Town of Fairfield

Sullivan Independence Hall
725 Old Post Road

Fairfield, Connecticut 06824
Purchasing Department

(203) 256·3060
FAX (203) 256·3080

ADDENDUM #2
BID #2024-65
Construction of Two (2) New Pickleball Courts – Tunxis Hill Park

1st April, 2024 – It is intended that this Addendum incorporating the following corrections, revisions, additions, deletions and clarifications become part of the Contract Documents, including pricing as submitted.

New Information:

1. Please see the attached Addendum prepared by Landtech. The attached documents have been updated to reflect the responses to the requests for information received by the Town of Fairfield.

2. Please utilize the Bid Form that begins on page 17 of this addendum document. ***Only bids on this form will be accepted.***

End of Addendum #2

Company: _____ Name: _____ Signature: _____ Date: _____

LANDTECH

Civil / Site Engineering · Site Planning
Environmental Science & Engineering
Landscape Architecture · Land Surveying
Permit Coordination & Management
Construction Management & Financing

March 28, 2024

PROJECT: 2024-65 CONSTRUCTION OF TWO (2) NEW PICKLEBALL COURTS - TUNXIS HILL PARK

REQUEST FOR INFORMATION #1 – RESPONSES TO BIDDER'S REQUEST FOR INFORMATION

Question 1: *"For the potential Sewer replacement (this item cannot be bid with the information currently included with the bid docs)"*

a. *"What is the piping size?"*
Response: 2-inch PVC.

b. *"What is the flow rate?"*
Response: Unknown. Minimal flow. The comfort station has 2 toilets and 2 sinks connected.

c. *"Who is the line servicing?"*
Response: The sewer line services the seasonal onsite bathrooms that use a force main system to pump up to the sanitary sewer located in Melville Avenue. Bathrooms can be closed during sewer work if needed.

d. *"Will it need to be pumped and bypassed?"*
Response: The facility can be closed temporarily if needed to relocate the line.

e. *"Will there be health department inspections and permits required?"*
Response: No. Town of Fairfield Sewer Department should be notified if the line needs to be relocated.

f. *"Will any new structures be required."*
Response: No.

Question 2: *"Does the town have a location for all the excess soils that will be generated from this site?"*
Response 2: Contractor is responsible to remove any excess soil offsite for proper disposal. Contractor shall stockpile existing stone dust within the limits of the project area for the Town of Fairfield to pick up for reuse.

Question 3: *"What is the location of the boring shown on page 10?"*
Response 3: A boring was not performed, only a deep test pit and percolation test for the purposes of designing the drainage system. As indicated in the Bid Documents, it is the responsibility of the contractor to retain a geotechnical engineer to perform borings and prepare a geotechnical report as required by the structural engineer for foundation design. The location of the test pit and percolation test are indicated by "DTH-1" and "P-1", respectively. Refer to Sheet C-2.0 of the Construction Drawings.

Question 4: *"Can the pavilion be bid as a separate item as there is no model specified and contractors may bid very different products? Or can the town provide a model for bid purposes?"*
Response 4: The Town of Fairfield has decided to bid the pavilion as an alternate. Bidding details for the proposed structure have been included on Sheets C-1.0/C-1.1/C-4.1 for the contractor's review as part of the bid. The prefab pavilion shown is a 10'x10' Meridian Gazebo (Model No. YM11756) as manufactured by Yardistry. The contractor may submit an alternate to the pavilion shown in their bid for the Town of Fairfield's review.

Question 5: *"Can the attached detail be used for the fence/drain along the new patio. It is best to keep any penetration at least 3' from the slab edges on post tensioned slabs."*
Response 5: Yes, the configuration of the detail provided for the fence and drain relative to the post tension slab is acceptable. A shop drawing for the drain itself will need to be submitted once the project has been awarded.

Question 6: "*Is Nova Play acrylics an acceptable alternate for court surfacing (submittal info attached)?*"
Response 6: The Town of Fairfield will accept the Nova Play arcylics as an acceptable alternate for this bid.

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BID #2024-65

CONSTRUCTION OF TWO (2) NEW PICKLEBALL COURTS
TUNXIS HILL PARK

TOWN OF FAIRFIELD
PURCHASING AUTHORITY
725 OLD POST ROAD
INDEPENDENCE HALL
FAIRFIELD, CT 06824.

SEALED BIDS are subject to the standard instructions set forth on the attached sheets. Any modifications must be specifically accepted by the Town of Fairfield, Purchasing Authority.

First Selectman

Director of Purchasing

3/15/2024
Date

Date Submitted_____ 2024

Bidder:

_____
Doing Business As (Trade Name)

_____
Address

_____
Town, State, Zip

_____
(Mr. / Ms.) Name and Title, Printed

_____
Signature

_____ _____
Telephone Fax

_____
E-mail

Sealed proposals will be received by the Purchasing Authority at the office of the Director of Purchasing, First Floor, Independence Hall, 725 Old Post Road, Fairfield, Connecticut 06824, up to:

11:00 am, Tuesday 2nd April, 2024

To provide labor, materials, equipment and all else necessary for the construction of two (2) new pickleball courts at Tunxis Hill Park, Fairfield, CT as detailed in the plans and project manual prepared by Land-Tech Consultants Inc.

NOTES:

1. Proposers are to complete all requested data in the upper right corner of this page and must return this page and the Proposal page with their bid.
2. No proposals shall be accepted from, or contracts awarded to, any person/company/affiliate or entity under common control who is in arrears to the Town of Fairfield upon debt, or contract or who has been within the prior five (5) years, a defaulter as surety or otherwise upon obligations to the Town of Fairfield, and shall be determined by the Town.
3. Bid proposals are to be submitted in a sealed envelope and clearly marked "**BID #2024-65**" on the outside of the envelope, including all outer packaging, such as, DHL, FedEx, UPS, etc.
4. It is the sole responsibility of the proposer to see that their submission is received by the Fairfield Purchasing Department prior to the time and date noted above. Bid proposals are not to be submitted via email or fax.
5. Bid proposals are not to be submitted with plastic binders or covers, nor may the bid proposal contain any plastic inserts or pages.

INVITATION TO BID

The Town of Fairfield (Town) on behalf of its Parks & Recreation Department is seeking competitive bids from qualified Contractors to provide labor, materials, equipment and all else necessary for the construction of two (2) new pickleball courts at Tunxis Hill Park.

ENCLOSURES

1. Project Manual prepared by Landtech Consultants, Inc.
2. Project Plans prepared by Landtech Consultants, Inc.

PRE-BID MEETING

A site meeting will commence at **Tunxis Hill Park, 225 Melville Avenue, Fairfield, CT** at **2:00pm on Thursday, 21st March, 2024** for prospective bidders to scope the conditions.

- While the meeting is non-mandatory, prospective bidders will be required to sign-in at commencement of the meeting. The sign-in sheet will be posted on the Purchasing Department website as below. Copies will not be made available at the meeting, nor will they be faxed out.
- All requests for information will be answered in writing as specified below under Addenda.

ADDENDA / REQUESTS FOR INFORMATION (RFI)

Addenda concerning important information and/or modifications to specifications will be posted on the Fairfield Purchasing Department website at **www.fairfieldct.org/purchasing**

- It is each Bidder's sole responsibility to monitor the above website for all updated information.
- Addenda will not be mailed, e-mailed or faxed out.
- Written requests for information will not be accepted after **4:30pm** on **Tuesday, 26th March, 2024.**
- Verbal requests for information via phone or other means will not be accepted.
- Failure to comply with these conditions will result in the bidder waiving the right to dispute bid specifications and conditions, no exceptions.

Questions concerning this bid must be submitted in writing and directed only to:
Ms. Lee A. Flaherty, Assistant Director: LFlaherty@fairfieldct.org

Response will be in the form of an addendum that will be posted approximately **Thursday, 28th March, 2024** to the Town of Fairfield website, which is www.fairfieldct.org/purchasing. It is the responsibility of each bidder to retrieve addenda from the website. Any contact about this bid between a Bidder and any other Town official and/or department manager and/or Town of Fairfield employee, other than as set forth above, may be grounds for disqualification of that Bidder. No questions or clarifications shall be answered by phone, in person or in any other manner than specified above.

BID BOND / BID SECURITY

A five (5) percent bid bond or equal approved security as stated per the Terms and Conditions must be submitted with the proposal.

All bonds, including payment and performance bonds when applicable, shall be written by a surety company or companies licensed to issue bonds in the State of Connecticut, and shall have at least an A-VIII policy holders rating, as reported by A.M. Best Rating Services, or otherwise deemed acceptable by the Town. The Town always reserves the right to reject surety companies, if an approved surety bond cannot be provided the bidder shall be deemed non-responsive.

A complete list of certified surety companies can be accessed on the U.S. Government Department of Treasury website; https://www.fiscal.treasury.gov/fsreports/ref/suretyBnd/c570_a-z.htm

Any bid submitted without such security will be excluded from the bidding process, no exceptions.

CHECKLIST

The following must be submitted with proposal:

- ☐ Cover page, completed and signed by authorized representative.
- ☐ Addenda acknowledged per the Bid Form in Project Manual.
- ☐ List of references where projects performed of comparable size and scope within the past three (3) years.
- ☐ Complete itemized list of schedule of values.
- ☐ List of all sub-contractors identifying each trade, hourly rates, and Tax ID number.
- ☐ Exceptions itemized and attached to Bid Form.

The Bidder hereby certifies that any and all defects, errors, inconsistencies or omissions of which he/she is aware, either directly or by notification from any sub-bidder or material supplier found in the Contract Documents are listed herewith in this Bid Form.

Name and Title of Authorized Representative (Printed)	Signature	Date

REFERENCES
Provide reference details of most recent similar scope projects performed:

REFERENCE #1:

Name of Company _____ Phone _____

Contact Person _____ Cell _____

Company Address _____ Fax _____

Date work completed _____ Email _____

REFERENCE #2:

Name of Company _____ Phone _____

Contact Person _____ Cell _____

Company Address _____ Fax _____

Date work completed _____ Email _____

REFERENCE #3:

Name of Company _____ Phone _____

Contact Person _____ Cell _____

Company Address _____ Fax _____

Date work completed _____ Email _____

REFERENCE #4:

Name of Company _____ Phone _____

Contact Person _____ Cell _____

Company Address _____ Fax _____

Date work completed _____ Email _____

REFERENCE #5:

Name of Company _____ Phone _____

Contact Person _____ Cell _____

Company Address _____ Fax _____

Date work completed _____ Email _____

SUBCONTRACTORS
Provide subcontractor details if any are to be employed as part of this contract, including labor rates:

SUBCONTRACTOR #1:

Name of Company _____ Fed ID # _____

Contact Person _____ Title _____

Company Address _____ Phone _____

Trade _____ Email _____

Rates: Supervisor $_____/hr Foreman $_____ /hr Journeyman $_____ /hr Apprentice $_____ /hr

SUBCONTRACTOR #2:

Name of Company _____ Fed ID # _____

Contact Person _____ Title _____

Company Address _____ Phone _____

Trade _____ Email _____

Rates: Supervisor $_____/hr Foreman $_____ /hr Journeyman $_____ /hr Apprentice $_____ /hr

SUBCONTRACTOR #3:

Name of Company _____ Fed ID # _____

Contact Person _____ Title _____

Company Address _____ Phone _____

Trade _____ Email _____

Rates: Supervisor $_____/hr Foreman $_____ /hr Journeyman $_____ /hr Apprentice $_____ /hr

SUBCONTRACTOR #4:

Name of Company _____ Fed ID # _____

Contact Person _____ Title _____

Company Address _____ Phone _____

Trade _____ Email _____

Rates: Supervisor $_____/hr Foreman $_____ /hr Journeyman $_____ /hr Apprentice $_____ /hr

NOTE: All sub-contractors are subject to approval by the Town of Fairfield and are required to provide Fed ID #.

PURCHASING AUTHORITY
TOWN OF FAIRFIELD
TERMS AND CONDITIONS OF BID

1. DEFINITIONS

Whenever the words defined occur in this Contract and in the specifications hereto attached, they shall have the meanings here given:
1. Owner: The Owner shall mean the Town of Fairfield (Town) or any duly authorized official thereof acting in an official capacity.

2. Contractor: Whenever the word "Contractor" is used in these specifications, it shall be understood to mean the person or persons, co-partnership or corporation, who has entered into this contract as the party of the second part, or his/her or their legal representative.

3. Sub-Contractor: Any individual, firm, partnership, or corporation to whom the Contractor sublets or assigns any part or parts of the project covered by the contract with the approval of the Town.

2. BID PROPOSALS

Bid proposals are to be submitted in a sealed envelope and clearly marked on the outside "**BID #2024-65**" including all outer packaging such as DHL, FedEx, UPS, etc. All prices and notations must be printed in ink or typewritten. No erasures are permitted. Bid proposals are to be in the office of the Purchasing Authority, First Floor, Independence Hall, 725 Old Post Road, Fairfield, Connecticut, prior to date and time specified, at which time they will be publicly opened.

Make bids upon the forms provided, properly signed and with all items filled out. Do not change the wording of the bid form, and do not add words to the bid form. Unauthorized conditions, limitations, or provisions attached to the bid may be cause for rejection of the bid. If alterations by erasure or interlineations are made for any reason, explain over such erasure or interlineations with a signed statement from the bidder.

It is the sole responsibility of the bidder to see that the bid is received by the Fairfield Purchasing Department prior to the deadline. Bid proposals are not to be submitted via email or fax.

3. SCOPE OF WORK/SITE INSPECTIONS

The bidder declares that the scope of the work has been thoroughly reviewed and any questions resolved (see above for name and number of individual to contact for questions). If applicable, the bidder further declares that the site has been inspected as called for in the specifications (q.v.).

4. EXCEPTION TO SPECIFICATIONS

No protest regarding the validity or appropriateness of the specifications or of the Invitation for Bids will be considered, unless the protest is filed in writing with the Purchasing Authority prior to the closing date for the bids. All bid proposals rendered shall be considered meeting the attached specifications unless exceptions are noted on a separate page dated and signed by the bidder.

5. RIGHT TO ACCEPT / REJECT

AFTER REVIEW OF ALL FACTORS, TERMS AND CONDITIONS, INCLUDING PRICE, THE PURCHASING AUTHORITY OF THE TOWN OF FAIRFIELD RESERVES THE RIGHT TO REJECT ANY AND ALL BIDS, OR ANY PART THEREOF, OR WAIVE DEFECTS IN SAME, OR ACCEPT ANY PROPOSAL DEEMED TO BE IN THE BEST INTEREST OF THE TOWN OF FAIRFIELD.

6. PROTESTS

No protest regarding the validity or appropriateness of the specifications or of the invitation for bids will be considered, unless the protest is filed in writing with the Director of Purchasing, prior to the closing date for the bids.

7. PRICES

Prices quoted must be firm, for acceptance by the Town of Fairfield, for a period of ninety (90) days. Price shall include all applicable duties. Bidders shall be required to deliver awarded items at prices quoted in their original bid. The price(s) and amount of the bid will have been arrived at independently and without consultation, communication or agreement with any other Contractor or bidder.

Price is to include all labor, materials, tools, equipment, plant, mobilization, permits, insurances, etc. required to properly complete the project.

8. F.O.B. DESTINATION

Prices quoted shall be Net – Delivered to destination. Bids quoting other than F.O.B. Destination may be rejected.

9. BID BOND

The BID BOND furnished, as bid security, must be duly executed by the bidder as principal. It must be in the amount equal to five percent (5%) of the total estimated bid, as guarantee that, in case the contract is awarded to the bidder, the bidder will, within ten days thereafter, execute such contract and furnish a Performance Bond and Payment Bond.

Small businesses may elect to obtain an irrevocable letter of credit or cashier's check in lieu of the Bid Bond. Such surety must also be in an amount equal to at least five percent (5%) of the total estimated bid.

All bid bonds shall be written by a surety company or companies licensed in the State of Connecticut, and shall have at least an A-VII policy holders rating, as reported by A.M. Best Rating Services, or otherwise deemed acceptable by the Town. The Town always reserves the right to reject surety companies, if an approved surety bond cannot be provided, the bidder shall be deemed non-responsive.

A complete list of certified surety companies can be accessed on the U.S. Government Department of Treasury website: https://www.fiscal.treasury.gov/fsreports/ref/suretyBnd/c570_a-z.htm

NOTE: Failure to provide a Bid Bond or equivalent security is not cause for a waiver defect. Any bid not accompanied by such security will be excluded from consideration.

10. PERMITS

The Contractor will be responsible for securing all necessary permits, state and local, as required by the Town of Fairfield prior to commencing work. Upon application for a building permit the Town will waive its application and permit fees for Town of Fairfield projects.

11. PAYMENT PROCEDURES

No voucher, claim or charge against the Town shall be paid without the approval of the Fiscal Officer for correctness and legality. Appropriate checks shall be drawn by the Fiscal Officer for approved claims or charges and they shall be valid without countersignature unless the Board of Selectmen otherwise prescribed.

12. PAYMENT PERIOD

The Town of Fairfield shall put forth its best effort to make payment within thirty days (30) after delivery of the item acceptance of the work, or receipt of a properly completed invoice, whichever is later. Payment period shall be net thirty days (30) unless otherwise mutually agreed upon. For projects that do not require a performance or bid bond, the Town of Fairfield reserves the right to retain five percent (5%) of total bid amount, which is payable ninety (90) days after final payment or acceptance of the work.

13. THE CONTRACTOR

The Contractor for the work described shall be thoroughly familiar with the requirements of all specifications, and the actual physical conditions of various job sites. The submission of a proposal shall be construed as evidence that the Contractor has examined the actual job conditions, requirements, and specifications. Any claim for labor, equipment, or materials required, or difficulties encountered which could have been foreseen had such an examination been carefully made will not be recognized.

13A. QUALIFICATIONS

Bidders, if requested, must be able to present satisfactory evidence that they have been regularly engaged in the business of such work as they propose to execute and that they are fully prepared with the necessary capital, personnel, materials, tools and equipment, in order to conduct the work to be contracted for the satisfaction of the Town and to begin work promptly when ordered.

13B. OBLIGATION OF CONTRACTOR

The Contractor shall do all the work and furnish all the materials, tools, and appliances necessary or proper for performing and completing work required by this contract in a manner specified. All the work, labor, and materials to be done and furnished under this contract shall be done and furnished strictly pursuant to and in conformity with the specifications hereto attached and other directions of the Town, as given from time to time during the progress of the work under the terms of the contract. The Contractor shall complete all work to be done under this contract to the satisfaction of the Town and in accordance with the specifications and drawings (where provided) herein mentioned at the prices herein agreed upon.

13C. LIABILITY OF CONTRACTOR

The Contractor shall at all times safely guard the Town's property from injury or loss in connection with this contract. The Contractor shall take all responsibility for the work and take precautions for preventing injuries to persons and property in or about the work. The Contractor shall assume the defense of and indemnify and save harmless the Town and its officers, agents, and employees from all claims, injuries, costs, and damages (including, but not limited to, attorney's fees and costs) relating to labor and materials furnished for the work, to inventions, patents and patent rights used in doing the work, or in consequence of any improper materials, implements or labor used therein, or any act, omission or neglect of the Contractor, its subcontractor(s), and or any of their respective agents or employees.

14. ASSIGNMENT OF CONTRACT

No rights under the RFP, the award, or any contract may be assigned or transferred without the consent of the Purchasing Authority.

15. RIGHT OF OWNER ("TOWN") TO TERMINATE CONTRACT

If the work to be done under this Contract shall be abandoned, or if at any time the Town is of the opinion that the Contractor is willfully violating any of the conditions of this contract or is not executing said contract in good faith or that the work is unnecessarily delayed and will not be finished within the prescribed time, the Town may notify the Contractor and Surety, in writing to that effect. If the Contractor does not, within five (5) business days thereafter, take such measures as will, in the judgment of the Town, ensure the satisfactory completion of the work aforesaid, the Town shall have the power to notify the Contractor to discontinue all work or any portion thereof, under this contract. A copy of this contract shall go to the surety.

Thereupon the Contractor shall cease to continue said work, on such part thereof as the Town shall designate. The Town shall thereupon have the power to place such and so many persons as deemed proper, by contract or otherwise, to work at and complete the work herein described and to use such materials, tools, and appliances found upon the work or to procure other materials, tools, and appliances for the completion of the same and charge the expenses of said labor, materials, tools, and appliances to the Contractor; and the expense so charged shall be deducted and paid by the Town out of such money as may be then due, or may at any time thereafter grow due to the Contractor under and by virtue of this agreement, or any part thereof; and in case the expense so charged is less than the sum which would have been payable under this contract if the same had been completed by the Contractor, the Contractor shall be entitled to receive the difference; and in case greater, the Contractor shall pay amount of such excess so due.

16. AWARD OF BIDS

Contracts and purchases will be made or entered into with the lowest responsible bidder meeting specifications, except as otherwise specified in the invitation. If more than one item is specified in the invitation, the Town of Fairfield reserves the right to determine the low bidder on an individual basis or on the basis of all items included in the Invitation for Bids, unless otherwise expressed by the Town. Additionally, the Town reserves the right to consider other factors in an award, such as the Town's prior experience with a vendor for services previously provided.

The Town of Fairfield reserves the right to award the bid with multiple items:

a. to more than one bidder, based on meeting the item(s) specification, cost, availability, or any combination of these criteria;
b. to a single bidder who meets the specifications for all items, and offers the best combination of lowest cost, best availability, and broadest product range;
c. and may add, subtract or delete any item and/or quantity as deemed in the best interest of the Town.

17. NON-APPROPRIATION

Award of the project, either partial or in its entirety, is contingent upon funding approval by the applicable boards of the Town of Fairfield, including state and federal agencies.

18. PERFORMANCE AND LABOR AND MATERIAL BOND

The successful bidder, within seven (7) business days after notification of award, will be required to furnish Performance and Labor and Material Bond provided by a company authorized to issue such bonds in the State of Connecticut, or Certified Check or properly executed Irrevocable Letter of Credit equal to a hundred per cent (100%) of the award.

In the event that the Contractor where required to provide evidence of insurance and a performance bond does not do so before beginning work, the Town of Fairfield reserves the right to withhold payment from such supplier until the evidence of insurance and performance bond has been received by the Town.

All payment and performance bonds shall be written by a surety company or companies licensed to issue bonds in the State of Connecticut, and shall have at least an A-VIII policy holders rating, as reported by A.M. Best Rating Services, or otherwise deemed acceptable by the Town. The Town always reserves the right to reject surety companies, if approved surety bonds cannot be provided the contract shall be terminated.

A complete list of certified surety companies can be accessed on the U.S. Government Department of Treasury website: https://www.fiscal.treasury.gov/fsreports/ref/suretyBnd/c570_a-z.htm

19. ADDITIONAL BOND REQUIREMENT – NON-RESIDENT CONTRACTORS

1. Non-resident contractors are required to deposit with the Department of Revenue Services an additional sum equivalent to 5% of the total contract value, as assurance that personal property taxes and/or any other State taxes assessed and due the State during the contract will be paid.
2. If this surety is not deposited with the State, the Town is required to deduct and submit to the State 5% of the total contract value.

20. METHOD OF DOING WORK

The Contractor shall conduct the work in such a manner so as not to interfere with or willfully annoy employees and officials of Town of Fairfield offices, employees of public utilities, residents or the general public.

The Contractor shall employ only competent employees trained/certified/licensed to perform the work.

Where the Town shall notify the Contractor, in writing, that any employee on the work is, in the Town's opinion, incompetent, unfaithful, disorderly and otherwise unsatisfactory, such employee shall be discharged from the work and shall not again be employed on it, except with the consent of the Town.

At the site of the work, the Contractor shall employ at all times while work is in progress personnel who have full authority to act for the Contractor, and shall be acceptable by the Town.

In connection with the execution of the bid, subsequent purchase orders and/or contracts, the Contractor shall not discriminate against any employee or applicant for employment because of age, race, religion, color, sex, or natural origin.

Executive order #11246 inclusive of all its amendments thereto relative to equal employment opportunities and implementation rule and regulations of the Department of Labor and equal employment opportunities are incorporated herein by specific reference.

The Town of Fairfield reserves the right to require the successful bidder(s) to enter into such security arrangements and/or written contracts as deemed necessary by the Town of Fairfield to protect the Town's property, goods, and interests.

21. GUARANTEE

Equipment, materials, and, or work executed shall be guaranteed for a minimum period of one (1) year against defective material and workmanship. The cost of all labor, materials, shipping charges, and other expenses in conjunction with the replacement of defective equipment, and, or unsatisfactory work, shall be borne by the Contractor.

The Contractor shall upon written notice remedy any and all defects in materials or workmanship resulting from work done under this contract and repair any damage to any structures or property caused by the Contractor incidental to this work, all such repairs to be done in accordance with instructions furnished by the Town and/or Fairfield Public Schools, and paid for by the Contractor.

22. CATALOGUE REFERENCE

Unless expressly stated otherwise, any and all reference to commercial types, sales, trade names and catalogues are intended to be descriptive only and not restrictive; the intent is to indicate the kind and quality of the articles that will be acceptable. Bids on other equivalent makes, or with reference to other catalogue items will be considered. The bidder is to clearly state exactly what will be furnished. Where possible and feasible, submit an illustration, descriptive material, and/or product sample.

23. HOLD HARMLESS

Contractor shall defend, indemnify, and hold harmless the Town of Fairfield, its officers, employees, agents or volunteers, from and against any and all claims and demands of any nature for any loss, damage, injury, or cost (including, but not limited to, attorney's fees and costs) which any person may suffer by reason of, or in any way arising out of, this Agreement, unless caused by the sole negligence of the Town.

24. OSHA

The bidder will certify all equipment complies with all regulations and conditions stipulated under the Williams-Steiger Occupational Safety and Health Act of 1971, as amended. The successful bidder will further certify that all items furnished under this project will conform and comply with Federal and State of Connecticut OSHA standards. The successful bidder will agree to indemnify and hold harmless the Town of Fairfield for any and all damages that may be assessed against the Town.

25. HAZARDOUS MATERIAL

In the instance that the Contractor discovers unanticipated hazardous material, whether it be in nature or capacity, the Town reserves the right to terminate the Contract and regain possession of the project site.

26. LIFE CYCLE COSTING

Where applicable, Life Cycle Costing will be used as a criterion for awarding bids. This is a method of calculating total cost of ownership of an item over the life of the product, which may include operation and maintenance expenses, transportation, salvage value, and/or disposal costs.

27. FEDERAL, STATE, AND LOCAL LAWS

All applicable Federal, State, and local laws, rules and regulations of all authorities having jurisdiction over the locality of the project shall apply to the contract and are deemed to be included herein**.** If the total amount of the project, including any current or future change orders, exceeds $100,000.00 all work is to be done in accordance with Connecticut Department of Labor (CT-DOL) rules and regulations. More information may be obtained from: www.ctdol.state.ct.us

The Davis-Bacon and Related Acts, shall apply to contractors and subcontractors performing on federally funded or assisted contracts in excess of $2,000 for the construction, alteration, or repair (including painting and decorating) of public buildings or public works. More information may be obtained from: https://www.dol.gov/whd/govcontracts/dbra.htm

NOTE: The Town shall apply the most current wage decision applicable at the time of contract award.

The bidder must not discriminate, nor permit discrimination, against any person on the grounds of race, color, national origin, religion, sex, handicap, or veteran status, in their employment practices, in any of their contractual arrangements, in all service and accommodation they offer to the public, and in any of their other business operations.

28. COMMISSION ON HUMAN RIGHTS & OPPORTUNITIES (CHRO)

The Contractor who is selected to perform this State project must comply with CONN. GEN. STAT. §§ 4a-60, 4a-60a, 4a-60g, and 46a-68b through 46a-68f, inclusive, as amended by June 2015 Special Session Public Act 15-5. An Affirmative Action Plan must be filed with and approved by the Commission on Human Rights and Opportunities prior to the commencement of construction.

State law requires a minimum of twenty-five percent (25%) 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, as amended. (Twenty-five percent (25%) of the work with DAS certified Small and Minority owned businesses and twenty-five percent (25%) of that work with DAS certified Minority, Women and/or Disabled owned businesses.) The Contractor must demonstrate good faith effort to meet the twenty-five percent (25%) set-aside goals.

For municipal public works contracts and quasi-public agency projects, the Contractor must file a written or electronic non-discrimination certification with the Commission on Human Rights and Opportunities. Forms can be found at CHRO Forms.

29. CONFLICT OF INTEREST

No officer, employee, or member of any elective or appointive board, commission, or committee of the Town, whether temporary or permanent, shall have or acquire any financial interest gained from a successful bid, direct or indirect, aggregating more than one hundred dollars ($100.00), in any project, matter, contract or business within his/her jurisdiction or the jurisdiction of the board, commission, or committee of which he/she is a member. Nor shall the officer / employee / member have any financial interest, direct or indirect, aggregating more than one hundred dollars ($100.00) in any contract or proposed contract for materials or services to be furnished or used in connection with any project, matter or thing which comes under his/her jurisdiction or the jurisdiction of the board, commission, committee of which he/she is a member.

30. UNLESS OTHERWISE NOTED

It will be assumed that all terms and conditions and specifications will be complied with and will be considered as part of the Bid Proposal.

Upon Award, all bidding documents (including but not limited to the following; Bid Invitation, Addendum, CT DOL Prevailing Wage Documents, Award Resolution, Town Purchase Order, and AIA Contract or equivalent when applicable) shall be binding on the Contractor and shall be incorporated into a formal legal contract.

31. TAX EXEMPT

Federal Tax Exemption 06-6001998.
Exempt from State Sales Tax under State General Statues Chapter 219-Section 12-412 Subsection A.
No exemption certificates are required and none will be issued.

32. INSURANCE

A. The Town of Fairfield is requiring insurance coverage as listed below for this work.

Note: The term "General Contractor" (hereinafter called the "Contractor") shall also include their respective agents, representatives, employees, and subcontractors, and their respective agents, representatives, and employees; and the term " Town of Fairfield" (hereinafter called the "Town") shall include their respective officers, agents, servants, officials, employees, volunteers, boards, commissions, authorities, and committees.

Note: The term "Town of Fairfield" or "Town" is to be taken to mean Town of Fairfield and the Fairfield Board of Education when the project includes the Board of Education, as well as the Board of Education's respective officers, agents, servants, officials, employees, volunteers, boards, and committees.

At least five days before the Contract is executed and prior to commencement of work there under the Contractor will be required to submit to the Town of Fairfield, Purchasing Director, 725 Old Post Road, Fairfield, CT 06824 a certificate of insurance, executed by an authorized representative of the insurance company, satisfactory to the Town's Risk Manager and in an acceptable form. The Town always reserves the right to reject insurance companies, if approved insurance policies cannot be provided the contract shall be terminated.

INSURANCE RIDER

Without limiting the Contractor's liability, the Contractor shall provide and maintain in full force and effect at all times until all work required by the contract has been fully completed, except that Products/Completed Operations coverage shall be maintained for five (5) years, insurance coverage related to its services in connection with the project in compliance with the following requirements.

The insurance required shall be written for not less than the scope and limits of insurance specified hereunder, or required by applicable federal, state, and/or municipal law, regulation or requirement, whichever coverage requirement is greater. It is agreed and understood that the scope and limits of insurance specified hereunder are minimum requirements and shall in no way limit or preclude the Town from requiring additional limits and coverage to be provided under the Contractor's policies.

B. Minimum Scope and Limits of Insurance:

Worker's Compensation Insurance:

- In accordance with the requirements of the laws of the State of Connecticut.
- Five hundred thousand dollars ($500,000) Employer Liability each accident.
- Five hundred thousand dollars ($500,000) Employer Liability each employee by disease.
- Five hundred thousand dollars ($500,000) Employer Liability policy limit coverage for disease.

Commercial General Liability Insurance:

- Bodily Injury, Personal Injury and Property Damage one million dollars ($1,000,000) each occurrence, two million dollars ($2,000,000) aggregate.
- Products/Completed Operations one million dollars ($1,000,000) each occurrence, two million dollars ($2,000,000) aggregate.

Automobile Liability Insurance:

- A combined single limit of one million dollars ($1,000,000). This policy shall include all liability of the Contractor arising from the operation of all self-owned motor vehicles used in the performance of the Contract; and shall also include a "non-Ownership" provision covering the operation of motor vehicles not owned by the Contractor, but used in the performance of the work, and, rider CA9948 or equivalent

Pollution Liability:

- One million dollars ($1,000,000) each occurrence, one million dollars ($1,000,000) aggregate.

Umbrella/Excess Liability Insurance:

- Five million dollars ($5,000,000) each occurrence, five million dollars ($5,000,000) aggregate. Such coverage must be follow form over Worker's Compensation, Commercial General Liability, Pollution Liability and Automobile Liability.

Indemnification: The Contractor shall defend, indemnify and save harmless the Town and its officers, agents, servants, officials, employees, volunteers, boards and commissions from and against any and all claims, demands, suits, proceedings, liabilities, judgments, awards, losses, damages, costs and expenses of any nature, including but not limited to attorneys' fees, on account of bodily injury, sickness, disease, death or any other damages or loss sustained by any person or persons or injury or damage to or destruction of any property, directly or indirectly arising out of, relating to, or in connection with the work called for in the Contract, whether or not due or claimed to be due in whole or in part to the active, passive or concurrent negligence, fault or contractual default of the Contractor, its officers, agents, servants or employees, any of its sub-contractors, the Town, any of its respective officers, agents, servants, officials, employees, volunteers, boards and commissions and/or any other person or persons, and whether or not such claims, demands, suits or proceedings are just, unjust, groundless, false, or fraudulent, and the Contractor shall and does hereby assume and agrees to pay for the defense of all such claims, demands, suits and proceedings, provided, however, that the Contractor shall not be required to indemnify the Town, its officers, agents, servants, officials, employees, volunteers, boards and commissions, against any such damages occasioned solely by acts or omissions of the Town, its officers, agents, servants, officials, employees, volunteers, boards and commissions, other than supervisory acts or omissions of the Town, its officers, agents, servants, officials, employees, volunteers, boards and commissions, in connection with the work called for in the Contract.

"Tail" Coverage: If any of the required liability insurance is on a claims-made basis, "tail" coverage will be required at the completion of this contract for a duration of 36 months, or the maximum time period reasonably available in the marketplace. The Contractor shall furnish certification of "tail" coverages described or continuous "claims made" liability coverage for 36 months following Contract completion.

Continuous "claims made" coverage will be acceptable in lieu of "tail" coverage provided its retroactive date is on or before the effective date of this Contract. If continuous "claims made" coverage is used, the Contractor shall be required to keep the coverage in effect for duration of not less than 36 months from the end of the Contract.

Acceptability of Insurers: The Contractor's policies shall be written by insurance companies licensed to do business in the State of Connecticut, with an A.M. Best rating of A- XV or otherwise acceptable by the Town's Risk Manager.

Subcontractors: The Contractor shall require subcontractors to provide the same "minimum scope and limits of insurance" as required herein, with the exception of Errors and Omissions/Professional Liability insurance/Fiduciary Liability, unless Errors and Omissions/Professional Liability/Fiduciary Liability insurance is applicable to the work performed by the subcontractor. All Certificates of Insurance shall be provided to and approved by the Town's Risk Manager prior to the commencement of work, as required herein.

Aggregate Limits: It is agreed that the Contractor shall notify the Town when fifty percent (50%) of the aggregate limits are eroded during the contract term. If the aggregate limit is eroded for the full limit, the Contractor agrees to reinstate or purchase additional limits to meet the minimum limit requirements stated herein. The premium shall be paid by the Contractor.

Deductibles and Self-Insured Retentions: Any deductible or self-insured retention must be declared to, and approved by, the Town. All deductibles or self-insured retentions are the sole responsibility of the Contractor to pay and/or to indemnify. Under no circumstances will the Town be responsible for paying any deductible or self-insured retentions related to this Contract

Notice of Cancellation or Non-renewal: Each insurance policy required shall be endorsed to state that coverage shall not be suspended, voided, cancelled, or reduced in coverage or in limits except after 30 days prior written notice by certified mail, return receipt requested, has been given to the Town, (provided ten (10) days' prior written notice shall be sufficient in the case of termination for nonpayment).

Waiver of Governmental Immunity: Unless requested otherwise by the Town, the Contractor and its insurer shall waive governmental immunity as defense and shall not use the defense of governmental immunity in the adjustment of claims or in the defense of any suit brought against the Town.

Additional Insured: The liability insurance coverage, except Errors and Omissions, Professional Liability, or Workers Compensation, if included, required for the performance of the Contract shall include the Town as Additional Insured. Coverage shall be primary and non-contributory with any other insurance and self-insurance and contain no special limitations on the scope of protection afforded to the Town of Fairfield. The Town and/or its representative retain the right to make inquiries to the Contractor, its agents or broker and insurer directly.

Waiver of Subrogation: A waiver of subrogation in favor of the Town is required on all policies.

Waiver/Estoppel: Neither approval by the Town nor failure to disapprove the insurance furnished by the Contractor shall relieve the Contractor of the Contractor's full responsibility to provide insurance as required under this Contract.

Contractor's Insurance Additional Remedy: Compliance with the insurance requirements of this Contract shall not limit the liability of the Contractor or its Sub-Contractors/Firms, employees or agents to the Town or others. Any remedy provided to the Town shall be in addition to, and not in lieu of, any other remedy available under this Contract or otherwise.

Certificate of Insurance: As evidence of the insurance coverage required by this Contract, the Contractor shall furnish Certificate(s) of Insurance to the Town's Risk Manager prior to the award of the Contract if required by the Bid document, but in all events prior to Contractor's commencement of work under this Contract. The Certificate(s) will specify all parties who are endorsed on the policy as Additional Insured (or Loss Payees). The certificates and endorsements for each insurance policy are to be signed by a person authorized by the insurer to bind coverage on its behalf. Renewals of expiring certificates shall be filed thirty (30) days prior to expiration. The Town reserves the right to require complete, certified copies of all required policies at any time. All insurance documents required should be mailed to Town of Fairfield, Chief Financial Officer, 725 Old Post Road, Fairfield, CT 06824 and Town of Fairfield, Risk Manager, 725 Old Post Road, Fairfield, CT 06824.

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SECTION 004113- BID FORM - STIPULATED SUM (SINGLE-PRIME CONTRACT)

1.1 BID INFORMATION

A. Bidder: _____

B. Project Name: Tunxis Hill Park – Construction of 2 New Pickleball Courts – 225 Melville Avenue

C. Project Location(s):

1. Tunxis Hill Park, 225 Melville Avenue, Fairfield, CT.

D. Owner: Town of Fairfield.

E. Owner Project Numbers:

F. Engineer: LANDTECH

G. Engineer Project Number: 2 2 3 1 2 - 0 3

1.2 CERTIFICATIONS AND BASE BID

A. Base Bid, Single-Prime (All Trades) Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by LANDTECH and Engineer's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. Tunxis Hill Park - Pickleball Courts

_____Dollars

{$_____).

1.3 BID ALTERNATES

1. Windscreens

_____Dollars

{$_____).

2. Pavilion

_____Dollars

{$_____).

1.4 BID GUARANTEE

A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within 7 days after a written Notice of Award, if offered within 90 days after receipt of bids, and on failure to do so agrees to forfeit to Owner the attached cash, cashier's check, certified check, U.S. money order, or bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Base Bid amounts above:

1. Tunxis Hill Park - Pickleball Courts

_____Dollars

{$_____).

B. In the event Owner does not offer Notice of Award within the time limits stated above, Owner will return to the undersigned the cash, cashier's check, certified check, U.S. money order, or bid bond.

1.5 SUBCONTRACTORS AND SUPPLIERS

A. The following companies shall execute subcontracts for the portions of the Work indicated:

1. Pickleball Court Installer: _____

1.6 TIME OF COMPLETION

A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by Engineer, and shall fully complete the Work within the following time frames:

1. **Tunxis Hill Park Pickleball Courts - 120 days after Notice to Proceed.**

ACKNOWLEDGEMENT OF ADDENDA

B. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

1. Addendum No. 1, dated _____
2. Addendum No. 2, dated _____
3. Addendum No. 3, dated _____
4. Addendum No. 4, dated _____
5.

1.7 CONTRACTOR'S LICENSE

A. The undersigned further states that it is a duly licensed contractor, for the type of work proposed, in Fairfield, Connecticut, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

B. The Bidder shall employ or engage only Certified Builders for work related to the pickleball courts. An employee of the Bidder or Bidder's Subcontractor(s) shall be certified by the American Sports Builders Association (ASBA) who will be present at the site regularly throughout the project to supervise and inspect all phases of the pickleball courts construction project. The identity of the certified builder(s) and documentation of their credentials must be provided with the bid documents. ASBA credentials must specifically list area of certification (pickleball).

1.8 SUBMISSION OF BID

A. Respectfully submitted this _____day of _____, 2024.

B. Submitted By:_____(Name of bidding firm or corporation).

C. Authorized Signature:_____(Handwritten signature).

D. Signed By:_____(Type or print name).

E. Title:_____(Owner/Partner/President/Vice President).

F. Witness By:_____(Handwritten signature).

G. Attest:_____(Handwritten signature).

H. By:_____(Type or print name).

I. Title:_____(Corporate Secretary or Assistant Secretary).

J. Street Address:_____.

K. City, State, Zip:_____.

L. Phone:_____.

M. License No.:_____.

N. Federal ID No.: _____(Affix Corporate Seal Here).

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Access to site.
4. Work restrictions.
5. Specification and drawing conventions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: Tunxis Hill Park – Pickleball Courts.

1. Project Location: 225 Melville Road; Fairfield, CT.

B. Owner: Town of Fairfield.

1. Owner's Representatives:
   a. Anthony Calabrese, Director
      Fairfield Parks & Recreation Department
      203-256-3191
      acalabrese@fairfieldct.org

C. Engineer of Record: LANDTECH
1. Point of Contact
   a. Curt Lowenstein, PE,
      518 Riverside Avenue
      Westport, CT
      203-454-2110
      clowenstein@landtechconsult.com

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Construction of a new (2) court pickleball court battery with associated retaining walls and perimeter fencing, patio, 10’x10’ pavilion, ADA compliant walkways, and associated site improvements.

1.5 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated. Access shall be maintained to the existing playground and pickleball courts throughout construction unless otherwise noted.

1. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, the public, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.6 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work to normal business working hours of 7:30 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated.

1. Weekend Hours: No work is permitted on weekends without written approval from Owner.

C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to neighboring properties with Owner.

1. Notify Engineer of Record and Owner not less than two days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.

1.7 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations on Construction Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

END OF SECTION 011000

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, cost of related coordination, revision, or adjustment, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - EXECUTION

2.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Windscreens. Refer to Specification Section 116623 – Sports Equipment.

B. Alternate No. 2: Pavilion. Refer to Construction Drawings Sheets C-1.0, C-1.1 and C-4.1.

END OF SECTION 012300

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 012300 "Alternates" for products selected under an alternate.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit one hard copy and one electronic copy of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication, or installation cannot be provided, if applicable.
b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific

features and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
i. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

2. Engineer of Record's Action: If necessary, Engineer will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within 10 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

    a. Forms of Acceptance: Change Order, or Engineer of Record's Supplemental Instructions for minor changes in the Work.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Owner will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Owner will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not allowed unless otherwise indicated.

END OF SECTION 012500

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. Contractor's construction schedule.
3. Construction schedule updating reports.
4. Material location reports.
5. Site condition reports.

B. Related Requirements:

1. Section 013300 "Submittal Procedures" for submitting schedules and reports.
2. Section 014000 "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by Architect.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file, where indicated.
2. PDF electronic file.

B. Startup construction schedule.

C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
3. Total Float Report: List of all activities sorted in ascending order of total float.
4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.

F. Construction Schedule Updating Reports: Submit with Applications for Payment.

G. Material Location Reports: Submit at monthly intervals.

H. Site Condition Reports: Submit at time of discovery of differing conditions.

1.5 QUALITY ASSURANCE

A. Prescheduling Conference: Conduct conference at Project site to review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:

1. Verify availability of qualified personnel needed to develop and update schedule.
2. Discuss constraints, including phasing, work stages, and interim milestones.
3. Review submittal requirements and procedures.
4. Review time required for review of submittals and resubmittals.
5. Review requirements for tests and inspections by independent testing and inspecting agencies.
6. Review time required for Project closeout and Owner startup procedures.
7. Review and finalize list of construction activities to be included in schedule.
8. Review procedures for updating schedule.

1.6 COORDINATION

A. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion and final completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 14 days, unless specifically allowed by Engineer of Record.
2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

a. Modular Block Retaining Wall materials.

3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Engineer of Record's and Owner's administrative procedures necessary for certification of Substantial Completion.
6. Punch List and Final Completion: Include not more than 15 days for completion of punch list items and final completion.

C. Constraints: Include constraints and work restrictions, if any, and show how the sequence of the Work is affected.

1. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

a. Subcontract awards.
b. Submittals.
c. Purchases.
d. Fabrication.
e. Sample testing.
f. Deliveries.
g. Installation.
h. Tests and inspections.
i. Adjusting.
j. Curing.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion, and the following interim milestones:

1. Retaining wall delivery and installation.
2. Post-tension slab installation.
3. Pickleball court surface installation.

E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.

F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and Contract Time.

G. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working

hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 30 days of date established for the Notice to Proceed. Base schedule on the startup construction schedule and additional information received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.3 REPORTS

A. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

1. Material stored prior to previous report and remaining in storage.
2. Material stored prior to previous report and since removed from storage and installed.
3. Material stored following previous report and remaining in storage.

B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Engineer of Record and Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. A copy of the latest construction schedule should be kept on site at all times.
2. When revisions are made, distribute updated schedules to the same parties. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Periodic construction photographs.
3. Final completion construction photographs.

B. Related Requirements:

1. Section 013300 "Submittal Procedures" for submitting photographic documentation.
2. Section 017700 "Closeout Procedures" for submitting photographic documentation as project record documents at Project closeout.
3. Section 311000 "Site Clearing" for photographic documentation before site clearing operations commence.

1.3 INFORMATIONAL SUBMITTALS

A. Digital Photographs: Submit image files within three days of taking photographs.

1. Identification: Provide the following information with each image description in file metadata tag:

a. Name of Project.
b. Name of Contractor.
c. Date photograph was taken.
d. Description of vantage point, indicating location, and direction (by compass point).

1.4 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation if the Contractor hires independent photographer.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in JPG format.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

B. Digital Images: Submit digital images exactly as originally recorded, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date and Time: Include date and time in file name for each image.

C. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points.

1. Flag excavation areas and construction limits before taking construction photographs.
2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
3. Take 10 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

D. Periodic Construction Photographs: Take 20 photographs weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

E. Final Completion Construction Photographs: Take 20 photographs minimum after date of Substantial Completion for submission as project record documents.

F. Additional Photographs: Engineer of Record and/or Owner may request photographs in addition to periodic photographs specified. If needed, insert requirements for aerial photographs.

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Requirements:

1. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
2. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Engineer of Record’s or Owner’s responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Engineer of Record’s or Owner’s responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.

D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making

corrections or revisions to submittals noted by Engineer of Record and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal: Submit within 14 days of date established for commencement of the Work. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.

    a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:

    a. Scheduled date for first submittal.
    b. Specification Section number and title.
    c. Submittal category: Action; informational.
    d. Name of subcontractor.
    e. Description of the Work covered.
    f. Scheduled date for Engineer of Record’s final release or approval.
    g. Scheduled date of fabrication.
    h. Scheduled dates for purchasing.
    i. Scheduled dates for installation.
    j. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Engineer of Record's Digital Data Files: Electronic digital data files in PDF format of the Contract Drawings will be provided by Engineer of Record for Contractor's use in preparing submittals.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Engineer of Record reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer of Record's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow five days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer of Record will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow five days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Engineer of Record's consultants, Owner, or other parties is indicated, allow 15 days for initial review of each submittal.

D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.

    a. File name shall use project identifier, submittal description, and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS - Drainage Piping - 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS – Drainage Piping - 061000.01.A).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Engineer of Record and Owner.
4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner**,** containing the following information:

    a. Project name.
    b. Date.
    c. Name and address of Engineer of Record.
    d. Name of Owner.
    e. Name of Contractor.
    f. Name of firm or entity that prepared submittal.
    g. Names of subcontractor, manufacturer, and supplier.
    h. Category and type of submittal.
    i. Submittal purpose and description.
    j. Specification Section number and title.
    k. Specification paragraph number or drawing designation and generic name for each of multiple items.
    l. Drawing number and detail references, as appropriate.
    m. Location(s) where product is to be installed, as appropriate.
    n. Related physical samples submitted directly.
    o. Indication of full or partial submittal.
    p. Transmittal number, numbered consecutively.
    q. Submittal and transmittal distribution record.

r. Other necessary identification.
s. Remarks.

E. Options: Identify options requiring selection by Engineer of Record or Owner.

F. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Engineer of Record or Owner on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Engineer of Record’s action stamp.

H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Engineer of Record's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Submit electronic submittals via email as PDF electronic files.

a. Engineer of Record will return annotated file via email as PDF electronic files. Annotate and retain one copy of file as an electronic Project record document file.

2. Action Submittals: Submit electronic submittals via email as PDF electronic files.

a. Engineer of Record will return annotated file via email as PDF electronic files. Annotate and retain one copy of file as an electronic Project record document file.

3. Informational Submittals: Submit electronic submittals via email as PDF electronic files.

a. Engineer of Record will return annotated file via email as PDF electronic files. Annotate and retain one copy of file as an electronic Project record document file.

4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

    a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
    b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams showing factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:

    a. PDF electronic file.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.
    b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.
    e. Notation of dimensions established by field measurement.

f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 24 by 36 inches.
3. Submit Shop Drawings in the following format:

a. PDF electronic file.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

a. Generic description of Sample.
b. Product name and name of manufacturer.
c. Sample source.
d. Number and title of applicable Specification Section.
e. Specification paragraph number and generic name of each item.

3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer of Record , through Owner, will return submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured, and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing

color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit two sets of Samples. Owner will retain one Sample sets; remainder will be returned.

1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.
5. Submit product schedule in the following format:

a. PDF electronic file.

F. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."

G. Application for Payment and Schedule of Values: Comply with requirements specified by Owner

H. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."

I. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."

J. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

K. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

L. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

M. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

N. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

O. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

P. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

Q. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

R. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

S. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer of Record.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and three paper copies of certificate, signed, and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer of Record.

B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ENGINEER OF RECORD'S ACTION

A. Action Submittals: Engineer of Record will review each submittal, make marks to indicate corrections or revisions required, and return it. Engineer of Record will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:

1. No Exceptions Taken

    a. Submittal is approved as submitted if no comments are provided or;

    b. Submittal is approved with minor comments that must be adhered to by the Contractor, but no resubmission of the submittal is required.

2. Revise and Resubmit

    a. Submittal requires revisions that must be resubmitted to the Engineer of Record for review and approval.

3. Rejected

    a. Submittal is not acceptable. Engineer of Record will provide comments noting how the submittal is not in compliance with the Contract Documents.

B. Informational Submittals: Engineer of Record will review each submittal and will not return it or will return it if it does not comply with requirements. Engineer of Record will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Engineer of Record.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Submittals not required by the Contract Documents may be returned by the Engineer of Record without action.

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Engineer of Record, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer of Record.

C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Engineer of Record for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer of Record for a decision before proceeding.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data : For Contractor's quality-control personnel.

B. Testing Agency Qualifications: Submit documentation that testing agencies intended to be used are properly licensed to perform the respective testing.

1.6 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.

2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking, testing, and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Retain general requirements in "Permits, Licenses, and Certificates" Paragraph below. Specific submittals may be specified in other Sections.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.7 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

D. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project. Contractor is responsible for retaining a Structural Engineer for the post-tension slab and retaining wall designs and a Geotechnical Engineer as required and further described in the Contract Documents.

E. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

F. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.8 QUALITY CONTROL

1. Cost of all quality control testing shall be included in the Total Price of the Bid submitted by the Contractor.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be the responsibility of the Contractor.

B. Contractor Responsibilities: All tests and inspections are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. It is the Contractor's responsibility to engage a qualified testing agency to perform these quality-control services.

    a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 72 hours in advance of time when Work that requires testing or inspecting will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

F. Testing Agency Responsibilities: Cooperate with Engineer of Record, Owner, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Engineer of Record, Owner, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies if required.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.9 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections and as follows:
   1. Notifying Engineer of Record, Owner, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
   2. Submitting a certified written report of each test, inspection, and similar quality-control service to Engineer of Record and Owner with copy to Contractor and to authorities having jurisdiction.
   3. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
   4. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
   5. Retesting and reinspecting corrected work.

PART 2 - EXECUTION

2.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to Architect.
   4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Engineer of Record’s and Owner’s reference during normal working hours.

2.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

   1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 312319 "Dewatering" for disposal of ground water at Project site.
2. Section 321216 "Asphalt Paving" for construction and maintenance of asphalt pavement for paved areas and walkways.

1.3 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Erosion- and Sedimentation-Control Plan: All erosion and sediment controls shall be installed and maintained throughout construction in accordance with the Construction Drawings.

C. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.

1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch thick, galvanized-steel, chain-link fabric fencing; minimum 8 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Provide galvanized-steel bases for supporting posts.

PART 3 - EXECUTION

3.1 TEMPORARY UTILITY INSTALLATION

A. Sanitary Facilities: Provide temporary toilets for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of facilities.

3.2 SUPPORT FACILITIES INSTALLATION

A. Temporary Construction Access: Construct and maintain temporary construction access adequate for construction operations. Locate temporary access as indicated on Construction Drawings.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

B. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

C. Parking: Use designated areas of Owner's existing parking areas for construction personnel as indicated on the Construction Drawings.

D. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

E. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

    a. Provide temporary, directional signs for construction personnel and visitors.

2. Maintain and touchup signs so they are legible at all times.

F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction for legal disposal of waste.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

C. Temporary Erosion and Sedimentation Control: Comply with Construction Drawings, State of Connecticut Soil Erosion & Sediment Control Guidelines latest revision, and requirements specified in Section 311000 "Site Clearing."

D. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to the Construction Drawings.

1. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
2. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
3. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

E. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

F. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

G. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.

H. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.

I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

J. Temporary Egress: Maintain temporary egress from existing playground and pickleball courts as indicated and as required by authorities having jurisdiction.

3.4 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. Remove temporary access not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

B. Related Sections:

1. Section 015000 "Temporary Facilities and Controls" for temporary site fencing.
2. Section 311000 "Site Clearing" for removing existing trees and shrubs.

1.3 DEFINITIONS

A. Caliper: Diameter of a trunk measured by a diameter tape or the average of the smallest and largest diameters at 6 inches above the ground for trees up to, and including, 4-inch size; and 12 inches above the ground for trees larger than 4-inch size.

B. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated.

C. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.

1. Species and size of tree.
2. Location on site plan. Include unique identifier for each.
3. Reason for pruning.
4. Description of pruning to be performed.
5. Description of maintenance following pruning.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified arborist and tree service firm.

B. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

C. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

D. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.

1. Use sufficiently detailed photographs or videotape.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

1.6 QUALITY ASSURANCE

A. Arborist Qualifications: Licensed Arborist in the State of Connecticut.

B. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.

C. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:

    a. Construction schedule. Verify availability of materials, personnel, and equipment needed to make progress and avoid delays.
    b. Enforcing requirements for protection zones.
    c. Arborist's responsibilities.
    d. Field quality control.

1.7 PROJECT CONDITIONS

A. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

B. Do not direct vehicle or equipment exhaust toward protection zones.

C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Topsoil: Natural or cultivated top layer of the soil profile or manufactured topsoil; 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 1 inch in diameter; and free of weeds, roots, and toxic and other nonsoil materials.

1. Obtain topsoil only from well-drained sites where topsoil is 4 inches (100 mm) deep or more; do not obtain from bogs or marshes.

B. Protection-Zone Fencing: Fencing fixed in position and meeting the following requirements.

1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 8 feet apart.

    a. Height: 4 feet.
    b. Color: High-visibility orange, nonfading.

2. Gates: Single swing access gates matching material and appearance of fencing, to allow for maintenance activities within protection zones; leaf width 36 inches.

C. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes pre-punched and reinforced; legibly printed with nonfading lettering and as follows:

1. Size and Text: As shown on Construction Drawings.
2. Lettering: 3-inch high minimum, black characters on white background or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place.

B. For the record, prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

A. No tree removal is proposed or permitted without prior authorization from the Engineer of Record and Owner.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

3.3 TREE- AND PLANT-PROTECTION ZONES

A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people from easily entering protected area except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.

B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Engineer of Record. Install one sign spaced approximately every 20 feet on protection-zone fencing, but no fewer than four signs with each facing a different direction.

C. Maintain protection zones free of weeds and trash.

D. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Engineer of Record and Owner.

E. Maintain protection-zone fencing and signage in good condition as acceptable to Engineer of Record and remove when construction operations are complete, and equipment has been removed from the site.

1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.4 EXCAVATION

A. General: Excavate at edge of protection zones indicated within protection zones according to requirements in Section 312000 "Earth Moving."

B. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction and as required for root

pruning. Any root pruning shall be under the direct supervision and direction of a licensed Arborist.

C. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.5 ROOT PRUNING

A. Prune roots that are affected by temporary and permanent construction. Prune roots under the direct supervision and direction of a licensed Arborist and as follows:

1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
2. Cut Ends: Treatment of cut ends shall be at the discretion of a licensed Arborist.
3. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
4. Cover exposed roots with burlap and water regularly.
5. Backfill as soon as possible according to requirements in Section 312000 "Earth Moving."

B. Root Pruning at Edge of Protection Zone: Prune roots flush with the edge of the protection zone unless otherwise directed by a licensed Arborist, by cleanly cutting all roots to the depth of the required excavation.

C. Root Pruning within Protection Zone: Clear and excavate by hand to the depth of the required excavation 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.

3.6 CROWN PRUNING

A. Prune branches that are affected by temporary and permanent construction. Prune branches as follows:

1. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by arborist.
2. Pruning Standards: Prune trees according to ANSI A300 (Part 1).
3. Cut branches with sharp pruning instruments; do not break or chop.
4. Do not apply pruning paint to wounds.

B. Chip removed branches and dispose of off-site.

3.7 FIELD QUALITY CONTROL

A. Inspections: Engage a qualified licensed arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

3.8 REPAIR AND REPLACEMENT

A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Engineer of Record and Owner.

1. Submit details of proposed root cutting and tree and shrub repairs.
2. Have arborist perform the root cutting, branch pruning, and damage repair of trees and shrubs.
3. Treat damaged trunks, limbs, and roots according to arborist's written instructions.
4. Perform repairs within 24 hours.
5. Replace vegetation that cannot be repaired and restored to full-growth status, as determined by Architect.

B. Trees: Remove and replace trees that are damaged during construction operations that Arborist determines are incapable of restoring to normal growth pattern.

1. Provide new trees of same size and species as those being replaced for each tree that measures 4 inches or smaller in caliper size.
2. Provide two new tree(s) of 4-inch caliper size for each tree being replaced that measures more than 6 inches in caliper size.

    a. Species: Species selected by Engineer of Record.

3.9 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove excess excavated material, displaced trees, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 015639

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Progress cleaning.
6. Starting and adjusting.
7. Protection of installed construction.

B. Related Requirements:

1. Section 011000 "Summary" for limits on use of Project site.
2. Section 013300 "Submittal Procedures" for submitting surveys.
3. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: Refer to Section 014000 “Quality Requirements.”

B. Certificates: Submit certificate signed by professional engineer certifying that location and elevation of improvements comply with requirements.

C. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

D. Final As-built Survey: Submit five copies and a digital copy showing the Work performed and record survey data for the project area. Full property boundary is not required.

1.5 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Owner for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Engineer of Record in writing.

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer of Record in writing promptly.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish limits on use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.

4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Engineer of Record when deviations from required lines and levels exceed allowable tolerances.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer of Record.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Engineer of Record. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Engineer of Record before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

C. Final As-built Survey: Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project.

1. Show Project area, monuments, streets, site improvements, drainage improvements, utilities, existing improvements and significant vegetation/trees, adjoining properties, grade contours. Full boundary survey is not required.

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering, and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
3. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
4. Proceed with patching after construction operations requiring cutting are complete.

F. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

    a. Use containers intended for holding waste materials of type to be stored.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

F. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls" and with authorities having jurisdiction over waste disposal.

G. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

H. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period.

I. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

B. Related Requirements:

1. Section 013233 "Photographic Documentation" for submitting final completion construction photographic documentation.
2. Section 017300 "Execution" for progress cleaning of Project site.
3. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 ACTION SUBMITTALS

A. Product Data: For cleaning agents.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner. Label with manufacturer's name and model number where applicable.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner’s signature for receipt of submittals.

5. Submit test/adjust/balance records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Perform preventive maintenance on equipment used prior to Substantial Completion.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
5. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
6. Complete final cleaning requirements.

7. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
8. Ensure all disturbed areas are stabilized with topsoil, hay, and grass seed unless otherwise directed by Engineer of Record or Owner.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer of Record and Owner will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer of Record will notify Contractor of items, either on Contractor's list or additional items identified by Engineer of Record, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment.
2. Certified List of Incomplete Items: Submit certified copy of Engineer of Record's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer of Record. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer of Record and Owner will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer of Record will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order.

2. Submit list of incomplete items in the following format:

a. MS Excel electronic file. Engineer of Record will return annotated file.
b. PDF electronic file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Owner for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

    a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    e. Remove snow and ice to provide safe access.
    f. Clean exposed exterior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    g. Remove debris and surface dust from limited access spaces, including roofs, trenches, and similar spaces.
    h. Sweep court broom clean in unoccupied spaces.
    i. Remove labels that are not permanent.
    j. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

    a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

END OF SECTION 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:

1. Section 017300 "Execution" for final property survey.
2. Section 017700 "Closeout Procedures" for general closeout procedures.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:
1. Number of Copies: Submit copies of record Drawings as follows:

a. Initial Submittal:

1) Submit PDF electronic files of scanned record prints.
2) Engineer of Record will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:

1) Submit five paper-copy sets of marked-up record prints and one digital copy.

B. Record Specifications: Submit one paper copy and annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.

E. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an acceptable drawing technique.
    c. Record data as soon as possible after obtaining it.
    d. Record and check the markup before enclosing concealed installations.
    e. Cross-reference record prints to corresponding archive photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Depths of foundations.
    d. Locations and depths of underground utilities.
    e. Revisions to routing of piping and conduits.
    f. Changes made by Change Order or Construction Change Directive.
    g. Changes made following Engineer of Record's written orders.
    h. Details not on the original Contract Drawings.
    i. Field records for variable and concealed conditions.
    j. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.

6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Engineer of Record. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Annotated PDF electronic file.
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Engineer of Record for resolution.
4. Engineer of Record will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.

    a. See Section 013300 "Submittal Procedures" for requirements related to use of Engineer of Record's digital data files.
    b. Engineer of Record will provide data file layer information. Record markups in separate layers.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
3. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as annotated PDF electronic file.

1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

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 revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in a secure location 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 of Record's and Owner's reference during normal working hours.

END OF SECTION 017839

SECTION 033816 – POST TENSION CONCRETE PICKLEBALL COURTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Scope of Work:

1. Provide engineering services by a qualified engineer (Structural Engineer) licensed to practice in the State of Connecticut to calculate and design the details for all the structural components of the post tension pickleball courts.
2. Provide geotechnical investigation of subsurface conditions to confirm bearing capacity of soils. Excavate unsuitable material and backfill with structural fill as required.
3. Design and install subsurface drainage system if required by geotechnical investigation.
4. Design and install new post tension concrete pickleball courts, surface acrylic coating system, perimeter concrete curb, pickleball equipment and fencing system.

B. Sustainable Design Intent: Comply with project requirements intended to achieve sustainable design, measured, and documented according to the CT High Performance Building Standard (CTHPS) Mandatory Requirements and Goals.

C. Related Requirements:
1. Section 116623 “Sports Equipment” for pickleball post footing, net strap footing installation, and other court equipment and accessories.

D. All equipment and materials shall meet or exceed the Connecticut Interscholastic Athletic Conference (CIAC), the National Federation of State High School Associations (NFHS), the American Sports Builders Association (ASBA), and the USA Pickleball (USAP) Rules and Regulations.

1.3 INFORMATIONAL SUBMITTALS

A. Qualifications of Post Tension Pickleball Courts Engineer. Submit evidence that engineer is licensed in the State of Connecticut.

B. Calculations, drawings, and specifications prepared by the Post Tension Pickleball Courts Engineer.

C. Qualifications of the Construction Supervisor: Submit evidence that the Construction Supervisor is an American Sports Builders Association (ASBA) with a minimum of five (5) years' experience installing post tension concrete pickleball courts.

D. Submit a complete set of drawings and specifications, stamped by a professional engineering licensed in the state of Connecticut, indicating layout, materials, earthwork requirements, engineer's calculations, concrete mix, reinforcement, joint fillers, court and curb surfacing, playing lines, fence and fence gate layout and materials, and other ancillary information necessary in communicating the intended installation.

1.4 QUALITY ASSURANCE

A. Contractor Qualifications:
   1. A minimum of ten (10) years of experience in the construction of pickleball courts.
   2. A minimum of twenty (20) projects that demonstrate experience with surface acrylic coating systems.
   3. Employees with a minimum of ten (5) years of experience in the installation of post tension concrete.
   4. Experience with Connecticut Schools and/or Municipalities where the same or similar scope of work was completed.
   5. Employees with:
      a. Unbonded Level 1 Certification from the Post Tensioning Institute for the installation of the post tensioning cables.
      b. Unbonded Level 2 Certification from the Post Tensioning Institute for the inspection of the post tensioning cables prior to the placement of the concrete.
      c. Pickleball Court Builder Certification from the American Sports Builders Association who will be present at the site regularly throughout the project to supervise and inspect all phases of the court construction project.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with standards of the Post Tensioning Institute and the American Sports Builders Association.

B. Verify utility locations and protect them from damage.

C. Verify dimensions and elevations in the field prior to construction.

2.2 POST TENSION CONCRETE PICKLEBALL COURTS

A. Site Preparation: Prepare subgrade and subbase in accordance with geotechnical recommendations and Post Tension Pickleball Courts Engineer's drawings and specifications.

B. Post Tension Concrete Slabs: Provide a complete set of specifications and stamped engineering drawings prior to the start of any work. Slabs shall be designed with a minimum residual compression of 3,000 psi in the center of the slabs.

C. Concrete Curbing: Install a perimeter concrete curb along fence lines surrounding the courts as shown on the drawings. The top elevation of the curbs shall match the surface elevation of the post tension concrete slabs.

PART 3 - EXECUTION

3.1 MEETINGS

A. Preinstallation Conference: Attend conference with the Construction Manager at the Project site. The pickleball court Construction Supervisor shall inspect the site and advise Construction Manager of conditions that need to be corrected prior to commencement of pickleball court construction.

3.2 CLOSEOUT SUBMITTALS

A. Instructions for maintenance of surface acrylic coating system.

3.3 CLEANING

A. Remove dust and debris from playing surfaces, and clean surfaces with plain water.

3.4 WARRANTY

A. Provide a 20-year warranty covering defects in material and workmanship of the post tension concrete slabs, resulting in structural cracking, heaving, or settling of the slabs.

B. Provide a 10-year warranty covering defects in material and workmanship of the surface coating system, including primer and sealer, resulting in color fading, surface deterioration, bubbling, or delamination of the coating.

END OF SECTION 033816

SECTION 116623 – SPORTS EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

B. 2022 Connecticut State Building Code which includes 2021 International Building Code.

1.2 SUMMARY

A. Section Includes:

1. Pickleball nets, net posts with sleeves, center net hold downs, and wind screens.

1.3 DEFINITIONS

A. NFHS: National Federation of State High School Associations.

1.4 ACTION SUBMITTALS

A. Product Data: For each of the following products.

1. Pickleball nets, net posts with sleeves, and center net hold downs, and wind screens.

B. Shop Drawings: For sports equipment.

1. Include details of field assembly for equipment, connections, installation, mountings, and attachments to other work, and operational clearances.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of sports equipment.

C. Warranty: Provide warranty information for each product.

1.6 COORDINATION

A. Coordinate layout and installation of sports equipment with other construction including post tension concrete pickleball courts.

PART 2 - PRODUCTS

2.1 NET POSTS

A. Provide standard permanent square pickleball net posts and sleeves complete with safety ratchet, caps, and pulleys.

B. Provide 3" black posts and hardware Edwards or approved equal with the following features:

1. Bronze alloy worm gear construction and chrome face plates.
2. Removable winder handle.
3. Lacing bars.
4. Internal steel pulley wheel and axle system.
5. Galvanized steel ground sleeves.

2.2 CENTER STRAPS AND CENTER STRAP GROUND ANCHORS

A. Provide standard permanent center strap anchors of 100% synthetic nylon webbing; complete with all hardware: MacGregor MTC Strap or approved equal.
   1. Ground anchor shall be made from galvanized steel pipe not less than ten inches (10") in length, one and five-eighth (1-5/8) inches outside diameter minimum manufactured by Edwards or approved equal.

2.3 PICKLEBALL NETS

A. Provide tournament quality pickleballs nets at each pickleball court of the appropriate length to match court width. Nets shall be compatible with pickleball net posts and center strap.
   1. New Width and Height (34" H x 22' W)
   2. Headbands shall be quadruple-stitched heavy duty two-ply polyester web; 23 oz. min.
   3. Cable: 3/16" steel cable vinyl-coated with 3,800 lb. test strength.
   4. Net: 3.5mm braided black knotless nylon weather treated with Nyothene for ultra-violet moisture protection. Break strength over 300 lbs. Double rows of netting for the top 5 rows under the headband, along the entire strength of net.
   5. Side and bottom tapes of HD vinyl-coated nylon-locked stitched to body for durability.
   6. Side pockets to be grommeted with dowels made of HD metal or fiberglass for even tension.

2.4 WIND SCREENS (ALTERNATE No. 1)

A. Contractor shall provide and install Permascreen 70 vented windscreen or approved equal.

B. Windscreen to consist of 8.2 oz. per square yard woven polypropylene fabric with reinforced edges and #2 brass grommets every 18” inches.

C. Provide windscreens with vents for perimeter chain link fence around pickleball courts, color to be black. Contractor shall coordinate windscreen height and length based on actual fence heights. See Construction Drawings for details on varied fence height in combination with perimeter retaining wall.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's written installation instructions and details shown on the Drawings. Complete equipment assembly where required.

B. Permanently Placed Sports Equipment and Components: Install rigid, level, plumb and square. Anchor securely and position at locations and elevations indicated in proper relation to adjacent construction.

3.3 CLEANING

A. After completing sports equipment installation, inspect components. Remove spots, dirt, and debris and touch up damaged shop-applied finishes according to manufacturer's written instructions.

B. Replace sports equipment and finishes that cannot be cleaned and repaired, in a manner approved by Engineer, before time of Substantial Completion.

END OF SECTION 116623

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section Includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.

B. Related Sections:

1. Section 015000 "Temporary Facilities and Controls" for temporary security and protection facilities, and temporary erosion- and sedimentation-control measures.
2. Section 017300 "Execution" for field engineering and surveying.

1.3 DEFINITIONS

A. Subsoil: All soil beneath the topsoil layer of the soil profile and typified by the lack of organic matter and soil organisms.

B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow.

D. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated.

E. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 MATERIAL OWNERSHIP

A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site and properly disposed of. It is the sole responsibility of the Contractor to ensure proper and legal disposal of all cleared materials.

1.5 INFORMATIONAL SUBMITTALS

A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.

1. Use sufficiently detailed photographs or videotape.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

B. Record Drawings: Identifying and accurately showing locations of all subsurface utilities and other subsurface structures, including but not limited to drainage system components.

1.6 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site with Engineer of Record and Owner.

1.7 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 Owner or authorities having jurisdiction.
3. Maintain full access to the existing playground and pickleball courts throughout construction.

B. Utility Locator Service: Notify Call Before You Dig for area where Project is located before site clearing.

C. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.

D. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.

5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

E. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

F. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."

1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. No clearing of any existing tree is permitted unless otherwise authorized by the Engineer of Record or Owner.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to Construction Drawings and requirements of authorities having jurisdiction.

B. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

A. General: Protect trees and plants remaining on-site according to requirements in Section 015639 "Temporary Tree and Plant Protection."

B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Engineer of Record and Owner.

3.4 EXISTING UTILITIES

A. Locate, identify, and relocate any existing utilities within the Project area as required.

1. Arrange with utility companies to shut off indicated utilities as required.

B. Interrupting 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 Owner not less than seven days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Owner's written permission.

3.5 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, 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 unless otherwise authorized by the Engineer of Record or Owner.
2. Grind down stumps and remove roots, obstructions, and debris to a depth of 18 inches below exposed subgrade.
3. Use only hand methods for grubbing within protection zones.
4. Chip removed tree branches and dispose of off-site unless otherwise directed by Engineer of Record or Owner.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects more than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 96 inches.
2. Do not stockpile topsoil within protection zones.
3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.

3.7 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and 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 along line of existing pavement or walks to remain before removing adjacent existing pavement or walks. Saw-cut faces vertically.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. It is the sole responsibility of the Contractor to 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.

END OF SECTION 311000

SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Preparing subgrades for post-tension concrete pickleball court, walks, and turf and grasses.
2. Drainage course for post-tension slab.
3. Subbase course and base course for asphalt paving.
4. Subsurface drainage backfill for walls and trenches.

B. Related Sections:

1. Section 013200 "Construction Progress Documentation", Section 013233 "Photographic Documentation" for recording pre-excavation and earth moving progress.
2. Section 311000 "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil.
3. Section 312319 "Dewatering" for lowering and disposing of ground water during construction.

C. Rock Measurement: Volume of rock actually removed, measured in original position by a licensed land surveyor in the State of Connecticut, but not to exceed the following. Unit prices for rock excavation include replacement with approved materials.

1. Outside of minimum dimensions required to install modular block retaining wall including, drainage aggregate behind wall and geosynthetic reinforcement fabric.
2. 6 inches beneath bottom of post-tension concrete slabs-on-grade.
3. 6 inches beneath pipe in trenches, and 24 inches wider than pipe.

1.3 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer of Record. Authorized additional excavation and replacement material will be paid for according to a mutually agreed upon unit price between the Contractor and Owner.
2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Engineer of Record. Unauthorized excavation, as well as remedial work directed by Engineer of Record, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. for bulk excavation or 3/4 cu. yd. for footing, and trench, that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:

1. Excavation of Footings, Trenches, and Pits: Late-model, track-mounted hydraulic excavator; equipped with a 42-inch wide, maximum, short-tip-radius rock bucket; rated at not less than 138-hp flywheel power with bucket-curling force of not less than 28,700 lbf and stick-crowd force of not less than 18,400 lbf with extra-long reach boom; measured according to SAE J-1179.
2. Bulk Excavation: Late-model, track-mounted loader; rated at not less than 230-hp flywheel power and developing a minimum of 47,992-lbf breakout force with a general-purpose bare bucket; measured according to SAE J-732.

I. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material [3/4 cu. yd. or more in volume that exceed a standard penetration resistance of [100 blows/2 inches when tested by a geotechnical testing agency, according to ASTM D 1586.

J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

K. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

L. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

M. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of the following manufactured products required:

1. Geotextiles.
2. Warning tapes.

B. Samples for Verification: For the following products, in sizes indicated below:

1. Geotextile: 12 by 12 inches.
2. Warning Tape: 12 inches long; of each color.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:

1. Classification according to ASTM D 2487.
2. Laboratory compaction curve according to ASTM D 698 andASTM D 1557.

C. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earth moving operations. Submit before earth moving begins.

1.6 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.

B. Pre-excavation Conference: Conduct conference at Project site.

1.7 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving 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 Owner or authorities having jurisdiction.

B. Utility Locator Service: Notify Call Before You Dig for area where Project is located before beginning earth moving operations.

C. Do not commence earth moving operations until temporary erosion- and sedimentation-control measures, specified on the Construction Drawings are in place.

D. Do not commence earth moving operations until plant-protection measures specified on the Construction Drawings are in place.

E. The following practices are prohibited outside the Project construction limits without prior approval from the Engineer of Record:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Dewatering.
4. Excavation or other digging unless otherwise indicated.
5. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

F. Prohibit heat sources, flames, ignition sources, and smoking within or near existing playground, pickleball courts, and baseball fields.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: Refer to Contractor's Geotechnical Engineer's recommendations.

C. Unsatisfactory Soils: Refer to Contractor's Geotechnical Engineer's recommendations.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.

E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.

F. Engineered Fill: Refer to Contractor's Geotechnical Engineer's recommendations.

G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.

H. Drainage Course: Narrowly graded mixture of size 3/4” – 1-1/4” clean washed crushed stone; ASTM D 448.

I. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch (25-mm) sieve and 0 to 5 percent passing a No. 4 (4.75-mm) sieve.

J. Sand: ASTM C 33; fine aggregate.

K. Impervious Fill: Refer to Contractor’s Geotechnical Engineer’s recommendations.

2.2 GEOTEXTILES

A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Grab Tensile Strength: 157 lbf (700 N); ASTM D 4632.
3. Sewn Seam Strength: 142 lbf (630 N); ASTM D 4632.
4. Tear Strength: 56 lbf (250 N); ASTM D 4533.
5. Puncture Strength: 56 lbf (250 N); ASTM D 4833.
6. Apparent Opening Size: No. 40 (0.425-mm) sieve, maximum; ASTM D 4751.
7. Permittivity: 0.5 per second, minimum; ASTM D 4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Grab Tensile Strength: 247 lbf; ASTM D 4632.
3. Sewn Seam Strength: 222 lbf; ASTM D 4632.
4. Tear Strength: 90 lbf; ASTM D 4533.
5. Puncture Strength: 90 lbf; ASTM D 4833.
6. Apparent Opening Size: No. 60 (0.250-mm) sieve, maximum; ASTM D 4751.
7. Permittivity: 0.02 per second, minimum; ASTM D 4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

2.3 ACCESSORIES

A. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches (750 mm) deep; colored as follows:

1. Red: Electric.

2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

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

B. Protect and maintain erosion and sedimentation controls during earth moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXPLOSIVES

A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
    a. Outside of minimum dimensions required to install modular block retaining wall including, drainage aggregate behind wall and geosynthetic reinforcement fabric.
    b. 6 inches beneath bottom of post-tension concrete slabs-on-grade.

c. 6 inches beneath pipe in trenches, and 24 inches wider than pipe.

3.5 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

B. Excavations at Edges of Tree- and Plant-Protection Zones:

1. Excavate by hand to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Cut and protect roots in accordance with the American National Standard for Arboricultural Operations.

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.7 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Excavate trenches to allow installation of top of pipe below frost line.

B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.

1. Clearance: 12 inches.

C. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.

1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

3.8 SUBGRADE INSPECTION

A. Notify Engineer of Record when excavations have reached required subgrade.

B. If Contractor’s Geotechnical Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Proof-roll subgrade below the post-tension slab with a pneumatic-tired dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Contractor's Geotechnical Engineer, and replace with compacted backfill or fill as directed.

D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer of Record, without additional compensation.

3.9 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under post-tension slab by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Engineer of Record.

1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

3.10 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.11 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, subdrainage, and post-tension slab subgrade preparation.
2. Surveying locations of underground utilities and drainage system components for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.12 UTILITY TRENCH BACKFILL

A. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Backfill voids with satisfactory soil while removing forms.

D. Place and compact initial backfill of subbase material, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.

1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

E. Place and compact final backfill of satisfactory soil to final subgrade elevation.

F. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements, slabs, and hardscape areas.

3.13 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use subbase material.
3. Under patio, use drainage course material.
4. Under post-tension slab, use engineered fill.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.14 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction according to optimum moisture content specified by Contractor’s Geotechnical Engineer or .

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.15 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 6 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:

1. Under post-tension slab, wall footing, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 92 percent.
3. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
4. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

3.16 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Turf or Unpaved Areas: Plus or minus 1 inch.
2. Walks: Plus or minus 1 inch.
3. Pavements: Plus or minus 1/2 inch.

C. Grading inside post-tension slab: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.17 SUBSURFACE DRAINAGE

A. Subdrainage Pipe: Specified on Construction Drawings.

B. Subsurface Drain: Specified on Construction Drawings.

1. Compact each filter material layer to 85 percent of maximum dry unit weight according to ASTM D 698 with a minimum of two passes of a plate-type vibratory compactor.

3.18 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

A. Place base course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place base course under pavements and walks as follows:
   1. Place base course material over subbase course under hot-mix asphalt pavement.
   2. Shape base course to required cross-slope grades.
   3. Place base course 6 inches or less in compacted thickness in a single layer.
   4. Place base course] that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
   5. Compact base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.19 DRAINAGE COURSE UNDER POST-TENSION CONCRETE SLABS-ON-GRADE

A. Place drainage course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place and compact drainage course under post-tension concrete slabs-on-grade as follows:

   1. Install 10-mil polyethylene sheeting on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
   2. Place drainage course 6 inches or less in compacted thickness in a single layer.
   3. Place drainage course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
   4. Compact each layer of drainage course to required cross sections and thicknesses to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.20 FIELD QUALITY CONTROL

A. Special Inspections: Contractor will engage a qualified special inspector to perform the following special inspections:

   1. Determine prior to polyethylene sheeting installation that subgrade for the post-tension slab has been prepared in compliance with requirements.
   2. Determine, at the required frequency, that in-place density of compacted fill below wall footings and behind retaining walls complies with requirements.

B. Testing Agency: Contractor will engage a qualified geotechnical engineering testing agency to perform tests and inspections.

C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing

subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by the Contractor's Geotechnical Engineer.

E. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:

1. Post-tension Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 1000 sq. ft. or less of slab, but in no case fewer than three tests.
2. Retaining Wall Backfill: At each compacted backfill layer, at least one test for every 50 feet or less of wall length, but no fewer than two tests.
3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 50 feet or less of trench length, but no fewer than two tests.

F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.21 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.22 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property unless otherwise directed.

END OF SECTION 312000

SECTION 312319 - DEWATERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section includes construction dewatering.

B. Related Requirements:

1. Section 013233 "Photographic Documentation" for recording preexisting conditions and dewatering system progress.
2. Section 312000 "Earth Moving" for excavating, backfilling, site grading, and controlling surface-water runoff and ponding.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Verify availability of Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review condition of site to be dewatered including coordination with temporary erosion-control measures and temporary controls and protections.
3. Review geotechnical report provided by Contractor’s Geotechnical Engineer.
4. Review proposed site clearing and excavations.
5. Review existing utilities and subsurface conditions.
6. Review observation and monitoring of dewatering system.

1.4 ACTION SUBMITTALS

A. Shop Drawings: For dewatering system, prepared by or under the supervision of a qualified professional engineer.

1. Include plans, elevations, sections, and details.
2. Show arrangement, locations, and details of wells and well points; locations of risers, headers, filters, pumps, power units, and discharge lines; and means of discharge, control of sediment, and disposal of water.
3. Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.

4. Include written plan for dewatering operations including sequence of well and well-point placement coordinated with excavation shoring and bracings and control procedures to be adopted if dewatering problems arise.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and professional engineer.

B. Field quality-control reports.

C. Existing Conditions: Using photographs or video recordings, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by dewatering operations. Submit before Work begins.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer that has specialized in design of dewatering systems and dewatering work.

1.7 FIELD CONDITIONS

A. Project-Site Information: A geotechnical report has not been prepared for this Project and is the responsibility of the Contractor to retain a Geotechnical Engineer licensed in the State of Connecticut to prepare a geotechnical report and provide recommendations as required to suit the needs of the project. The opinions expressed in the report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from this data.

1. It is the responsibility of the Contractor to make test borings and conduct other exploratory operations necessary for dewatering according to the performance requirements.
2. The geotechnical report should be provided to the Engineer of Record and Owner for record.

B. Survey Work: An existing conditions survey of the Project Area is included in the Construction Drawings. It is the responsibility of the Contractor to request and coordinate any additional survey of the Project Area needed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.

1. Design dewatering system, including comprehensive engineering analysis by a qualified professional engineer.
2. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, prevention of flooding in excavation, and prevention of damage to subgrades and permanent structures.
3. Prevent surface water from entering excavations by grading, dikes, or other means.
4. Accomplish dewatering without damaging existing buildings, structures, and site improvements adjacent to excavation.
5. Remove dewatering system when no longer required for construction.

B. Regulatory Requirements: Comply with governing regulatory notification regulations before beginning dewatering. Comply with water- and debris-disposal regulations of authorities having jurisdiction.

PART 3 - EXECUTION

3.1 PREPARATION

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

1. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding site or surrounding area.
2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

B. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

C. Provide temporary grading to facilitate dewatering and control of surface water.

D. Protect and maintain temporary erosion and sedimentation controls, which are specified on the Construction Drawings and in Section 015000 "Temporary Facilities and Controls," and Section 311000 "Site Clearing," during dewatering operations.

3.2 INSTALLATION

A. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.

1. Space well points or wells at intervals required to provide sufficient dewatering.

2. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.

B. Place dewatering system into operation to lower water to specified levels before excavating below ground-water level.

C. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.

D. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails.

3.3 OPERATION

A. Operate system continuously until structures have been constructed and fill materials have been placed or until dewatering is no longer required.

B. Operate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations.

1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
2. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.
3. Maintain piezometric water level according to geotechnical report and dewatering plan prepared by Contractor’s Geotechnical Engineer.

C. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.

D. Remove dewatering system from Project site on completion of dewatering. Plug or fill well holes with sand or cut off and cap wells a minimum of 36 inches below overlying construction.

3.4 FIELD QUALITY CONTROL

A. Observation Wells: Provide observation wells or piezometers, take measurements, and maintain at least the minimum number indicated; additional observation wells may be required by authorities having jurisdiction.

1. Observe and record daily elevation of ground water and piezometric water levels in observation wells.
2. Repair or replace, within 24 hours, observation wells that become inactive, damaged, or destroyed. In areas where observation wells are not functioning properly, suspend construction activities until reliable observations can be made. Add or remove water from observation-well risers to demonstrate that observation wells are functioning properly.
3. Fill observation wells, remove piezometers, and fill holes when dewatering is completed.

B. Survey-Work Benchmarks: Resurvey benchmarks regularly during dewatering and maintain an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Engineer of Record and Contractor's Geotechnical Engineer if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent construction.

C. Provide continual observation to ensure that subsurface soils are not being removed by the dewatering operation.

D. Prepare reports of observations.

3.5 PROTECTION

A. Protect and maintain dewatering system during dewatering operations.

B. Promptly repair damages to adjacent facilities caused by dewatering.

END OF SECTION 312319

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including attached Specifications Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Hot-mix asphalt walkways.

1.3 REFERENCE STANDARDS

A. CTDOT Form 818: State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction Form 818; including latest Supplements.

1.4 ACTION SUBMITTALS

A. Product Data: Include technical data and tested physical and performance properties.

   1. Herbicide.
   2. Paving geotextile.
   3. Joint sealant.

B. Hot-Mix Asphalt Designs:

   1. Certification, by authorities having jurisdiction, of approval of each hot-mix asphalt design proposed for the Work.
   2. For each hot-mix asphalt design proposed for the Work.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For paving-mix manufacturer.

B. Material Certificates: Include statement that mixes containing recycled materials will perform equal to mixes produced from all new materials.

   1. Aggregates.
   2. Asphalt binder.
   3. Asphalt cement.
   4. Cutback prime coat.

5. Emulsified asphalt prime coat.
6. Tack coat.
7. Fog seal.
8. Undersealing asphalt.

C. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by authorities having jurisdiction or the DOT of state in which Project is located.

B. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction Form 818, including current Supplements.

1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:

1. Prime Coat: Minimum surface temperature of 60 deg F.
2. Tack Coat: Minimum surface temperature of 60 deg F.
3. Slurry Coat: Comply with weather limitations in ASTM D3910.
4. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
5. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. General: Use materials and gradations that have performed satisfactorily in previous installations.

B. Coarse Aggregate: ConnDOT Form 818 Subarticle M.04.01-1.

C. Fine Aggregate: ConnDOT Form 818 Subarticle M.04.01-2.

D. Mineral Filler: ConnDOT Form 818 Subarticle M.04.01-3.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: ConnDOT Form 818 Subarticle M.04.01-4.

B. Emulsified Asphalts: ConnDOT Form 818 Subarticle M.04.01-5.

C. Water: Potable.

2.3 AUXILIARY MATERIALS

A. Reclaimed Asphalt Pavement (RAP) Recycle Option: ConnDOT Form 818 Subarticle M.04.01-6.

B. Joint Seal: ConnDOT Form 818 Subarticle M.04.01-8.

2.4 MIXES

A. Hot-Mix Asphalt: dense-graded, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction and complying with the following requirements:
   1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
   2. Superpave Mixes: ConnDOT Form 818 Sub article M.04.02-2.
      a. Base Course (Binder Course): HMA S0.5 Level 2.
      b. Surface Course: HMA S0.375 Level 2.
      c. Sidewalk Mix: HMA S0.375.
      d. Curb Mix: Form 818 Sub article M.04.02-1

2.5 FORMS

A. Wood or metal; straight, free from warp, and of sufficient strength to resist springing from the impact of the roller. Wood forms shall be 2-inch surfaced plank except that thinner material may be used at sharp curves. Forms shall be of a depth equal to the depth of the finished pavement section.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to begin paving.

B. Adequately protect and leave in clean condition manhole frames and covers, catch basin grates, valve and meter boxes, curbs, walks, and walls.

C. Adjust manhole covers, catch basin grates, valve boxes and similar items to conform with pavement grade or as directed by the Engineer.

D. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protection: Provide protective materials, procedures, and worker training to prevent asphalt materials from spilling, coating, or building up on curbs, driveway aprons, manholes, and other surfaces adjacent to the Work.

B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
2. Proof-roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

3.3 PATCHING

A. Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Tack Coat: Before placing patch material, apply tack coat uniformly to vertical asphalt surfaces abutting the patch. Apply at a rate of 0.05 to 0.15 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

C. Placing Two-Course Patch Material: Partially fill excavated pavements with hot-mix asphalt base course mix and, while still hot, compact. Cover asphalt base course with compacted layer of hot-mix asphalt surface course, finished flush with adjacent surfaces.

3.4 SURFACE PREPARATION

A. Ensure that prepared subgrade has been proof-rolled and is ready to receive paving. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces.

B. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.5 HOT-MIX ASPHALT PLACEMENT

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.

2. Place hot-mix asphalt surface course in single lift.
3. Spread mix at a minimum temperature of 250 deg F.
4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
6. Forms shall be used when hot mix asphalt is spread by hand. Forms shall be cleaned and oiled each time they are used. Forms shall be securely staked, braced, and held firmly to the required line and grade.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Overlap mix placement about 1 to 1-1/2 inches from strip to strip to ensure proper compaction of mix along longitudinal joints.
2. Complete a section of asphalt base course before placing asphalt surface course.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.6 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces and apply tack coat to joints.
2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
3. Offset transverse joints, in successive courses, a minimum of 24 inches.
4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method in accordance with AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."
5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.7 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
   1. Average Density, Rice Test Method: 92 percent of reference maximum theoretical density in accordance with ASTM D2041/D2041M, but not less than 90 percent or greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.8 ASPHALT CURBS

A. Construct hot-mix asphalt curbs over compacted pavement surfaces. Apply a light tack coat unless pavement surface is still tacky and free from dust. Spread mix at a minimum temperature of 250 deg F.

B. Place hot-mix asphalt to curb cross section indicated or, if not indicated, to local standard shapes, by machine or by hand in wood or metal forms. Tamp hand-placed materials and screed to smooth finish. Remove forms after hot-mix asphalt has cooled.

3.9 ASPHALT WALKWAYS

A. Sidewalks shall be constructed with a maximum transverse slope of 2 percent. Transverse slopes shall be at least 1 percent, unless longitudinal drainage is provided. The longitudinal slope of sidewalk shall not exceed the general grade established for the adjacent street or highway. Where adjacent street or highway general grades are less than 5 percent, the longitudinal slope of sidewalk may exceed the general road grade to a maximum of 5 percent.

B. Sidewalks and sidewalk ramps shall meet ADA requirements.

3.10 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce thickness indicated within the following tolerances:

   1. Base Course: Plus or minus 3/8 inch.

2. Surface Course: Plus 1/4 inch, no minus.

B. Pavement Surface Smoothness: Compact each course to produce surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Base Course: 1/4 inch.
2. Surface Course: 1/8 inch.
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.11 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined in accordance with ASTM D3549/D3549M.

C. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

D. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement in accordance with ASTM D979/D979M or AASHTO T 168.

1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared in accordance with ASTM D2041/D2041M, and compacted in accordance with job-mix specifications.
2. In-place density of compacted pavement will be determined by testing core samples in accordance with ASTM D1188 or ASTM D2726/D2726M.

    a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than three cores taken.

    b. Field density of in-place compacted pavement may also be determined by nuclear method in accordance with ASTM D2950/D2950M and coordinated with ASTM D1188 or ASTM D2726/D2726M.

E. Replace and compact hot-mix asphalt where core tests were taken.

F. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.12 WASTE HANDLING

A. General: Handle asphalt-paving waste in accordance with local and state requirements for proper construction waste management and disposal.

B. Asphalt-paving waste material shall be removed from the project site and legally disposed of.

END OF SECTION 321216

SECTION 321314 - COLOR SURFACING FOR CONCRETE PICKLEBALL COURTS

PART 1 GENERAL

1.1 GENERAL DESCRIPTION

A. Textured acrylic surfacing for concrete pickleball courts and similar play areas.

1.2 RELATED SECTIONS

A. Related Work

1. Court markings for pickleball courts.

B. References

1. American Concrete Institute (ACI)
2. American Sport Builders Association (ASBA)
3. USA Pickleball (USAP)

1.3 QUALITY ASSURANCE

A. Surfacing shall conform to the guidelines of the ASBA for planarity.

B. Concrete shall have a vapor barrier in accordance with ASTM E-1745.

C. Concrete mixes should be placed with a water/cement ratio of .45.

D. Curing compounds should not be used unless the curing compound manufacturer specifically states the surface may be coated with water based acrylic coatings.

E. All surface coatings products shall be supplied by a single manufacturer.

F. The contractor shall record the batch number of each product used on the site and maintain it through the warranty period.

G. The contractor shall provide the inspector, upon request, an estimate of the volume of each product to be used on the site.

H. The installer shall be an authorized applicator of the specified system.

I. The manufacturer’s representative shall be available to help resolve material questions.

1.4 SUBMITTALS

A. Manufacturer specifications for components, color chart and installation instructions.

B. Authorized Applicator certificate from the surface system manufacturer.

C. ITF classification certificate for the system to be installed.

D. Reference list from the installer of at least 5 projects of similar scope done in each of the past 3 years.

E. Current Material Safety Data Sheets (MSDS).

F. Product substitution: If other than the product specified, the contractor shall submit at least 7 days prior to the bid date a complete written list of proposed substitutions with sufficient data, drawings, samples, and literature to demonstrate to the owner's satisfaction that the proposed substitution is of equal quality and utility to that originally specified. Information must include a QUV test of at least 1000 hours illustrating the UV stability of the system. Test method similar to ASTM G53. The color system shall have an ITF pace rating in Category 2. Under no circumstances will systems from multiple manufacturers be considered.

1.5 MATERIAL HANDLING AND STORAGE

A. Store materials in accordance with manufacturer specifications and MSDS.

B. Deliver product to the site in original unopened containers with proper labels attached.

C. All surfacing materials shall be non-flammable.

1.6 GUARANTEE

A. Provide a guarantee against defects in the materials and workmanship for a period of one year from the date of substantial completion.

1.7 INSTALLER QUALIFICATIONS

A. Installer shall be regularly engaged in construction and surfacing of acrylic pickleball courts, play courts, or similar surfaces.

B. Installer shall be an Authorized Applicator of the specified surface system.

C. Installer shall be a builder member of the ASBA.

1.8 MANUFACTURER QUALIFICATIONS

A. System manufacturer shall provide documentation that the surface to be installed has been classified by the ITF as a medium pace surface.

B. System manufacturer shall be a US owned company.

C. System manufacturer shall be a member of the ASBA.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. California Products Corp., Andover, MA. 01810 / Plexipave System www.plexipave.com

B. Substitutions: Submit requests at least 7 days prior to the bid date with a complete written list of proposed substitutions with sufficient data, drawings, samples, and literature to demonstrate to the owner's satisfaction that the proposed substitution is of equal quality and utility to the specified product. Information must include a QUV test of at least 1000 hours illustrating the UV stability of the system. The system shall have an ITF pace rating in Category 2. Under no circumstance may the final color surface contain silica sand added at the job site.

2.2 MATERIALS

A. Patching Mix (California Court Patch Binder) - for use in patching cracks, holes, depressions, and other surface imperfections.

B. Crack Filler (Plexipave Crack Filler) - for use in filling fine cracks.

C. Concrete Preparer is a specially formulated acid heat for use in neutralizing the concrete in preparation for the Plexipave System.

D. Adhesion Primer – (California TiCoat) is a two-component water-based epoxy primer for uncoated concrete surfaces.

E. Acrylic Filler Course (California Acrylic Resurfacer) – for use as a filler for new or existing concrete surfaces. The 100% acrylic filler shall be blended with approved silica sand at the jobsite.

F. Acrylic Color Playing Surface (Plexichrome/Plexipave Color Base) – for use as the finish color and texture. Plexichrome and Plexipave Color Base are blended at the job site to achieve correct surface texture. *Factory Fortified Plexipave may be used as an alternative material.
Color to be selected by Owner from Manufacturer's standard color palette.

G. Line Paint (California Line Paint) – for use as the line marking on the court/play surface.

H. Water – for use in dilution/mixing shall be clean and potable.

2.3 MATERIAL SPECIFICATIONS

A. Court Patch Binder – 100% acrylic resin blended with Portland Cement and silica sand.

1) Percent solids by weight (minimum)	46%
2) Weight	8.7-8.9 lbs./gallon

B. Plexipave Crack Filler – 100% acrylic resin heavily filled with sand.

1) Percent solids by weight (minimum)	85%
2) Percent solids by weight (minimum)	15 lbs./gallon

C. Concrete Preparer – Phosphoric Acid based surface treatment

1) Percent solids by weight (minimum) 25.5%
2) Weight 9.5-9.6 lbs./gallon

D. California TiCoat – 2 component epoxy primer

1) Percent solids by weight (minimum) 34.6-34.8%
2) Weight 8.55-8.70 lbs./gallon

E. California Acrylic Resurfacer – 100% acrylic resin (no vinyl copolymerization constituent). The product shall contain not less than 3.5% attapulgite.

1) Percent solids by weight (minimum) 26.7%
2) Weight 8.7-8.9 lbs./gallon

F. Plexichrome – 100% acrylic resin (no vinyl copolymerization constituent) with selected light fast pigments. Green shall contain not less than 8% chrome oxide.

1) Percent solids by weight (minimum) 36.5%
2) Weight 10.0-10.2 lbs./gallon

G. Plexipave Color Base – 100% acrylic resin containing no vinyl copolymerization constituent. Contains not more than 63% rounded silica sand.

1) Percent solids by weight (minimum) 74%
2) Weight 13.1-14.1 lbs./gallon

H. California Line Paint – 100% acrylic resin containing no alkyds or vinyl constituents. Texturing shall be rounded silica sand.

1) Percent solids by weight (minimum) 60.5%
2) Weight 12-12.3 lbs./gallon

All surfacing materials shall be non-flammable and have a VOC content of not less than 100g./ltr. Measured by EPA method 24.

Local sands are not acceptable in the color playing surface. Sands must be incorporated at the manufacturing location to ensure quality and stability.

PART 3 EXECUTION

3.1 WEATHER LIMITATIONS

A. Do not install when rainfall in imminent or extremely high humidity prevents drying.

B. Do not apply unless surface and air temperature are 50°F and rising.

C. Do not apply if surface temperature is in excess of 140°F.

3.2 PREPARATION FOR ACRYLIC COLOR PLAYING SYSTEM

A. Clean surfaces of loose dirt, oil, grease, leaves, and other debris in strict accordance with

manufacturer's directions. Pressure washing will be necessary to adequately clean areas to be coated. Any areas previously showing algae growth shall be treated with Clorox or approved product to kill the organisms and then be properly rinsed.

B. Holes and cracks: Cracks and holes shall be cleaned and a suitable soil sterilant, as approved by the owner, shall be applied to kill all vegetation 14 days prior to use of **Court Patch Binder** according to manufacturer's specifications.

C. Depression: Depressions holding enough water to cover a five-cent piece shall be filled with Court Patch Binder Patching Mix. 3 gallons of Court Patch Binder, 100 lbs. 60-80 silica sand, 1-gallon Dry Portland Cement (Type I). **This step shall be accomplished prior to the squeegee application of Acrylic Resurfacer.** The contractor shall flood all the courts and then allow draining. Define and mark all areas holding enough water to cover a nickel. After defined areas are dry, prime with tack coat mixture of 2 parts water/l part Court Patch Binder. Allow tack coat to dry completely. Spread Court Patch Binder mix true to grade using a straight edge (never a squeegee) for strike off. Steel trowel or wood float the patch so that the texture matches the surrounding area. Never add water to mix. Light misting on surface and edges to feather in is allowed as needed to maintain work ability. Allow to dry thoroughly and cure.

NO WORK FROM THIS STAGE ON SHALL COMMENCE UNTIL AN INSPECTOR HAS ACCEPTED THE SURFACE.

D. Acid Treatment: Concrete Preparer shall be applied to all uncoated concrete surfaces at the rate of .01 to .012 gallon per square yard. Dilute 1 gallon of Concrete Preparer with 4 gallons of potable water. Apply liberally to the surface and spread with a soft hair push broom. After the surface has dried remove any dust or latent material.

E. Primer: California Ti Coat shall be applied to all uncoated concrete surface prior to application of filler materials. Apply at an application rate of .025-.03 gallon per square yard.

1. Mix component A with Component B at a ratio of 1:1. Let stand for 20-30 minutes prior to use.

2. Apply with a short nap phenolic core roller.

3. Allow the Ti Coat to dry for approximately 1-3 hours until the surface is slightly tacky to the touch. In no case shall the surface be left overnight before receiving an application of Acrylic Resurfacer.

F. Filler Course. (Acrylic Resurfacer): On the properly applied Ti Coat the filler course shall be applied to the clean underlying surface in one application to obtain a total quantity of not less than .06 gallon per square yard based on the material prior to any dilution. Acrylic Resurfacer may be used to pre-coat depression and crack/hole repairs to achieve better planarity prior to filler course application.

1. Over a properly repaired surface of concrete on existing courts, apply one coat of Acrylic Resurfacer according to the following mix:

Acrylic Resurfacer 55

gallons Water	20 - 40 gallons
Sand	600-800 pounds / 60-80 mesh
Liquid Yield	112-138 gallons

On new concrete, two coats of Acrylic Resurfacer may be used to properly fill all voids in the Post Tension Concrete surface. Use clean, dry 50-60 mesh sand and clean, potable water to make mixes. The quantity of sand and water in the above mix may be adjusted within above limits to complement the roughness and temperature of the surface.

2. Mix the ingredients thoroughly using accepted mixing devices and use a 70 Durometer rubber bladed squeegee to apply each coat of Acrylic Resurfacer as required.

3. Allow the application of Acrylic Resurfacer to dry thoroughly. Scrape off all ridges and rough spots prior to any subsequent application of Acrylic Resurfacer or subsequent cushion or color surface system.

3.3 APPLICATION OF ACRYLIC COLOR PLAYING SURFACE

A. All areas to be color coated shall be clean, free from sand, clay, grease, dust, salt, or other foreign matters. The Contractor shall obtain the Engineer's approval, prior to applying any surface treatment.

B. Blend color base and Plexichrome with a mechanical mixer to achieve a uniform Fortified Plexipave mixture. The mix shall be:

Color Base	30 gallons Plexichrome	20 gallons
Water	20 gallons	

C. Application shall be made by 50 durometer rubber faced squeegees. The Fortified Plexipave mixture should be poured on to the court surface and spread to a uniform thickness in a regular pattern.

D. A total of 3 applications of Fortified Plexipave shall be made to achieve a total application rate of not less than .15 gal./sy. No application should be made until the previous application is thoroughly dry.

3.4 LINE PAINTING

A. Pickleball Court Lines: Lines shall be 2” wide unless otherwise noted on the drawings. Lines shall be carefully laid out in accordance with ASBA and USA Pickleball guidelines. The area to be marked shall be taped to insure a crisp line. The California Line Paint shall have a texture similar to the surrounding play surface. Application shall be made by brush or roller at the rate of 150-200 sg./gal. (1/2 gal. per pickleball court).

3.5 PROTECTION

A. Erect temporary barriers to protect coatings during drying and curing.

B. Lock gates to prevent use until acceptance by the owner’s representative.

3.6 CLEAN UP

A. Remove all containers, surplus materials, and debris. Dispose of materials in accordance with local, state, and Federal regulations.

B. Leave site in a clean and orderly condition.

END OF SECTION 321314

SECTION 323113 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Chain-link fences.
2. Swing gates.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design chain-link fences and gates, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Chain-link fence and gate framework shall withstand the effects of gravity loads and wind loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
1. Minimum Post Requirements:
   a. Post Size: 2” diameter.
   b. Fence Height: 8 feet maximum combined wall and fence height. See Construction Drawings for additional details.
   c. Material: Galvanized black vinyl coated.

C. Lightning Protection System: Maximum grounding-resistance value of 25 ohms under normal dry conditions.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. 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: Include plans, elevations, sections, details, and attachments to other work. Show accessories, and hardware.

1.5 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of chain-link fence, and gate, from manufacturer.

B. Product Test Reports: For framing strength according to ASTM F 1043.

C. Field quality-control reports.

D. Warranty: Sample of special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For the following to include in emergency, operation, and maintenance manuals:

1. Finishes.
2. Gate hardware.

1.7 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing fence grounding. Member company of NETA or NRTL.

1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

1.8 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.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with CLFMI Product Manual and with requirements indicated below:

1. Fabric Height: 8 feet maximum combined wall and fence height. See Construction Drawings for additional details.
2. #8 Galvanized Fabric:

    a. Mesh Size: 2 inches.
    b. Polyvinyl-Coated Fabric: ASTM F 668

        1) Color: Black complying with ASTM F 934.

2.2 FENCE FRAMING

A. Posts and Rails: Comply with ASTM F 1043 for framing, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 based on the following:

1. Fence Height: 8 feet maximum combined wall and fence height. See Construction Drawings for additional details.
2. Light Industrial Strength: Galvanized.

    a. Line Post: 2.375” outer diameter.
    b. End, Corner and Pull Post: 2.875”outer diameter.

3. Horizontal Framework Members: Galvanized intermediate, top, and bottom rails complying with ASTM F 1043.

    a. Top and Bottom Rail: 1.66” outer diameter.
4. Brace Rails: 1.66” outer diameter galvanized at end posts and gate posts. Comply with ASTM F 1043.
5. Truss Rod: 3/8” diameter galvanized at end posts and gate posts.
6. Metallic Coating for Steel Framing:
    a. Coatings: Galvanized.

7. Polymer coating over metallic coating.

    a. Color: Black complying with ASTM F 934.

2.3 TENSION WIRE

A. Polyvinyl-Coated Steel Wire: 7-guage galvanized, tension wire complying with ASTM F 1664.

1. Color: Black, complying with ASTM F 934.

2.4 SWING GATES

A. General: Comply with ASTM F 900 for gate posts and single swing gate types.

1. Gate Leaf Width: 48 inches.
2. Gate Fabric Height: 48 inches.

B. Pipe and Tubing:

1. Galvanized Steel: Comply with ASTM F 1043 and ASTM F 1083; protective coating and finish to match fence framing.
2. Gate Posts: Round tubular galvanized steel.
3. Gate Frames and Bracing: Round tubular galvanized steel.

C. Frame Corner Construction: Welded or assembled with corner fittings.

D. Hardware:

1. Hinges: 180-degree inward. swing.
2. Latches permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate.
3. Padlock and Chain: Provide by owner.
4. Lock: Provided by owner.
5. Closer: Manufacturer's standard.

2.5 FITTINGS

A. General: Comply with ASTM F 626.

B. Post Caps: Provide for each post.

1. Provide line post caps with loop to receive tension wire or top rail.

C. Rail and Brace Ends: For each gate, corner, pull, and end post.

D. Rail Fittings: Provide the following:

1. Top Rail Sleeves: Galvanized round-steel tubing not less than 6 inches long.
2. Rail Clamps: Line and corner boulevard clamps for connecting intermediate and bottom rails in the fence line-to-line posts.

E. Tension and Brace Bands: Galvanized Pressed steel.

F. Tension Bars: Galvanized steel length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.

G. Truss Rod Assemblies: hot-dip galvanized after threading rod and turnbuckle or other means of adjustment.

H. Tie Wires, Clips, and Fasteners: According to ASTM F 626.

1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:

    a. Hot-Dip Galvanized Steel: galvanized coating thickness matching coating thickness of chain-link fence fabric.

I. Finish:

1. Metallic Coating for Pressed Steel: Not less than 1.2 oz. /sq. ft. zinc.

    a. Polymer coating over metallic coating.

2.6 GROUT AND ANCHORING CEMENT

A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

2.7 FENCE GROUNDING

A. Conductors: Bare, solid wire for No. 6 AWG and smaller; stranded wire for No. 4 AWG and larger.

1. Material above Finished Grade: Copper.
2. Material on or below Finished Grade: Copper.
3. Bonding Jumpers: Braided copper tape, 1 inch wide, woven of No. 30 AWG bare copper wire, terminated with copper ferrules.

B. Connectors and Grounding Rods: Comply with UL 467.

1. Connectors for Below-Grade Use: Exothermic welded type.
2. Grounding Rods: Copper-clad steel, 5/8 by 96 inches.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.

1. Do not begin installation before final grading is completed unless otherwise permitted by owner or Engineer.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements indicated.

1. Install fencing per Construction Drawings.

3.3 CHAIN-LINK FENCE INSTALLATION

A. Post Excavation: Drill or hand-excavate holes for posts and Sleeve-it Fence Post System per manufacturer recommendations.

B. Post Setting: Set posts Sleeve-it Fence Post System per manufacturer recommendations.

1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
2. Posts Set into Sleeve-it Fence Post System: Use Sleeve-it Fence Post System sleeves preset and anchored behind retaining wall for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with manufacturer approved anchoring material, mixed, and placed to comply with anchoring material manufacturer's written instructions and recommendations.

C. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 30 degrees or more.

D. Line Posts: Space line posts uniformly at 96 inches o.c.

E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.

1. Locate horizontal braces at midheight of fabric or higher, on fences with top rail and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

F. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

G. Intermediate and Bottom Rails: Install and secure to posts with fittings.

H. Chain-Link Fabric: Apply fabric to inside (court side) of enclosing framework. Leave 2 inches between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

I. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.

J. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.

1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.

K. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side.

3.4 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.5 GROUNDING AND BONDING

A. Fence Grounding: Install at maximum intervals of 1500 feet except as follows:

1. Fences within 100 Feet of Buildings, Structures, Walkways, and Roadways: Ground at maximum intervals of 750 feet.

a. Gates and Other Fence Openings: Ground fence on each side of opening.

1) Bond metal gates to gate posts.
2) Bond across openings, with and without gates, except openings indicated as intentional fence discontinuities. Use No. 2 AWG wire and bury it at least 18 inches below finished grade.

B. Grounding Method: At each grounding location, drive a grounding rod vertically until the top is 6 inches below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at the grounding location.

C. Bonding Method for Gates: Connect bonding jumper between gate post and gate frame.

D. Connections: Make connections to minimize possibility of galvanic action or electrolysis. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
2. Make connections with clean, bare metal at points of contact.
3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.

4. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

3.6 FIELD QUALITY CONTROL

A. Grounding-Resistance Testing: Engage a qualified testing agency to perform tests and inspections.

1. Grounding-Resistance Tests: Subject completed grounding system to a megger test at each grounding location. Measure grounding resistance no fewer than two full days after last trace of precipitation, without soil having been moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural grounding resistance. Perform tests by two-point method according to IEEE 81.
2. Excessive Grounding Resistance: If resistance to grounding exceeds specified value, notify Architect promptly. Include recommendations for reducing grounding resistance and a proposal to accomplish recommended work.
3. Report: Prepare test reports certified by a testing agency of grounding resistance at each test location. Include observations of weather and other phenomena that may affect test results.

3.7 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

3.8 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's personnel to adjust, operate, and maintain chain-link fences and gates.

END OF SECTION 323113

SECTION 334100 - STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions, including attached Specification Sections, apply to this section.

1.2 SUMMARY

A. Section Includes:

1. Pipe and fittings.
2. Nonpressure transition couplings.
3. Pressure pipe couplings.
4. Backwater valves.
5. Cleanouts.
6. Channel Drainage Systems.

1.3 DEFINITIONS

A. FRP: Fiberglass-reinforced plastic.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings:

1. Channel Drain: Include plans, elevations, sections, details, frames, and covers.

1.5 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of pipe and fitting, from manufacturer.

B. Field quality-control reports.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic pipe, and fittings in direct sunlight.

B. Protect pipe, pipe fittings, and seals from dirt and damage.

PART 2 - PRODUCTS

2.1 PVC PIPE AND FITTINGS

A. PVC Drainage Piping:

1. Pipe: ASTM D 3034, SDR 35, PVC pipe with bell-and-spigot ends for gasketed joints.
2. Fittings: ASTM D 3034, PVC with bell ends.
3. Gaskets: ASTM F 477, elastomeric seals.

B. PVC Pressure Piping:

1. Pipe: AWWA C900, PVC pipe with bell-and-spigot ends for gasketed joints.
2. Fittings: AWWA C900, PVC pipe with bell ends
3. Gaskets: ASTM F 477, elastomeric seals.

2.2 NONPRESSURE TRANSITION COUPLINGS

A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.

B. Sleeve Materials:

1. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
2. For Dissimilar Pipes: ASTM D 5926, PVC, or other material compatible with pipe materials being joined.

C. Unshielded, Flexible Couplings:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Dallas Specialty & Mfg. Co.
b. Fernco Inc.
c. Logan Clay Pipe.
d. Mission Rubber Company; a division of MCP Industries, Inc.
e. NDS Inc.
f. Plastic Oddities; a division of Diverse Corporate Technologies, Inc.

2. Description: Elastomeric sleeve with stainless-steel shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.

D. Shielded, Flexible Couplings:

1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Cascade Waterworks Mfg.
b. Dallas Specialty & Mfg. Co.
c. Mission Rubber Company; a division of MCP Industries, Inc.

2. Description: ASTM C 1460, elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.

E. Ring-Type, Flexible Couplings:

1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Fernco Inc.
b. Logan Clay Pipe.
c. Mission Rubber Company; a division of MCP Industries, Inc.

2. Description: Elastomeric compression seal with dimensions to fit inside bell of larger pipe and for spigot of smaller pipe to fit inside ring.

2.3 PRESSURE PIPE COUPLINGS

A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Cascade Waterworks Mfg.
2. Dresser, Inc.
3. Ford Meter Box Company, Inc. (The); Pipe Products Div.
4. JCM Industries, Inc.
5. Romac Industries, Inc.
6. Smith-Blair, Inc.; a Sensus company.
7. Victaulic Depend-O-Lok, Inc.
8. Viking Johnson.

B. Description: AWWA C219, tubular-sleeve coupling, with center sleeve, gaskets, end rings, and bolt fasteners.

C. Metal, bolted, sleeve-type, reducing or transition coupling, for joining underground pressure piping. Include 150-psig minimum pressure rating and ends sized to fit adjoining pipes.

D. Center-Sleeve Material: Manufacturer's standard.

E. Gasket Material: Natural or synthetic rubber.

F. Metal Component Finish: Corrosion-resistant coating or material.

2.4 BACKWATER VALVES

A. Plastic Backwater Valves:

1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Canplas LLC.
    b. IPS Corporation.
    c. NDS Inc.
    d. Plastic Oddities; a division of Diverse Corporate Technologies, Inc.
    e. Sioux Chief Manufacturing Company, Inc.
    f. Zurn Light Commercial Products Operation; Zurn Plumbing Products Group.

2. Description: Horizontal type; with PVC body, PVC removable cover, and PVC swing check valve.

2.5 CLEANOUTS

A. Plastic Cleanouts:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Canplas LLC.
    b. IPS Corporation.
    c. NDS Inc.
    d. Plastic Oddities; a division of Diverse Corporate Technologies, Inc.
    e. Sioux Chief Manufacturing Company, Inc.
    f. Zurn Light Commercial Products Operation; Zurn Plumbing Products Group.

2. Description: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

2.6 PLASTIC, CHANNEL DRAINAGE SYSTEMS

A. General Requirements for Plastic, Channel Drainage Systems:

1. Modular system of plastic channel sections, grates, and appurtenances.
2. Designed so grates fit into frames without rocking or rattling.
3. Number of units required to form total lengths indicated.

B. Manufacturers: Subject to compliance with requirements, provide product indicated on Construction Drawings or approved equal, but are not limited to, the following:

1. ACO USA.
2. MultiDrain Systems, Inc.
3. NDS Inc.
4. Tuf-Tite Corporation.
5. Zurn Light Commercial Products Operation; Zurn Plumbing Products Group.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavation, trenching, and backfilling are specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.

C. Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.

D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

E. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.

F. Install gravity-flow, nonpressure drainage piping according to the following:

1. Install piping pitched down in direction of flow.
2. Install piping with 6-inch minimum cover.
3. Install PVC drainage piping according to ASTM D 2321 and ASTM F 1668.

G. Install force-main pressure piping according to the following:

1. Install piping with restrained joints at tee fittings and at horizontal and vertical changes in direction. Use corrosion-resistant rods, pipe or fitting manufacturer's proprietary restraint system, or cast-in-place concrete supports or anchors.
2. Install piping with 48-inch minimum cover.
3. Install PVC pressure piping according to AWWA M23, or ASTM D 2774 and ASTM F 1668.

3.3 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, nonpressure drainage piping according to the following:

1. Join PVC drainage piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-seal joints or ASTM D 3034 for elastomeric-gasketed joints.
2. Join dissimilar pipe materials with nonpressure-type flexible couplings.

B. Join force-main pressure piping according to the following:

1. Join PVC pressure piping according to AWWA M23 for gasketed joints.
2. Join dissimilar pipe materials with pressure-type couplings.

3.4 BACKWATER VALVE INSTALLATION

A. Install horizontal-type backwater valves in piping where indicated.

3.5 CLEANOUT INSTALLATION

A. Install cleanouts and riser extensions from pipes to cleanouts at grade as indicated on Construction Drawings. Install piping so cleanouts open in direction of flow in pipe.

1. Use Light-Duty, top-loading classification cleanouts in earth or unpaved foot-traffic areas.

B. Set cleanout frames and covers in earth and set top flush with finished grade.

3.6 CHANNEL DRAINAGE SYSTEM INSTALLATION

A. Install with top surfaces of components, except piping, flush with finished surface.

B. Assemble channel sections to form slope down toward drain outlets. Use sealants, adhesives, fasteners, and other materials recommended by system manufacturer.

C. Embed channel sections in 4-inch minimum concrete around sides.

D. Fasten grates to channel sections.

E. Assemble channel sections with flanged or interlocking joints.

3.7 CONNECTIONS

A. Pipe couplings, expansion joints, and deflection fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

1. Use nonpressure-type flexible couplings where required to join gravity-flow, nonpressure piping unless otherwise indicated.

a. Unshielded flexible couplings for same or minor difference OD pipes.
b. Unshielded, increaser/reducer-pattern, flexible couplings for pipes with different OD.
c. Ring-type flexible couplings for piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.

2. Use pressure-type pipe couplings for force-main joints.

3.8 IDENTIFICATION

A. Materials and their installation are specified in Section 312000 "Earth Moving." Arrange for installation of warning tape directly over piping and at outside edge of underground structures.

1. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.9 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 6 inches of backfill is in place, and again at completion of Project.

1. Submit separate reports for each system inspection.
2. Defects requiring correction include the following:

    a. Alignment: Less than full diameter of inside of pipe is visible between structures.
    b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
    c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
    d. Infiltration: Water leakage into piping.
    e. Exfiltration: Water leakage from or around piping.

3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
4. Reinspect and repeat procedure until results are satisfactory.

B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.
2. Test completed piping systems according to requirements of authorities having jurisdiction.
3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
4. Submit separate report for each test.
5. Gravity-Flow Storm Drainage Piping: Test according to requirements of authorities having jurisdiction, UNI-B-6, and the following:

    a. Exception: Piping with soiltight joints unless required by authorities having jurisdiction.
    b. Option: Test plastic piping according to ASTM F 1417.
    c. Option: Test concrete piping according to ASTM C 924 (ASTM C 924M).

6. Force-Main Sewer Piping: Perform hydrostatic test after thrust blocks, supports, and anchors have hardened. Test at pressure not less than 1-1/2 times the maximum system operating pressure, but not less than 150 psig.

    a. Ductile-Iron Piping: Test according to AWWA C600, "Hydraulic Testing" Section.

b. PVC Piping: Test according to AWWA M23, "Testing and Maintenance" Chapter.

C. Leaks and loss in test pressure constitute defects that must be repaired.

D. Replace leaking piping using new materials and repeat testing until leakage is within allowances specified.

3.10 CLEANING

A. Clean interior of piping of dirt and superfluous materials. Flush with water.

END OF SECTION 334100

SECTION 323223 - SEGMENTAL RETAINING WALLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

A. This Section includes single depth segmental retaining walls with soil reinforcement.

B. Related Sections:
   1. Section 312000 "Earth Moving" for excavation for segmental retaining walls.

1.3 PERFORMANCE REQUIREMENTS

A. Basis of Design: Design of segmental retaining walls is based on products indicated. If comparable products of other manufacturers are proposed, provide engineering design for proposed products, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Delegated Design: Design segmental retaining walls, including comprehensive engineering analysis by a qualified professional engineer licensed in the State of Connecticut, using performance requirements and design criteria indicated.

C. Structural Performance: Engineering design shall be the responsibility of the Contractor's Engineer, licensed in the State of Connecticut.

   1. Gravity loads due to soil pressures resulting from grades indicated.

1.4 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform the following preconstruction testing:

   1. Test soil reinforcement and backfill materials for pullout resistance according to ASTM D 6706.
   2. Test soil reinforcement and backfill materials for coefficient of friction according to ASTM D 5321.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For concrete units.

C. Samples for Verification: For each color and texture of concrete unit required. Submit sections of units not less than 3 inches square.

D. Delegated-Design Submittal: For segmental retaining walls indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer licensed in the State of Connecticut responsible for their preparation.

1. Compliance Review: Qualified professional engineer responsible for segmental retaining wall design shall review and approve submittals and source and field quality-control reports for compliance of materials and construction with design.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified professional engineer licensed in the State of Connecticut.

B. Product Certificates: For segmental retaining wall units and soil reinforcement, from manufacturer.

1. Include test data for shear strength between segmental retaining wall units according to ASTM D 6916.
2. Include test data for connection strength between segmental retaining wall units and soil reinforcement according to ASTM D 6638.

C. Preconstruction test reports.

D. Source quality-control reports.

E. Field quality-control reports.

1.7 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

B. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects.

1. Build mockup of segmental retaining wall approximately 72 inches long by not less than 36 inches high above finished grade at front of wall.

a. Include typical soil reinforcement.
b. Include typical base and cap or finished top construction.
c. Include backfill to typical finished grades at both sides of wall.
d. Include typical end construction at one end of mockup.
e. Include 36-inch return at 1 end of mockup, with typical corner construction.

2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

C. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to segmental retaining walls including, but not limited to, the following:

a. Structural load limitations.
b. Construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
c. Field quality-control procedures.
d. Coordination with existing pickleball court usage throughout construction.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store and handle concrete units and accessories to prevent deterioration or damage due to contaminants, breaking, chipping, or other causes.

B. Store geosynthetics in manufacturer's original packaging with labels intact. Store and handle geosynthetics to prevent deterioration or damage due to sunlight, chemicals, flames, temperatures above 160 deg F or below 32 deg F, and other conditions that might damage them. Verify identification of geosynthetics before using and examine them for defects as material is placed.

PART 2 - PRODUCTS

2.1 SEGMENTAL RETAINING WALL UNITS

A. Concrete Units: ASTM C 1372, Normal Weight, except that units shall not differ in height more than plus or minus 1/16 inch from specified dimension.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, licensees of one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product by a licensee of one of the following or comparable product:

a. Allan Block Corporation.
b. Anchor Wall Systems, Inc.
c. GeoWestern, Inc.
d. ICD Corporation.
e. Keystone Retaining Wall Systems, Inc.; a Contech company.
f. Risi Stone Systems; a division of Rothbury International.
g. Rockwood Retaining Walls, Inc.
h. Tensar Earth Technologies, Inc.
i. Versa-Lok Retaining Wall Systems; a division of Kiltie Corporation.

3. Provide units that comply with requirements for freeze-thaw durability.
4. Provide units that interlock with courses above and below by means of integral lugs or lips.

B. Color: As selected by Owner from manufacturer's full range.

C. Shape and Texture: Provide units of basic shape and dimensions indicated on the Construction Drawings with exposed straight split faces. Finished to be selected by Owner.

D. Batter: Provide units that offset from course below to provide at least 1" batter.

E. Cap Units: Provide cap units of same shape as other units with smooth, as-cast top surfaces without holes or lugs.

F. Special Units: Provide corner units, end units, and other shapes as needed to produce segmental retaining walls of dimensions and profiles indicated and to provide texture on exposed surfaces matching face.

2.2 INSTALLATION MATERIALS

A. Pins: Product supplied by segmental retaining wall unit manufacturer for use with units provided, made from nondegrading polymer reinforced with glass fibers.

B. Clips: Product supplied by segmental retaining wall unit manufacturer for use with units provided, made from nondegrading polymer reinforced with glass fibers.

C. Cap Adhesive: Product supplied or recommended by segmental retaining wall unit manufacturer for adhering cap units to units below.

D. Leveling Base: 6" granular leveling pad shall be provided at a minimum.

E. Drainage Fill: 12" thick drainage aggregate or as specified by the Contractor's Engineer for the wall design.

F. Reinforced-Soil Fill: Comply with recommendations provided by Contractor's geotechnical engineer.

G. Nonreinforced-Soil Fill: Comply with recommendations provided by Contractor's geotechnical engineer.

H. Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent.

1. Apparent Opening Size: No. 70 to 100 (0.212- to 0.150-mm) sieve, maximum; ASTM D 4751.
2. Minimum Grab Tensile Strength: 110 lb (49.9 kg); ASTM D 4632.
3. Minimum Weight: 4 oz./sq. yd. (132 g/sq. m).

I. Subdrainage Pipe and Filter Fabric: Comply with design provided by Contractor's Engineer for the wall design.

J. Soil Reinforcement: Product specifically manufactured for use as soil reinforcement and as follows:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product by a licensee of one of the following or comparable product:

    a. Colbond Inc.
    b. Huesker, Inc.
    c. Luckenhaus Technical Textiles, Inc.
    d. Mirafi Construction Products; Ten Cate Nicolon.
    e. Propex Fabrics Inc.; Civil Engineering Fabrics.
    f. Strata Systems, Inc.
    g. Synteen Technical Fabrics, Inc.
    h. Tenax Corporation; Subsidiary of Tenax Group.
    i. Tensar Earth Technologies, Inc.
    j. Versa-Lok Retaining Wall Systems; a division of Kiltie Corporation.
    k. Webtec, Inc.

2.3 SOURCE QUALITY CONTROL

A. Direct manufacturer to test and inspect each roll of soil reinforcement at the factory for minimum average roll values for geosynthetic index property tests, including the following:

1. Weight.
2. Roll size.
3. Grab or single-rib strength.
4. Aperture opening.
5. Rib or yarn size.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for excavation tolerances, condition of subgrades, and other conditions affecting performance of segmental retaining walls.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 RETAINING WALL INSTALLATION

A. General: Place units according to NCMA's "Segmental Retaining Wall Installation Guide" and segmental retaining wall unit manufacturer's written instructions.

1. Lay units in running bond.
2. Form corners and ends by using special units.

B. Leveling Base: Place and compact base material to thickness indicated and with not less than 95 percent maximum dry unit weight according to ASTM D 698.

C. First Course: Place first course of segmental retaining wall units for full length of wall. Place units in firm contact with each other, properly aligned and level.

1. Tamp units into leveling base as necessary to bring tops of units into a level plane.

D. Subsequent Courses: Remove excess fill and debris from tops of units in course below. Place units in firm contact, properly aligned, and directly on course below.

1. For units with lugs designed to fit into holes in adjacent units, lay units so lugs are accurately aligned with holes, and bedding surfaces are firmly seated on beds of units below.
2. For units with lips at front of units, slide units as far forward as possible for firm contact with lips of units below.
3. For units with lips at bottom rear of units, slide units as far forward as possible for firm contact of lips with units below.
4. For units with pins, install pins and align units.
5. For units with clips, install clips and align units.

E. Cap Units: Place cap units and secure with cap adhesive.

3.3 FILL PLACEMENT

A. General: Comply with geotechnical report prepared by Contractor's geotechnical engineer and segmental retaining wall unit manufacturer's written instructions.

B. Fill voids between and within units with drainage fill. Place fill as each course of units is laid.

C. Place, spread, and compact drainage fill and soil fill in uniform lifts for full width and length of embankment as wall is laid. Place and compact fills without disturbing alignment of units. Where both sides of wall are indicated to be filled, place fills on both sides at same time. Begin at wall and place and spread fills toward embankment.

1. Use only hand-operated compaction equipment within 48 inch of wall, or one-half of height above bottom of wall, whichever is greater.
2. Compact reinforced-soil fill to not less than 95 percent maximum dry unit weight according to ASTM D 698.

    a. In areas where only hand-operated compaction equipment is allowed, compact fills in accordance with geotechnical report prepared by Contractor's geotechnical engineer.

3. Compact nonreinforced-soil fill to comply with geotechnical report prepared by Contractor's geotechnical engineer.

D. Place drainage geotextile against back of wall and place layer of drainage fill at least **12 inches** wide behind drainage geotextile to finished grade.

E. Place subdrainage pipe in drainage fill as indicated on Construction Drawings, sloped not less than 0.5 percent to drain.

F. Slope grade at top of wall away from wall unless otherwise indicated. Slope grade at base of wall away from wall. Provide uniform slopes that will prevent ponding.

G. Place soil reinforcement in horizontal joints of retaining wall where indicated and according to soil-reinforcement manufacturer's written instructions. Embed reinforcement a minimum of 8 inches into retaining wall and stretch tight over compacted backfill. Anchor soil reinforcement before placing fill.

1. Place additional soil reinforcement at corners and curved walls to provide continuous reinforcement.
2. Place geosynthetics with seams, if any, oriented perpendicular to segmental retaining walls.
3. Do not dump fill material directly from trucks onto geosynthetics.
4. Place at least 6 inches of fill over reinforcement before compacting with tracked vehicles or 4 inches before compacting with rubber-tired vehicles.
5. Do not turn vehicles on fill until first layer of fill is compacted and second layer is placed over each soil-reinforcement layer.

3.4 CONSTRUCTION TOLERANCES

A. Variation from Level: For bed-joint lines along walls, do not exceed 1-1/4 inches in 10 feet, 3 inches maximum.

B. Variation from Indicated Batter: For slope of wall face, do not vary from indicated slope by more than 1-1/4 inches in 10 feet.

C. Variation from Indicated Wall Line: For walls indicated as straight, do not vary from straight line by more than 1-1/4 inches in 10 feet.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Comply with requirements in Section 312000 "Earth Moving" for field quality control.
1. In each compacted backfill layer, perform at least 1 field in-place compaction test for each 24 inches of fill depth and each 50 feet or less of segmental retaining wall length.

3.6 ADJUSTING

A. Remove and replace segmental retaining wall construction of the following descriptions:

1. Broken, chipped, stained, or otherwise damaged units. Units may be repaired if Owner approves methods and results.
2. Segmental retaining walls that do not match approved Samples and mockups.
3. Segmental retaining walls that do not comply with other requirements indicated.

B. Replace units so segmental retaining wall matches approved Samples and mockups, complies with other requirements, and shows no evidence of replacement.

END OF SECTION 323223

SITE DEVELOPMENT PLANS
FOR PROPOSED
PICKLEBALL COURTS
AT TUNXIS HILL PARK

LOCATION MAP
1" = 300'

TUNXIS HILL PARK
225 MELVILLE AVENUE
FAIRFIELD, CONNECTICUT

DRAWING SHEET INDEX

SHEET NO.	SHEET TITLE
T-1.0	COVER SHEET
EX-1.0	EXISTING CONDITIONS PLAN
C-1.0	SITE OVERVIEW PLAN
C-1.1	SITE LAYOUT PLAN
C-1.2	PICKLEBALL COURT CROSS SECTIONS
C-2.0	SITE GRADING & DRAINAGE PLAN
C-3.0	SOIL EROSION & SEDIMENT CONTROL PLAN
C-3.1	SOIL EROSION & SEDIMENT CONTROL DETAILS
C-4.0	CONSTRUCTION DETAILS
C-4.1	CONSTRUCTION DETAILS

ASSESSORS MAP: #42
PARCEL NUMBER: #48
ZONING DISTRICT: B

APPLICANT:
ANTHONY CALABRESE, DIRECTOR
PARKS & RECREATION DEPARTMENT
TOWN OF FAIRFIELD
75 MILL PLAIN ROAD
FAIRFIELD, CT 06824
203-256-3191

OWNER OF RECORD:
TOWN OF FAIRFIELD
725 OLD POST ROAD
FAIRFIELD, CT 06824

PROPOSED PICKLEBALL COURTS

REVISION DATE	ISSUE
3/28/2024	BID ADDENDUM No. 1

LANDTECH
SITE/CIVIL • ENVIRONMENTAL • SURVEYING • PLANNING
518 RIVERSIDE AVENUE • WESTPORT, CT 06880 • 203-454-2110
HELLO@LANDTECHCONSULT.COM • WWW.LANDTECHCONSULT.COM

PREPARED FOR:
TOWN OF FAIRFIELD

PROJECT LOCATION:
TUNXIS HILL PARK
225 MELVILLE AVENUE
FAIRFIELD, CT

PROJECT TITLE:
SITE IMPROVEMENTS FOR
PROPOSED PICKLEBALL COURTS

DRAWING TITLE:
COVER SHEET

PROJECT No. 22312-02

DATE:	DESIGNED BY:	CHECKED BY:
3/15/2024	RW	CL

SCALE: N.T.S.

PROJECT STATUS:
CONSTRUCTION DRAWINGS

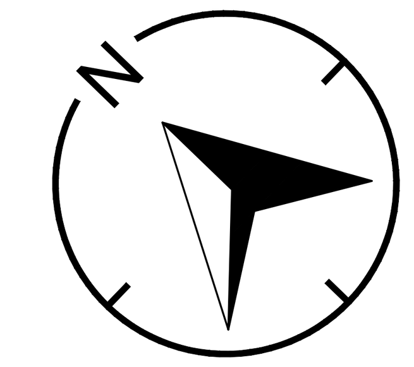
STATE OF CONNECTICUT · ROBERT WILLIAM SOUMELIDIS · 27803 · LICENSED PROFESSIONAL ENGINEER

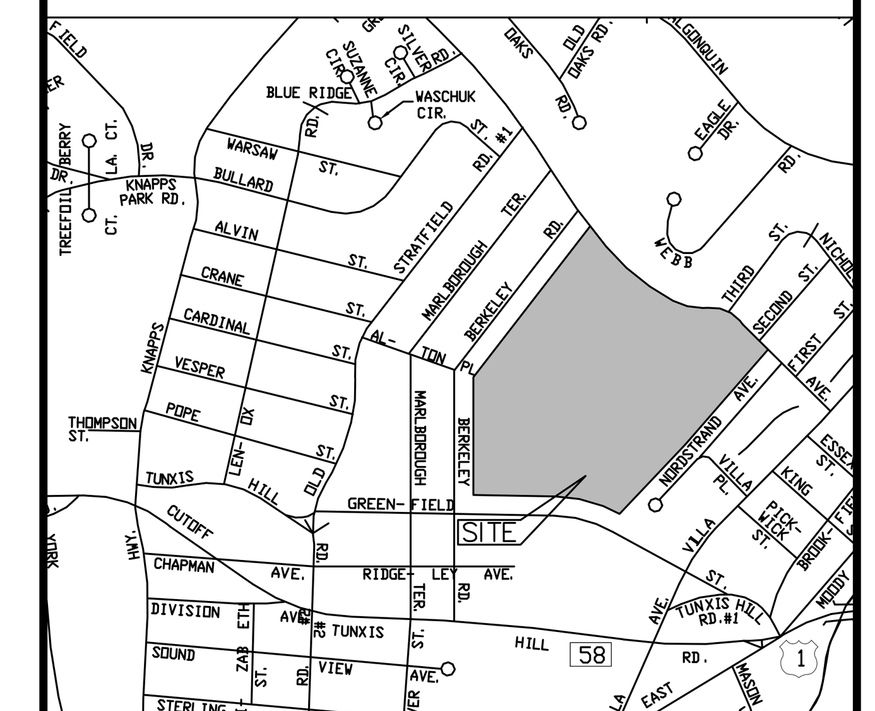
T-1.0

GENERAL NOTES

1. LOT LINE AND OTHER CONTEXTUAL INFORMATION FOR 225 MELVILLE AVENUE TAKEN FROM FROM TOWN OF FAIRFIELD GIS AND AERIAL IMAGERY.
2. TOPOGRAPHIC INFORMATION FOR 225 MELVILLE AVENUE TAKEN FROM PARTIAL TOPOGRAPHIC SURVEY PREPARED BY LANDTECH DATED 05/10/2023 AND WITH PUBLICLY AVAILABLE LIDAR INFORMATION.
3. DATUM: NAVD88
4. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UNDERGROUND PIPING, UTILITIES, AND OTHER FEATURES ARE TAKEN FROM EXISTING AS-BUILT MAPPING AND OTHER SOURCES OF INFORMATION AND ARE APPROXIMATE. THE INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. IN ADDITION, THERE MAY BE OTHER UNDERGROUND PIPING, UTILITIES, AND OTHER FEATURES PRESENT THAT ARE NOT SHOWN. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE PRESENCE OF ANY OF THESE EXISTING ELEMENTS BY WHATEVER MEANS NECESSARY AND PROTECTING THESE ELEMENTS AS REQUIRED OR RELOCATING THEM IF THEY ARE IN CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CALL "CALL BEFORE YOU DIG," 1-800-922-4455, THREE FULL WORKING DAYS PRIOR TO ANY EXCAVATION WORK ON THE PROPERTY.
6. SUBJECT PROPERTY IS LOCATED IN FEMA FLOOD ZONE "X" AS SHOWN ON FEMA FIRM PANEL NO. 09001C 0436G, EFFECTIVE JULY 8 2013.
7. CONTRACTOR TO MAINTAIN ACCESS TO EXISTING PICKLEBALL COURTS AND PLAYGROUND DURING CONSTRUCTION.

LANDTECH





LOCATION MAP
(NTS)

ASSESSORS MAP: #42
PARCEL NUMBER: #48
ZONING DISTRICT: B

APPLICANT:
ANTHONY CALABRESE, DIRECTOR
PARKS & RECREATION DEPARTMENT
TOWN OF FAIRFIELD
75 MILL PLAIN ROAD
FAIRFIELD, CT 06824
203-256-3191

OWNER OF RECORD:
TOWN OF FAIRFIELD
725 OLD POST ROAD
FAIRFIELD, CT 06824

PROPOSED PICKLEBALL COURTS

3/28/2024	BID ADDENDUM No. 1
REVISION DATE	ISSUE

LANDTECH
SITE/CIVIL • ENVIRONMENTAL • SURVEYING • PLANNING
518 RIVERSIDE AVENUE • WESTPORT, CT 06880 • 203-454-2110
HELLO@LANDTECHCONSULT.COM • WWW.LANDTECHCONSULT.COM

PREPARED FOR:
TOWN OF FAIRFIELD

PROJECT LOCATION:
TUNXIS HILL PARK
225 MELVILLE AVENUE
FAIRFIELD, CT

PROJECT TITLE:
SITE IMPROVEMENTS FOR PROPOSED PICKLEBALL COURTS

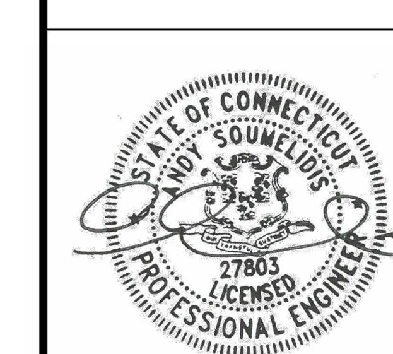
DRAWING TITLE:
EXISTING CONDITIONS PLAN

PROJECT No. 22312-02

DATE:	DESIGNED BY:	CHECKED BY:
3/15/2024	RW	CL

SCALE: 1" = 20'
IN FEET
0 20 40 60

PROJECT STATUS:
CONSTRUCTION DRAWINGS



EX-1.0

GENERAL NOTES

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2. TOPOGRAPHIC INFORMATION FOR 225 MELVILLE AVENUE TAKEN FROM PARTIAL TOPOGRAPHIC SURVEY PREPARED BY LANDTECH DATED 05/10/2023 AND WITH PUBLICLY AVAILABLE LIDAR INFORMATION.

3. DATUM: NAVD88

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5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CALL "CALL BEFORE YOU DIG," 1-800-922-4455, THREE FULL WORKING DAYS PRIOR TO ANY EXCAVATION WORK ON THE PROPERTY.

6. SUBJECT PROPERTY IS LOCATED IN FEMA FLOOD ZONE "X" AS SHOWN ON FEMA FIRM PANEL NO. 09001C 0436G, EFFECTIVE JULY 8 2013.

7. CONTRACTOR TO MAINTAIN ACCESS TO EXISTING PICKLEBALL COURTS AND PLAYGROUND DURING CONSTRUCTION.

8. SELECTED CONTRACTOR SHALL BE AN APPROVED MEMBER OF THE AMERICAN SPORTS BUILDERS ASSOCIATION.

9. IT IS INTENDED THAT THESE PLANS AND SPECIFICATIONS REQUIRE ALL LABOR AND MATERIALS NECESSARY AND PROPER FOR THE WORK CONTEMPLATED AND THAT THE WORK BE COMPLETED IN ACCORDANCE WITH THEIR TRUE INTENT AND PURPOSE. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY REGARDING ANY DISCREPANCIES OR AMBIGUITIES WHICH MAY EXIST IN THE PLANS OR SPECIFICATIONS. THE ENGINEER OF RECORD'S INTERPRETATION THEREOF SHALL BE CONCLUSIVE.

10. APPROVAL OF THESE PLANS BY THE TOWN OF FAIRFIELD OR ITS AGENTS SHALL NOT RELIEVE THE CONTRACTOR OR THE APPLICANT FROM THE RESPONSIBILITY FOR THE CORRECTION OF ERRORS OR OMISSIONS DISCOVERED DURING CONSTRUCTION. UPON REQUEST, THE APPROPRIATE REVISIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD AND TOWN OF FAIRFIELD FOR REVIEW AND APPROVAL.

11. PRIOR TO BEGINNING ANY CONSTRUCTION ON SITE, A PRE-CONSTRUCTION MEETING IS REQUIRED WITH THE ENGINEER OF RECORD, CONTRACTOR AND REPRESENTATIVE OF THE TOWN OF FAIRFIELD. CONTACT THE TOWN OF FAIRFIELD PARKS AND RECREATION DEPARTMENT AT (203) 256-3191.

12. HOURS OF EXTERIOR CONSTRUCTION ON THE PROJECT SITE SHALL BE LIMITED TO 7:00 A.M. TO 5:00 P.M. MONDAY THROUGH FRIDAY.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY SCHEDULING INSPECTION AND TESTING OF ALL FACILITIES CONSTRUCTED UNDER THIS APPROVED PLAN. ALL TESTING SHALL CONFORM TO THE REGULATORY AGENCY'S STANDARD SPECIFICATIONS.

14. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE OWNER AND/OR ENGINEER OF RECORD AND APPROVED BY THE TOWN OF FAIRFIELD.

15. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, BARRICADES, SIGNS, FLAGMEN OR OTHER DEVICES NECESSARY FOR PUBLIC SAFETY.

16. THE CONTRACTOR /OWNER AGREES:

    A. THE JOB SITE SHALL BE CLEAN AT THE END OF EACH PHASE OF WORK.
    B. TO BE RESPONSIBLE TO REMOVE AND DISPOSE OF ALL TRASH, SCRAP AND UNUSED MATERIAL IN A TIMELY MANNER.
    C. TO MAINTAIN THE SITE IN A NEAT, SAFE AND ORDERLY MANNER AT ALL TIMES.
    D. TO KEEP MATERIALS, EQUIPMENT, AND TRASH OUT OF THE WAY OF OTHER CONTRACTORS SO AS NOT TO DELAY THE JOB.
    E. TO BE RESPONSIBLE FOR THEIR OWN SAFETY, TRAFFIC CONTROL, PERMITS, RETESTING, AND INSPECTIONS.
    F. UNLESS OTHERWISE NOTED, ALL EXCESS SOILS AND MATERIALS SHALL BE LAWFULLY DISPOSED OF OFFSITE.
    G. ALL TOWN ROADS AND PARKING LOTS WHERE CONSTRUCTION VEHICLES ARE ENTERING SHALL BE SWEPT DAILY AT THE END OF THE WORK DAY TO PREVENT MUD TRACKING.

10. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

11. ALL DISTURBED AREAS SHALL BE RESTORED AND STABILIZED WITH TOPSOIL AND SEED.

12. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SECURE ALL REQUIRED BUILDING PERMITS, ROAD OPENING PERMITS, AND ANY OTHER ADDITIONAL PERMITS THAT MAY BE REQUIRED.

PRODUCT SPECIFICATIONS

1. PICKLEBALL NET POSTS:
   EDWARDS 3" - CLASSIC ROUND PICKLEBALL NET POSTS (BLACK) WITH GROUND SLEEVES (OR APPROVED EQUAL)

2. PICKLEBALL NETS:
   EDWARDS PICKLEBALL NET (36") HEIGHT - PROFESSIONAL GRADE EDWARDS PICKLEBALL NETS THAT CONFORM TO FIP & IFP REGULATIONS RESPECTIVELY. THESE OUTDOOR PICKLEBALL NETS & PADDLE TENNIS NETS FEATURE A PREMIUM 3.5 MM BRAIDED, KNOTLESS NYLON NETTING WITH 1 3/4" SQUARE MESH, HEAVY DUTY VINYL COATED HEADBAND, 5/8" DIAMETER FIBERGLASS DOWELS. (OR APPROVED EQUAL)

ALTERNATES

1. WINDSCREEN:
   PERMASCREEN 70 IS A VINYL COATED POLYESTER REINFORCED WITH 18OZ. VINYL TAPE WITH BRASS GROMMETS AT MAX 12" INTERVALS.
   PERMASCREEN 70 WIND SCREEN COLOR BLACK OR ACCEPTED ALTERNATE SHALL BE INSTALLED ONTO THE CHAIN LINK MESH PER THE SPECIFICATIONS AFTER FENCE REPAIR AND REPLACEMENTS HAVE BEEN COMPLETED.

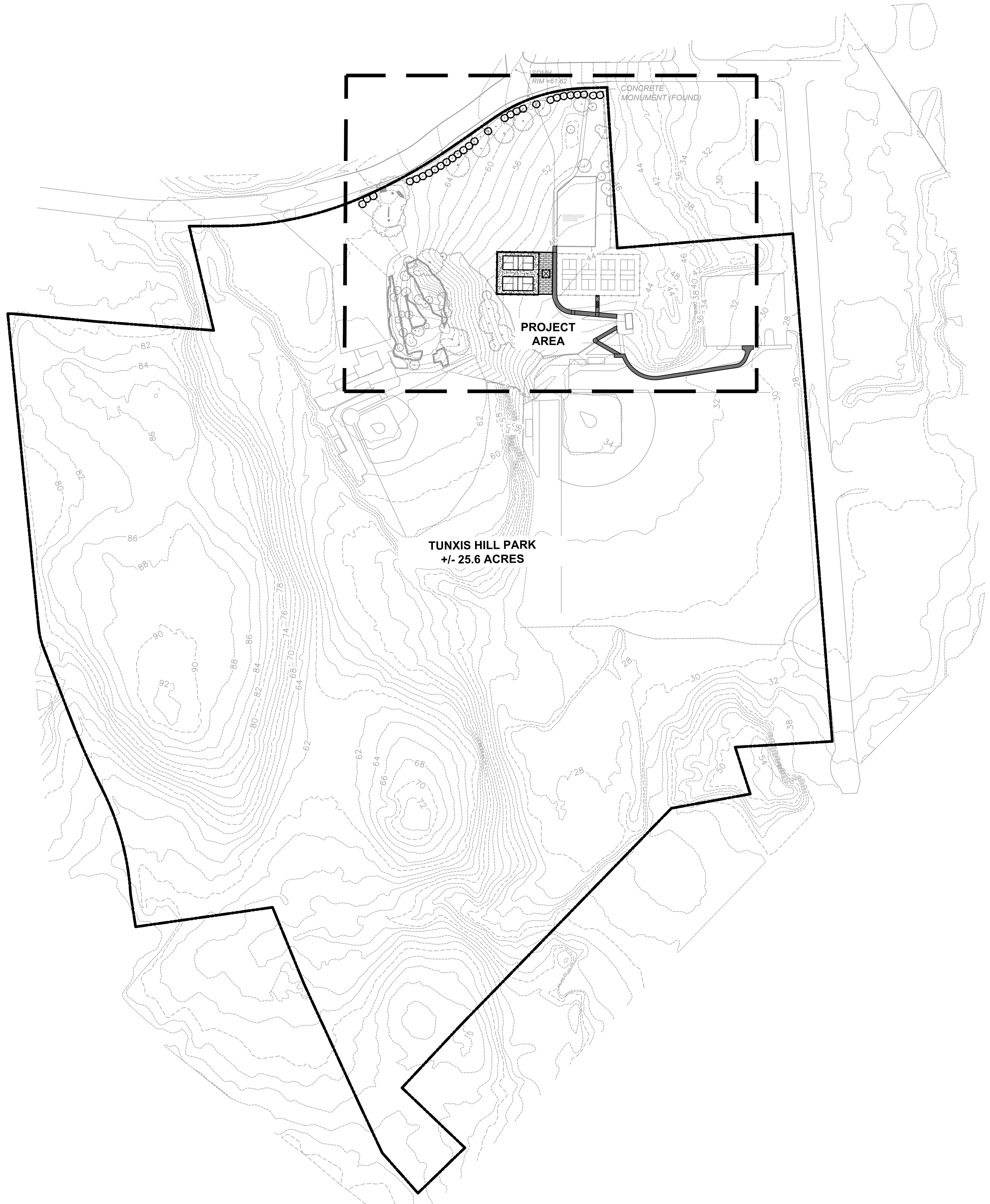
2. PAVILION:
   A. DIMENSIONS: 10' X 10'
   B. HEIGHT: 10'-6" TO THE PEAK OF THE ROOF
   C. MATERIAL
      - ROOF: METAL STANDING SEAM (COLOR TO BE SELECTED BY OWNER)
      - FRAMING AND SUPPORTS: PRESSURE TREATED LUMBER
   D. FOUNDATION: DESIGN BY CONTRACTOR'S STRUCTURAL ENGINEER
   E. MODEL No.: YM11756
   F. MANUFACTURER: YARDISTRY, OR ACCEPTED ALTERNATE

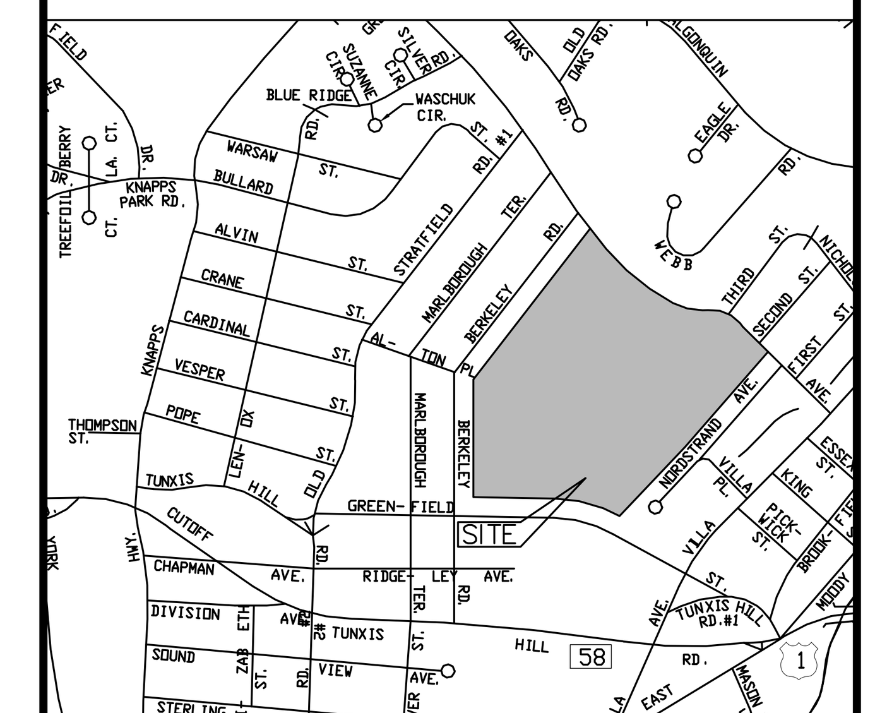
GEOTECHNICAL AND STRUCURAL DESIGN

1. CONTRACTOR IS RESPONSIBLE FOR RETAINING A GEOTECHINICAL ENGINEER, AND STRUCTURAL ENGINEER, LICENSED IN THE STATE OF CONNECTICUT TO PROVIDE A GEOTECHNICAL REPORT AND STRUCTURAL DESIGN FO THE PROPOSED RETAINING WALLS, POST TENSION SLAB, AND PAVILION FRAMING AND FOUNDATION.

LANDTECH

T:\\ ACTIVE PROJECTS\22312-03 TOWN OF FAIRFIELD - 225 MELVILLE AVE., FAIRFIELD\DRAWINGS\TOWN OF FAIRFIELD - 225 MELVILLE AVENUE - SITE PLAN.DWG





LOCATION MAP
(NTS)

ASSESSORS MAP: #42
PARCEL NUMBER: #48
ZONING DISTRICT: B

APPLICANT:
ANTHONY CALABRESE, DIRECTOR
PARKS & RECREATION DEPARTMENT
TOWN OF FAIRFIELD
75 MILL PLAIN ROAD
FAIRFIELD, CT 06824
203-256-3191

OWNER OF RECORD:
TOWN OF FAIRFIELD
725 OLD POST ROAD
FAIRFIELD, CT 06824

PROPOSED PICKLEBALL COURTS

REVISION DATE	ISSUE
3/28/2024	BID ADDENDUM No. 1

LANDTECH
SITE/CIVIL • ENVIRONMENTAL • SURVEYING • PLANNING
518 RIVERSIDE AVENUE • WESTPORT, CT 06880 • 203-454-2110
HELLO@LANDTECHCONSULT.COM • WWW.LANDTECHCONSULT.COM

PREPARED FOR:
TOWN OF FAIRFIELD

PROJECT LOCATION:
TUNXIS HILL PARK
225 MELVILLE AVENUE
FAIRFIELD, CT

PROJECT TITLE:
SITE IMPROVEMENTS FOR PROPOSED PICKLEBALL COURTS

DRAWING TITLE:
SITE OVERVIEW PLAN

PROJECT No. 22312-02

DATE:	DESIGNED BY:	CHECKED BY:
3/15/2024	RW	CL

SCALE: 1" = 20'

IN FEET
0 100 200 300

PROJECT STATUS:
CONSTRUCTION DRAWINGS

STATE OF CONNECTICUT · TROY SOUMELIDIS · 27803 · LICENSED · PROFESSIONAL ENGINEER

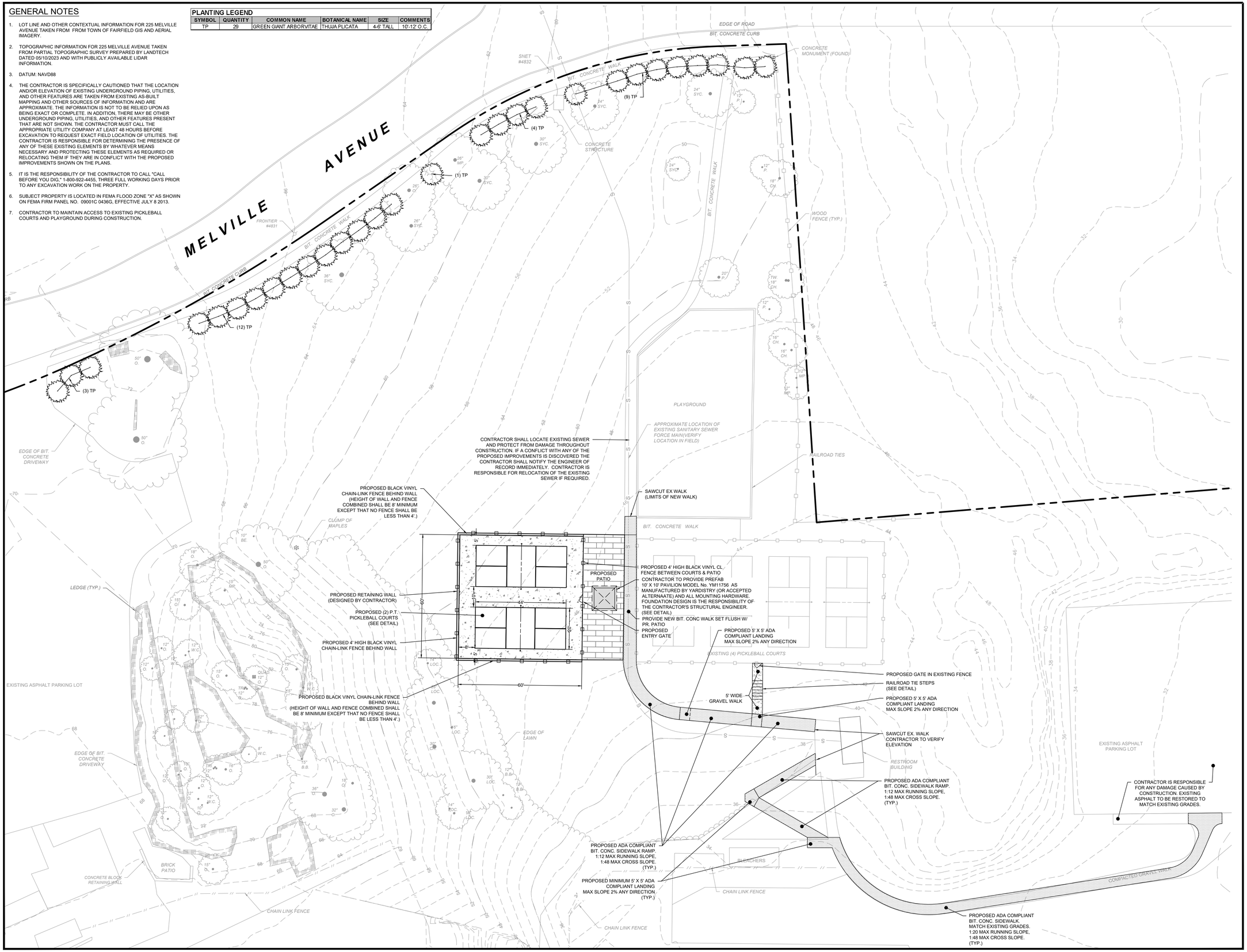
C-1.0

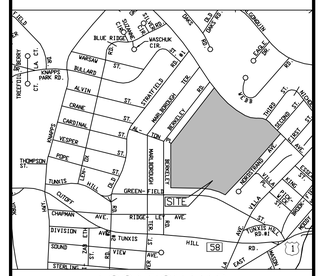
GENERAL NOTES

1. LOT LINE AND OTHER CONTEXTUAL INFORMATION FOR 225 MELVILLE AVENUE TAKEN FROM FROM TOWN OF FAIRFIELD GIS AND AERIAL IMAGERY.
2. TOPOGRAPHIC INFORMATION FOR 225 MELVILLE AVENUE TAKEN FROM PARTIAL TOPOGRAPHIC SURVEY PREPARED BY LANDTECH DATED 05/10/2023 AND WITH PUBLICLY AVAILABLE LIDAR INFORMATION.
3. DATUM: NAVD88
4. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UNDERGROUND PIPING, UTILITIES, AND OTHER FEATURES ARE TAKEN FROM EXISTING AS-BUILT MAPPING AND OTHER SOURCES OF INFORMATION AND ARE APPROXIMATE. THE INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. IN ADDITION, THERE MAY BE OTHER UNDERGROUND PIPING, UTILITIES, AND OTHER FEATURES PRESENT THAT ARE NOT SHOWN. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE PRESENCE OF ANY OF THESE EXISTING ELEMENTS BY WHATEVER MEANS NECESSARY AND PROTECTING THESE ELEMENTS AS REQUIRED OR RELOCATING THEM IF THEY ARE IN CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CALL "CALL BEFORE YOU DIG," 1-800-922-4455, THREE FULL WORKING DAYS PRIOR TO ANY EXCAVATION WORK ON THE PROPERTY.
6. SUBJECT PROPERTY IS LOCATED IN FEMA FLOOD ZONE "X" AS SHOWN ON FEMA FIRM PANEL NO. 09001C 0436G, EFFECTIVE JULY 8 2013.
7. CONTRACTOR TO MAINTAIN ACCESS TO EXISTING PICKLEBALL COURTS AND PLAYGROUND DURING CONSTRUCTION.

PLANTING LEGEND

SYMBOL	QUANTITY	COMMON NAME	BOTANICAL NAME	SIZE	COMMENTS
TP	29	GREEN GIANT ARBORVITAE	THUJA PLICATA	4-6' TALL	10'-12' O.C.





LOCATION MAP
(NTS)

ASSESSORS MAP: #42
PARCEL NUMBER: #48
ZONING DISTRICT: B

APPLICANT:
ANTHONY CALABRESE, DIRECTOR
PARKS & RECREATION DEPARTMENT
TOWN OF FAIRFIELD
75 MILL PLAIN ROAD
FAIRFIELD, CT 06824
203-256-3191

OWNER OF RECORD:
TOWN OF FAIRFIELD
725 OLD POST ROAD
FAIRFIELD, CT 06824

PROPOSED PICKLEBALL COURTS

REVISION DATE	ISSUE
3/28/2024	BID ADDENDUM No. 1

LANDTECH
SITE/CIVIL • ENVIRONMENTAL • SURVEYING • PLANNING
518 RIVERSIDE AVENUE • WESTPORT, CT 06880 • 203-454-2110
HELLO@LANDTECHCONSULTANT.COM • WWW.LANDTECHCONSULTANT.COM

PREPARED FOR:

TOWN OF FAIRFIELD

PROJECT LOCATION:

TUNXIS HILL PARK
225 MELVILLE AVENUE
FAIRFIELD, CT

PROJECT TITLE:

SITE IMPROVEMENTS FOR PROPOSED PICKLEBALL COURTS

DRAWING TITLE:

SITE LAYOUT PLAN

PROJECT No.		
22312-02		
DATE: 3/15/2024	DESIGNED BY: RW	CHECKED BY: CL

SCALE: 1" = 20'

IN FEET
0 20 40 60

PROJECT STATUS:

CONSTRUCTION DRAWINGS

STATE OF CONNECTICUT · ROBERT WAYNE SOUMELIDIS · 27803 · LICENSED PROFESSIONAL ENGINEER

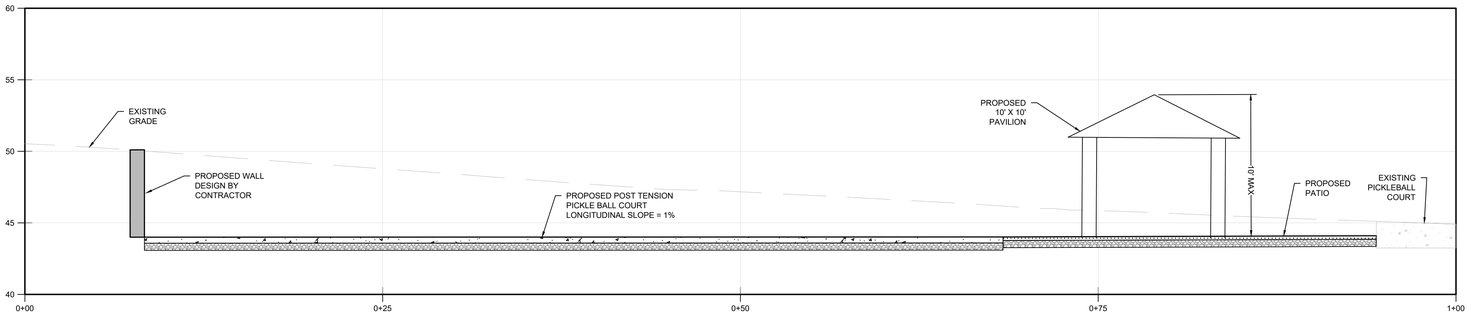
C-1.1

T:\1. ACTIVE PROJECTS\2312-03 TOWN OF FAIRFIELD - 225 MELVILLE AVE. - FAIRFIELD\DRAWINGS\TOWN OF FAIRFIELD - 225 MELVILLE AVENUE - SITE PLAN.DWG

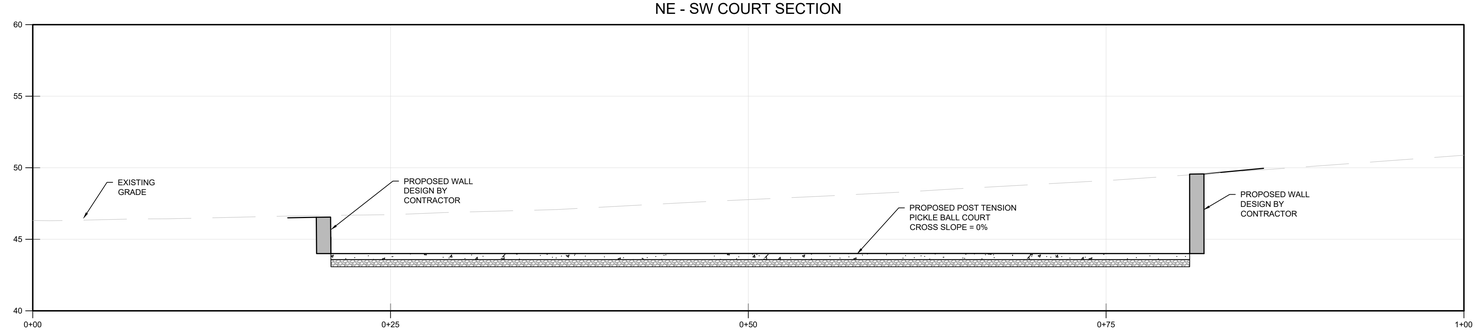
GENERAL NOTES

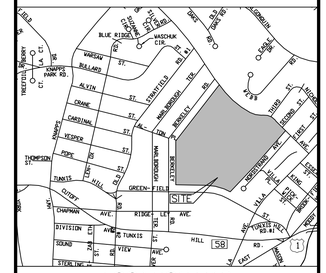
1. COURT CROSS SECTIONS ARE REPRESENTATIVE ONLY, REFER TO SITE PLAN AND DETAIL SHEETS FOR DESIGN SPECIFICS.
2. RETAINING WALL DESIGN IS THE RESPONSIBILITY OF THE CONTRACTOR.

NW - SE COURT SECTION



NE - SW COURT SECTION





LOCATION MAP
(NTS)

ASSESSORS MAP: #42
PARCEL NUMBER: #48
ZONING DISTRICT: B

APPLICANT:
ANTHONY CALABRESE, DIRECTOR
PARKS & RECREATION DEPARTMENT
TOWN OF FAIRFIELD
75 MILL PLAIN ROAD
FAIRFIELD, CT 06824
203-256-3191

OWNER OF RECORD:
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725 OLD POST ROAD
FAIRFIELD, CT 06824

PROPOSED PICKLEBALL COURTS

REVISION DATE	ISSUE
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HELLO@LANDTECHCONSULT.COM • WWW.LANDTECHCONSULT.COM

PREPARED FOR:

TOWN OF FAIRFIELD

PROJECT LOCATION:

TUNXIS HILL PARK
225 MELVILLE AVENUE
FAIRFIELD, CT

PROJECT TITLE:

SITE IMPROVEMENTS FOR PROPOSED PICKLEBALL COURTS

DRAWING TITLE:

PICKLEBALL COURT CROSS SECTIONS

PROJECT No. 22312-02

DATE:	DESIGNED BY:	CHECKED BY:
3/15/2024	RW	CL

SCALE: 1" = 5'

IN FEET
0 5 10 15

PROJECT STATUS:

CONSTRUCTION DRAWINGS

STATE OF CONNECTICUT
ROY SOUVENIR
27803
LICENSED
PROFESSIONAL ENGINEER

C-1.2

CUT/FILL ANALYSIS

CUT: 660 CY
FILL: 90 CY
NET: 570 CY CUT

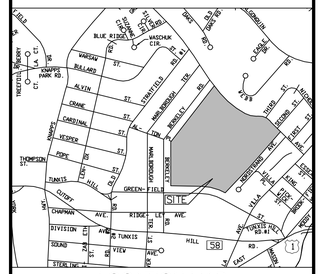
MELVILLE AVENUE

BIT. CONCRETE CURB
BIT. CONCRETE WALK
SNET #4832
FRONTIER #4831
CONCRETE MONUMENT (FOUND)
CONCRETE STRUCTURE
WOOD FENCE (TYP.)
PLAYGROUND
APPROXIMATE LOCATION OF EXISTING SANITARY SEWER FORCE MAIN(VERIFY LOCATION IN FIELD)
RAILROAD TIES
EXISTING (4) PICKLEBALL COURTS
MATCH EXISTING GRADE +/- 44.00
EXISTING ASPHALT PARKING LOT
RESTROOM BUILDING
BLEACHERS
CHAIN LINK FENCE
COMPACTED GRAVEL PATH
CLUMP OF MAPLES
LEDGE (TYP.)
BRICK PATIO
CONCRETE BLOCK RETAINING WALL
EDGE OF BIT. CONCRETE DRIVEWAY
EDGE OF LAWN

4" PERF. PVC WALL DRAIN (SEE DETAIL)
CONNECT WALL DRAIN TO 8" PVC
TW: 48.0
BW: 44.1
TW: 52.0
BW: 44.6
TW 50.0
BW 44.0
1% MAX SLOPE
0.833% MIN SLOPE
TW: 44.0
BW: 44.0
60 LF OF 2" TRENCH DRAIN
TF: 44.0
(SEE DETAIL)
DTH-1
TW 44.0
BW 44.0
TW: 49.0
BW: 44.6
TW 46.6
BW 44.3
CONNECT WALL DRAIN TO PR. 8" PVC
32 LF 8" PVC PIPE @ S = 0.5% MIN
1300 SF STONE INFILTRATION
BOTTOM OF STONE: 42.67
TOP OF STONE: 43.50
4" PERFORATED PIPE
INV= 42.75
CONNECT TO LEVEL SPREADER
INV= 42.50
40 LF LEVEL SPREADER WITH TREATED WOOD EDGE
LIP= 43.50
(SEE DETAIL)
INSTALL BACKFLOW PREVENTER AT OUTLET
24.5'
45.0'
10.0'

T:\1. ACTIVE PROJECTS\2312-03 TOWN OF FAIRFIELD - 225 MELVILLE AVE. - FAIRFIELD\DRAWINGS\TOWN OF FAIRFIELD - 225 MELVILLE AVENUE - SITE PLAN.DWG

LANDTECH



LOCATION MAP
(NTS)

ASSESSORS MAP: #42
PARCEL NUMBER: #48
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APPLICANT:
ANTHONY CALABRESE, DIRECTOR
PARKS & RECREATION DEPARTMENT
TOWN OF FAIRFIELD
75 MILL PLAIN ROAD
FAIRFIELD, CT 06824
203-256-3191

OWNER OF RECORD:
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725 OLD POST ROAD
FAIRFIELD, CT 06824

PROPOSED PICKLEBALL COURTS

REVISION DATE	ISSUE
3/28/2024	BID ADDENDUM No. 1

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HELLO@LANDTECHCONSULT.COM • WWW.LANDTECHCONSULT.COM

PREPARED FOR:

TOWN OF FAIRFIELD

PROJECT LOCATION:

TUNXIS HILL PARK
225 MELVILLE AVENUE
FAIRFIELD, CT

PROJECT TITLE:

SITE IMPROVEMENTS FOR PROPOSED PICKLEBALL COURTS

DRAWING TITLE:

SITE GRADING & DRAINAGE PLAN

PROJECT No.		
22312-02		
DATE: 3/15/2024	DESIGNED BY: RW	CHECKED BY: CL

SCALE: 1" = 20'

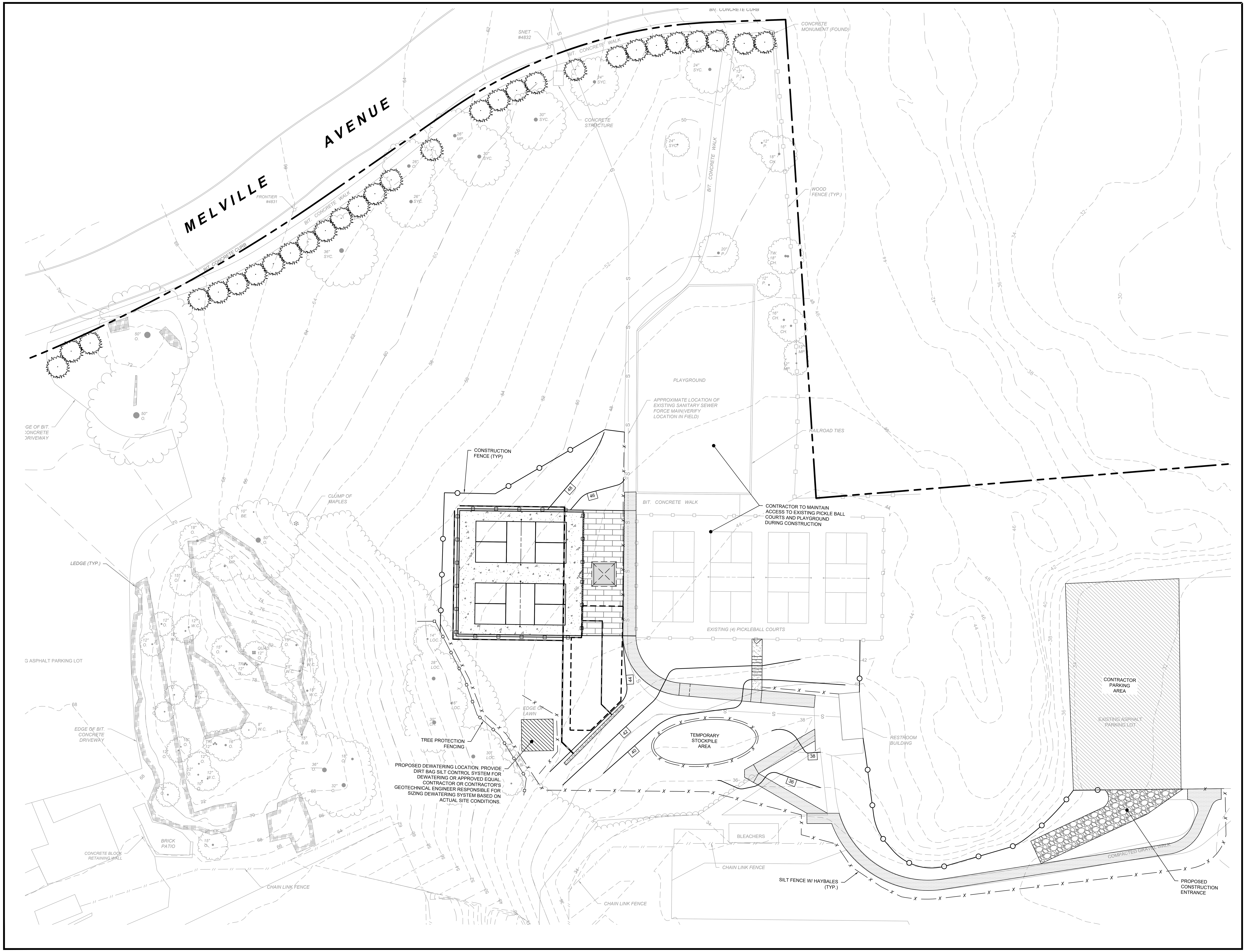
IN FEET
0 20 40 60

PROJECT STATUS:

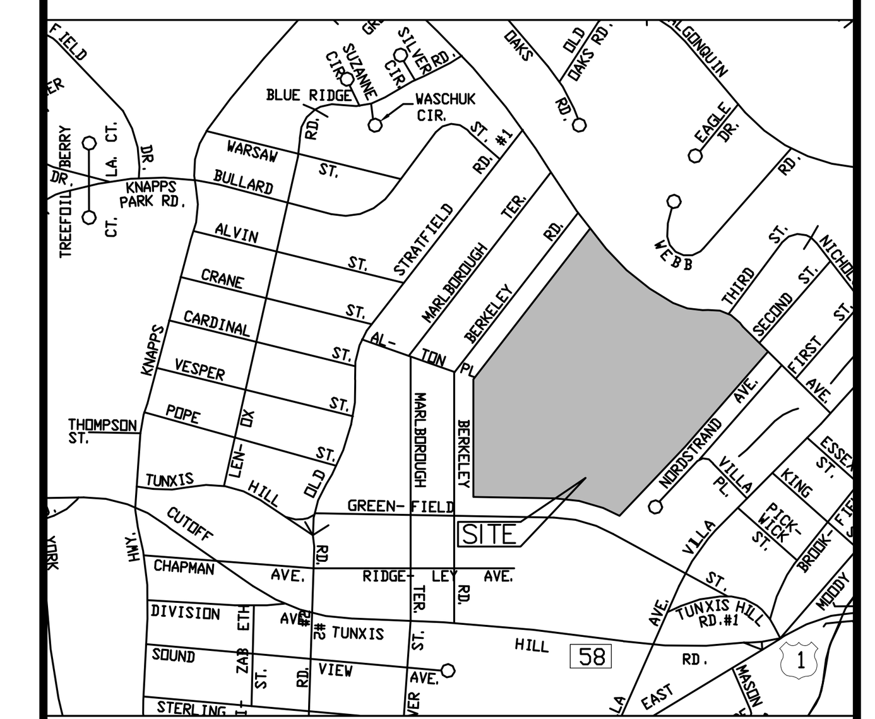
CONSTRUCTION DRAWINGS

STATE OF CONNECTICUT · ROBERT SOUMELIDIS · 27803 · LICENSED · PROFESSIONAL ENGINEER

C-2.0


MELVILLE AVENUE
BIT. CONCRETE CURB
BIT. CONCRETE WALK
CONCRETE MONUMENT (FOUND)
CONCRETE STRUCTURE
WOOD FENCE (TYP.)
PLAYGROUND
APPROXIMATE LOCATION OF EXISTING SANITARY SEWER FORCE MAIN(VERIFY LOCATION IN FIELD)
RAILROAD TIES
CONSTRUCTION FENCE (TYP)
CLUMP OF MAPLES
LEDGE (TYP.)
EDGE OF BIT. CONCRETE DRIVEWAY
CONTRACTOR TO MAINTAIN ACCESS TO EXISTING PICKLE BALL COURTS AND PLAYGROUND DURING CONSTRUCTION
EXISTING (4) PICKLEBALL COURTS
CONTRACTOR PARKING AREA
EXISTING ASPHALT PARKING LOT
TEMPORARY STOCKPILE AREA
RESTROOM BUILDING
EDGE OF LAWN
TREE PROTECTION FENCING
PROPOSED DEWATERING LOCATION. PROVIDE DIRT BAG SILT CONTROL SYSTEM FOR DEWATERING OR APPROVED EQUAL. CONTRACTOR OR CONTRACTOR'S GEOTECHNICAL ENGINEER RESPONSIBLE FOR SIZING DEWATERING SYSTEM BASED ON ACTUAL SITE CONDITIONS.
BLEACHERS
CHAIN LINK FENCE
SILT FENCE W/ HAYBALES (TYP.)
COMPACTED GRAVEL WALK
PROPOSED CONSTRUCTION ENTRANCE
BRICK PATIO
CONCRETE BLOCK RETAINING WALL
ASPHALT PARKING LOT

LANDTECH



LOCATION MAP
(NTS)

ASSESSORS MAP: #42
PARCEL NUMBER: #48
ZONING DISTRICT: B

APPLICANT:
ANTHONY CALABRESE, DIRECTOR
PARKS & RECREATION DEPARTMENT
TOWN OF FAIRFIELD
75 MILL PLAIN ROAD
FAIRFIELD, CT 06824
203-256-3191

OWNER OF RECORD:
TOWN OF FAIRFIELD
725 OLD POST ROAD
FAIRFIELD, CT 06824

PROPOSED PICKLEBALL COURTS

REVISION DATE	ISSUE
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LANDTECH

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518 RIVERSIDE AVENUE • WESTPORT, CT 06880 • 203-454-2110
HELLO@LANDTECHCONSULT.COM • WWW.LANDTECHCONSULT.COM

PREPARED FOR:
TOWN OF FAIRFIELD

PROJECT LOCATION:
TUNXIS HILL PARK
225 MELVILLE AVENUE
FAIRFIELD, CT

PROJECT TITLE:
SITE IMPROVEMENTS FOR PROPOSED PICKLEBALL COURTS

DRAWING TITLE:
SOIL EROSION & SEDIMENT CONTROL PLAN

PROJECT No. 22312-02

DATE:	DESIGNED BY:	CHECKED BY:
3/15/2024	RW	CL

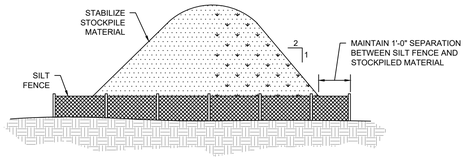
SCALE: 1" = 20'
IN FEET
0 20 40 60

PROJECT STATUS:
CONSTRUCTION DRAWINGS

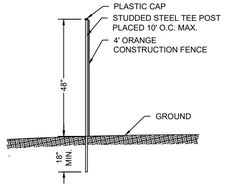
C-3.0

GENERAL EROSION AND SEDIMENT CONTROL NOTES

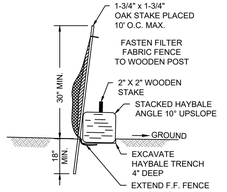
1. LAND DISTURBANCE WILL BE KEPT TO A MINIMUM; RESTABILIZATION WILL BE SCHEDULED AS SOON AS POSSIBLE.
2. SILT FENCE WILL BE INSTALLED ALONG THE TOE OF ALL CRITICAL CUT AND FILL SLOPES, SOIL STOCKPILE AREAS, AND IN THOSE AREAS SHOWN ON THE PLAN.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE STATE OF CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, 2002.
4. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED PRIOR TO LAND DISTURBANCE WHENEVER POSSIBLE.
5. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE PROPERLY MAINTAINED UNTIL STABILIZATION HAS BEEN ACHIEVED.
6. ADDITIONAL CONTROL MEASURES WILL BE INSTALLED DURING THE CONSTRUCTION PERIOD IF NECESSARY OR REQUIRED. A MINIMUM OF 50 FEET OF SILT FENCE SHALL BE STORED AT THE SITE FOR EMERGENCY USE.
7. ANY EXCAVATIONS THAT MUST BE DEWATERED WILL BE PUMPED INTO A FILTER BAG ON-SITE. THE INLETS OF ALL PUMPS ARE TO BE FLOATED A MINIMUM OF 24 INCHES OFF THE BOTTOM OF THE EXCAVATION.
8. WATER AND CALCIUM CHLORIDE SHALL BE APPLIED TO UNPAVED ACCESSWAYS TO PREVENT WIND GENERATED SEDIMENTS AND DUST.
9. DEBRIS AND OTHER WASTES RESULTING FROM EQUIPMENT MAINTENANCE AND CONSTRUCTION ACTIVITIES WILL NOT BE DISCARDED ON-SITE.
10. SEDIMENT REMOVED FROM CONTROL STRUCTURES WILL BE DISPOSED OF IN A MANNER WHICH IS CONSISTENT WITH INTENT OF THE PLAN.
11. SILT FENCES SHALL HAVE SEDIMENT REMOVED WHEN THE DEPTH OF THE SEDIMENT IS EQUAL TO ½ TO ⅔ THE HEIGHT OF THE FENCE. FENCES SHALL BE PROPERLY INSTALLED AND RIPPED FENCE OR BROKEN POSTS REPAIRED AS SOON AS PRACTICAL.
12. ANTI-TRACKING PADS AND GRAVEL CHECK DAMS SHALL BE REPLACED WHEN VOID SPACES ARE FULL OR STRUCTURES ARE BREACHED, AS APPLICABLE.
13. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND THE SOIL SURFACE STABILIZED WHEN CONSTRUCTION IS COMPLETE AND THE SOIL SURFACES ARE PERMANENTLY STABILIZED. STRUCTURAL COMPONENTS SHALL BE CLEANED OF ALL SEDIMENT UPON COMPLETION OF CONSTRUCTION.
14. THE OWNER IS ASSIGNED THE RESPONSIBILITY FOR IMPLEMENTING THIS EROSION AND SEDIMENT CONTROL PLAN. THIS RESPONSIBILITY INCLUDES INSTALLATION AND MAINTENANCE OF CONTROL MEASURES. INFORMING ALL PARTIES ENGAGED ON THE CONSTRUCTION SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, NOTIFYING THE PLANNING AND ZONING COMMISSION OF ANY TRANSFER OF THIS RESPONSIBILITY, AND FOR CONVEYING A COPY OF THE EROSION AND SEDIMENT PLAN IF AND WHEN THE TITLE OF LAND IS TRANSFERRED.



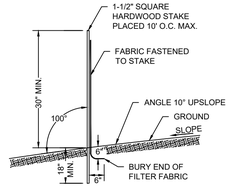
STOCKPILE DETAIL
(NTS)



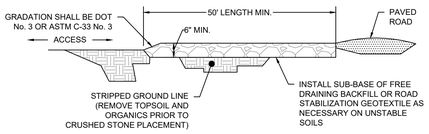
CONSTRUCTION FENCE
(NTS)

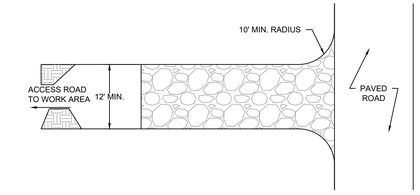


SILT FENCE W/ HAY BALES
(NTS)

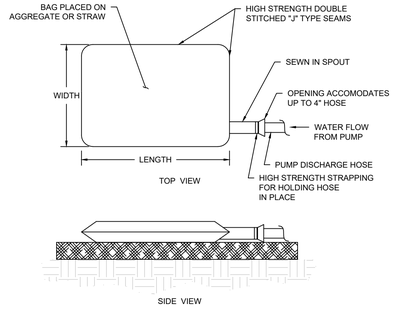


GEOTEXTILE SILT FENCE
(NTS)

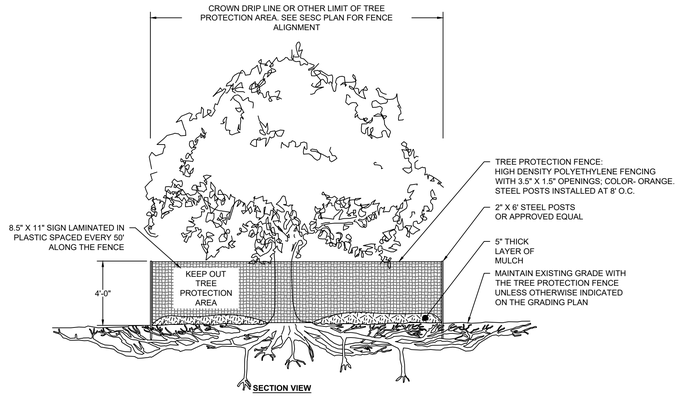




CONSTRUCTION ENTRANCE
(NTS)

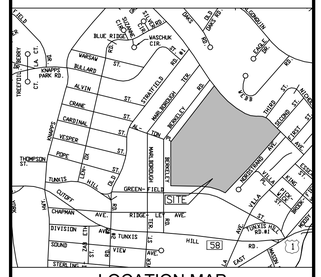


DIRTBAG® PUMPED SILT CONTROL SYSTEM
(NTS)



NOTES:
1. NO PRUNING SHALL BE PERFORMED EXCEPT BY APPROVED ARBORIST.
2. NO EQUIPMENT SHALL OPERATE INSIDE THE PROTECTIVE FENCING INCLUDING DURING FENCE INSTALLATION AND REMOVAL.

TREE PROTECTION DETAIL
(NTS)



LOCATION MAP
(NTS)

ASSESSORS MAP: #42
PARCEL NUMBER: #48
ZONING DISTRICT: B

APPLICANT:
ANTHONY CALABRESE, DIRECTOR
PARKS & RECREATION DEPARTMENT
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203-256-3191

OWNER OF RECORD:
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PROPOSED PICKLEBALL COURTS

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PREPARED FOR:
TOWN OF FAIRFIELD

PROJECT LOCATION:
TUNXIS HILL PARK
225 MELVILLE AVENUE
FAIRFIELD, CT

PROJECT TITLE:
SITE IMPROVEMENTS FOR PROPOSED PICKLEBALL COURTS

DRAWING TITLE:
SOIL EROSION & SEDIMENT CONTROL DETAILS

PROJECT No. 22312-02

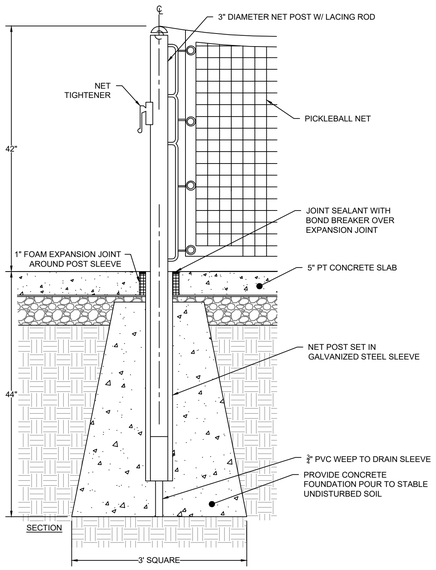
DATE:	DESIGNED BY:	CHECKED BY:
3/15/2024	RW	CL

SCALE: NTS

PROJECT STATUS:
CONSTRUCTION DRAWINGS

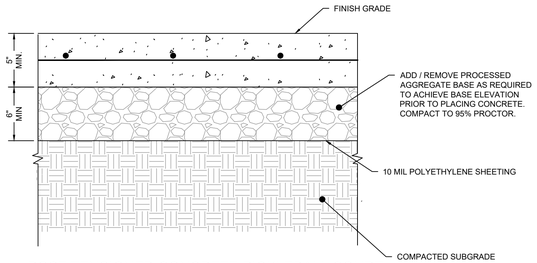
STATE OF CONNECTICUT · SCOTT SOUWEIDIS · 27803 · LICENSED PROFESSIONAL ENGINEER

C-3.1



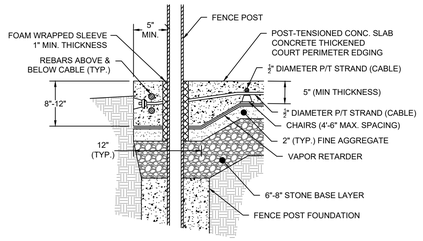
PICKLEBALL NET POST @ PT CONCRETE SLAB

(NTS)



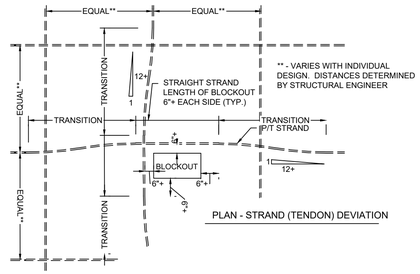
POST TENSIONED CONCRETE PICKLEBALL COURT

(NTS)



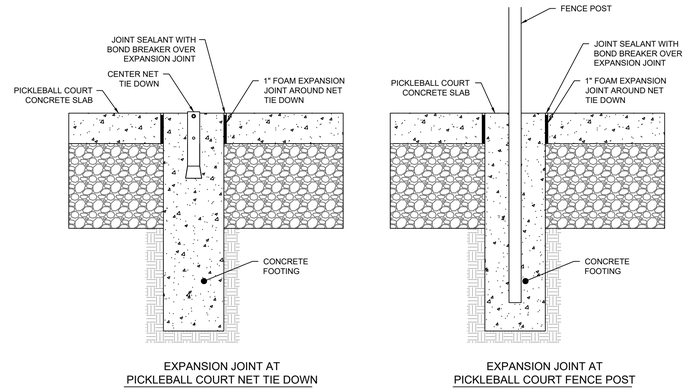
EDGE SECTIONS OF POST-TENSIONED CONCRETE COURT

(NTS)



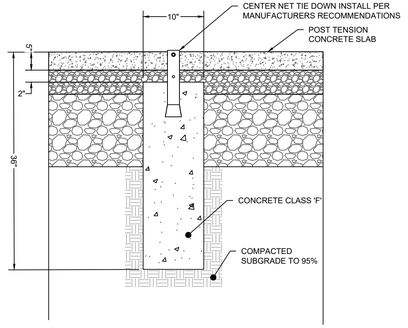
PLAN - STRAND (TENDON) DEVIATION

(NTS)



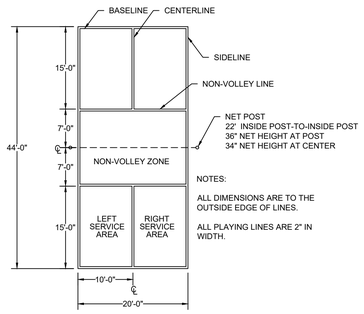
POST TENSIONED CONCRETE EXPANSION JOINTS AT PICKLEBALL COURT

(NTS)



CENTER NET TIE DOWN

(NTS)



LINE TOLERANCE GUIDE:
NET LINE TO OUTSIDE OF NVZ LINE: 7'-0" +/-1/8"
NET LINE TO OUTSIDE OF BASELINE: 22'-0" +/-1/4"
OUTSIDE SIDELINE TO OUTSIDE SIDELINE: 20'-0" +/-1/4"
OUTSIDE SIDELINE TO CENTERLINE: 10'-0" +/-1/8"
DIAGONAL DIMENSION: 48'-4" +/-3/4"

PICKLEBALL COURT STRIPING LAYOUT

(NTS)

ASSESSORS MAP: #42
PARCEL NUMBER: #48
ZONING DISTRICT: B

APPLICANT:
ANTHONY CALABRESE, DIRECTOR
PARKS & RECREATION DEPARTMENT
TOWN OF FAIRFIELD
75 MILL PLAIN ROAD
FAIRFIELD, CT 06824
203-256-3191

OWNER OF RECORD:
TOWN OF FAIRFIELD
725 OLD POST ROAD
FAIRFIELD, CT 06824

PROPOSED PICKLEBALL COURTS

3/28/2024	BID ADDENDUM No. 1
REVISION DATE	ISSUE

LANDTECH
SITE/CIVIL • ENVIRONMENTAL • SURVEYING • PLANNING
518 RIVERSIDE AVENUE • WESTPORT, CT 06880 • 203-454-2110
HELLO@LANDTECHCONSULT.COM • WWW.LANDTECHCONSULT.COM

PREPARED FOR:

TOWN OF FAIRFIELD

PROJECT LOCATION:

TUNXIS HILL PARK
225 MELVILLE AVENUE
FAIRFIELD, CT

PROJECT TITLE:

SITE IMPROVEMENTS FOR PROPOSED PICKLEBALL COURTS

DRAWING TITLE:

CONSTRUCTION DETAILS

PROJECT No. 22312-02

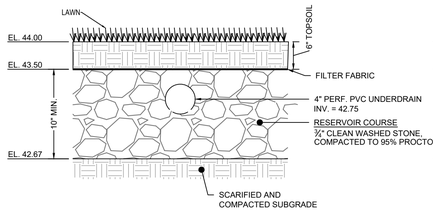
DATE:	DESIGNED BY:	CHECKED BY:
3/15/2024	RW	CL

SCALE: N.T.S.

PROJECT STATUS: CONSTRUCTION DRAWINGS

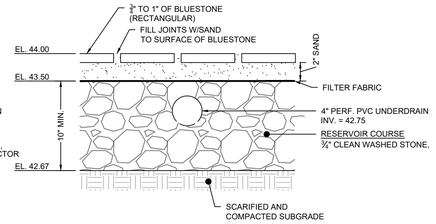
STATE OF CONNECTICUT · ROBERT · SOUMELIDAS · 27803 · LICENSED PROFESSIONAL ENGINEER

C-4.0



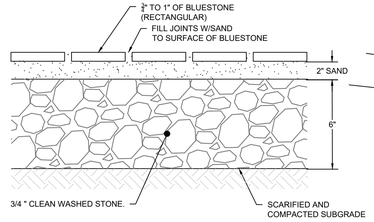
LAWN W/ DRAINAGE RESERVOIR BELOW

(NTS)



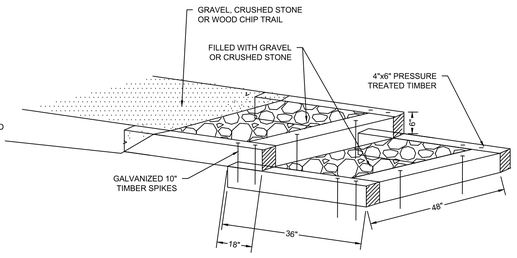
PATIO W/ DRAINAGE RESERVOIR BELOW

(NTS)



PATIO DETAIL

(NTS)



TIMBER STEPS

(NTS)

TEST HOLE DATA

SOIL TESTING CONDUCTED ON July 13, 2023

TEST HOLE 1

0 - 20 in	TOPSOIL	
20 - 28 in	BROWN SANDY LOAM	
28 - 60 in	MOTTLED HARDPAN	
	NO ROOTS	
	MOTTLING @ 28", NO GROUNDWATER, LEDGE @	
	RESTRICTIVE LAYER @ 28"	

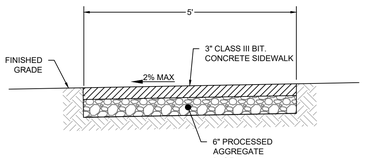
PERCOLATION TEST DATA

Perc Hole 1 Date: 7/14/2023

Depth: 36 in. Presoak: 1 hr

Time	Depth (in.)	Drop (in.)	Interval (min.)	Rate (min./in.)
9:00	5.00			
9:05	10.00	5.00	00:05	1.00
9:10	14.25	4.25	00:05	1.18
9:15	15.25	1.00	00:05	5.00
9:20	16.00	0.75	00:05	6.67
9:25	16.50	0.50	00:05	10.00
9:30	17.00	0.50	00:05	10.00

Final Rate: 1" in 10.00 minutes

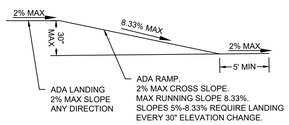


GENERAL NOTES:

1. ALL NEW SIDEWALK SHALL BE ADA COMPLIANT. 2% MAX CROSS SLOPE, 5% MAX RUNNING SLOPE.

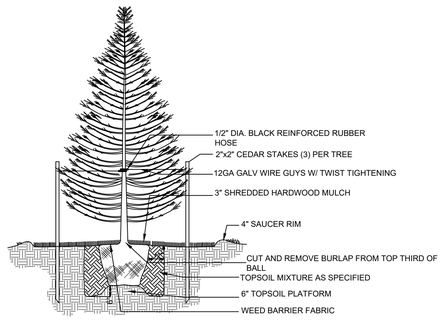
BITUMINOUS CONCRETE SIDEWALK TYPICAL CROSS SECTION

(NTS)



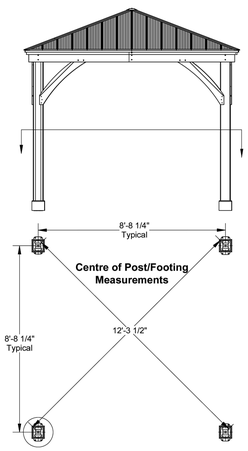
SIDEWALK ADA RAMP GRADING

(NTS)

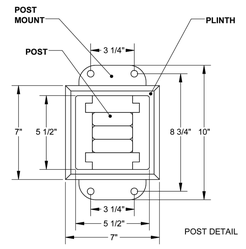


EVERGREEN TREE PLANTING DETAIL

(NTS)

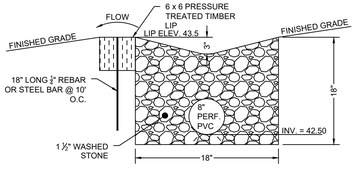


10' x 10' Meridian Gazebo
YM11756



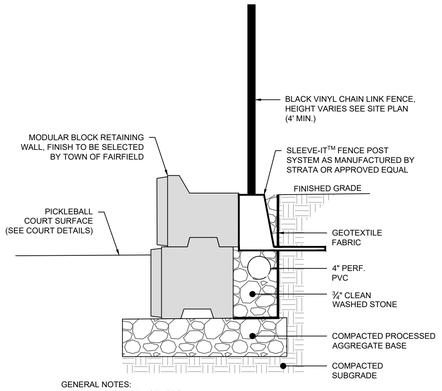
YARDISTRY (MODEL No. YM11756) 10'x10' PAVILLION

(NTS)



LEVEL SPREADER W/ TIMBER LIP

(NTS)

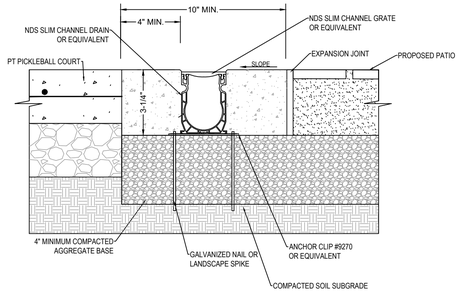


GENERAL NOTES:

1. WALL DESIGN BY OTHERS.
2. FINAL WALL DESIGN PLANS SHALL BE PROVIDED BY A STRUCTURAL ENGINEER LICENSED IN CONNECTICUT.

MODULAR BLOCK WALL TYPICAL SECTION

(NTS)



GENERAL NOTES

1. EXISTING SOILS SHOULD BE EVALUATED TO ENSURE PROPER STRUCTURAL AND PERMEABILITY PROPERTIES.
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
3. DO NOT SCALE THIS DRAWING
4. THIS IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY.
5. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED.

2" DRAIN CHANNEL DETAIL

(NTS)

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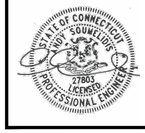

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