free of paraffin or petroleum.
   3. Manufacturers:
      a. "Kure-N-Seal 0800" by Sonneborn.
      b. "Cure & Seal" by Symons.
      c. Or approved equal.

D. Sealants:
   1. Joint Sealers: ASTM D1850.

E. Forms:
   1. Curb forms shall be of wood or steel, straight, and of sufficient strength to resist springing during depositing and consolidating the concrete. The outside forms shall have a height equal to the full depth of the curb. The inside form of curb shall have batter as indicated and shall be securely fastened to and supported by the outside form.
   2. Straight forms of wood shall be surfaced plank, 2-inch nominal thickness, straight and free from warp, twist, loose knots, splits, or other defects. Wood forms shall have a nominal length of 10 feet, with a minimum of three stakes per form, at maximum spacing of 4 feet. Corners, deep sections, and radius bends shall have additional stakes and braces, as required. Radius bends may be formed with 3/4-inch boards, laminated to the required thickness.
   3. Steel forms shall be channel-formed sections with a flat top surface and with welded braces at each end and at not less than two intermediate points. Form ends shall be interlocked and self-aligning. Forms shall include flexible forms for radius forming, corner forms, form spreaders, and fillers. Forms shall have a nominal length of 10 feet, with minimum of two welded stake pockets per form. Stake pins shall be solid steel rods with chamfered heads and pointed tips, designed for use with steel forms.
   4. Rigid forms shall be provided for curb returns, except that benders of thin plank forms may be used for curb or curb returns with a radius of 10 feet or more, where grade changes occur in the return, or where the central angle is such that a rigid form with a central angle of 90 degrees cannot be used. Back forms for curb returns may be made of 1-1/2 inch benders, for the full height of the curb, cleated together.
   5. Machine formed curb: Straight and radius curbing may be placed with self-propelling machine approved by the engineer. Approval of machine shall depend on job requirements and performance.

PART 3 – EXECUTION

3.1 INSPECTION

A. The Contractor shall notify the Engineer 24 hours before placing concrete in order to give the Engineer an opportunity to inspect the formwork and related items prior to placement of the concrete.

B. Delivery tickets shall show the amount of cement, brand, and amount of all admixtures, in addition to information required by ASTM C94, Section 14. Water added on the job shall be approved and the amount noted on the delivery ticket and initialed by the Contractor.

3.2 SUBBASE PREPARATION

A. Concrete curbing shall be constructed on a compacted granular subbase as shown on the Drawings.

B. The subbase shall be maintained in a smooth, compacted condition in conformity with the required section and established grade, until the concrete is placed.

C. The subbase shall be in a moist condition when concrete is placed.

D. The subbase shall be prepared and protected so as to produce a subbase free from frost when the concrete is deposited.

E. Subbase may need to be placed along path of slipformed curbing machine in order to ensure proper placement. To be determined by engineer as per section 609-3.04B

3.3 FORMWORK

A. Earth cuts may not be used as forms for vertical surfaces.

B. All forms shall be built mortar tight and of materials sufficient in strength to hold concrete without bulging between supports. Forms shall be maintained to eliminate the formation of joints due to shrinkage of the forms. Concrete, mis-shapen by bulges or deformations caused by inadequate forms, shall be removed or corrected as ordered by the Engineer. All replacements or corrections shall be made at the Contractor's expense.

C. All surfaces of wooden forms that will be in contact with exposed concrete shall be thoroughly treated with an approved lacquer in the procedure recommended by the manufacturer. Forms so treated shall be protected from being damaged or dirtied prior to placing of the concrete.

D. Metal forms shall be treated with an approved form lacquer or may be treated with an approved form oil. The metal used for forms shall be of sufficient thickness to remain true to shape. All bolt and rivet heads shall be designed to hold the forms rigidly together and to allow removal, without injury to the concrete. Metal forms which do not have smooth surfaces, correct alignment and clean surfaces shall not be used.

E. The forms on the front of the curb shall be removed not less than 2 hours nor more than 6 hours after the concrete has been placed. Forms back of curb shall remain in place until the face and top of the curb have been finished as specified for concrete finishing.

3.4 CONCRETE PLACEMENT AND FINISHING

A. Preparation:

1. Set approved forms true to line and grade. Cast curb in 20-foot long sections. If curbs abut existing pavement, locate construction joints opposite existing pavement joints as directed.
2. Provide cut to size joint filler between 20-foot sections and where curb abuts existing concrete paving and fixed structures or appurtenances. Protect the top edge of the joint filler during concrete placement with a temporary cap and remove after concrete has been placed.
3. Expansion joints shall be constructed at right angles to the line of the curb.
4. For slipform curbing, perform a "dry run" of the intended day's placement using engineer approved equipment or a "mock up" of matching dimensions. Movement of equipment shall have the ability to be followed by a string or survey equipment to indicate correct offset for placement. Remove all obstructions encountered along path and repair any questionable subbase as determined by Engineer.

B. Concrete Placement:
1. Concrete shall be placed in layers not to exceed 6 inches. For slipform concrete, refer to maximum placement depth as recommended by machine manufacturer.
2. Concrete shall be thoroughly consolidated by tamping and spading or with approved mechanical vibrators, eliminating all air pockets, stone pockets and honeycombing.
3. Place concrete in accordance with ACI 301 unless otherwise specified herein.
4. Cold Weather Concreting: Comply with ACI 306 for placement at temperatures of, or expected to be, below 40 DegF.
5. Hot Weather Concreting: Comply with ACI 305 for placement at temperatures of, or expected to be, above 90 DegF.
6. For slipform concrete, any curb placed outside the tolerance of 1/2 inch of the established line or 1/4 inch outside of the established grade shall be removed and replaced by the contractor.
7. When machine forming, the Contractor may provide additional width of curb without any other change in shape or dimension, if provided by the Contractor at no additional cost to the owner. If the Contract Documents or the Engineer require no curb be placed across the driveway entrances, the Contractor may continue placing curb across driveway entrances, but the curb placed across driveway entrances, excluding transitions, must be cut out and the concrete legally disposed in a manner approved by the Engineer.

C. Concrete Finishing:
1. The top of the curb shall be rounded with an edging tool to a radius of 1/2 inch and the surfaces shall be floated and finished with a smooth wood float until true to grade and section and uniform in texture. Floated surfaces shall then be brushed with a fine-hair brush with longitudinal strokes.
2. Immediately after removing the front curb form, the face of the curb shall be rubbed with a wood or concrete rubbing block and water until blemishes, form marks, and tool marks have been removed. The surface, while still wet, shall be brushed in the same manner as the curb top. Except at grade changes or curbs, finished surfaces shall not vary, from the testing edge of 10-foot straightedge, more than 1/8 inch for gutter and entrance and 1/4 inch from top and face of curb. Irregularities exceeding the above shall be satisfactorily corrected.
3. Visible surfaces and edges of finished curb shall be free of blemishes and form and tool marks, and shall be uniform in color, shape, and appearance.
4. No plastering shall be permitted.
5. Curbing forms shall be left in place at least 24 hours, or until the concrete has sufficiently set so that, in the opinion of the Engineer, the forms can be removed without injury to the curbing.

D. Machine Formed Curbs:
1. For Machine formed curb, uniformly feed concrete to the machine so the concrete maintains the shape of the section, without slumping after extrusion. Avoid stopping machine during

placement. If stopping is necessary, immediately cease tamping and vibrating operations. Voids or honeycomb on the surface of the finished curb will not be allowed. Immediately after extrusion, perform any additional surface finishing required.

3.5 CURING

A. Impervious Sheeting Method:

1. The entire exposed surface shall be wetted with a fine spray of water and then covered with impervious sheeting material. Sheets shall be laid directly on the concrete surface with the light-colored side up and overlapped 12 inches when a continuous sheet is not used.
2. The curing medium shall not be less than 18 inches wider than the concrete surface to be cured and shall be securely weighted down by heavy wood planks, or by placing a bank of moist earth along edges and laps in the sheets.
3. Sheets shall be satisfactorily repaired or replaced if torn or otherwise damaged during curing. The curing medium shall remain on the concrete surface to be cured for not less than 7 days.

- or -

B. Membrane Curing Method:

1. The entire exposed surface shall be covered with a membrane forming curing compound.
2. Curing compound shall be applied in two (2) coats by hand operated pressure sprayers at a coverage of approximately 200 square feet per gallon for both coats, unless otherwise approved by the Engineer based upon manufacturer's data.
3. The second coat shall be applied in a direction approximately at right angles to the direction of application of the first coat. The compound shall form a uniform, continuous, coherent film that will not check, crack, or peel and shall be free from pinholes or other imperfections. Apply an additional coat to all surfaces showing discontinuity, pinholes, or other defects.
4. Concrete surfaces that are subjected to heavy rainfall within 3 hours after curing compound has been applied shall be resprayed by the above method and at the above coverage at no additional cost to the Owner.
5. Expansion-joint openings shall be sealed at the top by inserting moistened paper or fiber rope or covering with strips of waterproof paper prior to application of the curing compound, in a manner to prevent the curing compound entering the joint.
6. Concrete surfaces to which membrane-curing compounds have been applied shall be adequately protected for 7 days from pedestrian and vehicular traffic and from any other action that might disrupt the continuity of the membrane. Any area covered with curing compound and damaged by subsequent construction operations within the 7-day curing period shall be resprayed as specified above at no additional expense to the Owner.

3.6 SEALING JOINTS

A. The approximately horizontal sections of expansion joints shall be sealed with joint sealer. The joint opening shall be thoroughly cleaned before the sealing material is placed. Sealing shall be done so that the material will not be spilled on exposed surfaces of the concrete.

B. Concrete at the joint shall be surface dry and atmospheric and concrete temperatures shall be above 50ºF at the time of application of joint-sealing materials. Excess material on exposed surfaces of the concrete shall be removed immediately and exposed concrete surfaces cleaned.

C. For Machine Formed Curbs

1. Crack Control Joints. Crack control joints shall be formed or saw cut to a width of 1/8 inch minimum, 1/4 inch maximum and a depth of 1-1/2 inches. The cut or formed joints shall extend slightly below the surface of the adjacent pavement and shall be spaced at 1/8 inch

intervals. When the curb is constructed next to concrete pavement, the curb shall line up with the pavement joints in additional joints shall be provided in the curb which line up with the pavement joints. The saw cut or formed joints shall be left unfilled.

2. Expansion Joints. Expansion joints shall be 1-1/16 inches wide and contain Premoulded Resilient Joint Filler. The filler shall be cut to conform to the cross section of the curb and curb and gutter. The expansion joints shall be located at all immovable objects (bridge structures, etc.), adjacent to expansion joints in the pavement, where shown in the contract documents, or directed by the Engineer. Expansion joints shall not be required at regular intervals unless otherwise shown in the contract documents.

3.7 BACKFILLING AND RESTORATION

A. After curing, debris shall be removed, and the area adjoining the concrete shall be backfilled, graded, and compacted to conform to the surrounding area in accordance with lines and grades indicated.

B. All lawns, pavements, driveways, shrubs, or other improvements affected by curbing placement shall be restored to their original condition.

3.8 PROTECTION

A. The Contractor shall protect the curbing and keep it in alignment and “first class” condition until the completion of the Contract. Any curbing, which is damaged prior to final acceptance of the Work, shall be removed and replaced at the Contractor’s expense.

END OF SECTION

SECTION 321630 – CONCRETE SIDEWALKS

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes the installation of concrete sidewalk as shown on the Drawings, or as specified herein.

B. The materials and methods specified herein are directly intended for placement of "new" concrete sidewalk. Where existing sidewalk is removed and replaced during construction, modifications to these specifications to match existing conditions shall be made as directed by the Engineer.

1.2 QUALITY ASSURANCE

A. Reference Standards:
   1. The latest edition of the following standards, as referenced herein, shall be applicable.
      a. ConnDOT Standards.
      b. American Society of Testing and Materials (ASTM).
      c. American Concrete Institute (ACI).

B. The Contractor shall provide and pay for all costs in connection with an approved independent testing facility to determine conformance of materials with the specifications, if at any time during the Work, materials appear unsuitable in the opinion of the Engineer.

1.3 SUBMITTALS

A. Concrete:
   1. The Contractor shall furnish the name and location of the concrete supplier.
   2. Submit the design mix for each class of concrete prior to use in the Work.

B. Product Data:
   1. Submit manufacturer's catalog cuts, specifications, and installation instructions.

C. Test Results:
   1. The testing laboratory shall submit written reports of all tests, investigations, and recommendations to the Contractor and the Engineer.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Concrete:
   1. All cast-in-place concrete shall be ready mixed concrete meeting the following criteria:
      a. 28-day compressive strength-4000 psi.
      b. Air entrainment-4% to 8%.
      c. Slump-2" to 4".

B. Premoulded Expansion Joint Filler:
   1. Concrete curbing shall be provided with a 1/2 inch premoulded expansion joint filler conforming to ASTM D1751.
   2. The premoulded expansion joint filler shall be "pre-cut" to match the concrete sidewalk cross-sectioned dimensions as detailed on the Drawings.

C. Fabric Reinforcement:
   1. Flat sheets of 6 x 6 - W 2.9 x W 2.9, ASTM A1064, welded wire reinforcement.

D. Sealants:
   1. Joint Sealers: ASTM C920.

E. Forms:
   1. Sidewalk forms shall be of wood or steel, straight of sufficient strength to resist springing during depositing and consolidating concrete, and of a height equal to the full depth of the finished sidewalk.
   2. Wood forms shall be surfaced plank, 2-inch nominal thickness, straight and free from warp, twist, loose knots, splits or other defects. Wood forms shall have a nominal length of 10 feet, with a minimum of three stakes per form, at maximum spacing of 4 feet. Corners, deep sections, and radius bends shall have additional stakes and braces, as required. Radius bends may be formed with 3/4-inch boards, laminated to the required thickness.
   3. Steel forms shall be channel-formed sections with a flat top surface and with welded braces at each end and at not less than two intermediate points. Form ends shall be interlocked and self-aligning. Forms shall include flexible forms for radius forming, corner forms, form spreaders, and fillers. Forms shall have a nominal length of 10 feet, with a minimum of two welded stake pockets per form. Stake pins shall be solid steel rods with chamfered heads and pointed tips, designed for use with steel forms.

PART 3 – EXECUTION

3.1 INSPECTION

A. The Contractor shall notify the Engineer 24 hours before placing concrete in order to give the Engineer an opportunity to inspect the formwork, reinforcing and related items prior to placement of the concrete.

B. Delivery tickets shall show the amount of cement, brand, and amount of all admixtures, in addition to information required by ASTM C94, Section 14. Water added on the job shall be approved and the amount noted on the delivery ticket and initialed by the Contractor.

3.2 SUBBASE PREPARATION

A. Concrete sidewalk shall be constructed on a compacted granular subbase as shown on the Drawings.

B. The completed subbase shall be tested for grade and cross section with a template extending the full width of the sidewalk and supported between side forms.

C. The subbase shall be maintained in a smooth, compacted condition in conformity with the required section and established grade, until the concrete is placed.

D. The subbase shall be in a moist condition when concrete is placed.

E. The subbase shall be prepared and protected so as to produce a subbase free from frost when the concrete is deposited.

3.3 FORMWORK

A. Earth cuts may not be used as forms for vertical surfaces.

B. All forms shall be built mortar tight and of materials sufficient in strength to hold concrete without bulging between supports. Forms shall be maintained to eliminate the formation of joints due to shrinkage of the forms. Concrete, misshapen by bulges or deformations caused by inadequate forms, shall be removed or corrected as ordered by the Engineer. All replacements or corrections shall be made at the Contractor's expense.

C. All surfaces of wooden forms that will be in contact with exposed concrete shall be thoroughly treated with an approved lacquer in the procedure recommended by the manufacturer. Forms so treated shall be protected from being damaged or dirtied prior to placing of the concrete.

D. Metal forms shall be treated with an approved form lacquer or may be treated with an approved form oil. The metal used for forms shall be of sufficient thickness to remain true to shape. All bolt and rivet heads shall be designed to hold the forms rigidly together and to allow removal, without injury to the concrete. Metal forms which do not have smooth surfaces, correct alignment and clean surfaces shall not be used.

E. Side forms shall not be removed for less than 12 hours after finishing has been completed.

3.4 CONCRETE PLACEMENT AND FINISHING

A. Preparation:
   1. Set forms true to line and grade and anchor rigidly in position.
   2. Transverse expansion joints shall be installed at sidewalk returns and opposite expansion joints in adjoining curbs. Longitudinal expansion joints shall be installed between concrete sidewalk and abutting concrete curb, continuously. Transverse expansion joints shall be installed equally at not more than 25 feet on center, unless otherwise directed by the Engineer, or as detailed on the Drawings.
   3. Transverse expansion joints shall be filled with 1/2-inch joint filler strips. Joint filler shall be placed with top edge 1/4 inch below the surface and shall be held in place with steel pins or other devices to prevent warping of the filler during floating and finishing. Protect the top edge of the joint filler during concrete placement with a temporary cap and remove after concrete has been placed.
   4. Expansion joints shall be formed about structures and features that project through or into the sidewalk pavement, using joint filler of the type, thickness, and width indicated. The filler shall be installed in such manner as to form a complete, uniform separation between the structure and sidewalk pavement.

B. Placement of Fabric Reinforcement:
   1. Prior to placement, clean reinforcement thoroughly of mill and rust scale and of coatings which could destroy or reduce bond. Where there is a delay in depositing concrete after the positioning of reinforcement, reclean reinforcement, if necessary.
   2. Place reinforcement midway between top and bottom of the slab and secure against displacement.

3. Lap edges and ends of adjoining sheets of fabric reinforcement at least half the mesh width. Offset end laps in adjacent sheets to prevent continuous joints at ends. Interrupt reinforcement at expansion joints, stopping 2 inches from edges.

C. Concrete Placement:
   1. Concrete shall be placed in the forms in one layer of such thickness that when compacted and finished the sidewalk will be of the thickness indicated. After concrete has been placed in the forms, a strike-off guided by side forms shall be used to bring the surface to proper section to be compacted.
   2. The concrete shall be tamped and consolidated with a suitable wood or metal tamping bar, and the surface shall be finished to grade with a wood float. Finished surface of the walk shall not vary more than 3/16 inch from the testing edge of a 20-foot straightedge. Irregularities exceeding the above shall be satisfactorily corrected. The surface shall be divided into rectangular areas by means of contraction joints spaced at intervals shown on the drawings.
   3. Place concrete in accordance with ACI 301 unless otherwise specified herein.
   4. Cold Weather Concreting: Comply with ACI 306 for placement at temperatures of, or expected to be, below 40°F.
   5. Hot Weather Concreting: Comply with ACI 305 for placement at temperature of, or expected to be, above 90°F.

D. Concrete Finishing:
   1. After straight edging, when most of the water sheen has disappeared, and just before the concrete hardens, the surface shall be finished to a smooth and uniformly fine granular or sandy texture free of waves, irregularities, or tool marks. A scored surface shall be produced by brooming with a fiber-bristle brush in a direction transverse to that of the traffic, or as otherwise shown on the drawings.
   2. All slab edges, including those at formed joints, shall be finished carefully with an edger having a radius of 1/8 inch. Corner and edges which have crumbled and areas which lack sufficient mortar for proper finishing shall be cleaned and filled solidly with a properly proportioned mortar mixture and then finished.
   3. The completed surface shall be uniform in color and free of surface blemishes and tool marks.

3.5 CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing as follows:
   1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
      a. Water.
      b. Continuous water-fog spray.

c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

3.6 SEALING JOINTS

A. At the end of the curing period, expansion joints shall be carefully cleaned and filled with joint sealer. Concrete at the joint shall be surface dry, and the atmospheric and pavement temperatures shall be above 50˚F, at the time of application of joint sealing materials.

B. Joints shall be filled flush with the concrete surface in such manner as to minimize spilling on the walk surface. Spilled sealing material shall be removed immediately, and the surface of the walk cleaned. Dummy groove joints shall not be sealed.

3.7 BACKFILLING AND RESTORATION

A. After curing, debris shall be removed, and the area adjoining the concrete shall be backfilled, graded, and compacted to conform to the surrounding area in accordance with lines and grades indicated.

B. All lawns, pavements, driveways, shrubs, or other improvements affected by sidewalk placement shall be restored to their original condition.

3.8 PROTECTION

A. The Contractor shall protect the sidewalk and keep it in “first class” condition until the completion of the Contract. Any sidewalk which is damaged prior to final acceptance of the Work shall be removed and replaced at the Contractor’s expense.

3.9 FIELD QUALITY CONTROL

A. Testing and Inspecting: The Contractor will be responsible for providing an independent inspecting agency to perform tests and inspections and to submit reports.

B. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., pl us one set for each additional 50 cu. yd. or fraction thereof.
2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
    a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
3. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
4. Air Content: ASTM C23 l, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
5. Concrete Temperature: ASTM C I 064/C I 064M; one test hourly when air temperature is 40 DegF and below and when 80 DegF and above, and one test for each composite sample.
6. Compression Test Specimens: ASTM C3 l /C3 I M.
    a. Cast and laboratory cure three sets of two standard cylinder specimens for each composite sample.

7. Compressive-Strength Tests: ASTM C39/C39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days. The remaining two cylinders will be held in reserve. If the results of the 28-day tests indicate low strength concrete, the engineer will direct the contractor and laboratory to test the remaining two cylinders at a time directed by the Engineer.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
9. Test results shall be reported in writing to Engineer, concrete manufacturer, and Owner within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

END OF SECTION

SECTION 321815 – ATHLETIC CHANNEL DRAIN SYSTEM

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes install a precast, interlocking channel drainage system as specified and as shown on the working drawings.

B. System Description: Modular trench drain system precast from a corrosion resistant polymer including interlocking modular components for on-site installation.

1.2 QUALITY ASSURANCE

A. Warranty:
   1. Channel drain system is included under the Project Warranty.

1.3 SUBMITTALS

A. Contractor will submit shop drawings showing a plan of the total drainage system listing all parts being provided with exact center-line dimensions suitable for installation. Copies of the manufacturer's recommended method of installation, assembly, and anchorage shall be submitted for review.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Physical and Mechanical Characteristics of Channel Units.
   1. Top unit width - Approximately 6.1 inches.
   2. Internal width - Approximately 4.0 inches.
   3. Unit depth - Approximately 9.6 inches.

B. Channel Profile shall include positive interlocking tongue and groove connections which can be sealed to provide watertight connections. Each precast polymer channel shall be an approximately 1-meter unit and be available in curved and straight sections.

C. Catch Basins shall be precast polymer concrete, 39.37" in length and include a plastic grating.

D. Channel Drainage System:
   1. Track to track applications.
      a. ACO Sport System 2000.
      b. Sportsedge XT-6 Slot Drain.

E. Grates:
   1. Grates are to be black plastic with an anti-slip finish.
   2. Grate locking devices are to be galvanized steel.

PART 3 – EXECUTION

3.1 SITE PREPARATION

A. Excavate the area for channel placement wide enough to accommodate the channel size with a minimum of four-inch concrete encasement. Channels require a minimum of six inches concrete support, and top of channel must be evenly aligned to the surface of the surrounding surface on both sides, as well as underneath the channel.

3.2 INSTALLATION

A. Install precast channel drain in accordance with the details on the plans and the manufacturer's instructions.

B. Channel sections are installed from the outlet ends of the system, working from the catch basins. Insert channels from above to allow ends to interlock. Channel sections shall be placed on brick, rebar basket, channel chair, low slump concrete grout slurry, or suspended to obtain correct finished elevation. Cutting will be made, if required, by masonry or concrete saw. Cover top of channel with tape, plastic, or plywood strips to protect the channel surface from concrete during pouring.

C. Finishing and Cleanup
   1. Following final set of concrete, remove protection covering top of channels.
   2. Install drain system in strict accordance with manufacturer's recommendations and shop drawings.

END OF SECTION

SECTION 321823.38 – SYNTHETIC RUNNING TRACK SURVEYING

PART 1 – GENERAL

1.1 SUMMARY

A. This section covers all labor and materials required to provide survey of key construction elements and the final track and field facility. The Contractor is responsible for completing all survey work.

1.2 CODES AND STANDARDS

A. The survey work must be completed by a licensed surveyor or engineer.

B. Codes and standards follow the current guidelines set forth by the National Federation of State High School Associations (NFSHSA).

1.3 SUBMITTALS

A. The following information must be submitted by the Contractor:
   1. After installation of new precast channel drain:
      a. Survey the new precast channel drain location with elevations at:
         1) 10-meter intervals starting at the common finish line.
   2. New outside and infield border curbs:
      a. Survey the outside border curbs location with elevations at:
         1) 10-meter intervals starting at the common finish line.
         2) All sprint chute corners.
         3) Elevations to show top of curb and top of notch if necessary.
      b. Survey the infield border curbs location with elevations at:
         1) 10-meter intervals.
         2) Elevations to show top of curb and top of notch.
   3. After installation of all field events:
      a. Survey all field events with elevations as follows:
         1) 4 corners of all long/triple jump sand pits.
         2) Center of all long/triple jump take-off boards.
   4. After installation of the asphalt/concrete base:
      a. Survey track oval and field event areas as follows:
         1) Both edges of all runways at 10-foot intervals.
         2) High jump area on a 20-foot grid.
         3) All paved D-zone surfaces on a 20-foot grid.
         4) Oval lanes 1, 3 and 6 at 10-meter intervals starting at the common finish line.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 321823.39 – SYNTHETIC RUNNING TRACK SURFACING

PART 1 – GENERAL

1.1 SUMMARY

A. This section covers all labor and materials required to install a first-class track & field surface. The Track & Field Synthetic Surfacing Contractor is responsible for installing all track & field synthetic surfacing materials and line markings as designated in these specifications.

1.2 CODES AND STANDARDS

A. Codes and standards follow the current guidelines set forth by the National Federation of State High School Associations (NFSHSA).

1.3 SUBMITTALS

A. The following information must be submitted by the Track & Field Synthetic Surfacing Contractor prior to installation.
   1. Test results, from an IAAF certified laboratory, verifying manufacturer's Track & Field Synthetic Surfacing product meets the IAAF Performance Specifications for Synthetic Surfaces.
      a. The same components from the test sample must be used in the installed surface. No substitutions will be allowed.
      b. TRRL Pendulum test results for slip resistance must be greater than 47.
   2. Surfacing Contractor On-site Project Manager/Superintendent Qualifications:
      a. The project manager/superintendent for the surfacing contractor will be on-site during all surfacing operations. Substitution of project manager/superintendent shall not be permitted.
      b. A list of completed facilities, minimum of 5, which are certified to meet NFSHSA rules & regulations in the past 5 years utilizing the product specified in these specifications. The Track & Field Synthetic Surfacing Contractor's project manager/supervisor responsible for the completed facilities must supervise this project.
   3. Standard printed specifications of the track & field synthetic surfacing system that is being installed.
   4. Installation process and requirements for subbase (stone, asphalt, and concrete) and any conditions that may limit the track & field synthetic surface installation or affect quality of installation.
   5. Temperature/climatic conditions limiting quality of installation.
   6. Standard specification and application for recommended subbase primers, crack filler, patching and leveling material.
   7. Three product samples, a minimum of 6" x 6" in size, the same color, texture, thickness, etc. of the same type of surfacing to be installed for this project. This must be a representative sample of the product. This sample must be submitted and approved by the Owner prior to installation. At completion of the project this sample may be used as a comparison to judge the quality of the installed product.
   8. Material safety data sheets on all individual components of the product being installed.
   9. Provide a letter stating the Track & Field Synthetic Surfacing Contractor reviewed the asphalt specification and are accepting the specification as correct. Upon completion of the Asphalt paving and prior to installation of the track & field synthetic surface, the Track & Field Synthetic Surfacing Contractor will provide a letter accepting the installed asphalt and stating it is suitable to receive the track & field synthetic surface.

10. Letter from synthetic surfacing manufacturer approving the installer/applicator of the synthetic surface listed in these specifications.
11. Written notice and acceptance that all in-ground field event equipment is installed as per the Contract Documents and the rules of the sport.

B. The following information shall be submitted after completion of the specified work:
1. Provide a copy of the Track & Field Synthetic Surface vendor's standard Warranty noting any exceptions to the Warranty information included in this Specification Section.
2. Provide a Care and Maintenance manual for the Owner's use in maintaining the synthetic surfacing.

1.4 QUALITY ASSURANCE

A. Prior to installation, or during installation or at completion of installation of the synthetic surfacing, if the Owner has any question or doubt about the quality or formulation of the material, the Track & Field Synthetic Surfacing Contractor shall have the product tested. If the product meets these specifications, then the Owner shall pay for the cost of the testing; if the product does not meet these specifications, then the Track & Field Synthetic Surfacing Contractor shall pay for the testing. Any material failing to meet specifications will be replaced with new material at the Track & Field Synthetic Surfacing Contractor’s expense.

B. Slopes and Tolerances (NFSHSA):
1. The maximum lateral inclination permitted for the track across the full width of the track, preferably toward the inside lane, and across all runways, shall not exceed 2:100, 2.0 percent.
2. The maximum overall downward inclination permitted in the running direction for the track, the running direction for all runways and the throwing direction for all landing sectors shall not exceed 1:1,000, 0.1 percent. Inclination shall be measured by comparing the start and end points of the races that use the straightaway portion of the oval, the last 20 meters of the javelin runway, the start and end points of other runways, not to exceed 40 meters, and the full graded length of each landing sector.
3. In the high jump approach and takeoff area, the maximum overall downward inclination shall not exceed 1:100, 1.0 percent, in the running direction toward the center of the crossbar.
4. The surface of a throwing circle shall be level.

1.5 SPECIAL PROJECT CONDITIONS

A. The Track & Field Synthetic Surfacing Contractor will provide a project manager/superintendent on-site daily through the completion of the Track & Field Synthetic Surfacing Contractor's portion of the contract.
1. The on-site project manager/superintendent shall remain on site through the completion of the project. Substitution of project manager/superintendent shall not be permitted.

B. The Track & Field Synthetic Surfacing Contractor will provide a technician that will serve as a consultant to the Owner and Contractor during the Asphalt Paving, first reviewing the asphalt specification, accepting the specification as correct, and then, providing daily review and guidance of the construction of the Asphalt Paving which will directly affect the tolerances and longevity of the eventual synthetic surfacing installation.

C. Prior to installing any concrete, the Contractor must verify with the Track & Field Synthetic Surface manufacturer if any curing compounds or agents are allowed or acceptable.

1.6 SPECIFIC SCOPE OF WORK

A. The Track & Field Synthetic Surfacing Contractor shall verify the entire track & field subbase and all events to determine that:
   1. The synthetic surface for the 400-meter track oval will accurately fit onto the Asphalt Paving base.
   2. That slopes and elevations meet required tolerances.
   3. No bird baths exceed the allowable limits as specified.
   4. The track & field areas will meet or exceed the rules of the sport.

B. The Track & Field Synthetic Surfacing Contractor shall provide all labor, materials and equipment to perform the following work:
   1. The Track & Field Synthetic Surfacing Contractor is responsible for installing all track & field synthetic surfacing materials and line markings as designated in these specifications.
   2. Review Bidding documents and specifications, provide technical assistance, and approve Asphalt Paving base work as required in the specifications.
   3. Review and approve installation of all field event in-ground equipment before any track & field synthetic surfacing is installed as specified and shown on the Drawings.
   4. Brush and wash down all areas to be surfaced, as often as necessary during the installation of the track and field synthetic surface.
   5. Repair all birdbaths as required in these specifications.
   6. Install removable track & field synthetic surfacing (full pour polyurethane) plugs in all pole vault boxes, throw circles (cut plugs in half); apply synthetic surfacing to the junction box covers.
   7. Install special material (i.e., foam, board, etc.) in slot drain opening to prevent polyurethane from entering the opening. The drainage slot opening shall be neatly trimmed out (vertical cuts), after polyurethane installation, to allow proper drainage to occur. No polyurethane is allowed on the inside of the drainage slot opening. This shall apply only if the precast slot drain is installed.
   8. Repair all damaged areas, clean-up all glue, and remove excess polyurethane, primers and similar products. All trim cuts shall be neat and clean; on all curves the trim-out shall follow a radius line for accuracy and neatness.

1.7 WARRANTY/GUARANTEE

A. General: Warranties / Guarantees specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and are in addition to and run concurrent with other warranties/guarantees made by the Contractor under requirements of the Contract Documents.

B. The following are inclusive of the term “Track & Field Synthetic Surface” for provisions of the guarantee:
   1. All slopes & tolerances as required in this specification.
   2. Synthetic track & field surface product as specified and represented by the Track & Field Synthetic Surface Manufacturer.
   3. All materials and products specified.
   4. All line markings installed in accordance with the Contract Documents.

C. Track & Field Synthetic Surface Installer Guarantee: Provide in writing a “Full System Guarantee” agreement. The President/Principal(s) of both the Track & Field Synthetic Surface Installer and the Track & Field Synthetic Surface Manufacturer (if different) shall sign this document and it shall include the following:

1. All work executed under this section will be free from defects of material and workmanship for the specified period from date of Substantial Completion/Acceptance of the Owner.
2. Any defects will be remedied on written notice at no additional cost to the Owner.
3. The warranty shall not be prorated.
4. All material shall be guaranteed to the extent that the surfacing:
    a. Has been manufactured, applied and will perform in accordance with these and the manufacturer's specifications.
    b. Will hold fast and/or adhere to the primer, asphalt, concrete, edging, filler, patches, or overlay materials.
    c. Is Ultra-Violet resistant, will not bubble, blister, fade, crack, or wear excessively during the warranty period.

D. The Track & Field Synthetic Surfacing Contractor shall, in the presence of the Owner, inspect the track and field synthetic surfacing each year until the end of the warranty period, or at any time requested by the Owner. Any defects in workmanship or materials (at no fault of the Owner) shall be repaired at the expense of the Track & Field Synthetic Surfacing Contractor to the satisfaction of the Owner.

E. Contractor shall not be held liable for incidental or consequential damages. The Track & Field Synthetic Surface Warranties described shall be conditioned upon:
    1. Owner shall maintain track as described in the Owner's Manual submitted by the Contractor to the Owner.

F. The Warranty does not cover any defect, failure, damage caused by or connected with abuse, neglect, deliberate acts, acts of God, casualty or loads exceeding the Contractor's recommendations.

G. Warranty period to be five (5) years minimum.

PART 2 – PRODUCTS

2.1 TRACK & FIELD SYNTHETIC SURFACE

A. The track and field synthetic surface shall be as per the manufacturer's specifications, plus the following requirements and where discrepancies exist, they shall be brought to the attention of the Owner or Owner's representative prior to Bidding or Installation.

B. Colors:
    1. Base Bid: Manufacturer's Standard Royal Blue.
    2. Confirm all final colors with owner.

C. The following Products are approved for bidding:
    1. Beynon Sports Surfaces:
        a. Contact: (410) 771-9473.
        b. Base Bid Product: Basemat Structural Spray (Porous): BSS 100.
        c. Add Alternate Product: Sandwich System: BSS 300
    2. Advanced Polymer Technologies (APT):
        a. Contact: (724) 452-1330.
        b. Base Bid Product: Basemat Structural Spray (Porous): Rekortan BS.
        c. Add Alternate Product: Sandwich System: Rekortan M.
    3. Stockmeier Urethanes:
        a. Contact: (800) 777-1320.

b. Base Bid Product: Basemat Structural Spray (Porous): Stobitan SC.
c. Add Alternate Product: Sandwich System: Stobitan SW

D. Synthetic Track Surfacing shall be IAAF approved thickness unless otherwise specified.

E. Patching Material: All materials must be approved materials and compatible with the synthetic surface.

PART 3 – EXECUTION

3.1 INSPECTION AND ACCEPTANCE

A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of this Contract, any defects affecting installation.

B. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

3.2 INSTALLATION REQUIREMENTS

A. The following installation requirements must be met by the Track & Field Synthetic Surfacing Contractor:
1. Installation by synthetic surface manufacturer approved project manager/superintendent applicators and technicians. Local laborers may be hired for non-technical work, only.
2. Priming - The primer shall be spray-applied in accordance with the manufacturer's specifications. Only those areas which can be installed the same day should be primed. All concrete areas to be surfaced shall receive manufacturer's approved primer.

3.3 INSTALLATION OF TRACK & FIELD SYNTHETIC SURFACE

A. Base Bid: Basemat Structural Spray (Porous):
1. Thickness to match sample submitted to IAAF certified testing laboratory.
2. Base Layer:
a. The SBR granules and polyurethane shall be mixed together on site to regulate the ratio/quantity of SBR, not to exceed 82% by weight in the base mat portion of the system. The single component polyurethane binder shall be mixed with the SBR rubber so that a minimum of 20%, by weight, exists in the final mixture. This mixture is then mechanically installed using the paver.
3. Wearing layer:
a. The 0.5 to 1.5-millimeter EPDM granules shall be mixed with polyurethane, the single-component structural spray coating. The structural spray shall be made in two (2) uniform applications.

B. Add Alternate: Sandwich System:
1. Thickness to match sample submitted to IAAF certified testing laboratory.
2. Base Layer:
a. The SBR granules and polyurethane shall be mixed together on site to regulate the ratio/quantity of SBR, not to exceed 82% in the base mat portion of the system. The polyurethane shall be mixed with the SBR rubber so that a minimum of 20%, by weight, exists in the final mixture. This mixture is then mechanically installed using the paver.
3. Seal Coat:

a. The two polyurethane components are mixed at the prescribed ratio homogeneously with a suitable mixing device. The coating is squeegee applied to the base mat, making it impermeable.

4. Wearing layer:

a. The 1 to 3mm EPDM granules shall be integrated into the polyurethane to achieve the full depth of the 5 mm wearing course. The resilient embedded textured finish shall be a dense matrix of exposed EPDM granules. The homogeneous wearing course shall be applied in situ with the base course.

3.4 TIMING, LIMITATIONS, AND CONDITIONS AFFECTING INSTALLATION

A. The track surfacing material shall be applied no sooner than 28 days after placement of the asphalt top course.

B. Installation shall not take place if adjacent or concurrent construction generates excessive dust, abrasives or any other by-product that, in the opinion of the installer, would be harmful to the track material, until completion of such works.

C. Apply Synthetic Track Surfacing in dry weather when pavement and atmospheric temperatures are fifty (50) degrees Fahrenheit or above and are anticipated to remain above fifty (50) degrees Fahrenheit for twenty-four (24) hours after completing application.

D. The maximum temperature cannot exceed 105 degrees at any point during a 24-hour period.

E. Rain cannot be falling. If there is a threat of rain, work shall cease until dry conditions can be re-established on the track pavement. Work is to proceed only when adequate curing can be guaranteed by the manufacturer.

F. Weather and Climate: If in the opinion of the synthetic track surfacing manufacturer or the Owner, weather and climatic conditions are having or will have an adverse effect on installation; work shall be delayed until the adverse condition has passed.

G. Adjacent and Concurrent Construction: Installation shall not take place until the completion of the adjacent or concurrent construction operations which generate dust, airborne abrasives, or any other by-product that, in the opinion of the Owner or synthetic track surfacing manufacturer, would be harmful to the track material. Under specific direction of the Owner, the Track & Field Synthetic Surfacing Contractor may be allowed to cover the track material with an approved covering if such harmful construction operations must occur after the track material has been installed.

END OF SECTION

SECTION 321823.40 – SYNTHETIC RUNNING TRACK LINE MARKINGS

PART 1 – GENERAL

1.1 SUMMARY

A. This section covers all labor and materials required to install the track & field line markings.

B. The Synthetic Surface Contractor is responsible for the purchase and installation of all paints and line markings.

1.2 CODES AND STANDARDS

A. Codes and standards follow the current guidelines set forth by the National Federation of State High School Associations (NFSHSA).

1.3 SUBMITTALS

A. The following information shall be submitted prior to installation of specified work:
   1. A list, similar to the one in Part 3.2 below, depicting the colors of all line markings and labels of the events to be included for approval prior to installation. Also, all symbols and markings clearly identified, illustrated, and their colors stated. The recommended NFSHSA colors shall be used.
   2. Installation process and requirements for line markings and any conditions that may limit the installation or affect quality of installation.
   3. Material safety data sheets on all products, as necessary.

B. The following information shall be submitted at the completion of the specified work:
   1. Upon completion of all line markings, the Track & Field Synthetic Surfacing Contractor shall submit to the Owner a five (5) diagram/drawing depicting and identifying all line markings: 1) a key to the color codes, 2) a chart for all symbols, and 3) labels for all events.

PART 2 – PRODUCTS

2.1 PAINT

A. The paint shall be a metal latex-based paint typically used on Track & Field Synthetic Surface.

B. One free re-stripe of all below line markings should be provided within the warranty period of the track surfacing.

2.2 TEMPORARY REFERENCE MARKINGS

A. These markings shall be removed at the completion of the project.

PART 3 – EXECUTION

3.1 SUMMARY

A. General line markings of the 400-meter track and field events, shall be spray applied, using only paint, primers and finishes supplied and guaranteed by the approved manufacturer and/or supplier.

B. All markings shall be in accordance with the rules of the NFSHSA and shall be certified for accuracy. The color code of the NFSHSA shall be followed.

C. No line markings shall be installed if the weather conditions are not proper (i.e., too windy).

3.2 LINE MARKINGS

A. Paint:
   1. All line markings to receive adequate paint to completely cover the track & field synthetic surface.

B. Measure Line (Theoretical – not painted):
   1. Track oval will not utilize a regulation curb.
   2. Distance to right hand edge of the inside lane line of Lane 1 to be 20 centimeters from the measure line.

C. Line Precedence:
   1. Lane lines to take precedence over other markings.
      a. Numbers and letters to be broken at all lane line intersections.
   2. Waterfall starting lines take precedence over straight starting lines.
      a. Straight starting lines to taper at waterfall starting lines – maintain a 1/2-inch gap.

D. Chute Extensions:
   1. Chute extension lines to be solid not dashed.
   2. Break chute extension lies 2 inches either side of track oval lines.

E. 100 Meters:
   1. One Direction – main straight away.
   2. Event label:
      a. 100.
      b. 4 inches high.
      c. The color of the label to be white.
      d. Located in the outside lane and is above the starting line.
   3. Color of starting line is white.

F. 100 Meter Hurdles:
   1. One Direction – main straight away.
   2. Event label:
      a. 100.
      b. 4 inches high.
      c. The color of the label to be white.
      d. Located in the outside lane and is above the starting line.
   3. Color of the starting line is white.
   4. The hurdle tic marks are yellow.
      a. Hurdle tic marks are a 2.5-inches wide by 3 inches high triangle, the triangle is pointing in the direction of running – Each lane shall have 2 tic marks with each tic mark adjacent to the lane line, but not touching the lane line.

G. 110 Meter Hurdles:
   1. One Direction – main straight away.
   2. Event label:
      a. 110.
      b. 4 inches high.
      c. The color of the label to be white.
      d. Located in the outside lane and is above the starting line.
   3. Color of the starting line is white.
   4. The hurdle tic marks are blue.
      a. Hurdle tic marks are a 2.5-inches wide by 3 inches high triangle, the triangle is pointing in the direction of running – Each lane shall have 2 tic marks with each tic mark adjacent to the lane line, but not touching the lane line.

H. 200 Meters:
   1. All in lanes.
   2. Event label:
      a. 200.
      b. 4 inches high.
      c. The color of the label to be white.
      d. Located in Lane 2 and is above the starting line.
   3. Color of the starting line is white.

I. 400 Meters:
   1. All in lanes.
   2. Event label:
      a. 400.
      b. 4 inches high.
      c. The color of the label to be white.
      d. Located in Lane 2 and is above the starting line.
   3. Color of the starting line is white.

J. 300 Meter Hurdles:
   1. All in lanes.
   2. Event label:
      a. 300.
      b. 4 inches high.
      c. The color of the label to be white.
      d. Located in lane 2 and is above the starting line.
   3. Color of the starting line is white.
   4. The hurdle tic marks are red.
      a. Hurdle tic marks are a 2.5-inches wide by 3 inches high triangle, the triangle is pointing in the direction of running – Each lane shall have 2 tic marks with each tic mark adjacent to the lane line, but not touching the lane line.

K. 800 Meters:
   1. Waterfall start and 1 turn stagger.
   2. Event label:
      a. 800.

b. 4 inches high.
c. The color of the label to be white.
d. The 1 turn stagger starting line is located in Lane 2, the waterfall starting line is located in the outside lane, and the labels are above the starting line.

3. Color of the 1 turn stagger starting line is white with a green insert.
4. The color of the waterfall starting line is white.

L. 1600 Meters:
1. Waterfall start.
2. Event label:
a. 1600.
b. 4 inches high.
c. The color of the label to be white.
d. Located in the outside lane and is above the starting line.
3. Color of the starting line is white.

M. 1-Mile Run:
1. Waterfall start.
2. Event label:
a. 1 mile.
b. 4 inches high.
c. The color of the label to be white.
d. Located in the outside lane and is above the starting line.
3. Color of the starting line is white.
4. Install 1-inch wide by 3-inch long white marks on the infield side of the inside lane line at the 3/4, 1/2, and 1/4 marks.

N. 2-Mile Run:
1. Waterfall start.
2. Event label:
a. 2 mile.
b. 4 inches high.
c. The color of the label to be white.
d. Located in the outside lane and is above the starting line.
3. Color of the starting line is white.

O. 3200 Meters:
1. Waterfall start.
2. Event label:
a. 3200.
b. 4 inches high.
c. The color of the label to be white.
d. Located in the outside lane and is above the starting line.
3. Color of the starting line is white.

P. 4x100 Meter Relay:
1. All in lanes.

2. Event label:
    a. 400.
    b. 4 inches high.
    c. The color of the label to be white.
    d. Located in lane 2 and is above the starting line.
3. Color of the starting line is white, same starting line as the staggered starting line for the 400 meters.
4. The relay exchange zone markers are yellow and the acceleration zone marker is yellow.
    a. Exchange zone markers are 36-inch wide by 18-inch high triangles, the two triangles point into the relay exchange zone, and the triangles are included in the 30-meter zone

Q. 4x200 Meter Relay:
1. Four turn stagger.
2. Event label:
    a. 800R.
    b. 4 inches high.
    c. The color of the label to be white.
    d. Located in lane 2 and is above the starting line.
3. Color of the starting line is white with a red insert.
4. The relay exchange zone markers are red.
    a. Exchange zone markers are 36-inch wide by 18-inch high triangles, the two triangles point into the relay exchange zone, and the triangles are included in the 30-meter zone

R. 4x400 Meter Relay:
1. Three turn stagger.
2. Event label:
    a. 1600R.
    b. 4 inches high.
    c. The color of the label to be white.
    d. Located in lane 2 and is above the starting line.
3. Color of the starting line is white with a blue insert.
4. The relay exchange zone markers are blue.
    a. Exchange zone markers are 36-inch wide by 18-inch high triangles, the two triangles point into the relay exchange zone, and the triangles are included in the 30-meter zone.

S. 4x800 Meter Relay:
1. One turn stagger.
2. Event label:
    a. 3200R.
    b. 4 inches high.
    c. The color of the label to be white.
    d. Located in lane 2 and is above the starting line.
3. Color of the starting line is white with a green insert.
4. The relay exchange zone markers are green.
    a. Exchange zone markers are 36-inch wide by 18-inch high triangles, the two triangles point into the relay exchange zone, and the triangles are included in the 30-meter zone.

T. Break Lines:
   1. The break line shall be a solid green arc line per Rule, Section 1, Article 10.
   2. Provide green dashes on the inside lane line of Lane 5 from box alley 2 start to break lines (both turns).

U. Finish Line:
   1. Location:
      a. Common: Located at the point of curvature (PC) per plan.
   2. 2 inches wide and white in color.
   3. The intersection of the finish line with the lane lines shall be painted to conform with the current NCAA recommendation
   4. No lean line is to be provided.

V. Box Alleys:
   1. Provide 1-turn box alley starts for the following events:
      a. 800.
      b. 1600.
      c. 3200.
   2. Box 1 to be lanes 1 through 3.
   3. Box 2 to be lanes 4 through 6.

W. Long/Triple Jump:
   1. Runway lines:
      a. 2-inch wide lines.
      b. White in color.
      c. 48-inch wide runways (inside edge to inside edge of line).
   2. Distance marks:
      a. Provide 1.5-inch long by 1-inch wide white lines outside the runway on the right hand (direction of running) side every foot beginning at 20 feet from the long jump foul line and extending the length of the runway or 150 feet, whichever is shorter.
      b. Every 5- and 10-foot line to be 3 inches long by 1 inch wide.
      c. Every 10-foot line to be labeled below the line facing the athlete.

X. Lane numbers:
   1. The numbers are a block style, 24 inches high, and the numbers will not have a color shadow.
   2. The color of the numbers will be white.
   3. There are 5 sets of numbers:
      a. There is 1 set of numbers 5 feet before the 110M starting line.
      b. There is 1 set of numbers 1 foot after the common finish line, facing to the outside of the track oval.
      c. There is 1 set of numbers staggered in the first turn, above the 400M staggers.
      d. There is 1 set of numbers staggered at the 300M, above the starting line.
      e. There is 1 set of numbers staggered at the 200M, above the starting line.

Y. Interval Marks:
   1. Provide a 2-inch wide white line on the inside of the track oval extending from the inside edge of the inside Lane 1 line approximately 4 inches long.

2. These lines are to be at 50-meter intervals starting at the common finish line and running the entire length of the track oval.

Z. All color markings listed above must be reviewed and verified as correct, as per the rules and regulations of the governing body.

Note: All line markings must be reviewed and verified with the Owner's representative prior to installation.

END OF SECTION

SECTION 321823.41 – SYNTHETIC RUNNING TRACK CERTIFICATION SURVEY

PART 1 – GENERAL

1.1 SUMMARY

A. This section covers all labor and materials required to provide certification of the final track & field facility. The Contractor is responsible for completing all survey work.

1.2 CODES AND STANDARDS

A. The survey work must be completed by a licensed surveyor.

B. Codes and standards follow the current guidelines set forth by the National Federation of State High School Associations (NFSHSA).

1.3 SUBMITTALS

A. The following information must be submitted by the Contractor:
   1. After installation of the track & field synthetic surface and line markings:
      a. The Contractor shall submit the below Track & Field Certification Survey, stating the completed facility meets requirements outlined in the NFSHSA Rulebook. The Engineer or Surveyor, selected by the Contractor, must survey the facility's as-built line markings.

B. Certification Survey:
   1. Facility Information:

      Owner _____

      Facility Name _____

      Location _____

   2. Surveyor/Engineer Information:

      Firm Name _____

      Contact _____

      Phone # _____

      Registration # _____

      Firm Name _____

      Contact _____

      Home # _____

      Registration # _____

3. Survey Information:

Date of Survey _____

Weather Conditions _____

1.4 TRACK OVAL MEASUREMENTS

A. Contractor shall provide for Engineer's review a completed Class 4 Markings Certification for Running Tracks per the latest ASBA (American Sports Builders Association) Construction and Maintenance Manual.

B. The track survey and certification form shall be completed and stamped and signed by a licensed surveyor and the surveyor shall have provided similar work for at least 5 running tracks in the last 5 years.

END OF SECTION

SECTION 323113 – CHAIN LINK FENCE AND GATES

PART 1 – GENERAL

1.1 DESCRIPTION

A. The Contractor shall provide all labor, materials, equipment, and services necessary for, and incidental to, the installation of chain link fence and gates, as shown on the Drawings and as specified herein.

B. All chain link fence shall have a thermally-bonded and fused polymer color coating.

C. All gates and gate hardware shall be powder coated.

1.2 QUALITY ASSURANCE

A. Comply with standards of the Chain Link Fence Manufacturer's Institute.

B. Provide steel fence and related gates as a complete system produced by a single manufacturer, including necessary erection accessories, fittings and fastenings.

C. Comply with ASTM A53 for requirements of Schedule 40 piping.

D. Comply with ASTM F668 Specification for Polymer Coated Chain Link Fence Fabric.

E. Comply with ASTM F1043 Specification for Strength and Protective Coatings of Metal Industrial Fence Framework.

F. Height of fence shall be measured from the top of concrete footing to the top of post.

G. Manufacturer: Company shall be headquartered in the US having US manufacturing facility/facilities specializing in manufacturing chain link fence products with at least 5 years of experience.

H. Fence contractor: Company with demonstrated successful experience installing similar projects and products in accordance with ASTM F567.

I. Tolerances: Current published edition of ASTM specifications tolerances apply. ASTM specification tolerance supersede any conflicting tolerance.

1.3 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.
   1. Fence and gate posts, rails and fittings
   2. Chain link fabric, reinforcements, and attachments.
   3. Gates and hardware.

B. Shop Drawings: Show locations of fences, gates, posts, rails, tension wires, details of extended posts, extension arms, gate swing, or other operation, hardware, and accessories. Indicate materials, dimensions, sizes, weights, and finishes of components. Include plans, gate elevations, sections details of post anchorages, attachment, bracing, and other required installation and operational clearances.

C. Samples for Verification: For each type of chain-link fence and gate indicated:
   1. Polymer coated steel wire (for fabric) in 6-inch (150-mm) lengths on shapes for posts, rails, wires and gate framing.
   2. Two-stage powder coat finish, in 6-inch (150-mm) lengths on shapes for gate framing.

D. Product Certificates: For each type of chain-link fence and gate, signed by product manufacturer:
   1. Strength test results for framing according to ASTM F1043.
   2. Material certifications, made in USA, Buy America Act or Buy America when required.

E. Qualification Data: For installer.

F. Field quality-control test reports.

G. Maintenance Data: For the following to include in maintenance manuals:
   1. Polymer finishes.
   2. Powder coat finishes.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed chain-link fences and gates similar in material, design and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

PART 2 – PRODUCTS

2.1 CHAIN LINK FABRIC

A. General: Height indicated on Drawings. Provide fabric in one-piece heights for fence heights up to 10 feet measured between top and bottom of outer edge of selvage knuckle or twist. Comply with ASTM A392, CLFMI CLF 2445, and requirements indicated below:
   1. Steel Chain Link Wire Fabric:
      a. Polymer Coated Steel Fabric: ASTM F668, the wire gauge specified for polymer coated wire is that of the metallic coated steel core wire.
         1) Class 2b fused and adhered.
         2) Color: Black. In compliance with ASTM F934.

B. Mesh Size:
   1. 2 inches for track fences.

C. Selvages: Knuckled top and bottom.

2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Stretcher Bars: One piece equal to full height of fabric, minimum cross-section 3/16 inch by 3/4 inch.

B. Metal Bands (for stretcher bars): Steel, wrought iron, or malleable iron, to secure stretcher bars to end, corner, pull and gate posts.

C. Wire Ties:
   1. For tying fabric to line posts, rails and braces: 9-gauge steel wire.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work and other conditions affecting performance:
   1. Begin installation in general site areas or those not directly adjacent to the playing field only after final grading including topsoiling and paving is completed in that area or as otherwise permitted by Engineer.
   2. For installation directly adjacent to the playing field, coordinate footing installation timing with final installation of playing field materials so as not to contaminate, destroy or displace these playing field materials.
   3. If unsatisfactory conditions are present, proceed with installation only after they have been corrected.

3.2 PREPARATION

A. Coordinate fence and gate installation with completion of finished grading and installation of adjacent finish field materials.

B. Stake locations of fence lines, gates and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, irrigation system, underground structures, benchmarks and property monuments.

3.3 INSTALLATION

A. Attach fabric to playing field side of fence. Bottom of fabric to be set on finished grade of curb, track, or playing field except when indicated otherwise. Thread stretcher bars through fabric using one bar for each gate and end post and two for each corner and pull post. Pull fabric tight so that the maximum deflection of fabric is 2 inches when a 30-pound pull is exerted perpendicular to the center of a panel. Maintain tension by securing stretcher bars to posts with metal bands spaced 15 inches on center. Fasten fabric to steel framework with wire ties spaced 12 inches on center for line posts and 24 inches on center for rails and braces. Bend back wire ends to prevent injury. Tighten stretcher bar bands, wire ties, and other fasteners securely.

B. Position bolts for securing metal bands and hardware so nuts are located opposite the fabric side of fence. Tighten nuts and score excess threads.
   1. Secure post tops, extension arms, and caps with one-way cadmium plated steel screws.

C. Touch Up: Small nicks or other blemishes shall be touched up with paint materials suitable for and matching the finish of the damaged material. Severely damaged fencing/gates deemed as unacceptable at the sole discretion of the Owner or its representatives shall be replaced at the contractor's expense.

END OF SECTION

SECTION 329113 – SOIL PREPARATION

PART 1 – GENERAL

1.1 SUMMARY

A. This section includes provisions for the placement of topsoil outside of the athletic field limits in conformance with the lines, grades and thicknesses as shown on the Drawings and as herein specified.

B. Minimum thickness is 6 inches, for all areas disturbed during construction and not receiving other surface treatment.

C. The Contractor shall furnish all materials and perform all work in accordance with these specifications, drawings, and instructions provided by the Owner.

1.2 SUBMITTALS

A. Samples: Furnish earth materials to the testing laboratory for analysis and report, as directed by the Engineer or as outlined in the specifications.

B. Quality Control Submittals:
   1. Test Reports: The testing laboratory shall submit written reports of all tests, investigations, and recommendations to the Contractor and the Engineer. Indicate quantities of materials necessary to bring topsoil into compliance with textural/gradation requirements. Indicate quantity of lime and quantity and analysis of fertilizer.

1.3 REFERENCES

A. Comply with the latest edition of the following standards:
   1. ConnDOT Standards
   2. "Standard Specifications for Highway Materials and Methods of Sampling and Testing, American Association of State Highway and Transportation Officials (AASHTO)."
   3. ASTM International (ASTM)
      a. C33, Standard Specification for Concrete Aggregates.
      b. C602, Standard Specification for Agricultural Liming Materials
   4. U.S. Bureau of Reclamation (USBR)
      a. 514.4.4, Reclamation Instructions, Series 510—Land Classification Techniques and Standards, Part 514—Laboratory Procedures, Chapter 4—Particle-Size Analyses.
      b. 14.8.7, Reclamation Instructions, Series 510—Land Classification Techniques and Standards, Part 514—Laboratory Procedures, Chapter 8—Soil Chemical Tests

1.4 QUALITY ASSURANCE

A. Provide and pay for all costs in connection with an approved independent testing facility to determine conformance of soils and aggregate with the specifications.

1.5 PROJECT CONDITIONS

A. Coordinate the placement of topsoil with the completion of all underground work including that of the other trades.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Topsoil: Natural, friable, fertile, fine loamy soil possessing the characteristics of representative topsoils in the vicinity which produces a heavy growth; free from subsoil, objectionable weeds, litter, sods, stiff clay, stones larger than 1 inch in diameter, stumps, roots, trash, toxic substances, or any other material which may be harmful to plant growth or hinder planting operations. Contractor is to verify amount stockpiled and supply any additional as needed:

1. Topsoil shall contain not less than 6% nor more than 20% organic matter as determined by the wet combustion method (chronic acid reduction); topsoil shall have a pH value of not less than 5.5 nor more than 7.0;
2. Topsoil shall meet the following mechanical analysis:

SIZE OF SCREEN	% OF SOIL RETAINED	% OF SOIL PASSING
1”	0	100
1/4	3	97
No. 100	40-60	40-60

3. Imported topsoil in which more than 60% of the material passing a No. 100 sieve shall be rejected. All percentages are to be based on the dry weight of the samples.
4. Laboratory tests of the topsoil shall be performed by a certified testing laboratory, and shall perform tests for the following:
   a. Sieve particle size analysis and gradient of mineral content.
   b. Chemical analysis of the following:
      1) pH and buffer pH.
      2) Percent of organic content.
      3) Nutrient levels of phosphorus, potassium magnesium, manganese, iron, zinc and calcium.
      4) Soluble salt.
      5) Cation exchange capacity (CEC).
   c. Recommended fertilizer and rate of application for low and medium level nutrient soils.

2.2 MATERIAL ACCEPTANCE

A. Topsoil may be acquired from approved sites that are designated on the Drawings. If no sites are designated, material proposed for use as topsoil must be stockpiled, sampled, and tested prior to use.

B. Topsoil containing foreign material may be rejected on the basis of visual examination by the Engineer, prior to testing.

C. Acceptance of topsoil shall be based upon test results. Tested topsoil must be approved in writing by the Engineer before any material is used.

2.3 SOIL AMENDMENT

A. Textural Amendments: Amend as necessary to conform to required composition by incorporating sand, peat, manure, or sawdust.

B. Fertilizer: Shall be delivered to the site, mixed as specified, in the original unopened standard size bags showing weight, analysis and name of manufacturer. Store fertilizer in a weatherproof place and in such a manner that it shall be kept dry and its effectiveness shall not be impaired.

1. Percentages of nitrogen, phosphorus and potash shall be based on laboratory test recommendations. For the purpose of bidding, assume 10% nitrogen, 6% phosphorus and 4% potash by weight. At least 50% of the total nitrogen shall contain no less than 3% water-insoluble nitrogen. At least 60% of the nitrogen content shall be derived from super-phosphate containing not less than 18% phosphoric acid or bone meal containing 25% to 30% phosphoric acid and 2% to 3% nitrogen. Potash shall be derived from muriate of potash containing 55% to 60% potash.
2. Grass or sodded areas shall have fertilizer applied according to soil text report or as specified on the drawings.

C. Organic Matter: Leaf matter and yard waste composted sufficiently to break down all woody fibers, seeds, and leaf structures, and free of toxic and non-organic matter. Organic matter shall be commercially prepared compost. Coarse sand shall be clean, sharp, natural sands free of limestone, shale and slate particles, ASTM C33 fine aggregate with a Fines Modulus Index of 2.75 or greater.

D. Lime: Shall be ground palletized, or pulverized lime manufactured to meet agricultural standards and contain a maximum of 60% oxide.

PART 3 – EXECUTION

3.1 STOCKPILING

A. Stockpile topsoil from on-site sources or provide from off-site sources and stockpile, if on-site quantities are deficient.

B. Stockpiles are to contain not less than 200 cubic yards or the minimum required for the project.

C. Stockpiles are to have a maximum height of 10 feet and be trimmed to uniform surfaces and slopes.

D. The sites of all stockpiles and adjacent areas, which have been disturbed are to be graded and put into an acceptable condition by seeding, as directed by the Engineer.

3.2 PREPARATION

A. Preparation - Disk, drag, harrow or hand rake subgrade to a depth of 3 inches to provide bond for topsoil. Topsoil, which must be transported across finished walks, shall be delivered in such a manner that no damage will be done to the walks. The Contractor shall be responsible for the repair of such damage.

B. Before placing topsoil, rake subsoil surface clear of stones larger than 1.5 inches, debris, and roots. Compact topsoil to form a layer with minimum depth of 4 inches in lawn areas and 12 inches in shrub beds. Topsoil shall be placed so that after final settlement there will be good drainage (and conforming to elevations shown on drawings). Contractor is to maintain surfaces and place any additional topsoil necessary to replace that which may have eroded before acceptance.

C. Locations containing unsuitable subsoil shall be treated in one of the following manners:
1. Where unsuitability within the construction site is deemed by the Owner to be due to excessive compaction caused by heavy equipment or by the presence of boards, mortar, concrete or other construction materials in subgrade, and where the natural subsoil is other than A.A.S.H.T.O. classification of A6 or 7, the Contractor shall loosen such areas with spikes, discs, or other means to loosen the soil to a condition acceptable by the Owner. The Contractor shall also remove all debris and objectionable material. Soil should be loosened to a minimal depth of

12 inches with additional loosening as required to obtain adequate drainage. Contractor may introduce peat moss, sand, or organic matter into the subsoil to obtain adequate drainage should he so desire. All such remedial measures shall be considered as incidental to the work and no extra payment shall be made for this part of the work; and;

2. Where subgrade is deemed by the Owner to be unsuitable because the natural subsoil falls into an AASHTO classification of A6 or 7 and contains moisture in excess of 30%, then such a condition shall be rendered suitable by installation of a subdrainage system or by other means described elsewhere in these specifications. Where such conditions have not been known or revealed prior to planting time and where they have not been recognized in the preparation of drawings and specifications, then the Owner shall issue a change order to install the proper remedial measures, all of which shall be in addition to the contract sum.

3.3 TOPSOIL PLACEMENT

A. Do not place topsoil when subsoil or topsoil is frozen, excessively wet, or otherwise detrimental to the Work.

B. Mix soil amendments, lime, and fertilizer with topsoil before placement or spread on topsoil surface and mix thoroughly into entire depth of topsoil before planting or seeding. Delay mixing of fertilizer if planting or seeding will not occur within 3 days.

C. Place 1/2 of total depth of topsoil and work into subgrade soil to create a transition layer. Place remainder of topsoil to depth after compacting to 75% where seeding and planting are scheduled.

D. Uniformly distribute to within 1/2 inch of final grades. Fine grade topsoil eliminating rough or low areas and maintaining levels, profiles, and contours of subgrade to ensure positive drainage.

E. Remove stones exceeding 1 inch, roots, sticks, debris, and foreign matter during and after topsoil placement.

F. Remove surplus subsoil and topsoil from Site. Grade stockpile area as necessary and place in condition acceptable for planting or seeding.

3.4 CLEANING

A. Remove all surplus subsoil and topsoil from project site.

B. Leave the site in clean, satisfactory condition ready to receive subsequent operations.

END OF SECTION

SECTION 329200 – TURF AND GRASSES

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes the preparation of ground surfaces, fertilization of applicable areas, seeding, mulching of applicable surface areas, and maintenance of turf areas until such time as project is accepted by Engineer. Applicable areas shall include those identified on the Contract Drawings being located outside the track and field area.

B. Seed shall be sown from March 1 to May 15, or from September 15 to November 15 of given calendar year, unless otherwise approved by Engineer.

1.2 SUBMITTALS

A. Quality Control Submittals:
   1. Certification:
      a. Submit manufacturer's or vendor's certified analysis for soil amendments and fertilizer materials.
      b. Submit vendor's certified analysis for each grass seed mixture required, stating botanical and common name, percentages by weight, percentages by purity, germination, and weed seed.

B. Maintenance Instructions: Submit instructions recommending procedures to be implemented for maintenance of landscaped work for one (1) full year. Submit prior to expiration of Contractor's maintenance period.

C. Submit description of planned mulching techniques and corresponding manufacturer's installation recommendations for approval by Engineer.

1.3 QUALITY ASSURANCE

A. All turf and grasses work shall be performed by one Contractor, with proven expertise in this type of construction.

B. Package standard products with the manufacturer's certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.

C. The Contractor shall provide and pay for all costs in connection with an approved independent testing facility to determine conformance of materials with the specifications.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver packaged materials in containers, showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery, and while stored on site.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Fertilizer:
1. Commercial fertilizer (5-10-5) inorganic, or organic, containing not less than five (5) percent nitrogen, ten (10) percent available phosphoric acid, and five (5) percent water soluble potash.
2. If, as an alternative, the Contractor wishes to substitute for commercial fertilizer 5-10-5, another commercial fertilizer with a 1-2-1 ratio, such as 10-20-10 or 6-12-6, they may do so with the approval of the Engineer and the rate of fertilizer to be used shall be whatever amount is required to furnish the same amount of nitrogen as would be supplied by the 5-10-5.

B. Seed:
1. Seed shall be fresh, clean, new-crop seed mixed in the proportions specified for species and variety, conforming to Federal and State Standards.
2. Site Seed Mix: Use the following standard mixture unless a special mixture is otherwise indicated or approved by the Owner.

SPECIES	% BY WEIGHT	% BY GERMINATION
Zig Zag Tall Fescue	25	90
Amity Tall Fescue	25	90
Mazama Kentucky Bluegrass	20	85
Metolious Perennial Ryegrass	20	90
Double Time Perennial Ryegrass	10	85

3. Weed seed content shall not exceed 0.20%.

C. Mulch:
1. Provide and install a mulch adequate to protect the seeding during its growing period. It shall be the responsibility of the Contractor to determine the appropriate mulching techniques for the particular site conditions and acquire approval of the same from the Engineer.
2. Clean straw for gentle slopes, consisting of stalks of oats, wheat, rye, or other approved crops which are free of noxious weed seeds. Weight shall be based on a fifteen (15) percent moisture content.
3. Mulching blanket for steep slopes and drainage swales: “Curlex Blanket” by American Excelsior, “Ero-Mat” by Contech Construction Products, Inc, or approved equal.
4. Bonded fiber matrix for mulching in areas where slopes are 1.5H:1V or greater or cut or fill slopes 20 feet (6m) or more in height. Product shall be EcoAegis as manufactured by Canfor, or approved equal meeting U.S. DOT Standard Specification FP-96, Section 713.05(h)
   a. Package Weight: 50 pound (18.6kg) bags.
   b. Moisture Content: 12 +/- 3 percent by weight.
   c. Minimum Water Holding Capacity: Approximately 10 times dry weight.
   d. Composition:
      1) Refined Softwood Fiber: (90% by weight).
      2) Blended Hydrocolloid-based Binder: (9% by weight).
      3) Mineral Activator: (1% by weight).
   e. Color: Natural – No Dye Products.

D. Water: Clean and potable.

2.2 ACCESSORIES

A. Soil Amendments: Soil amendments are not to be made without review and authorization by the Engineer.
   1. Lime: Natural limestone containing not less than 85% of total carbonates, ground so that not less than 90% passes a 10-mesh sieve and not less than 50% passes a 100-mesh sieve.
   2. Aluminum Sulfate: Commercial grade.
   3. Peat Humus: FS Q-P-166 and with texture and pH range suitable for intended use.
   4. Bonemeal: Commercial, raw, finely ground; 4% nitrogen and 20% phosphoric acid.
   5. Superphosphate: Soluble mixture of treated minerals; 20% available phosphoric acid.
   6. Sand: Clean, washed sand, free of toxic materials.
   7. Perlite: Conforming to National Bureau of Standards PS 23.
   8. Vermiculite: Horticultural grade, free of toxic substances.
   9. Sawdust: Rotted sawdust, free of chips, stones, sticks, soil, or toxic substances and with 7.5 pounds (2.8 kg) nitrogen uniformly mixed into each cubic yard of sawdust.
   10. Manure: Well-rotted, unleached stable or cattle manure containing not more than 25% by volume of straw, sawdust, or other bedding materials and containing no chemicals or ingredients harmful to plants.
   11. Commercial Fertilizer: Complete fertilizer of neutral character, with some elements derived from organic sources and containing available plant nutrients.
   12. Composted Organic Material: Shall have a minimum organic matter content of 60 percent, as determined by ASTM D-2974, and screened to ¾-inch (1.9 cm).

PART 3 – EXECUTION

3.1 PREPARATION OF TOPSOIL

A. Clean topsoil of roots, plants, stones, clay lumps and other extraneous materials harmful or toxic to plant growth.

B. Mix fertilizer into top 2 inches (5 cm) of topsoil at a rate of 10 pounds (3.7 kg) per 1,000 square feet. (92.9 m^2)

C. Mix approved soil amendments into top 2 inches (5cm) of topsoil at necessary rates.

D. Water dry topsoil to depth of 4 inches (10cm) at least 48 hours prior to seeding to obtain a loose friable seed bed.

3.2 PREPARATION OF UNCHANGED GRADES

A. Where lawns are to be planted in areas not altered or disturbed by excavating, grading, or stripping, prepare soil for seeding as follows:
   1. Till to a depth of not less than 6 inches (15cm).
   2. Apply soil amendments and initial fertilizers as specified.
   3. Remove high areas and fill in depressions.

4. Till soil to a homogeneous mixture of fine texture, free of lumps, clods, stones, roots, and other extraneous matter.
    a. Prior to preparation of unchanged areas, remove existing grass, vegetation and turf. Dispose of such materials off the site; do not turn over into soil being prepared for lawns.
    b. Apply specified commercial fertilizer at rates specified and thoroughly mixed into upper 2 inches (5 cm) of topsoil. Delay application of fertilizer, if lawn planting will not follow within one week.

3.3 SEEDING

A. Apply seed only when wind velocities are less than five (5) miles per hour (9km/hr).

B. Sow half the seed with mechanical seeder.

C. Sow remaining half of the seed at right angles to the direction of the first seeding pattern, using the same method.

D. Apply seed at the rate of 4 pounds (1.5 kg) per 1,000 square feet (92.9 sq. meters) of disturbed area.

E. Cover seed to a depth of ⅛-inch (3mm) by raking, harrowing, or cultipacking.

F. Roll seeded area with roller weighing no more than 150 pounds per foot of roller width.

G. Water seeded areas to a depth of four (4) inches (10cm) as required during the maintenance period.

3.4 MULCHING

A. Spread straw uniformly over seeded area with 75% ground coverage and at least 1-½ inches loose depth.
    1. If, in the opinion of the Engineer, wind will disrupt the mulching, apply asphalt emulsion at a rate of 10 gallons (37.81) per 1,000 square feet (92.9 m^2).

B. Place mulching blanket in accordance with submitted manufacturer's recommendations.

C. Place bonded fiber matrix mulch material, EcoAegis, at a rate of 3,500 to 4,100 pounds per acre, based on manufacturer's recommendations.

3.5 HYDROSEEDING

A. Hydroseeding shall not be utilized for the athletic practice field limits.

B. Mix specified seed, fertilizer, and pulverized mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.

C. Apply slurry uniformly to all areas to be seeded. Rate of application as required to obtain specified seed sowing rate.

3.6 PROTECTION

A. Immediately after seeding, erect barricades and warning signs as required to protect newly planted areas from pedestrian and vehicular traffic. Maintain barricades throughout maintenance period until grass and/or turf is established.

B. Repair or replace damaged landscape work as directed by Engineer.

3.7 MAINTENANCE

A. Begin maintenance immediately after seed placement.

B. Watering:
   1. Keep soil moist during seed germination period.
   2. Supplement rainfall to produce a total depth penetration of 2 inches per day after germination.
   3. Prevent erosion and displacement of seed.

C. Mowing:
   1. When grass reaches 4 inches in height, mow to 2-½ inches in height.
   2. Maintain grass between 2 inches and 2-½ inches in height.
   3. Do not cut off more than 30% of grass leaf in a single mowing.
   4. Remove grass clippings.

D. Reseed and mulch spots larger than 1 square foot not having uniform coverage.

E. Maintain lawns by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading, and replanting as required to establish a smooth, acceptable lawn, free of eroded or bare areas.

F. Maintain and protect all seeded areas until final acceptance of the Contract.

3.8 FINAL ACCEPTANCE

A. Final acceptance of lawn areas will be granted when a uniform stand of acceptable grass is obtained, with a minimum of 95 percent coverage.
   1. Portions of the lawn and athletic field areas may be accepted at various times at the discretion of the Engineer**.**

B. Upon acceptance by the Engineer of a seeded area, the Owner will immediately assume responsibility for maintenance and protection of that portion of the Contract seeding.

END OF SECTION

SECTION 330500 – COMMON WORK RESULTS FOR UTILITIES

PART 1 – GENERAL

1.1 SUMMARY

A. This section includes the installation of buried piping.

1.2 REFERENCES

A. The following references shall be applicable: American Society of Testing and Materials (ASTM).
   1. American National Standards Institute (ANSI).
   2. American Water Works Association (AWWA).
   3. Uni-Bell Plastic Pipe Association.

1.3 SUBMITTALS

A. Submit for approval a schedule for all proposed testing. Include proposed testing procedures indicating the sequence in which pipe sections will be tested and description of methods and equipment to be used.

B. Field Test Reports: Submit results of field testing directly to Engineer with copy to Contractor.

1.4 STORAGE, AND HANDLING

A. Deliver and store materials within the Contract limits as approved by Engineer.

B. Handle materials carefully with approved handling devices in accordance with manufacturer's recommendations. Special care shall be exercised during delivery and storage to avoid damage to the materials.

C. Do not drop or roll products off trucks. Products are not to be otherwise dragged, rolled, or skidded.

D. Materials shall be stored on heavy wood blocking or platforms in accordance with the manufacturer's instructions and recommendations. Materials shall not be in contact with the ground and their interiors shall be maintained free from dirt and other foreign matter.

E. Products cracked, gouged, chipped, dented, or otherwise damaged will not be approved and are to be removed and replaced at the Contractor's expense, unless the product can be repaired in a manner acceptable to the manufacturer and the Engineer. All repairs shall be at the Contractor's expense.

1.5 COORDINATION

A. Contractor shall be responsible for coordinating site utility work with other trades to ensure building service connection locations are verified and coordinated prior to commencing site construction.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Conform to individual pipe specification(s).

B. Pipe transition fittings: Shall be as indicated on the drawings. If not specifically indicated selection shall be based on pressure requirements of the system and types of materials being joined. Product selection shall be approved by the engineer.

C. Grout:
   1. Description: ASTM C1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.
      a. Characteristics: Post hardening, volume adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
      b. Design Mix: 5000 psi (34.5 MPa), 28-day compressive strength.
      c. Packaging: Premixed and factory packaged.

D. Flowable Fill:
   1. Description: Low-strength-concrete, flowable-slurry mix.
      a. Cement: ASTM C150, Type I, Portland.
      b. Density: 115 to 145 pounds/cubic foot (1840 to 2325 kg/cu. m)
      c. Aggregates: ASTM C33, natural sand, fine and crushed gravel or stone, coarse.
      d. Aggregates: ASTM C33, natural sand, fine.
      e. Admixture: ASTM C618, fly-ash mineral.
      f. Water: Comply with ASTM C94/C94M.
      g. Strength: Greater than 40 psig at 28 days and no more than 150 psig at one year.

PART 3 – EXECUTION

3.1 UTILITY DEMOLITION

A. Disconnect, demolish, and remove piped utility systems, equipment, and components indicated to be removed.
   1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
   2. Piping to Be Abandoned in Place: Drain piping. Fill abandoned piping with flowable fill, and cap or plug piping with same or compatible piping material.
   3. Equipment to Be Removed: Disconnect and cap services and remove equipment.
   4. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make operational.
   5. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

3.2 BURIED PIPE INSTALLATION

A. General:
   1. Installation of all pipe, fittings, valves, specials, and appurtenances shall be subject to the review and/or approval of the Engineer.
   2. Install piping valves and fittings as shown, specified and as recommended by the manufacturer and in conformance with referenced standards, and approved Shop Drawings.
   3. Request instructions from Engineer before proceeding if there is a conflict between the manufacturer’s recommendations and the Drawings or Specifications.
   4. All piping and appurtenances shall be inspected by the Engineer prior to installation. Engineer’s inspection will not relieve Contractor or manufacturer from responsibility for damaged products.

5. Present all conflicts between piping systems and equipment, structures or facilities to Engineer for determination of corrective measures before proceeding.
6. Take field measurements prior to installation to ensure proper fitting of Work. Uncover the existing pipelines sufficiently in advance of the proposed Work in order that the type and location of the existing pipes and joints and other information required to fabricate the proposed piping can be determined. Obtain whatever information is required to complete the connections of the proposed pipelines to the existing pipelines.
7. Carefully examine all piping for cracks, damage, or other defects before installation. Immediately remove defective materials from the site, unless the defective materials can be repaired in a manner acceptable to the manufacturer and Engineer. Remove, replace, or repair at the Contractor's expense piping found to be broken or defective.
8. Inspect interior of all piping and mating surfaces and remove all dirt, gravel, sand, debris, or other foreign material before installation. Maintain the interior of all piping clean until acceptance of the completed Work. Prevent foreign matter from entering joint space.
9. Install buried piping accurately to line and grade shown, specified or directed, unless otherwise approved by the Engineer. Use accurate means of determining and checking the alignment and grade subject to the approval of the Engineer. Remove and relay piping that is incorrectly installed at Contractor's expense.
10. Do not lay piping in water, unless approved by the Engineer. Ensure that the water level in the trench is at least 6 inches below the bottom of piping. Maintain a dry trench until jointing and backfilling are complete, unless otherwise specified in these Specifications or approved by the Engineer.
11. Pipe laying work shall be conducted so that trenching operations are not advanced too far ahead of the pipe laying operation resulting in excessive lengths of open trench. In general, open trench ahead of pipe laying shall not exceed 50 feet.
12. Start laying piping at lowest point and proceed toward the higher elevations, unless otherwise approved by the Engineer. Slope piping uniformly between elevations shown on the Drawings or as otherwise provided by the Engineer.
13. Where pipe crossings occur, the lower pipe shall be laid first and all backfill thoroughly compacted to the level of the higher pipe before the higher pipe is installed. Backfill material under such conditions may be earth, broken stone, or 2500 psi concrete.
14. Install piping so that the barrel of the piping and not the joints receives the bearing pressure from the trench bottom, or other bedding condition.
15. No piping shall be brought into position until the preceding length, valve, fitting, or special has been bedded and secured in place.
16. Whenever pipe laying is not actively in progress, the open ends of the piping shall be closed by a temporary plug or cap to prevent soil, water and other foreign matter from entering the piping.
17. Where required for inserting valves, fittings, special appurtenances, and closures, shall be made with a machine specially designed for cutting piping and in accordance with the manufacturer's instructions for field cutting of pipe. Make cuts carefully, without damage to piping, so as to leave a smooth end at right angles to the axis of the piping. Taper cut ends and file off sharp edges until smooth. Flame cutting will not be permitted. Replace and repair damaged piping.
18. Blocking under piping will not be permitted unless specifically approved by Engineer for special conditions.
19. Touch up protective and linings and coatings prior to installation.
20. Rotate piping to place outlets in proper position.

B. Bedding and Backfilling:
1. Bedded and installed piping in conformance with Section "Trenching and Backfilling" and as shown except as otherwise specified.

2. No piping shall be laid until Engineer approves the bedding condition.
3. Excavation in excess of that required as shown on the Drawings or specified, which is not authorized by the Engineer, shall be at the Contractor's expense. Backfilling and compaction of the over-excavated areas shall be at the Contractor's expense.
4. Carefully and thoroughly compact all pipe bedding and fill up to the pipe centerline with hand-held pneumatic compactors.

C. Transitions From One Type of Pipe to Another:
1. Provide all necessary adapters, specials, and connection pieces required when connecting different types and sizes of pipe or connecting pipe made by different manufacturers.

D. Work Affecting Existing Piping:
1. Location of Existing Piping:
a. Locations of existing piping shown shall be considered approximate. Contractor shall perform all necessary subsurface investigation to verify actual locations in the field.
b. Determine exact location of existing piping to make connections, relocate, replace or which may be disturbed during earth moving operations, or which may be affected by work in any way.
c. Coordinate all excavations with utility companies, Owner and Engineer.
2. Taking Existing Pipelines Out of Service:
a. Do not take pipelines out of service unless specifically approved by Engineer.
b. Notify Engineer at least 48 hours prior to taking any pipeline out of service.

3.3 SPECIFIC PIPE INSTALLATION

A. Polyvinyl Chloride Pipe (PVC):
1. Gravity Sewers: Install all PVC piping in accordance with ASTM D2321 "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications."
2. Water Distribution/Pressure Sewers: Install all PVC pipe in accordance with AWWA Standard C605 "Underground Installation of PVC Pressure Pipe and Fittings for Water."
3. Lay pipe with bell and spigot joints with bells upstream.
4. Completely clean all jointing surfaces and adjacent areas prior to making joint.
5. Field cut pipe for shorter than standard pipe lengths. Cut ends square and perpendicular to the pipe axis. Remove and smoothly bevel ends. Field spigots shall be stop marked with a felt tip mark or wax crayon for proper length of assembly insertion. The angle and depth of field bevels, and lengths to stop marks, shall be comparable in quality to factory made spigots.
6. Assemble all joints in accordance with recommendations of the manufacturer. If a lubricant is required to facilitate assembly, it shall have no detrimental effect on the gasket or on the pipe when subjected to prolonged exposure.
7. Rotate the spigot by hand or with a strap wrench to verify proper jointing. If unusual joining resistance is encountered or if the insertion mark does not reach the flush position, disassemble the joint, inspect for damage, reclean the joint components and repeat the assembly steps.
8. Use a bar and wood blocking to properly seat pipe joints. DO NOT USE BACKHOE BUCKET, OR SIMILAR MACHINERY, TO FORCE JOINT ASSEMBLY.

B. High Density Polyethylene Gravity Piping (HDPE):
1. Install in accordance with the pipe manufacturer's specifications
2. Completely clean all jointing surfaces and adjacent areas prior to making joints.

3. Field cut pipe for shorter than standard pipe lengths. Cut ends square and perpendicular to the pipe axis. Remove and smoothly bevel ends.
4. Assemble all joints in accordance with recommendations of the manufacturer. If a lubricant is required to facilitate assembly, it shall not have a detrimental effect on the gasket or on the pipe when subjected to prolonged exposure.

3.4 FIELD QUALITY CONTROL

A. General:
1. Notify Engineer at least 48 hours in advance of all testing.
2. Provide all testing apparatus including pumps, hoses, gauges, fittings, temporary bulkheads, plugs, compressors and miscellaneous other required items.
3. Provide temporary blocking and bracing or approved thrust and joint restraint to prevent joint separation and pipe movement during testing.
4. Unless otherwise approved, conduct all tests in the presence of the Engineer and in the presence of local authorities having jurisdiction.
5. Water Source:
   a. Provide all water for testing, flushing, and other water uses. The source of the water shall be subject to the approval of the Engineer.
   b. The point of introduction of water for conducting tests shall be subject to the approval of the Engineer.
6. All costs for tests shall be included in the Contractor's bid.
7. Locate, and repair or replace, section of piping which fail the test and retest until acceptance.

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B. Required Tests for Storm Sewers:
1. Perform the following tests after the storm drainage pipe has been installed and prior to final acceptance:
   a. Alignment Test for all pipe.
2. Based upon visual observations, the Engineer may order additional testing including the following:
   a. Television Inspection, if required by the Engineer.
   b. Deflection Test, if required by the Engineer
3. Perform tests prior to placement of pavement, or other construction which may, in the opinion of the Engineer, be detrimentally affected by excavation required for repairs.
4. Submit details prior to making tests of proposed testing procedures with a description of methods and equipment to the Engineer for approval.
5. Alignment Test:
   a. All storm drainage pipe will be subject to a visual inspection in order to identify proper alignment, grade, and excessive deflection.
   b. The Engineer may choose to perform an alignment test using the hand-lamp method, in which case the full diameter of the pipe shall be visible when viewed between consecutive structures.
6. Television Inspection:
   a. The Engineer will notify the Contractor in writing which completed sewers shall be inspected by closed-circuit television.

b. The Contractor shall commence the television inspection within 15 days of the Engineer's written notification. The Contractor shall notify the Engineer at least 5 days prior to commencement of television inspection.

c. No television inspection shall be performed without the Engineer or his representative present to witness the inspection.

d. The Contractor shall provide the Engineer with 3 copies of a report of the televising inspection of each section of completed sewer inspected. Show the exact location and extent of all cracks, loose joints, holes, vertical and horizontal, misalignment, faulty service connections, caved-in pipe, points of infiltration, obstructions, debris and all else detrimental to the proper functioning and service of the completed sewer. The Contractor shall provide the actual television inspection video with the report showing all the above conditions found, at all wyes, tees and laterals and as directed by the Engineer.

e. The Engineer will review the report and will instruct the Contractor, to repair any conditions which, in the opinion of the Engineer, are detrimental to the proper function and service of the storm pipe.

7. Deflection Test:

a. The Engineer will notify the Contractor in writing which completed sewers shall be tested by the deflection method.

b. The Contractor shall commence the deflection test within 15 days of the Engineer's written notification. The Contractor shall notify the Engineer at least 5 days prior to commencement of television inspection.

c. No Deflection testing shall be performed without the Engineer or his representative present to witness the test.

d. The deflection test shall be performed on flexible drainage pipe with a "go/no-go" mandrel with a diameter equal to 95 percent of the inside diameter of the pipe being tested.

e. The maximum pipe deflection shall be 5 percent.

f. The Engineer will review the Deflection Test results and will instruct the Contractor, to repair any conditions which, in the opinion of the Engineer, are detrimental to the proper function and service of the storm pipe.

8. Visual Inspection: Prior to final acceptance, a visual inspection of all appurtenance structures (i.e., manholes, chambers, etc.) will be required. Repair visual leaks, regardless of their magnitude.

END OF SECTION

SECTION 330513 – MANHOLES AND STRUCTURES

PART 1 – GENERAL

1.1 SUMMARY

A. This section includes the following:
   1. Installation of inline storm area drains.
   2. Connections between inline storm drains, new storm header piping, and existing storm drainage piping.
   3. Frames, grates, and appurtenances associated with storm area drains.

1.2 QUALITY ASSURANCE

A. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified:
   1. American Society of Testing and Materials (ASTM).
   2. Occupational Health and Safety Administration (OSHA).
   3. Manufacturer's installation requirements.

1.3 SUBMITTALS

A. Product Data:
   1. Manufacturer's catalog cuts, specifications, and installation instructions for inline area drains, connection fittings, frames, and grates.

1.4 QUALITY ASSURANCE

A. All piping and appurtenances shall be new, clean and in accordance with material specifications, unless specifically noted on the plans.

B. Size and classification shall be shown on the plans or as specified herein.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver and store materials in a manner that prevents damage or deformation.

B. Materials damaged during delivery, storage, or handling shall be remove and replaced at the contractor's expense.

PART 2 – PRODUCTS

2.1 DESIGN REQUIREMENTS

A. Collector Pipe Inline Drainage Structures / clean outs and sized as per drawings:
   1. General:
      a. Inline structures only are to be used. Risers with fittings are not allowed.
   2. Products:
      a. Cleanouts and Air Relief Basins

1) Nyloplast Drain Basin.
2) Nyloplast Inline Drain.

b. Grate
1) Solid, Ductile Iron - H20 Solid
2) Open Grate - H10 Pedestrian.

3. Suppliers:
a. Nyloplast - ADS
1) www.ads-pipe.com/us.
b. National Diversified Sales:
1) www.ndspro.com.
c. Approved equal.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install inline area drains and associated piping in accordance with:
1. Manufacturer's recommendations.
2. Lines, grades, and elevations shown on the Drawings.

B. Inline area drains shall be:
1. Installed true to line and grade.
2. Fully supported on prepared bedding.
3. Protected from movement during backfilling.
4. Refer to Section "Trenching and Backfilling" and "Earth Moving."

C. Any excavation beyond that required for proper installation shall be restored with approved materials at the Contractor's expense.

3.2 PIPE CONNECTIONS

A. Connections between inline area drains, new storm header piping, and existing 24" corrugated polyethylene pipe (CPP) shall be made using manufacturer-approved watertight fittings compatible with the pipe materials being joined.

B. Connection to existing piping shall:
1. Be made at the locations and elevations shown on the Drawings.
2. Be watertight and structurally secure.
3. Prevent leakage, soil migration, and differential movement.

C. The locations of existing storm drainage piping shown on the Drawings are based on available record information and field observations and are considered approximate. The Contractor shall verify the exact location, elevation, and condition of existing piping prior to connection.

D. All connections shall be inspected prior to backfilling.

3.3 FRAMES AND GRATES

A. Frames shall be firmly seated at the correct finished elevation.

B. Final adjustments shall ensure positive drainage to each area drain with no ponding.

3.4 WATERTIGHTNESS

A. All inline area drains and pipe connections shall be free of visible leakage.

B. Any leakage shall be corrected prior to acceptance in a manner approved by the Engineer.

3.5 COMPLETION

A. Remove construction debris from all drains and piping.

B. Protect installed drains and grates from damage until final acceptance.

END OF SECTION

SECTION 334100.20 – HIGH DENSITY POLYETHYLENE STORM UTILITY DRAINAGE PIPING

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes the installation of polyethylene piping systems as shown on the Drawings and as specified herein.

B. All piping, fittings, and appurtenances shall be new, clean, and in accordance with material specifications. In no instance shall second- hand or damaged materials be acceptable.

1.2 QUALITY ASSURANCE

A. Reference Standards:
   1. The latest edition of the following standards, as referenced herein, shall be applicable:
      a. Standard Specifications for Highway Materials and Methods of Sampling and Testing, American Association of State Highway and Transportation Officials (AASHTO).
      b. American Society of Testing and Materials (ASTM).

1.3 SUBMITTALS

A. Product Data:
   1. Submit manufacturer's catalog cuts, specifications, and installation instructions for both pipe and coupling system.
   2. Submit manufacturer's certification that product was manufactured, tested, and supplied in accordance with the standards specified herein.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage:
   1. Pipe, fittings, specials, appurtenances, and accessories shall be delivered to and stored within the Contractor's work limits as shown on the Drawings.
   2. Special care shall be exercised during delivery and storage to avoid damage to the products.
   3. Products shall be stored so as to avoid unnecessary handling and in locations where they will not interfere with the Owner's operations or public travel.

B. Handling:
   1. Pipe, fittings, special appurtenances, and accessories shall be handled carefully with approved handling devices in strict conformance with the manufacturer's recommendations.
   2. Products shall not be dropped nor shall products be otherwise dragged, rolled, or skidded.

C. Products cracked, gouged, chipped, dented, or otherwise damaged will not be approved and shall be removed and replaced at the Contractor's expense, unless the product can be repaired in a manner acceptable to the manufacturer and Engineer. All repairs shall be at the Contractor's expense.

PART 2 – PRODUCTS

2.1 MATERIALS

A. HDPE Soil Tight Pipe:

1. Pipe shall be ADS N-12 ST IB (per AASHTO) smooth interior with annular exterior corrugations and a Manning's "n" value of 0.012 high-density polyethylene pipe (HDPE) as manufactured by Advanced Drainage Systems (ADS) or approved equal. Pipe shall have an integral soil tight gasketed bell and spigot.
   a. 4 inches through 11 inches conforming to AASHTO M252 Type S.
   b. 12 inches through 60 inches conforming to AASHTO M294 Type S or ASTM F2306.
2. Pipe shall be joined using a bell and spigot joint meeting AASHTO [**M252] [M294] [ASTM F2306**]. The joint shall be soil-tight and gasketed and shall meet the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable wrap to ensure the gasket is free from debris. A joint lubricant supplied by the manufacturer shall be used on the gasket and bell during assembly.
3. Fittings shall conform to ASTM F2306. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket meeting the soil-tight joint performance requirements of ASTM F2306.

PART 3 – EXECUTION

3.1 INSPECTION

A. Inspect all pipe and fittings prior to laying in the trench. Remove defective pipe and fittings from the site.

B. Do not backfill until inspection by the Engineer, unless otherwise approved by the Engineer.

3.2 INSTALLATION AND TESTING

A. Trenching, backfilling and compaction shall conform to Section "Trenching and Backfilling."

B. Pipe installation and testing shall conform to Section "Common Work Results for Utilities."

END OF SECTION

APPENDIX A

Geotechnical Report

OTO
CONNECTICUT LLC

J9015-04-01
June 26, 2025

Mr. Michael Moonan
Senior Landscape Architect
CHA Consulting, Inc.
575 Broadway, Suite 310
Albany, New York 12207

Re: Geotechnical Engineering Recommendations
Saint Marie-Greenhalgh Sports Complex Improvements
33 Wicker Street
Putnam, Connecticut

Dear Mr. Moonan:

OTO Connecticut, LLC (OTO) is pleased to provide this report summarizing our findings and geotechnical engineering recommendations for proposed renovations to the existing running track at the Saint Marie-Greenhalgh Sports Complex in Putnam, Connecticut. A Site Locus is provided as Figure 1. A Site Sketch is provided as Figure 2.

Our geotechnical recommendations are based upon conditions observed in ten soil borings. The asphalt surface of the existing track was cored at each boring location. Our services consisted of the review of historic information, full-time observation of the borings, the measurement of the asphalt thickness in each of the cores, review of the logs and soil samples, engineering analyses, and preparation of this report. This report is subject to the attached limitations.

PROJECT DESCRIPTION

The project Site is at the Saint Marie-Greenhalgh Sports Complex located at 33 Wicker Street in Putnam, Connecticut. The location of the Site is shown on Figure 1. The Site is bounded to the north by an elevated parking area associated with Putnam Elementary School, followed by Putnam Middle School further to the northwest; to the northeast/east by an elevated paved drive, followed by residential and/or commercial properties; to the southeast by Wicker Street, followed by Putnam High School; to the south by Wheatons Brook; and to the west by the Little River. It appears that the Site is located on the flood plain of the adjacent river and brook.

Existing Conditions

The Site contains an athletic field surrounded by a running track. An asphalt paved sidewalk is also located around the track perimeter. Bleachers are located on the northeastern and southwestern sides of the track. In addition, an asphalt parking lot is located to the southeast of the track and is of similar elevation. A raised paved drive (oriented in a northwest-southeast direction) is located along the northeastern/eastern

portion of the Site, where it leads to the adjacent elementary school and middle school parking lots.

The ground surface topography is generally flat in the area of the athletic field, track and adjacent paved areas. However, topography slopes upwards in the north and eastern portion of the study area, towards a raised paved drive to the northeast and an elevated parking area (associated with the adjacent Putnam Elementary School) to the north. A topographic survey was not available at the time of this report.

The asphalt track was observed to be in fair to poor condition. Numerous cracks of varying size and distribution were observed throughout the track surface, and there were several areas that had been previously repaired (patched). The approximate limits where the most severe cracking was observed are identified as red shaded areas on Figure 2. The track surface appeared to be relatively uniform and no significant depressions were observed.

Proposed Project Plans

Project plans call for the reconstruction of the existing track surface and other associated improvements. We understand that the location and alignment of the new track will be identical to the existing track (as shown on Figure 2). Two alternatives are being considered for the new track surface, including:

1. Milling and overlay of existing surface, or
2. Full depth replacement and paving.

As discussed below, we recommend the full-depth replacement alternative.

SUBSURFACE EXPLORATIONS

Subsurface investigations consisted of ten shallow soil borings (TC-1 through TC-10) performed within the footprint of the existing track. These borings were performed by Seaboard Drilling of Chicopee, Massachusetts, using a Mobile B-53 truck mounted drill rig. The borings were extended to a depth between five and ten feet below ground surface. At each boring location, the existing asphalt layer was cored by Witch Enterprises, Inc. of Agawam, Massachusetts. The asphalt cores were labeled and provided to OTO. Borings and asphalt cores were both performed on January 17, 2025. Boring locations are shown on Figure 2. Boring logs are attached and include information regarding both the soil borings and the asphalt cores.

As indicated on the boring logs, soil samples were collected from directly beneath the track/asphalt core. Photographs of the cores are provided on the corresponding boring log. The ground surface (corresponding to a depth of zero feet) presented on the boring logs indicates the top of the soil layer directly ***below*** the asphalt (i.e. depths of soil layers referenced in this report refer to the depth below bottom of asphalt.)

Asphalt Cores of Existing Track

An asphalt core was collected at each soil boring location. In general, three layers were present within the cores, a surface rubberized (blue) track surface layer, followed by an asphalt finish course over an asphalt base course layer. A location description for each core is provided in Table 1. These layers are discussed in detail below and the measured thickness of each layer is presented in Table 2. Asphalt core information, including photographs, are presented on the boring logs.

Soil Borings

Soil samples were collected continuously from beneath the asphalt until termination between five and ten feet below ground surface.

Soil samples were collected using a two-inch diameter split spoon sampler, driven 24 inches with a 140-pound automatic hammer falling 30 inches (American Society for Testing and Materials Test Method D1586 “Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils”). The number of blows required to drive the sampler each six inches was recorded. The standard penetration resistance, or N-value, is the number of blows required to drive the sampler the middle 12 inches. Soil properties, such as strength and density, are related to the N-value. The field N-values are corrected to a standard 60% hammer efficiency, known as N_{60}, to account for differing hammer efficiencies for each hammer type and drill rig. The N-values presented on the boring logs are field values, which are not adjusted for hammer efficiency. However, the adjusted N_{60} values were used in our engineering calculations and analysis.

An O’Reilly, Talbot & Okun Associates, Inc. (OTO) engineer observed and logged the borings. Samples were described according to a modified version of the Burmister Soil Classification System. After drilling, bore holes were backfilled with soil cuttings and additional gravel, and then patched with asphalt.

EXISTING TRACK/PAVEMENT CONDITIONS

Each boring was performed within the limits of the existing running track. In general, the track is in fair to relatively poor condition, with numerous cracks and other areas where the track has been repaired previously. General condition photographs are attached. The areas of the most severe cracking are shaded red on Figure 2. Borings TC-1 and TC-5 through TC-7 were performed within the areas of the most severe cracking. Additional cracking (although more widely spaced) was observed in other portions of the track. A description of where each boring was performed, relative to observed cracking/patched areas within the track, is presented in Table 1.

Table 1
Boring Location Information Relative to Track Conditions

Boring ID	Location Description
TC-1	Within a large, recently patched area
TC-2	Through an existing asphalt crack
TC-3	At hairline asphalt crack
TC-4	Through an existing asphalt crack
TC-5	Between two recently patched areas
TC-6	Within a large patch
TC-7	Through an existing asphalt crack
TC-8	Through an existing asphalt crack
TC-9	At crack in center of track, no cracks in approx. 20-foot radius
TC-10	In area with no significant cracks

Notes:
1. Borings performed by Seaboard Drilling of Chicopee, Massachusetts on January 17, 2025, and were observed by OTO.

Significant physical observations based upon our Site walkover include the following:

- Portions of the track are heavily cracked and in poor condition. The condition of the track in the southwestern (straightaway) portion of the track is generally worse than the other areas of the track, since it contains more concentrated areas of cracking and patching. However, we note that cracking and patching were observed throughout the track.

- Pavement patches were observed throughout the track and appeared to have been completed at various times. The date of which patches were installed is unknown. However, based upon historical Google Earth aerial imagery, it appears that some patches have been present since at least 2015.

- Cracking was observed in the walkway pavement surrounding the track, including within the parking area in the southeast portion of the Site.

- Areas of ice were observed, indicating surface water flow or low lying areas where ponding may occur.

SUBSURFACE CONDITIONS

This discussion of subsurface conditions at the Site is based upon published geologic information, general knowledge of the Site location and nearby vicinity, and the soil investigations performed during this study. These investigations include ten soil borings and asphalt cores. Subsurface conditions consisted of a track surface layer and underlying asphalt, followed by a soil base course underlain by native sand and gravel.

Soil Conditions

Track and Asphalt: The track surface appears to consist of three layers, a blue, rubberized track surface layer, followed by a two-layered asphalt section including an asphalt finish (wearing) course and a coarse asphalt base course layer. The rubberized track surface layer is generally on the order of ¼ inches thick. In some of the cores, the two underlying layers of asphalt delaminated, and the thickness of each layer could be easily measured. At other locations, the two layers were tightly bound and the thickness of each layer could only be estimated based upon the relative size of the particles exposed at the exterior surface of the cores. In general, the upper finish course appears to be about 1-inch thick, and the lower asphalt base course is between 1 and 2 inches thick. The total thickness of the asphalt section was between 2 and 3.25 inches. Asphalt thickness measurements are presented on Table 2. Photographs of the cores are provided on the boring logs.

Gravel Base Course: The surficial track and asphalt layers were directly underlain by between one (1) and eight (8) inches of gravel base course. The gravel base course material is a coarse-grained soil layer that provides structural support for the overlying pavement and promotes the drainage of water from directly below the pavement. The existing gravel base course consisted of mixture of sand and gravel, although the relative amounts of sand and gravel varied. The thickness of this layer was measured using a tape measure in the open borehole after drilling. We note that it can be difficult to get a precise measurement of layer thickness since mixing of soil particles occurs during drilling (especially since the underlying natural soil layer is similar). An approximate thickness and simplified description of the of base course material encountered at each boring location are presented in Table 2. Further details are provided on the attached boring logs.

Table 2
Existing Track/Pavement Conditions

Boring ID	Approximate Thickness (in)			Gravel Base Course Material
	Track[1]	Asphalt[2]	Gravel Base Course[3]	
TC-1	0.5	2.5	4	sandy gravel
TC-2	0.25	3.0	6	gravelly sand
TC-3	0.5	2.0	8	sandy gravel
TC-4	0.25	2.5	3	gravel
TC-5	0.25	2.25	2	gravel
TC-6	0.75	3.0	8	sandy gravel
TC-7	0.25	2.5	1	sandy gravel
TC-8	0.75	3.25	7	gravelly sand
TC-9	0.5	2.25	7	medium sand
TC-10	0.25	2.5	4	sand and gravel

Notes:
1. Track consists of rubberized asphaltic material.
2. Asphalt consisted of 2 layers: upper asphalt finish course & lower asphalt base course
3. Gravel base course thicknesses were measured in the soil borings. Since some mixing of soil occurs during the drilling process the measured thicknesses are approximate.

Natural Sand and Gravel: A natural sand and gravel was encountered below the gravel base course layer to a depth of ten feet below bottom of asphalt (which was the maximum depth explored). These native soils generally consisted of loose to very dense, fine to medium sand with varying amounts of gravel and coarse sand, and little to trace amounts of silt. Trace organics (roots) were encountered within this soil layer at a depth of approximately two feet below bottom of asphalt in boring TC-7. No other organics were encountered within the borings.

We note that the granular base course and underlying natural sand and gravel are similar material, with the main difference being density, and the presence of more silt and organics in the natural soil. The similarity between the two soil layers made it difficult to measure the thickness of the gravel base course at some locations.

Groundwater Conditions

No groundwater was encountered in the borings during drilling. The borings extended to between five and ten feet below bottom of asphalt. Based on historical Google Earth aerial imagery, a small body of water (with a surface area on the order of 65,000 square feet) is sometimes present approximately 100 feet southwest of the existing track. It appears that this area of lower elevation fills with water when levels of the adjacent Wheatons Brook (to the south) and/or Little River (to the west) rise. The groundwater table therefore fluctuates seasonally throughout the Site and is likely higher during periods of wet weather.

SIGNIFICANT GEOTECHNICAL ISSUES

The significant geotechnical issues for the proposed construction addressed in this report include pavement design and subsurface drainage. Based upon our review of cores and subsurface conditions, it appears that water enters the track pavement section and remains trapped. In cold weather, frost/ice may form that heaves the pavement and causes cracking and differential settlement. No significant concerns, such as deleterious material or overly fine-grained soils, were identified with the borings; however, the gravel base course thickness was observed to vary and should be replaced with a non-frost susceptible (less than 5 percent fines) soil.

DESIGN RECOMMENDATIONS

The following recommendations are provided for the construction assumed in this report.

Repair Recommendations

As described above, the existing asphalt at the Site is in fair to poor condition. Cracking, minor rutting, and patched areas are present in the asphalt-paved areas. We understand that two repair alternatives are presently being considered, namely:

1. Milling and Overlay: This alternative includes the milling and removal of the existing track surface layers, including the rubberized surface coating and

asphalt finish course; the cleaning of the existing asphalt base course layer; and installing a new finish course asphalt layer followed by a new rubberized surface layer.

2. Full Depth Replacement: This alternative includes removing the existing pavement and gravel base course layers followed by the installation of a completely new pavement section (including gravel base course, asphalt layers, and surface layer).

The first alternative (milling and overlay) is typically less expensive. However, we do not recommend this alternative since it does not appear that it would extend the service life of the track significantly. Presently, cracks extend through the underlying asphalt base course, and these cracks would remain (since the asphalt base course would not be replaced under the first alternative). These cracks eventually migrate upward though the new asphalt finish course layer and manifest themselves as reflective surface cracks. To help with this issue, a fiberglass reinforcing mesh (such as the Tensar GlassPave fabric) can be installed on the surface of the existing asphalt base course layer prior to overlayment to reinforce the section and limit reflective cracking. However, these mesh systems can be relatively expensive to purchase and install, and for this project we anticipate that the savings would be minor.

In addition, we recommend that the repair includes surface water control and drainage improvements. Pavement design and surface water control and drainage recommendations are provided below.

Pavement Design Recommendations

We recommend that full depth replacement of the track, which would consist of the following:

- Removal of the existing asphalt layers;
- Removal of the existing sand and gravel base layer. (Based upon our observations it appears that some, if not all, of this sand and gravel can be reused);
- Proof compaction of the soil subgrade;
- Installation of subsurface drainage around the track perimeter (described in the section below);
- Installation of 12-inches of a non-frost susceptible Gravel Base Course layer; and
- Installation of a new asphalt pavement section and track surface layer.

Table 3
Proposed Track Pavement Section

Layer	Thickness (inches)
Track Surface	Per manufacturer's recommendations
Asphalt Finish Course	1
Asphalt Base Course	2
Gravel Base Course	12

Gradation recommendations for non-frost susceptible Gravel Base Course are provided in Table 4.

Surface Water Control and Drainage Recommendations

The Saint Marie-Greenhalgh Sports Complex is likely located adjacent to the flood plain of the Wheatons Brook and Little River. The ground surface in the vicinity of the track and paved areas is generally flat. However, topography slopes upwards to the north and northeast beyond the paved sidewalk encircling the track. The slope consists of a grass covered area that contains no other vegetation. Therefore, surface water likely runs down from the slope and pools in the vicinity of the track and surrounding paved areas. The presence of water during cold weather periods may lead to differential frost movements, which may contribute to the observed cracking and pavement damage in the track.

As part of the project, we recommend drainage improvements to facilitate the collection of surface water and to limit the amount of flow across the Site. The recommended improvements include: subsurface drainage along the perimeter of the track; drainage swales and subsurface drains along the uphill portions; and additional catch basins. Each improvement is described below.

Perimeter Drainage: We recommend the installation of subsurface drainage trench around the track perimeter to remove water from the track subgrade. This system should include a 4-inch diameter (minimum) perforated plastic pipe in a trench filled with crushed stone, which is wrapped in a geotextile separation fabric. Collected water should be directed to flow away from the track area.

Uphill Drainage Systems: Currently, water is able to flow onto the track from areas of higher elevation located to the north and east. We recommend the installation of a drainage swale on the uphill sides of the track be constructed to collect water and prevent ponding on the track. In addition, we recommend that a subsurface drain be installed along the uphill sides to capture or prevent water from flowing into the pavement subgrade. The subsurface drain should consist of a six-inch diameter, perforated PVC pipe, buried approximately three feet below ground surface in a Crushed Stone filled trench lined with a geotextile filter fabric.

Catch Basins: Based upon historic Google Earth imagery, it appears that there are only a limited number of catch basins on Site. This lack of drainage results in significant flow of rainwater, which leads to the ponding of water in low areas and promotes the formation of ice and slippery conditions during winter months. Therefore, as part of the planned reconstruction, we recommend that the project civil engineer consider adding additional catch basins to limit the distance between drainage structures and to improve storm water collection. As applicable, the pavement or ground surface in which the catch basins are placed should be regraded to direct surface water toward catch basins.

Earthwork Considerations

We anticipate that earthwork for this project may include the following: the removal of the existing track section; the treatment of the existing soils to address any localized loose

areas that may be present; the placement of compacted engineered fill beneath pavements; and any necessary grading. Additional excavations may be needed for the installation of drainage structures.

Three engineered fill types are recommended:

- Non-frost susceptible Gravel Base Course for use beneath pavements and asphalt beneath the track;
- Crushed Stone for use in underdrain systems; and
- Granular Fill for use as miscellaneous fill.

Grain size distribution requirements are presented in Table 4.

Table 4
Grain Size Distribution Requirements

Size	Gravel Base Course	Crushed Stone	Granular Fill
	Percent Finer by Weight		
3 inch	100	---	100
1 ½ inch	70-100	---	---
1 inch	---	100	---
¾ inch	---	90-100	---
½ inch	---	10-50	---
⅜ inch	---	0-20	---
¼ inch	50-85	---	---
No. 4	30-60	0-5	---
No. 10	---	---	30-90
No. 40	---	---	10-70
No. 200	0-6*	---	0-15
*Non Frost Susceptible (NFS) fill should be used as Gravel Base Course. Typically, NFS soils are categorized as having less than 6 percent fines (passing No. 200)			

Gravelly portions of the existing sand and gravel base course likely meet or are near and grain size requirements for Gravel Base Course. However, other portions that contain higher amounts of silt may not meet requirements and should be removed and replaced or amended with coarser material. On-Site soils likely meet requirements for use as Granular Fill, provided it is free of deleterious (organics or unsuitable debris) and/or oversized material. If the contractor elects to re-use on-Site material, a representative sample should be submitted for testing and approval by the geotechnical engineer.

We recommend that compaction be accomplished by a minimum of six passes with a 6,000 pound (or larger) vibratory roller. To facilitate compaction, the moisture content of the existing subgrade and fill materials should be maintained at or near the optimum moisture content. The compacted soils should meet or exceed 95% maximum dry density as defined by ASTM D1557.

We appreciated the opportunity to be of service on this project. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely yours,
O'Reilly, Talbot & Okun Associates, Inc.

Stephen McLaughlin, EIT
Senior Project Manager

Michael J. Talbot, P.E.
Principal

Attachments: Limitations, Site Locus, Site Sketch, Boring Logs with Photographs, General Condition Photographs

LIMITATIONS

1. The observations presented in this report were made under the conditions described herein. The conclusions presented in this report were based solely upon the services described in the report and not on scientific tasks or procedures beyond the scope of the project or the time and budgetary constraints imposed by the client. The work described in this report was carried out in accordance with the Statement of Terms and Conditions attached to our proposal.

2. The analysis and recommendations submitted in this report are based in part upon the data obtained from widely spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it may be necessary to reevaluate the recommendations of this report.

3. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. For specific information, refer to the boring logs.

4. In the event that any changes in the nature, design or location of the proposed structures are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by OTO Connecticut, LLC. It is recommended that we be retained to provide a general review of final plans and specifications.

5. Our report was prepared for the exclusive benefit of our client. Reliance upon the report and its conclusions is not made to third parties or future property owners.



0 1000 FEET

0 0.5 1.0 MILES

0 0.5 1 KILOMETERS

1:24,000 SCALE NATIONAL GEODETIC VERTICAL DATUM 1929 10 FOOT CONTOUR INTERVAL

O:\Job Files\J9000\9015 CHA\04 Saint Marie-Greenhalgh Sports Complex\Figures\Figure 1 - Site Locus (24k scale) 9015-04-01.pdf

OTO CONNECTICUT LLC
WWW.OTO-ENV.COM • HELLO@OTO-ENV.COM

SAINT MARIE-GREENHALGH SPORTS COMPLEX TRACK REPLACEMENT

33 WICKER STREET
PUTNAM, CONNECTICUT

SITE LOCUS

Topographic Map Quadrant: PUTNAM, CT

Map Version: 2018

Current As Of: 2018

Date: FEBRUARY 2025

PROJECT No. J9015-04-01

FIGURE No. 1

O:\Job Files\J9000\9015 CHA\04 Saint Marie-Greenhalgh Sports Complex\Figures\Figure 2 - Site Sketch (8.5x11) 9015-04-01.pdf

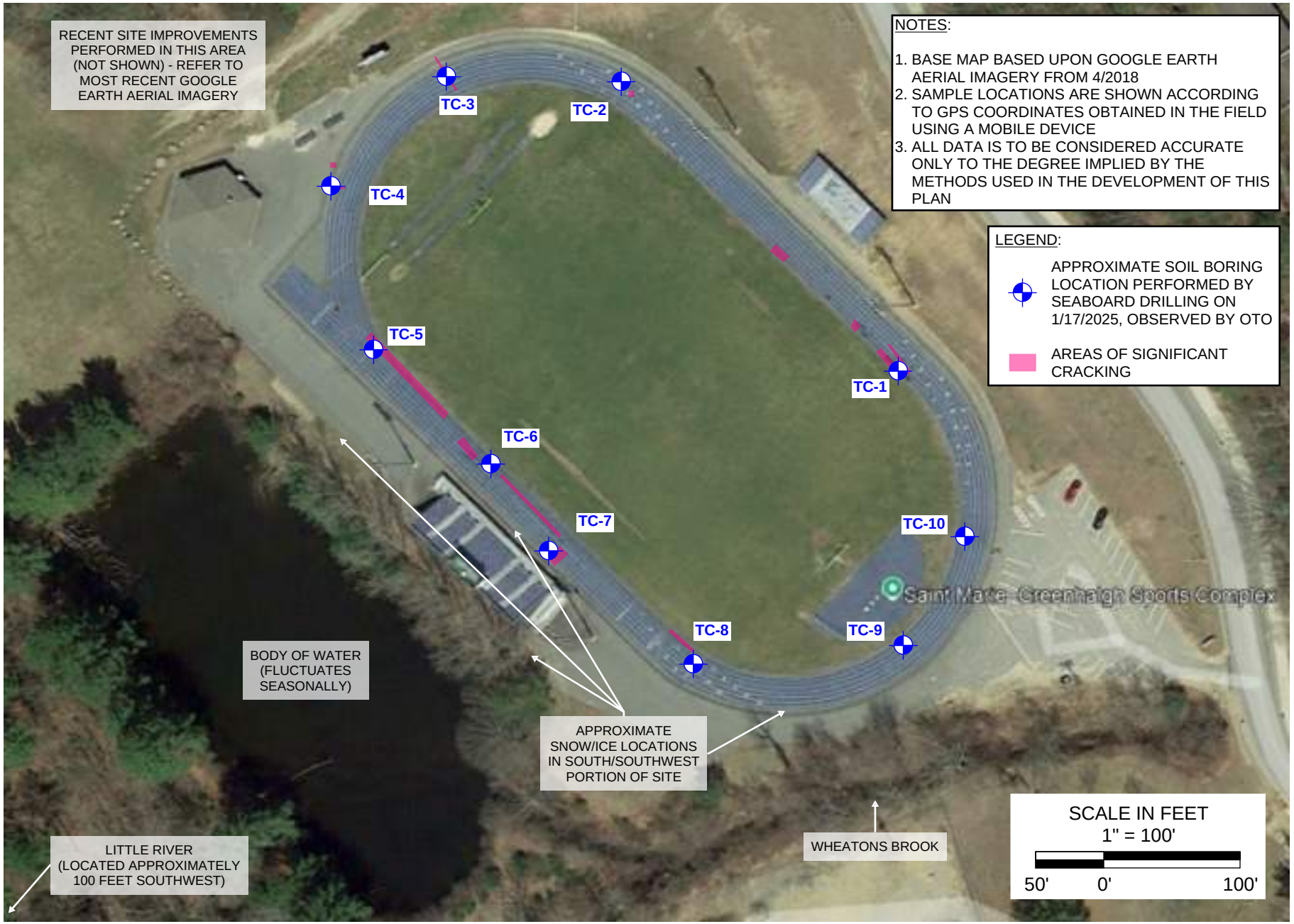


FIGURE No. 2

PROJECT No. J9015-04-01

SAINT MARIE-GREENHALGH SPORTS COMPLEX
TRACK REPLACEMENT
33 WICKER STREET
PUTNAM, CONNECTICUT

SITE SKETCH

DESIGNED BY: CYI
DRAWN BY: KPS
CHECKED BY:
DATE: 3/4/2025
REV. DATE:

OTO CONNECTICUT LLC
WWW.OTO-ENV.COM • HELLO@OTO-ENV.COM

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

BORING LOGS

SUMMARY OF THE BURMISTER SOIL CLASSIFICATION SYSTEM (MODIFIED)

RELATIVE DENSITY (of non-plastic soils) OR CONSISTENCY (of plastic soils)

STANDARD PENETRATION TEST (SPT)
Method: Samples were collected in accordance with ASTM D1586, using a 2" diameter split spoon sampler driven 24 inches. If samples were collected using direct push methodology (Geoprobe), SPTs were not performed and relative density/consistency were not reported. N-Value: The number of blows with a 140 lb. hammer required to drive the sampler the middle 12 inches. WOR: Weight Of Rod (depth dependent) WOH: Weight Of Hammer (140 lbs.)

COHESIONLESS SOILS		COHESIVE SOILS	
BLOWS/FOOT (SPT N-Value)	RELATIVE DENSITY	BLOWS/FOOT (SPT N-Value)	CONSISTENCY
0-4	Very loose	<2	Very soft
4-10	Loose	2-4	Soft
10-30	Medium dense	4-8	Medium Stiff
30-50	Dense	8-15	Stiff
>50	Very dense	15-30	Very stiff
*Based upon uncorrected field N-values		>30	Hard

MATERIAL: (major constituent identified in CAPITAL letters)

COHESIONLESS SOILS		
MATERIAL	FRACTION	GRAIN SIZE RANGE
GRAVEL	Coarse	3/4" to 3"
	Fine	1/4" to 3/4"
SAND	Coarse	1/16" to 1/4"
	Medium	1/64" to 1/16"
	Fine	Finest visible & distinguishable particles
SILT/CLAY	see adjacent table	Cannot distinguish individual particles
COBBLES	3" to 6" in diameter	
BOULDERS	> 6" in diameter	
Note: Boulders and cobbles are observed in test pits and/or auger cuttings.		

COHESIVE SOILS		
SMALLEST DIAMETER	PLASTICITY	IDENTITY
None	Non-plastic	**SILT**
1/4" (pencil)	Slight	**clayey SILT**
1/8"	Low	**SILT & CLAY**
1/16"	Medium	**CLAY & SILT**
1/32"	High	**Silty CLAY**
1/64"	Very High	**CLAY**
Wetted sample is rolled in hands to smallest possible diameter before breaking.		

ORGANIC SILT: Typically gray to dark gray, often has strong H2S odor. May contain shells or shell fragments. Light weight.

Fibrous PEAT: Light weight, spongy, mostly visible organic matter, water squeezed readily from sample. Typically near top of layer.

Fine grained PEAT: Light weight, spongy, little visible organic matter, water squeezed from sample. Typically below fibrous peat.

DEBRIS: Detailed contents described in parentheses (wood, glass, ash, crushed brick, metal, etc.)

BEDROCK: Underlying rock beneath loose soil, can be weathered (easily crushed) or competent (difficult to crush).

ADDITIONAL CONSTITUENTS

TERM	% OF TOTAL
and	35-50%
some	20-35%
little	10-20%
trace	1-10%

COMMON TERMS

Glacial till: Very dense/hard, heterogeneous mixture of sand, silt, clay, sub-angular gravel. Deposited at base of glaciers, which covered all of New England.

Varved clay: Fine-grained, post-glacial lake sediments characterized by alternating layers (or varves) of silt, sand and clay.

Fill: Material used to raise ground, can be engineered or non-engineered.

COMMON FIELD MEASUREMENTS

Torvane: Undrained shear strength is estimated using an E285 Pocket Torvane (TV). Values in tons/ft2.

Penetrometer: Unconfined compressive strength is estimated using a Pocket Penetrometer (PP). Values in tons/ft2.

RQD: Rock Quality Designation is determined by measuring total length of pieces of core 4" or greater and dividing by the total length of the run, expressed as %. 100-90% excellent; 90-75% good; 75-50% fair; 50-25% poor; 25-0% very poor.

PID: Soil screened for volatile organic compounds (VOCs) using a photoionization detector (PID) referenced to benzene in air. Readings in parts per million by volume.

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING TC-1

PROJECT	Track Replacement			CONTRACTOR	Seaboard Environmental Drilling		
JOB NUMBER	9015-04-01	FINAL DEPTH (ft)	10.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Putnam, CT	SURFACE ELEV (ft)	--	FOREMAN	Jarett	CASING	
START DATE	1/17/2025	DISTURBED SAMPLES	5	HELPER	Dale	CASE DIAMETER	N/A
FINISH DATE	1/17/2025	UNDISTURBED SAMPLES	0	BIT TYPE	N/A	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Caren Irgang	WATER LEVEL		ROD TYPE	A (1 5/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	Southeastern portion of track (along straightaway)	FIRST (ft)	N/E	SAMPLER	2" O.D. Split Spoon	ASPHALT CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	6"

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
	5/6/10/35	12/24	S-1 (0-2')	--	Top 4": Medium dense, brown, GRAVEL, little fine to coarse sand, trace silt, damp (FROZEN) Bottom 8": Medium dense, light brown, medium SAND, some gravel, damp	GRAVEL GRAVELLY SAND	1,2,3
	24/12/12/12	14/24	S-2 (2-4')	--	Top 3": Medium dense, light brown to orange, fine SAND, trace grevel, trace medium to coarse sand, damp Bottom 11": Medium dense, light brown, fine SAND, trace medium sand, little silt, damp		
5'	30/18/14/16	16/24	S-3 (4-6')	--	Top 6": Dense, light brown, medium SAND, little fine to coarse sand, little silt, little gravel, damp Bottom 10": Dense, light brown, medium SAND, some coarse sand, some gravel, damp		
	18/19/20/24	12/24	S-4 (6-8')	--	Dense, light brown, medium SAND, some gravel, little coarse sand, trace silt, dry		
	15/11/8/7	16/24	S-5 (8-10')	--	Medium dense, light brown, medium SAND, some fine gravel, little coarse sand, trace silt, dry		
10'						10.0	

End of exploration at 10'

Photograph of Asphalt Core at Location TC-1



Approx. Track Thickness: 0.5"
Approx. Asphalt Thickness: 2.5"

Remarks:
1. Asphalt core performed by Witch Enterprises on 1/17/2025
   Asphalt core consisted of approximately: 0.5" track, 2.5" asphalt.
2. Boring performed in large, recently patched area.
3. Started collecting samples below the track/asphalt core (described in Note 1). Ground surface (depth of 0 feet), as presented on this boring log, indicates the top of the surficial layer directly below the track and underlying asphalt.

PROJECT NO.
9015-04-01

LOG OF BORING
TC-1

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING TC-2

PROJECT	Track Replacement			CONTRACTOR	Seaboard Environmental Drilling		
JOB NUMBER	9015-04-01	FINAL DEPTH (ft)	6.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Putnam, CT	SURFACE ELEV (ft)	--	FOREMAN	Jarett	CASING	
START DATE	1/17/2025	DISTURBED SAMPLES	3	HELPER	Dale	CASE DIAMETER	N/A
FINISH DATE	1/17/2025	UNDISTURBED SAMPLES	0	BIT TYPE	N/A	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Caren Irgang	WATER LEVEL		ROD TYPE	A (1 5/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	Northeastern portion of track (between straightaway and northern curve)	FIRST (ft)	N/E	SAMPLER	2" O.D. Split Spoon	ASPHALT CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	6"

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
	12/12/15/17	13/24	S-1 (0-2')	--	Medium dense, brown, medium SAND, some fine gravel, little coarse sand, trace coarse gravel, trace silt, damp (bottom 7" little silt)	GRAVELLY SAND 2.0	1,2,3
	14/11/12/12	11/24	S-2 (2-4')	--	Medium dense, brown, fine to medium SAND, little coarse sand, little silt, damp (1" layer with some silt in middle)	FINE TO MEDIUM SAND 4.0	
5'	14/13/28/82	7/24	S-3 (4-6')	--	Dense, gray brown, coarse GRAVEL, some fine gravel, little silt, little sand, damp	GRAVEL 6.0	
					End of exploration at 6'		
10'							

Photograph of Asphalt Core at Location TC-2



Approx. Track Thickness: 0.25"
Approx. Asphalt Thickness: 3"

Remarks:
1. Asphalt core performed by Witch Enterprises on 1/17/2025. Corehole holding water (water introduced by asphalt core cutting method). Asphalt core consisted of approximately: 0.25" track, 3" asphalt (vertical crack throughout, core in 2 pieces).
2. Core and boring performed at asphalt crack.
3. Started collecting samples below the track/asphalt core (described in Note 1). Ground surface (depth of 0 feet), as presented on this boring log, indicates the top of the surficial layer directly below the track and underlying asphalt.

PROJECT NO.
9015-04-01

LOG OF BORING
TC-2

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING TC-3

PROJECT	Track Replacement			CONTRACTOR	Seaboard Environmental Drilling		
JOB NUMBER	9015-04-01	FINAL DEPTH (ft)	5.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Putnam, CT	SURFACE ELEV (ft)	--	FOREMAN	Jarett	CASING	
START DATE	1/17/2025	DISTURBED SAMPLES	3	HELPER	Dale	CASE DIAMETER	N/A
FINISH DATE	1/17/2025	UNDISTURBED SAMPLES	0	BIT TYPE	N/A	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Caren Irgang	WATER LEVEL		ROD TYPE	A (1 5/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	Northern portion of track (along curve)	FIRST (ft)	N/E	SAMPLER	2" O.D. Split Spoon	ASPHALT CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	6"

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
	17/11/15/17	16/24	S-1 (0-2')	--	Top 3": Medium dense, brown, GRAVEL, damp Next 5": Medium dense, light brown, medium to coarse SAND, some gravel, trace silt, damp Bottom 8": Medium dense, light brown, fine SAND, little silt, little gravel, damp	GRAVEL SAND AND GRAVEL	1,2,3
	15/17/18/13	10/24	S-2 (2-4')	--	Dense, light brown, medium SAND, and GRAVEL, little silt, little fine sand, dry		
5'	17/50 for 6"	8/12	S-3 (4-5')	--	Very dense, light brown, medium SAND, and gravel, little silt, little fine sand, dry	5.0	
					End of exploration at 5'		
10'							

Photograph of Asphalt Core at Location TC-3



Approx. Track Thickness: 0.5"
Approx. Asphalt Thickness: 2"

Remarks:
1. Asphalt core performed by Witch Enterprises on 1/17/2025. Corehole holding water (water introduced by asphalt core cutting method). Asphalt core consisted of approximately: 1/4" track, 2" asphalt (vertical crack throughout, core in 2 pieces).
2. Boring performed at hairline asphalt crack.
3. Started collecting samples below the track/asphalt core (described in Note 1). Ground surface (depth of 0 feet), as presented on this boring log, indicates the top of the surficial layer directly below the track and underlying asphalt.

PROJECT NO. 9015-04-01

LOG OF BORING TC-3

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING TC-4

PROJECT	Track Replacement			CONTRACTOR	Seaboard Environmental Drilling		
JOB NUMBER	9015-04-01	FINAL DEPTH (ft)	8.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Putnam, CT	SURFACE ELEV (ft)	--	FOREMAN	Jarett	CASING	
START DATE	1/17/2025	DISTURBED SAMPLES	4	HELPER	Dale	CASE DIAMETER	N/A
FINISH DATE	1/17/2025	UNDISTURBED SAMPLES	0	BIT TYPE	N/A	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Caren Irgang	WATER LEVEL		ROD TYPE	A (1 5/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	Northwestern portion of track (along curve)	FIRST (ft)	N/E	SAMPLER	2" O.D. Split Spoon	ASPHALT CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	6"

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
	13/18/22/23	15/24	S-1 (0-2')	--	Top 3": Dense, brown, GRAVEL, damp Bottom 12": Dense, light brown, fine to medium SAND, some gravel, some coarse sand, little silt, damp	GRAVEL GRAVELLY SAND	1,2,3
	21/20/26/19	18/24	S-2 (2-4')	--	Dense, gray to brown, medium to coarse SAND, some gravel, little silt, little fine sand, damp (1/2" fine sand in middle)	4.0	
5'	21/22/17/12	8/24	S-3 (4-6')	--	Dense, gray to orange, fractured GRAVEL, some sand, trace silt, damp	SANDY GRAVEL 6.0	
	10/17/10/7	14/24	S-4 (6-8')	--	Top 10": Medium dense, medium to coarse sand, some gravel, trace fine sand, trace silt, damp Bottom 4": Medium dense, light brown, fine SAND, trace silt, damp	GRAVELLY SAND FINE SAND 8.0	
10'					End of exploration at 8'		

Photograph of Asphalt Core at Location TC-4



Approx. Track Thickness: 0.25"
Approx. Asphalt Thickness: 2.5" (1"+1.5")

Remarks:
1. Asphalt core performed by Witch Enterprises on 1/17/2025. Corehole holding water (water introduced by asphalt core cutting method). Asphalt core consisted of approximately: 0.25" track, 2.5" asphalt (1" asphalt over 1.5" asphalt. Vertical crack throughout, core in 3 pieces).
2. Boring performed under asphalt crack.
3. Started collecting samples below the track/asphalt core (described in Note 1). Ground surface (depth of 0 feet), as presented on this boring log, indicates the top of the surficial layer directly below the track and underlying asphalt.

PROJECT NO.
9015-04-01

LOG OF BORING
TC-4

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING TC-5

PROJECT	Track Replacement			CONTRACTOR	Seaboard Environmental Drilling		
JOB NUMBER	9015-04-01	FINAL DEPTH (ft)	10.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Putnam, CT	SURFACE ELEV (ft)	--	FOREMAN	Jarett	CASING	
START DATE	1/17/2025	DISTURBED SAMPLES	5	HELPER	Dale	CASE DIAMETER	N/A
FINISH DATE	1/17/2025	UNDISTURBED SAMPLES	0	BIT TYPE	N/A	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Caren Irgang	WATER LEVEL		ROD TYPE	A (1 5/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	Western portion of track (along straightaway)	FIRST (ft)	N/E	SAMPLER	2" O.D. Split Spoon	ASPHALT CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	6"

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
	19/13/9/9	10/24	S-1 (0-2')	--	Top 2": Medium dense, brown, GRAVEL, damp (FROZEN) Bottom 8": Medium dense, brown, medium SAND, some coarse sand, little coarse gravel, trace fine gravel, damp (FROZEN top 2")	GRAVEL GRAVELLY SAND	1,2,3
	9/6/4/6	11/24	S-2 (2-4')	--	Top 4": Loose, brown, medium to coarse SAND and GRAVEL, damp Bottom 7": Loose, brown, medium SAND, some coarse sand, little gravel, damp		
5'	6/7/5/5	10/24	S-3 (4-6')	--	Medium dense, brown, medium SAND, little silt, little fine gravel, trace coarse gravel, damp		
	3/5/10/9	14/24	S-4 (6-8')	--	Top 5": Medium dense, brown, medium SAND, little silt, little fine gravel, trace gravel, damp Next 7": Medium dense, light brown, medium SAND, little coarse sand, damp Bottom 2": Medium dense, brown, fine SAND, damp	6.5 FINE TO MEDIUM SAND	
10'	10/8/9/11	16/24	S-5 (8-10')	--	Top 6": Medium dense, light brown, medium SAND, trace coarse sand, damp Bottom 10": Medium dense, light brown, fine SAND, trace silt, little fine gravel, damp	10.0	

End of exploration at 10'

Photograph of Asphalt Core at Location TC-5



Approx. Track Thickness: 0.25"
Approx. Asphalt Thickness: 2.25"

Remarks:
1. Asphalt core performed by Witch Enterprises on 1/17/2025. Corehole holding water (water introduced by asphalt core cutting method). Asphalt core consisted of approximately: 0.25" track, 2.25" asphalt (approximately 1-2" ice observed underneath asphalt core).
2. Boring performed between two recently patched areas.
3. Started collecting samples below the track/asphalt core (described in Note 1). Ground surface (depth of 0 feet), as presented on this boring log, indicates the top of the surficial layer directly below the track and underlying asphalt.

PROJECT NO. 9015-04-01

LOG OF BORING TC-5

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING TC-6

PROJECT	Track Replacement			CONTRACTOR	Seaboard Environmental Drilling		
JOB NUMBER	9015-04-01	FINAL DEPTH (ft)	4.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Putnam, CT	SURFACE ELEV (ft)	--	FOREMAN	Jarett	CASING	
START DATE	1/17/2025	DISTURBED SAMPLES	2	HELPER	Dale	CASE DIAMETER	N/A
FINISH DATE	1/17/2025	UNDISTURBED SAMPLES	0	BIT TYPE	N/A	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Caren Irgang	WATER LEVEL		ROD TYPE	A (1 5/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	Western portion of track (along straightaway)	FIRST (ft)	N/E	SAMPLER	2" O.D. Split Spoon	ASPHALT CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	6"

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
	31/21/12/13	16/24	S-1 (0-2')	--	Top 4": Dense, GRAVEL, little sand, little silt, damp Next 4": Dense, brown, fine GRAVEL and SAND, damp Bottom 8": Dense, light brown, fine to medium SAND, some coarse sand, little silt, damp	GRAVEL FINE TO MEDIUM SAND	1,2,3
	10/10/14/13	10/24	S-2 (2-4')	--	Medium dense, light brown, fine to medium SAND, some coarse sand, little silt, little gravel, damp	4.0	
5'					End of exploration at 4'		
10'							

Photograph of Asphalt Core at Location TC-6



Approx. Track Thickness: 0.75"
Approx. Asphalt Thickness: 2.75" (0.5+2.5")

Remarks:
1. Asphalt core performed by Witch Enterprises on 1/17/2025.
   Asphalt core consisted of approximately: 0.75" track, 2.75" asphalt (0.5" asphalt over 2.5" asphalt, core in 2 pieces).
2. Boring performed in large patch.
3. Started collecting samples below the track/asphalt core (described in Note 1). Ground surface (depth of 0 feet), as presented on this boring log, indicates the top of the surficial layer directly below the track and underlying asphalt.

PROJECT NO.
9015-04-01

LOG OF BORING
TC-6

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING TC-7

PROJECT	Track Replacement			CONTRACTOR	Seaboard Environmental Drilling		
JOB NUMBER	9015-04-01	FINAL DEPTH (ft)	8.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Putnam, CT	SURFACE ELEV (ft)	--	FOREMAN	Jarett	CASING	
START DATE	1/17/2025	DISTURBED SAMPLES	4	HELPER	Dale	CASE DIAMETER	N/A
FINISH DATE	1/17/2025	UNDISTURBED SAMPLES	0	BIT TYPE	N/A	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Caren Irgang	WATER LEVEL		ROD TYPE	A (1 5/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	Western portion of track (along straightaway)	FIRST (ft)	N/E	SAMPLER	2" O.D. Split Spoon	ASPHALT CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	6"

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
	50/47/25/25	14/24	S-1 (0-2')	--	Top 7": Very dense, brown, medium SAND, some coarse sand, some fine gravel, trace coarse gravel, damp (FROZEN top 4") Bottom 7": Very dense, brown, SAND AND GRAVEL, some coarse sand, little silt, damp	GRAVELLY SAND SAND AND GRAVEL	1,2,3
	20/23/24/27	5/24	S-2 (2-4')	--	Top 2": Dense, gray, GRAVEL, trace organics (roots), damp Bottom 3": Dense, light brown, fine to medium SAND, little silt, some gravel, damp	4.0	
5'	18/19/35/14	13/24	S-3 (4-6')	--	Top 9": Dense, coarse GRAVEL, trace sand, trace silt Bottom 4": Medium dense, brown, fine to medium SAND and fine GRAVEL, little silt, damp	GRAVEL 5.0 SAND AND GRAVEL	
	18/12/11/9	21/24	S-4 (6-8')	--	Top 8": Medium dense, brown, fine to medium SAND and fine GRAVEL, little silt, dmp Next 5": Medium dense, brown, fine to medium SAND, trace fine to coarse gravel, trace coarse sand, damp (very dark brown at tip) Bottom 8": Medium dense, brown, fine to medium SAND, trace coarse sand, damp	6.5 FINE TO MEDIUM SAND 8.0	
10'					End of exploration at 8'		

Photograph of Asphalt Core at Location TC-7



Approx. Track Thickness: 0.25"
Approx. Asphalt Thickness: 2.5" (1"+1.5")

Remarks:
1. Asphalt core performed by Witch Enterprises on 1/17/2025.
   Asphalt core consisted of approximately: 0.25" track, 2.5" asphalt (1" asphalt over 1.5" asphalt, core in 2 pieces).
2. Boring performed in two overlapping patched areas with additional crack.
3. Started collecting samples below the track/asphalt core (described in Note 1). Ground surface (depth of 0 feet), as presented on this boring log, indicates the top of the surficial layer directly below the track and underlying asphalt.

PROJECT NO. 9015-04-01

LOG OF BORING TC-7

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING TC-8

PROJECT	Track Replacement			CONTRACTOR	Seaboard Environmental Drilling		
JOB NUMBER	9015-04-01	FINAL DEPTH (ft)	10.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Putnam, CT	SURFACE ELEV (ft)	--	FOREMAN	Jarett	CASING	
START DATE	1/17/2025	DISTURBED SAMPLES	5	HELPER	Dale	CASE DIAMETER	N/A
FINISH DATE	1/17/2025	UNDISTURBED SAMPLES	0	BIT TYPE	N/A	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Caren Irgang	WATER LEVEL		ROD TYPE	A (1 5/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	Southwestern portion of track (between straightaway and southern curve)	FIRST (ft)	N/E	SAMPLER	2" O.D. Split Spoon	ASPHALT CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	6"

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
	36/47/29/25	14/24	S-1 (0-2')	--	Top 1": Very dense, brown, GRAVEL, little sand, little silt, damp (FROZEN) Next 9": Very dense, brown, medium SAND, some coarse sand, some gravel, damp (FROZEN top 3", semi-frozen next 3") Bottom 4": Very dense, brown, medium SAND and GRAVEL, some coarse sand, damp	GRAVEL SAND AND GRAVEL 2.0	1,2,3
	10/7/7/7	6/24	S-2 (2-4')	--	Medium dense, GRAVEL, little coarse sand, little silt, trace fine to medium sand, damp	SANDY GRAVEL 4.0	
5'	6/3/3/2	7/24	S-3 (4-6')	--	Loose, brown, medium SAND, some gravel, some coarse sand, little silt, damp	GRAVELLY SAND	
	3/3/2/5	13/24	S-4 (6-8')	--	Loose, brown, fine to medium SAND, some gravel, little coarse sand, damp		
	14/20/14/10	22/24	S-5 (8-10')	--	Top 6": Dense, light brown, fine to medium SAND, some gravel, little coarse sand, damp Next 8": Dense, brown, fine SAND, little silt, trace coarse sand, little fine gravel, damp Bottom 8": Dense, fine to medium SAND, little coarse sand, damp	8.5 FINE TO MEDIUM SAND 10.0	
10'					End of exploration at 10'		

Photograph of Asphalt Core at Location TC-8



Approx. Track Thickness: 0.75"
Approx. Asphalt Thickness: 3.25"

Remarks:
1. Asphalt core performed by Witch Enterprises on 1/17/2025. Corehole holding water (water introduced by asphalt core cutting method). Asphalt core consisted of approximately: 0.75" track, 3.25" asphalt (vertical crack throughout, core in 2 pieces).
2. Boring performed under asphalt crack.
3. Started collecting samples below the track/asphalt core (described in Note 1). Ground surface (depth of 0 feet), as presented on this boring log, indicates the top of the surficial layer directly below the track and underlying asphalt.

PROJECT NO. 9015-04-01

LOG OF BORING TC-8

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING TC-9

PROJECT	Track Replacement			CONTRACTOR	Seaboard Environmental Drilling		
JOB NUMBER	9015-04-01	FINAL DEPTH (ft)	8.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Putnam, CT	SURFACE ELEV (ft)	--	FOREMAN	Jarett	CASING	
START DATE	1/17/2025	DISTURBED SAMPLES	4	HELPER	Dale	CASE DIAMETER	N/A
FINISH DATE	1/17/2025	UNDISTURBED SAMPLES	0	BIT TYPE	N/A	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Caren Irgang	WATER LEVEL		ROD TYPE	A (1 5/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	Southern portion of track (along curve)	FIRST (ft)	N/E	SAMPLER	2" O.D. Split Spoon	ASPHALT CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	6"

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
	29/28/20/22	19/24	S-1 (0-2')	--	Top 7": Dense, brown, medium SAND, little silt, little gravel, little coarse sand, damp (FROZEN) Bottom 12": Dense, coarse GRAVEL and medium to coarse SAND, trace silt, damp (little brown fine sand at tip)	MEDIUM SAND GRAVEL AND SAND 2.0	1,2,3
	20/20/13/10	13/24	S-2 (2-4')	--	Top 5": Dense, light brown, fine SAND, trace medium sand, damp Bottom 8": Dense, fine to medium SAND, some coarse sand, little fine gravel, little medium sand, trace silt, damp (fine sand at tip, orange in bottom 2")	FINE SAND	
5'	6/3/3/2	16/24	S-3 (4-6')	--	Top 8": Loose, light brown, fine SAND, little fine gravel, little medium sand, trace silt, damp (little silt bottom 4") Bottom 8": Loose, light brown, fine to medium SAND, damp (1/2" clay pocket in middle)	6.0	
	4/16/15/14	19/24	S-4 (6-8')	--	Top 5": Dense, brown, fine to medium SAND, some coarse sand, little fine gravel, little medium sand, trace silt, damp Next 3": Dense, dark brown, GRAVEL, trace silt, damp Bottom 11": Dense, light brown, fine to medium SAND, trace silt, some coarse sand, some gravel, damp	FINE TO MEDIUM SAND 8.0	
10'					End of exploration at 8'		

Photograph of Asphalt Core at Location TC-9



Approx. Track Thickness: 0.5"
Approx. Asphalt Thickness: 2.25" (0.5"+1.75")

Remarks:
1. Asphalt core performed by Witch Enterprises on 1/17/2025. Corehole holding water (water introduced by asphalt core cutting method). Asphalt core consisted of approximately: 0.5" track, 2.25" asphalt (0.5" asphalt over 1.75" asphalt, core in 2 pieces).
2. Boring performed at crack in center of track, no cracks in approx. 20'-radius.
3. Started collecting samples below the track/asphalt core (described in Note 1). Ground surface (depth of 0 feet), as presented on this boring log, indicates the top of the surficial layer directly below the track and underlying asphalt.

PROJECT NO.
9015-04-01

LOG OF BORING
TC-9

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING TC-10

PROJECT	Track Replacement			CONTRACTOR	Seaboard Environmental Drilling		
JOB NUMBER	9015-04-01	FINAL DEPTH (ft)	6.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Putnam, CT	SURFACE ELEV (ft)	--	FOREMAN	Jarett	CASING	
START DATE	1/17/2025	DISTURBED SAMPLES	3	HELPER	Dale	CASE DIAMETER	N/A
FINISH DATE	1/17/2025	UNDISTURBED SAMPLES	0	BIT TYPE	N/A	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Caren Irgang	WATER LEVEL		ROD TYPE	A (1 5/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	Southeastern portion of track (along curve)	FIRST (ft)	N/E	SAMPLER	2" O.D. Split Spoon	ASPHALT CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	6"

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
	20/15/14/13	19/24	S-1 (0-2')	--	Top 4": Medium dense, light brown, medium to coarse SAND and GRAVEL, trace silt, damp (semi-frozen) Bottom 15": Medium dense, brown, fine SAND, little medium sand, little gravel, little silt, damp	GRAVEL FINE SAND	1,2,3
	13/9/9/7	15/24	S-2 (2-4')	--	Medium dense, brown, fine SAND, little medium sand, little gravel, little silt, damp	4.0	
5'	4/3/3/3	18/24	S-3 (4-6')	--	Medium dense, light brown, fine to medium SAND, little silt, trace fine gravel, trace coarse sand, damp	FINE TO MEDIUM SAND 6.0	
					End of exploration at 6'		
10'							

Photograph of Asphalt Core at Location TC-10



Approx. Track Thickness: 0.25"
Approx. Asphalt Thickness: 2.5"

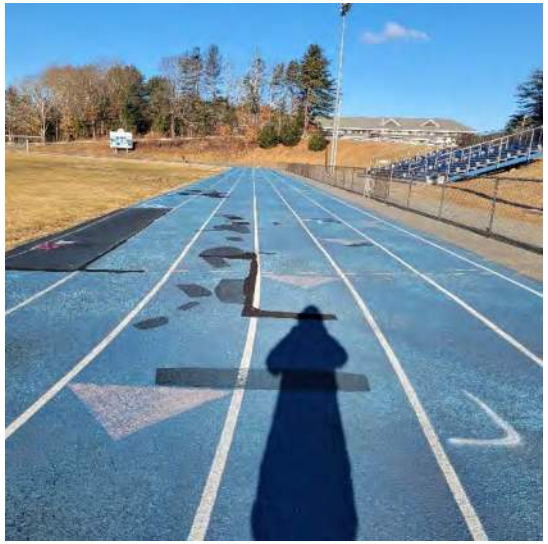
Remarks:
1. Asphalt core performed by Witch Enterprises on 1/17/2025
   Asphalt core consisted of approximately: 0.25" track, 2.5" asphalt.
2. Boring performed in area of no significant cracks.
3. Started collecting samples below the track/asphalt core (described in Note 1). Ground surface (depth of 0 feet), as presented on this boring log, indicates the top of the surficial layer directly below the track and underlying asphalt.

PROJECT NO.
9015-04-01

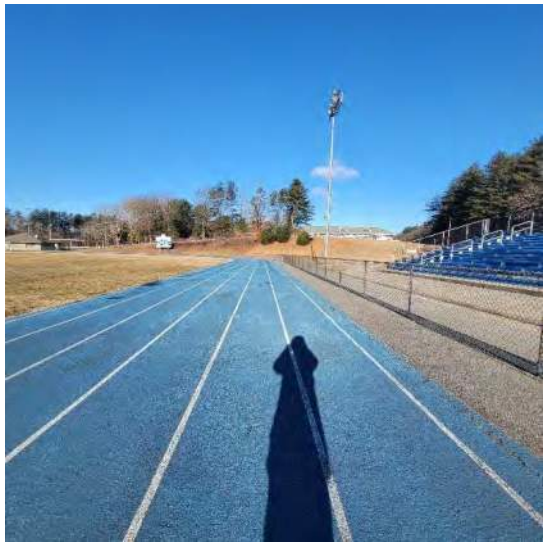
LOG OF BORING
TC-10



Photograph 1 – Condition of asphalt in front of TC-1



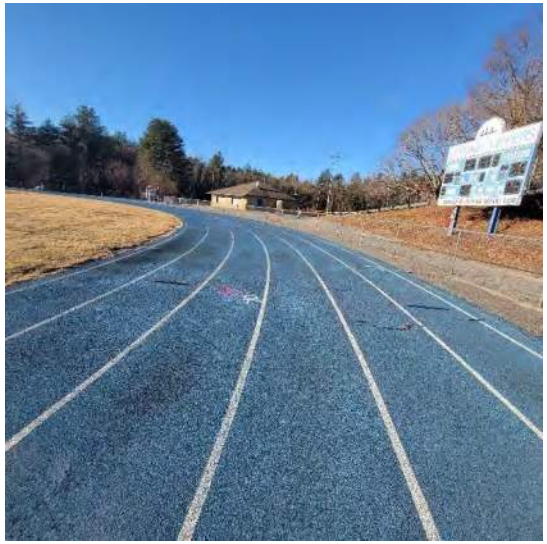
Photograph 2 – Condition of track and topography at TC-1



Photograph 3 – Condition of track between TC-1 and TC-2



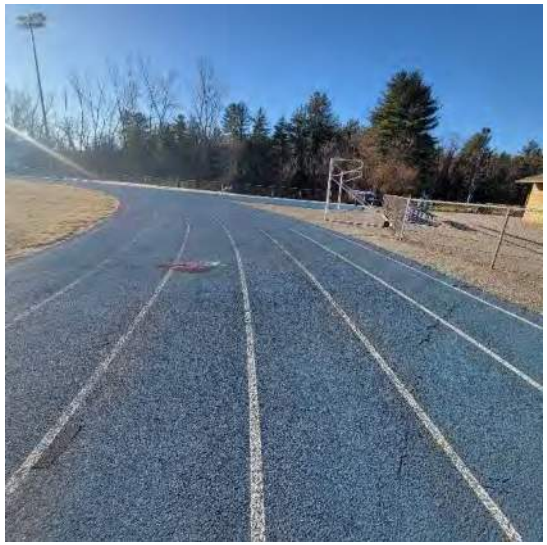
Photograph 4 – Condition of track and topography at TC-2



Photograph 5 – Condition of track and topography at TC-3



Photograph 6 – Condition of track and topography in front of TC-4



Photograph 7 – Condition of track at TC-4



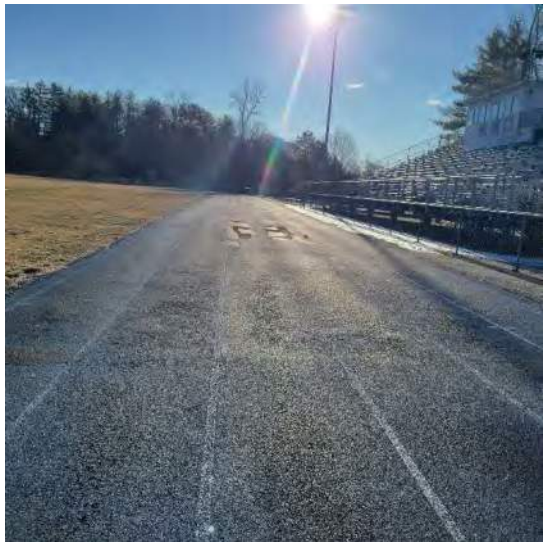
Photograph 8 – Condition of asphalt near TC-4



Photograph 9 – Condition of asphalt adjacent to yellow structure



Photograph 10 – Condition of asphalt near TC-5



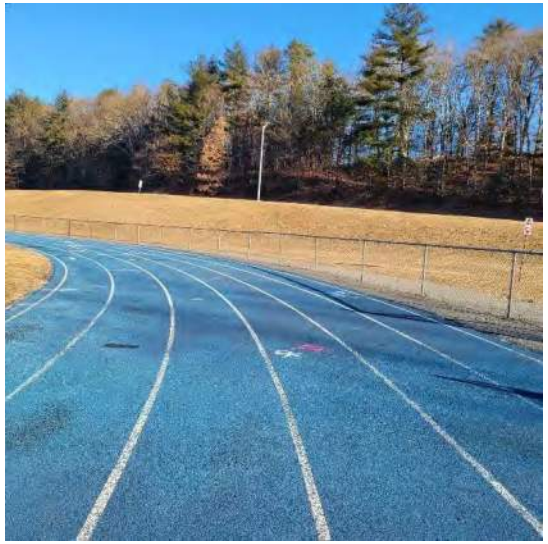
Photograph 11 – Condition of track between TC-5 and TC-6



Photograph 12 – Condition of track at TC-7



Photograph 13 – Condition of track at TC-9



Photograph 14 – Condition of track and topography at TC-10



Photograph 15: Snow and ice at south portion of Site



Photograph 16 – Condition of asphalt at entrance