Town of BETHANY

Kai Byrd
Superintendent
Bethany Public Schools
44 Peck Road
Bethany, CT 06524
Phone: 203-393-1170

BID NO.	DATE OF BID OPENING	TIME OF BID OPENING	INSURANCE REQUIREMENTS
BPS-25-01	July1, 2025	2:30 P.M., Prevailing Local Time	Liability See General Terms & Conditions

BID ITEM
Renovations at Bethany Community School

AMOUNT OF BID SURETY	PERFORMANCE BOND	CONTRACT PERIOD OR DATE DELIVERY REQUIRED
NONE	100%	From 7/3/2025 thru 8/15/2025

PRE-BID MEETING: LOCATION	PRE-BID: DATE	PRE-BID: TIME
Bethany Community School, Bus Canopy, 44 Peck Rd., Bethany, CT	NONE	N/A

CONTACT PERSON	PHONE	DEPT.
Kai Byrd	(203)393-1170	Board of Education

INVITATION TO BID

Sealed proposals will be received at the Board of Education office, 44 Peck Rd., Bethany, Connecticut, 06524, for furnishing the commodities and/or services herein listed to Board of Education agencies.

AFFIRMATION OF BIDDER

The undersigned bidder affirms and declares:

1) That this contract proposal is executed and signed by said bidder with full knowledge and acceptance of the provisions of the General Terms & Conditions, Bid Specifications and Bid Proposal which are made a part of the contract.

2) That should any part of this proposal be accepted in writing by the Board of Education within seven (7) calendar days from the date of bid opening, said bidder will furnish and deliver the commodities and/or services for which this proposal is made, in the quantities and at the prices bid, and in compliance with the Specifications.

3) That this proposal is covered by surety in the following form as checked. (See Amount of Bid Surety above if required)

☐ Proposal Bond ☐ Cashier's Check ☐ Certified Check Enclosed in the amount of $ _____

PROPOSAL: The undersigned, accepting the conditions set forth herein, hereby agrees in strict accordance therewith, to furnish and deliver the commodities and/or services to the Board of Education agency or agencies named at the prices bid herein.

Type of Business ☐ Proprietorship ☐ Partnership ☐ Sub Chapter S Corp. ☐ Corporation			
Company Name	Doing Business As (Trade Name)		
Business Address	City	State	Zip Code
Signature of Person Authorized to Sign This Bid	Title	Date	
Print Name of Signer	Phone	Fax	

General Instructions:

Proposals are to be:

* **Delivered to the Board of Education Office, 44 Peck Rd., Bethany, Connecticut, 06524**
* ***Submitted in duplicate unless otherwise indicated in the specifications.***
* Submitted using the blank proposal forms furnished.
* Submitted in a sealed opaque envelope clearly marked as a public bid including the bid number and the bidder's name and address.
* Made out and signed in the corporate, or other, name of bidder and signed by an authorized person to execute the bid fully and properly.

Proposals received later than the time and date specified for the bid opening will not be considered.

Amendments to or withdrawal of proposals received later than the time and date set for the opening will not be considered.

To be considered, exceptions to the bid must be made on the exceptions page or a clearly marked attachment.

ELECTRONIC CHANGES TO ANY OF THE BID PAGES INCLUDING THE SPECIFICATIONS AND GENERAL TERMS & CONDITIONS IS NOT ALLOWED AND MAY RESULT IN THE REJECTION OF THE BID.

Bidders or their representatives may be present at the bid opening. Bids will be opened in the Board of Education's Conference Room in the Board of Education Offices immediately after the date and time stated in the bid.

The Bethany Board of Education may require further information and references on any individual or company placing a bid prior to the awarding of a bid.

The Bethany Board of Education reserves the right to amend and/or cancel the bid invitation prior to the time and date of the bid opening.

The Bethany Board of Education reserves the right to correct an award erroneously made as a result of a clerical error.

The Bethany Board of Education reserves the right, *in its sole discretion,* to award the bid to the lowest responsible qualified Bidder, who shall be determined by the Bethany Board of Education. ***To avoid confusion,*** in some cases, the lowest qualified bidder could be the highest bid returned in response to an invitation to bid.

A contract shall not be awarded to any corporation, firm or individual who has an unpaid and overdue debt to the Town of Bethany by nonpayment of taxes, by debt or contract, or who is in default as surety or otherwise by any obligation to the Town or the Bethany Board of Education.

BID PROPOSAL

The undersigned _____, doing business in the City / Town of _____ _____, submits herewith, in conformity with the general terms and conditions, drawings, and specifications for the above mentioned public bid, the following proposal for:

RENOVATIONS AT BETHANY COMMUNITY SCHOOL

Having familiarized themselves with the local conditions affecting the cost of the work, with the Construction Documents and Addenda, if any thereto, as prepared by *SILVER/PETRUCELLI + ASSOCIATES / ARIS LAND STUDIO* and on file in the office of the Board of Education, hereby propose to construct and complete the Project listed, all in accordance therewith for the sum listed below.

BASE BID: Renovations at Bethany Community School **(*TOTAL LUMP SUM*)**

_____

_____Dollars ($_____)

BREAKDOWN OF BASE BID:

1. Mobilization/Demobilization, Site Work and Incidental Construction $_____
2. Removal & Disposal of Existing Pavements, Steps, Railings, Fencing + Trees $_____
3. Grading Operations, Paving + Stairways: Materials & Installation $_____
4. 4' Fencing: Materials & Installation $_____
5. Landscaping, Topsoil + Seeding: Material & Installation $_____

ADD ALTERNATE #1 BID: Installation of North Stair Plantings **(*TOTAL LUMP SUM*)**

_____

_____Dollars ($_____)

UNIT PRICING	
1. Additional Concrete – Per SF	$_____
2. Rock Excavation – Per Cubic Yard (3 CY or more of Contiguous Rock)	$_____

Work can be started within: _____ days after receiving order.

Work can be completed within: _____ days after receiving order.

ADDENDUM RECEIPT

Receipt of the following Addenda to the Contract Documents is acknowledged:

Addendum Number: _____Dated:_____

Addendum Number: _____Dated:_____

Addendum Number: _____Dated:_____

Company Name	Date		Phone
Address	City	State	Zip Code
Name (Print_	Title		
Signature			Date

NOTE

THIS DOCUMENT, IN ORDER TO BE CONSIDERED A VALID BID, MUST BE SIGNED BY A PRINCIPAL, OFFICER OR OWNER OF THE BIDDING FIRM. SUCH SIGNATURE WILL ATTEST TO THE FACT THAT THE TERMS, CONDITIONS AND SPECIFICATIONS OF THIS BID HAVE BEEN READ, UNDERSTOOD AND ACCEPTED BY THE BIDDER.

Part 1: Proposal Instructions

- **Submission Instructions.** Submit two original proposals in a sealed package to this address:

  Kai Byrd, Superintendent of Schools
  44 Peck Road
  Bethany, CT 06524

  Mark the outside of the bid envelopes with the following: PUBLIC BID BPS-25-01.
  The bidder must provide two (2) copies of their bid proposal.
  Bidders must include the attached Bid form for their costs.

- **Deadline.** Proposals must be received at the location stated above no later than **2:00PM. local time on Tuesday, July 1, 2025**. Proposals received after the deadline will not be accepted. There will be a public bid opening at **2:30p.m. on July 1, 2025,** in the Selectman's Conference Room, located at 40 Peck Road Bethany, CT.

- **Proposal Acceptance and Rejection.** The Board of Education of Bethany reserves the right to accept, reject or negotiate any or all bids, to waive or not waive informalities or irregularities in bids or bidding procedures and to accept any bid determined by Bethany to be in the best interests of Bethany, regardless of price.

- **Questions.** If you have any questions about this RFP or the proposal procedures, submit them in writing or by e-mail by the question deadline of **June 26, 2025, at noon**. Questions received after this deadline will not be considered. All questions received before the deadline will be answered in writing and posted on the Bethany's website www.bethany-ct.com

  Direct questions about RFP to the following person (electronically only):
  Kai Byrd, Supertendent
  44 Peck Road
  Bethany, CT 06524
  Tel: (203) 393-1170
  Email: kbyrd@bethany-ed.org

Part 2: Scope of Work
SEE APPENDIX A – CONTRACT SPECIFICATIONS.
SEE APPENDIX B – CONTRACT DRAWINGS.

Part 3: Cost Proposals

To be considered, Proposers must submit a complete cost proposal response to this RFP, using the Bid Response Form. The cost proposal must be signed by an official authorized to bind the vendor to their provisions. The cost proposal must include a statement from the vendor as to the period during which its proposal will remain in effect. This period must be at least 90 days from the due date of submission of the cost proposal.

Vendors must respond to this RFP using the format provided by the Bethany Board of Education . Failure to conform to the specifications will be considered non-responsive and may result in disqualification.

Part 4: Contract Costs

Contract negotiations will be undertaken with the Proposer whose proposal shows them to be the most qualified, responsible and capable of implementing the project at a reasonable cost. The contract agreement that may be entered into will be that which is most advantageous to Bethany and will not necessarily be based solely on cost.

Part 5: Relevant Bethany Compliance with Existing Laws

It is the policy of the Board of Education to provide fair and reasonable opportunities for participation. During the performance of the agreement, the successful Vendor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, ancestry, handicap, age, political belief or place of birth. The Vendor also agrees to comply with all applicable federal, state, and local laws in the conduct of work.

Part 6: Performance, Labor and Material Bond / Bid Bond

Performance, Labor, and Material Bond

To ensure the faithful execution of the contract, according to its provisions, the bidder awarded the contract will be required to provide at his own expense, to the Bethany Board of Education, a Performance Bond for the full amount of the contract and furnish a Labor and Material Bond. The bond must be written by a company licensed to write business in the State of Connecticut and shall be furnished prior to the issuance of a Contract or a Purchase Order.

Bonding:

A 100% Performance Bond must be submitted by the successful contractor.

A 100% Labor and Material Payment Bond must be submitted by the successful contractor.

Part 7: Insurance/Indemnification

The Contractor must maintain during the term of the contract the following insurance coverage, at a minimum:

Commercial General Liability Insurance in the amount of $1,000,000.00 per occurrence for property damage and bodily injury, with a $1,000,000.00 aggregate.

Worker's Disability Compensation Insurance including employer's liability coverage, in accordance with applicable statutes of the State of Connecticut.

Motor Vehicle Liability Insurance, including Connecticut no-fault coverage.

Any other Insurance that may be needed by the Contractor in order to fulfill contractual obligations.

The Bethany Board of Education shall be named as additional insured on all provided

Contractor insurance policies.

The Contractor shall indemnify, defend and hold harmless the Board of Education, its boards, commissioners, officers, employees and agents against all claims of loss, damage and/or injury arising out of the performance of services or that may be sustained in or upon Bethany Board of Education premises from any actions or omissions by the Contractor. Such indemnification shall survive the termination of this Agreement.

GENERAL TERMS AND CONDITIONS

All bids are subject to the General Terms and Conditions, Bid Specifications and Contract Proposal as provided.

Price: **Bid prices will include delivery, F.O.B. destination, without extra compensation.**

Taxes: The Bethany Board of Education is exempt from the payment of the Excise Taxes imposed by the Federal Government, and the Sales and Use Tax of the State of Connecticut. Such taxes should not be included in the bid price. Exemption certificates will be furnished to the successful bidder.

Award: The Board of Education reserves the right to make an award which, in his judgment and recommendation from the department, following bid evaluations; best meets the specifications and is deemed in the best interest of the Bethany Board of Education. The Board of Education reserves the right to increase or decrease all quantities indicated in this bid.

The Board of Education further reserves the right to reject any or all bids, in whole or in part; to award any item, group of items or total bid unless otherwise specified by the bidder, and to waive informality or technical defects, if, in his judgment, the best interests of the Bethany Board of Education will be so served.

Price Discrepancies:

In the event there is a discrepancy between the unit price and extended price the unit price will prevail.

In the event there is a discrepancy between the written price and numeric price the written price will prevail.

Multiple Year Bid Pricing:

For multiple year bids, the bid price for each successive year is to be greater than or equal to the preceding year. Front loaded bids may be rejected.

Additional Departments:

The quoted prices will be made available to any Board of Education department or agency wishing to utilize the vendor's service.

Permits:

It is the responsibility of the successful bidder to obtain all Federal, State, and local pe1mits when needed. If the permit is for a bid specific project, all fees imposed by the Board of Education for permits issued by the Board of Education will be waived. All State or Federal permitting fees to be collected by the Town of Bethany will not be waived.

Hold Harmless & Indemnification Agreement:

The bidder assumes full responsibility for its negligent acts, errors or omissions and agrees to hold harmless and indemnify the Board of Education, its agents, and servants, from and against any and all claims, suits, damages, costs, losses and expenses resulting from such negligent acts, errors or omissions while conducting activities associated with this bid.

Anti-Trust Claim Assignment Clause:

The contractor or subcontractor offers and agrees to assign to the Board of Education all right, title and interest in all causes of action it may have under Section 4 of the Clayton Act, 15 U.S.C. Section 15, or under Chapter 624 of the General Statutes of Connecticut, arising out of the purchase of services, property or intangibles of any kind pursuant to a public purchase contract or subcontract. This assignment shall be made and become effective at the time the Board of Education awards or accepts such contract, without further acknowledgement by the parties.

Non-Collusive Bid Statement

The bidder, being fully informed regarding the accuracy of the statements made herein, certifies that:

a. The bid has been arrived at by the bidder independently and has been submitted without collusion with, and without any agreement, understanding, or planned common course of action with, any other vendor of materials, supplies, equipment, or services described in the invitation to bid, designed to limit independent bidding or competition, and,

b. The contents of the bid have not been communicated by the bidder or its employees or agents to any person not an employee or agent of the bidder or its surety on any bond furnished with the bid and will not be communicated to any such person prior to the official opening of the bid.

The bidder further certifies that this statement is executed for the purpose of inducing the Board of Education to consider the bid and make an award in accordance therewith.

Non-Discrimination Clause:

Pursuant to Section 4a-60 and 4a-60a of the Connecticut General Statutes as amended by Public Act 07-142 and 07-245, the bidder agrees and warrants that he or his subcontractors will in the performance of the contract not discriminate or permit discrimination against any person or group of people on the grounds of race, color, religious creed, age, marital status, civil union, national origin, ancestry, sex, sexual orientation, mental retardation, including physical disability unless it is shown by the contactor that the physical disability prevents performance of the work. In addition, the contractor agrees to comply with all other provisions of the aforementioned statutes.

Prior to entering into a contract and the issuance of a purchase order, the bidder shall provide to the Board of Education documentation such as a company or corporate policy adopted by the governing body that supports the nondiscrimination agreement and warranty as stated above.

The Contractor further agrees that neither he nor his subcontractors will discharge, expel, or otherwise discriminate against any person because he has opposed any unfair employment practice or because he has filed a complaint or testified or assisted in any proceeding under Section 31-127 of the Connecticut General Statutes. The advertisement of employment opportunities will be carried out in such a manner as not to restrict or discriminate against individuals because of their race, color, religious creed, age, sex, national origin or ancestry, except in the case of a bona fide occupational qualification or need.

Safety Standards:

All contractors and their employees, agents and subcontractors are required to comply with all EPA, NFPA and OSHA safety standards at all times while working on site. The Contractor and employees, agents and subcontractors found to be in non-compliance may be removed from the work site, as well as subject to forfeiture of payment and/or contract termination. The Board of Education reserves the right to inspect the work site at any time for safety compliance. The Board of Education may require the contractor as well as any agents and subcontractors to provide a copy of their OSHA 300 log for the three previous years for review.

Debarment:

The Board of Education reviews any bid being considered to assure that neither the contractor nor any subcontractor being utilized is subject to state or federal debarment based on published debarment lists. Persons or firms currently debarred under the Federal Davis Bacon Act that are included on the State Debarment List pursuant to Connecticut General Statutes, Section 31-53a, as amended, shall not be awarded a contract. No contract shall be awarded to any firm, corporation, partnership, or association in which such persons or firms have an interest until the expiration date listed has passed.

Performance, Labor, and Material Bond (Not Applicable):

To ensure the faithful execution of the contract, according to its provisions, the bidder awarded the contract will be required to provide at his own expense, to the Board of Education, a Performance Bond for the full amount of the contract and also furnish a Labor and Material Bond. The bond must be written by a company licensed to write business in the State of Connecticut and shall be furnished prior to the issuance of a Contract or a Purchase Order.

Bid Bond (Not Applicable):

A Certified Check, Cashier's Check or Bid Bond in the amount stated on the contract proposal, made payable to the "Bethany Board of Education", must be submitted with each bid, as a guarantee that in case the contract is awarded, the bidder will execute such contract and furnish satisfactory Performance and Labor and Material Bond if required. Unsuccessful bidders shall be entitled to return of surety where the Agent has required bid deposits. A successful bidder shall forfeit any surety required by the Agent upon failure on his part to enter into a contract within ten (10) days after being notified of the award.

Toxic Substances:

In accordance with Section 31-40M of the General Statutes of Connecticut, any person who supplies any toxic substances as defined in 31-40J shall provide the following information:

a. The generic or basic chemical name of the toxic substance.
b. The level at which exposure to the substance is determined to be hazardous, if known.
c. The acute and chronic effects of exposure of hazardous levels.
d. The symptoms of such effects.
e. The appropriate emergency treatment.
f. Proper conditions for safe use and exposure to such toxic substances.
g. Procedures for cleanup of leaks and spills of such toxic substances.
h. A label on each container of any such substance which states, in a clearly legible and conspicuous form, that a toxic substance is contained therein.

This information should be disclosed at the time of the bid opening and chemical Safety Data Sheets **(S.D.S.)** sheets will also be required if the products meet the toxic substance criteria.

Training:

Pursuant to Connecticut General Statutes, Section 31-536 contractors must furnish proof to the Labor Commission that all employees performing manual labor on public building projects have completed a course in construction safety. The statute applies to all public building projects where state funds are involved, and the total construction cost is $100,000 or more.

Payment Terms:

Payment terms will be considered in an award under the following conditions:

A) Preferred Payment Terms:

Any discount effective either for 30 days or based on "10/EOM" (10 days after the end of the month, e.g., 2%/30 days or 2/10 EOM). The minimum payment term is 20 days from receipt of invoice. Shorter payment terms or the C.O.D will not be considered unless stated in the bid.

B) Secondary Payment Terms:

Any discount effective for 20 days, e.g., 2%/20 days.

If bids are tied, the longer payment period will be considered the lower bid. For example, thirty days terms are better than twenty days terms, providing the same percentages apply (such as 1% or 2%).

C) Short Period Payment Terms:

Payment terms of less than 20 days, even with a discount, are not considered comparable to longer period payment terms due to the special handling of the payment required in such short check-processing period. Such terms will not be considered in an award except in the case of a tie bid.

It shall be understood that the cash discount period will be from receipt of invoice and not from the date of the invoice.

Liability Insurance (Applicable):

The General Terms and Conditions require the bidder awarded the contract to maintain in force during the performance of the work policies of workers compensation insurance, employers' liability, bodily injury liability and property damage insurance covering the operations of the contractor and the use of all motor vehicles employed by the contractor. A certificate of insurance evidencing the fact that the contractor has secured the required insurance shall be filed with the Bethany Board of Education at the time of the execution of this contract. It **is further required that the Bethany Board of Education be named as an additional insured.** This should be shown under the description of operations portion of the certificate of insurance. All certificates should also indicate a notice of cancellation complying with state statute.

Minimum Requirements for Certificate of Insurance

A. Commercial General Liability
   - General Aggregate: $ 2,000,000.00
   - Product/Completed Operations Aggregate: $ 1,000,000.00
   - Occurrence Aggregate: $ 1,000,000.00

B. Automobile Liability
   - Liability Limit: $ 1,000,000.00

C. Excess (Umbrella Liability) Liability
   - The requirement that an umbrella policy be provided will depend on a case-by-case evaluation. Your exposure to catastrophic loss arising from the work or service being performed will determine the limit required.

D. Workers Compensation & Employers Liability
   - Per Connecticut Statutes

Stipulations:

A contract issued as the result of a bid shall not be considered exclusive. The Board of Education reserves the right to contract with other vendors for similar services when deemed appropriate.

The Board of Education maintains the right to withhold payment for unsatisfactory materials and/or workmanship until such time that the defect is corrected. If the defect is not satisfactorily repaired within 60 days, the Board of Education may elect to have the repair made by an alternate vendor and subtract the cost from the Contractor's invoice. The Board of Education also reserves the right to deduct from the vendor's billing any costs incurred as a result of inferior or unsatisfactory materials and/or workmanship.

The Board of Education reserves the right to cancel the contract at any time with no cost to the Board of Education. Any violations of the contract specifications shall be deemed to be justification to cancel the contract. Should it become necessary for the Board of Education to write a letter notifying the contractor of unsatisfactory work, it will become the first step in terminating the contract for cause. If it is necessary to repeat this procedure, the third letter will constitute notice of te1mination of the contract for cause. The Board of Education's decision shall be final and without recourse or cost to the Board of Education. Furthermore, the Board of Education reserves the right to deduct from the vendor's invoices any costs incurred due to the cancellation of a contract for cause. If the cancellation is for budgetary considerations or is based upon the discretionary right of the Board of Education, then the cancellation shall be upon thirty (30) days written notice.

The Board of Education reserves the right not to award the continuation of a multiple-year bid. The award of each year's contract is contingent upon adoption and approval of budgetary funds for this purpose.

State Set-Aside Program (Not Applicable)

If this project is subject to the State set-aside program, it is the contractor's responsibility to contact CHRO and to comply with all statutory requirements.

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 (25%) percent of the state-funded portion of the contract for award to subcontractors holding current certification from the Connecticut Department of Administrative Services ("DAS") under the provisions of CONN. GEN. STAT.§ 4a-60g, as amended. (25% of the work with DAS certified Small and Minority owned businesses and 25% of that work with DAS certified Minority, Women and/or disabled owned businesses.) The contractor must demonstrate good faith in making an effort to meet the 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 http://www.ct.gov/opm/cwp/view.asp

APPENDIX A

CONTRACT SPECIFICATIONS

SECTION 00 01 10

Bethany Community School Improvements

Section 00 01 10	Table of Contents
Section 00 01 15	List of Drawings
Section 01 11 00	Summary of Work
Section 01 20 10	Payment Items
Section 01 23 00	Alternates
Section 05 52 14	Exterior Metal Handrails
Section 31 10 01	Site Preparation
Section 31 10 10	Site Clearing
Section 31 20 00	Earth Moving
Section 32 13 13	Site Concrete
Section 32 31 14	Chain Link Fencing and Gates
Section 32 92 19	Seeding
Section 32 93 43	Plantings

END OF SECTION

SECTION 00 01 15

L-1	NOTES + MISCELLANEOUS DETAILS
L-2	NORTH STAIR IMPROVEMENTS
L-3	MISCELLANEOUS DETAILS
L-4	PLANTING PLAN (ADD-ALTERNATES #1)

END OF SECTION

SECTION 01 11 00

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Contract Documents and general provisions of the Contract, including general and Supplementary Conditions and other Technical specifications, apply to this section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project is entitled, "Renovations at Bethany Community School". The existing facility, as shown on the Contract Drawings, shall have existing fencing and pavement removed, earthwork for modified grades, new pavements, fencing, and plantings. The work involves mobilization and establishing temporary facilities, preparation of the site, establishing sediment and erosion controls, removing pavements, stripping of topsoil, preparation of the subgrade, installation of concrete curbing, installation of granular base, installation of concrete walks and stairways with railings, installation of fencing, fine grading, plantings and seeding for site stabilization.

B. The CONTRACTOR shall include in his bid, all items required in order to carry out the intent of the Work as described, shown, and implied in the Contract Documents. This shall include, but is not limited to, traffic controls, noise controls, sediment and erosion controls, water/stormwater management measures, and health and safety measures.

C. It shall be the CONTRACTOR'S responsibility upon discovery to immediately notify the OWNER in writing, of errors, omissions, discrepancies, and instances of non-compliance with applicable codes and regulations within the documents. Any additional costs arising from the CONTRACTOR'S failure to provide such notification shall be borne by the CONTRACTOR.

1.3 WORK SEQUENCE

GENERAL NOTE: The overall anticipated order of construction activities is given below. The list of activities is not intended to be a critical path, nor be inclusive of all required activities.

A. Prior to mobilization, the CONTRACTOR shall provide OWNER with all required preliminary submittals, including laboratory analytical data for materials and soils to be brought onsite for construction.

B. The CONTRACTOR shall mobilize all equipment, labor, tools, materials, and incidentals to the site. Temporary facilities shall include sanitary facilities, materials, equipment, and security fencing as required.

C. The CONTRACTOR shall prepare this site for construction by installing applicable sediment and erosion controls, as shown on the Contract Drawings and referenced in the Contract Documents.

D. The CONTRACTOR shall perform clearing, grubbing, stripping, and chipping, as described in applicable portions of the Contract Drawings.

E. The CONTRACTOR shall perform demolition and abandonment activities, as required.

F. The CONTRACTOR shall complete the subgrade preparation.

G. The CONTRACTOR shall furnish, place, and compact aggregates.

H. The CONTRACTOR shall install paving and specified site improvements, including concrete curbs and asphalt pavements and site stabilization.

I. The CONTRACTOR shall complete final site cleanup and restoration activities.

1.4 MISCELLANEOUS PROVISIONS

A. Examination of the Site:
   1. It is not the intent of the Contract Documents to show all existing conditions. All CONTRACTORS are advised to visit the site and become familiar with existing conditions attend the Pre-Bid Conference prior to submitting their Bid proposal.
   2. CONTRACTORS should investigate and satisfy themselves as to the conditions affecting the work, including but not limited to, those bearing upon transportation, handling, and storage of materials, availability of labor, water, electric power, uncertainties of weather, roads or similar physical conditions of the ground, and facilities needed preliminary to and during the prosecution of the work. Any failure by the CONTRACTOR to acquaint himself with the available information shall not relieve him from the responsibility for estimating properly the difficulty and cost of successfully performing the work.

1.5 CONTRACTOR USE OF PREMISES

A. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the work is indicated.
   1. The CONTRACTOR shall confine his operations, including storage of materials, supplies, equipment, and incidentals to the areas specified in the Contract Documents.
   2. Existing public access roads, drives, walks, and parking areas are to be kept free and clear at all times. Only designated areas shall be used for parking and storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
   3. The CONTRACTOR shall be responsible for keeping the work area clean and orderly.
   4. CONTRACTOR'S daily access to the site shall be as indicated on the Contract Documents. Parking for the CONTRACTOR'S employees shall be limited to an area designed by the OWNER and the CONTRACTOR may be required to provide identification stickers for all vehicles.
   5. Special precautions shall be taken to protect all drainage systems near the work area. Prevent any and all sediment, debris, or other materials from getting into these systems. Should any sediment, debris, or other materials get into these systems, or if any damage occurs to them, the CONTRACTOR shall immediately contact the OWNER. The CONTRACTOR shall be fully responsible for all costs associated with additional cleaning and repairs caused by neglecting to protect the drainage systems.
   6. No signs, other than those approved by the OWNER, shall be visible on the premises.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

Not used

END OF SECTION

SECTION 01 20 10

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications Sections apply to this Section.

1.2 SUMMARY

A. This section includes measurement and payment paragraphs for the following:

1. Payment items (lump sum and unit price) for the final closure construction.

2. Payment items – supplementary bid items for work above and beyond as identified in contract plans.

3, Bidders must submit a complete bid.

a. Bidders may be disqualified for submitting more than one proposal in accordance with Instructions to Bidders.

4. Successful Bids will include the lowest responsible, responsive bidder.

5. The Owner also reserves the right to reject all Bids.

1.3 DEFINITIONS

A. Approximate Quantities: Quantities for Contract Unit Price payment items provided for Contractor's information only. No guarantees are made as to the quantities of the listed elements.

B. Bid: The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

C. Payment Items: The Owner's distribution of the Contract Sum for each Bid through listed work items.

1. Each payment item description includes an anticipated scope of services. However, not all materials, labor, equipment, or services required to complete the Work are guaranteed to be listed or specified.

2. Include costs associated with items of work required to complete the defined scope of services within the appropriately specified payment item.

3. Payment items in the Contractor's bid shall include all necessary labor, equipment, tools, material, plus cost for delivery, installation, applicable taxes, overhead, and profit.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 BASE BID PAYMENT ITEMS

A. Payment Item No. 1 – Mobilization/Demobilization, Site Work and Incidental Construction

1. Work associated with this item will be paid for at the Contract Lump Sum price for site mobilization and demobilization; insurance and bonds; administrative and general conditions and general requirements; temporary security fencing; temporary facilities; field surveys including progress surveys, as-built survey, and other survey services as required during the course of the project; erosion and sediment control and stormwater management not covered in other bid items; site preparation, and incidental materials, equipment, tools and labor not covered by other bid items required to complete the Work.

B. Payment Item No. 2 – Removal and Disposal of Existing Pavements, Steps, Railings, Fencing, and Trees.

1. Work associated with this item will be paid for at the Contract Lump Sum price for removal, disposal and where noted, including fencing, pavement, steps and railing, tree protection and pruning, and incidental materials, equipment, tools and labor not covered by other bid items required to complete the Work.

C. Payment Item No. 3 – Grading Operations, Paving and Stairways: Material + Installation

1. Work associated with this item will be paid for at the Contract Lump Sum price includes stripping and storage of topsoil, excavation, grading operations, preparation of subgrade, formwork, base course, concrete pavement and curbs, stairways and railings, disposal of surplus material, supplying and installing erosion control fabrics, and incidental materials, equipment, tools and labor not covered by other bid items required to complete the Work.

D. Payment Item No. 4 – 4’ Fencing

1. Work associated with this item will be paid for at the Contract Lump Sum price includes purchase, supplying and installing 4’ Chain Link Fence and Gates, including excavation, footings, fencing, mesh, asphalt pavement mowing strip, as shown on the Contract Drawings and described in Contract Specifications and any other applicable portions of the Contract Documents. Incidental materials, equipment, tools, and labor not covered by other bid items but required to complete the Work are included in this Item.

E. Payment Item No. 5 – Landscaping, Topsoil, Seed.

1. Work associated with this item will be paid for at the Contract Lump Sum price includes purchasing, supplying, placing / installing, and maintaining topsoil, turf seed, temporary fencing and signage and incidental materials, equipment, tools and labor not covered by other bid items required to complete the Work.

3.2 ADD-ALTERNATE BID PAYMENT ITEMS

A. ADD Alternate No. 1 – Installation of North Stair Plantings

1. Work associated with this item will be paid for at the Contract Lump Sum price includes purchase, supplying and installing Plant material per the NORTH STAIR PLANTING PLAN, including trees, shrubs, herbaceous plant material and mulch and incidental materials, equipment, tools and labor not covered by other bid items required to complete the Work.

3.3 UNIT BID PAYMENT ITEMS

A. Payment Item 2 – Concrete Pavement

1. The quantity of **CONCRETE PAVEMENT** to be paid for under this item shall be the number of **SQUARE FEET** of Concrete Pavement installed by the Contractor, with all other work including excavation, 6" Base, and Concrete Pavement installed, including all incidental expenses necessary to complete the work in accordance with the plans and specifications, to the satisfaction of the Owner.

C. Payment Item – Rock Excavation

1. The quantity of **ROCK EXCAVATION** to be paid for under this item shall be the number of **CUBIC YARDS** of Rock removed, a minimum volume of 3 cubic yards of rock, removed and excavated by the by the Contractor, with all other work including excavation, and all incidental expenses necessary to complete the work in accordance with the plans and specifications, to the satisfaction of the Owner.

END OF SECTION 01 20 10

01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

A. Identification and description of Alternate Work.

1.2 DESCRIPTION OF REQUIREMENTS

A. "Alternates" are defined as alternate products, materials, equipment, systems, methods, units of work or major elements of the construction, which may, at Owner's option, and under terms established by Instructions to Bidders and in the Contract or Agreement, be selected for the Work in lieu of corresponding requirements of Contract Documents. Alternates may or may not change the scope and general character of the Work substantially. Requirements of this section may be related to "allowances," "unit prices," "change orders," "substitutions," and similar provisions.

B. Refer to the Contract or "Owner-Contractor Agreement," and subsequent modifications thereof, if any, for determination of which of the several scheduled "Alternates" herein have been accepted, and therefore are in full force and effect as though included originally in the contract documents of the base bid.

C. Coordinate related work and modify surrounding work as required to complete the Work, including changes under each alternate, when acceptance is designated in the Owner-Contractor Agreement.

D. Immediately following award of Contract, prepare and distribute to each entity to be involved in performance of the Work, a notification of status of each alternate. Indicate which Alternates have been:

1. Accepted
2. Rejected
3. Deferred for consideration at a later date as indicated. Include full description of modifications to alternates, if any.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS OF ALTERNATES

A. Description for each Alternate is recognized to be abbreviated and incomplete. Each change in execution must be complete for the scope of Work affected. Refer to the Specification Sections and Drawings, for specific requirements of the Work, regardless of whether references are so noted in description of each alternate. Coordinate related work and modify surrounding work as required to properly integrate with the Work of each alternate. It is recognized that descriptions of alternates are primarily scope definitions, and do not necessarily detail the full range of materials and processes needed to complete the work as required.

2.2 DESCRIPTION OF ALTERNATES

A. (ADD) **Alternate Number 1**: Total cost to furnish and install Plant material per the NORTH STAIR PLANTING PLAN, including trees, shrubs, herbaceous plant material and mulch and incidental materials, equipment, tools and labor not covered by other bid items required to complete the Work.

END OF SECTION 01 23 00

SECTION 05 52 14

GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Provide and install Exterior Metal Handrails as shown on the drawings and as specified herein.

1.3 RELATED SECTIONS

A. Section

32 13 13 – Site Concrete

1.4 PERFORMANCE REQUIREMENTS

A. Work under this section shall meet the requirements of the Connecticut State Building Code and the latest ASTM Specifications.

B. General: In engineering handrails to withstand structural loads indicated, determine allowable design working stresses of handrail and railing materials based on the following:

1. Structural Steel: AISC S335, "Specification for Structural Steel Buildings Allowable Stress Design and Plastic Design with Commentary."

C. Structural Performance of Handrails: Provide handrails capable of withstanding the following structural loads without exceeding allowable design working stresses of materials for handrails, anchors, and connections:

1. Handrails: Capable of withstanding the following loads applied as indicated:

a. Concentrated load of 200 lbf (890 N) applied at any point and in any direction.
b. Uniform load of 50 lbf/ft. (730 N/m) applied horizontally and concurrently with uniform load of 100 lbf/ft. (1460 N/m) applied vertically downward.
c. Concentrated and uniform loads above need not be assumed to act concurrently.

D. Thermal Movements: Provide handrails that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

E. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.5 SUBMITTALS

A. Product Data: For the following:

1. Grout, anchoring cement, and paint products.
2. Powder coating finish.

B. Shop Drawings: Show fabrication and installation of handrails. Include detailed plans, elevations, sections, component details, and attachments to other Work.

1. For installed handrails indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Qualification Data: Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.6 QUALITY ASSURANCE

A. 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 handrails that are similar to those indicated for this Project in material, design, and extent.

B. Source Limitations: Obtain each type of handrail and railing through one source from a single manufacturer.

C. Arrange for installation of ornamental metal specified in this Section by the same firm that fabricated it.

D. Welding Standards: Qualify procedures and personnel according to the following:

1. AWS D1.1, "Structural Welding Code--Steel."

E. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.

1.7 STORAGE

A. Store handrails in a dry, well-ventilated, weather tight place.

1.8 PROJECT CONDITIONS

A. Field Measurements: Verify handrail and railing dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating handrails without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.9 COORDINATION

A. Coordinate installation of anchorages for handrails. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.10 SCHEDULING

A. Schedule installation so handrails are mounted only on completed walls and stairs. Do not support temporarily by any means that does not satisfy structural performance requirements.

PART 2 - PRODUCTS

2.1 METALS

A. General: Provide metal free from pitting, seam marks, roller marks, stains, discolorations, and other imperfections where exposed to view on finished units.

B. Steel: Provide steel in the form indicated, complying with the following requirements:

1. Steel Pipe: ASTM A 53; finish, type, and weight class as follows:
   a. Finish: see specification section 09 43 35.
   b. Type F, or Type S, Grade A, standard weight (Schedule 40), unless another grade and weight are required by structural loads.

2.2 WELDING MATERIALS, FASTENERS, AND ANCHORS

A. Welding Electrodes and Filler Metal: Provide type and alloy of filler metal and electrodes as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.

B. Fasteners for Anchoring Handrails to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring handrails to other types of construction indicated and capable of withstanding design loads.

1. For steel handrails, use stainless steel fasteners.

C. Fasteners for Interconnecting Handrail and Railing Components: Use fasteners fabricated from same basic metal as fastened metal, unless otherwise indicated. Do not use metals that are corrosive or incompatible with materials joined.

1. Provide concealed fasteners for interconnecting handrail and railing components and for attaching them to other work, unless otherwise indicated.
2. Provide vandal proof screws for exposed fasteners, unless otherwise indicated.

D. Cast-in-Place and Post Installed Anchors: Anchors of type indicated below, fabricated from corrosion-resistant materials with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

1. Cast-in-place anchors.
2. Expansion anchors.

2.3 GROUT AND ANCHORING CEMENT

A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by fabricator for exterior applications.

2.4 FABRICATION

A. General: Fabricate handrails to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Assemble handrails in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

C. Form changes in direction of railing members as follows:

1. As detailed.

D. Welded Connections: Fabricate handrails for connecting members by welding. Cope components at perpendicular and skew connections to provide close fit, or use fittings designed for this purpose. Weld connections continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove flux immediately.
4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

E. Nonwelded Connections: Fabricate handrails by connecting members with concealed mechanical fasteners and fittings, unless otherwise indicated. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

1. Fabricate splice joints for field connection using an epoxy structural adhesive where this is manufacturer's standard splicing method.

F. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect handrail and railing members to other work, unless otherwise indicated.

G. Provide inserts and other anchorage devices for connecting handrails to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by handrails. Coordinate anchorage devices with supporting structure.

H. For railing posts set in concrete, provide preset sleeves of steel to match railings not less than 6 inches (150 mm) long with inside dimensions not less than 1/2 inch (12 mm) greater than outside dimensions of post, and steel plate forming bottom closure.

I. Shear and punch metals cleanly and accurately. Remove burrs from exposed cut edges.

J. Ease exposed edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.

K. Cut, reinforce, drill, and tap components, as indicated, to receive finish hardware, screws, and similar items.

L. Provide weep holes or another means to drain entrapped water in hollow sections of handrail and railing members that are exposed to exterior or to moisture from condensation or other sources.

M. Fabricate joints that will be exposed to weather in a watertight manner.

N. Close exposed ends of handrail and railing members with prefabricated or fabricated end fittings or as indicated on drawings.

O. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated. Close ends of returns.

2.5 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable

if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Provide exposed fasteners with finish matching appearance, including color and texture, of handrails.

2.6 STEEL FINISHES

A. Galvanized Finish: Hot-dip galvanize items indicated to be galvanized to comply with applicable standards listed below.

B. Galvanizing shall comply with ASTM A123, A153 or A386 as applicable for fabrication and design requirements.

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

D. Items exposed to the exterior and indicated on the drawings shall be hot-dipped galvanized after fabrication. Deltagalv® by Duncan Galvanizing, Everett, MA is specified as a reference standard of quality or approved equal. Deltagalv® is an enhanced hot dip galvanizing process which provides long term corrosion protection combined with an architecturally acceptable substrate for exposed steel. ASTM A l23 design and fabrication requirements shall apply.

E. Prior to galvanizing, the steel shall be immersed in a pre-flux solution of zinc ammonium chloride. The use of the wet kettle process shall be prohibited. Galvanize all ferrous fasteners, clips, sleeves, anchors and accessories in contact with galvanized items. The galvanizing bath shall contain high grade zinc and other earthly materials.

F. All galvanized materials shall be inspected for compliance with these specifications and marked with a stamp indicating the name of the galvanizer, the ASTM Specification and the weight of the zinc coating in ounces per square foot.

G. A notarized statement of compliance with specifications shall be furnished to the Engineer or Landscape Architect by the galvanizer with the initial shipment.

H. Items to be galvanized shall be galvanized after fabrication. Where size of assembly is too large for complete unit galvanizing, these assemblies shall be galvanized prior to fabrication, in as large sections as practical and then only with the written approval of the Engineer or Landscape Architect.

I. Where galvanizing prior to completing fabrication cannot be avoided, joints shall be welded after fabrication, ground smooth and finished with four (4) full coats of California Products Corp. WW Totrust, Sealube ZRC, Zirp by Duncan or equal.

J. Thoroughly protect all non-ferrous items in contact with dissimilar metals, concrete, masonry and mortar with approved bituminous coating on contact surfaces.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fit exposed connections together to form tight, hairline joints.

B. Perform cutting, drilling, and fitting required to install handrails. Set handrails accurately in location, alignment, and elevation; measured from established lines and levels and free from rack.

1. Do not weld, cut, or abrade surfaces of handrail and railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).
3. Align rails so variations from level for horizontal members and from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet (5 mm in 3 m).

C. Adjust handrails before anchoring to ensure matching alignment at abutting joints. Space posts at interval indicated, but not less than that required by structural loads.

D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing handrails and for properly transferring loads to in-place construction.

3.2 RAILING CONNECTIONS

A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of handrails.

B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

C. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches (50 mm) beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches (150 mm) of post.

3.3 ANCHORING POSTS

A. Form or core-drill holes not less than 5 inches (125 mm) deep and 1/2 inch (20 mm) larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with the following anchoring material, mixed and placed to comply with anchoring material manufacturer's written instructions:

1. Nonshrink, nonmetallic grout.

B. Leave anchorage joint exposed; wipe off surplus anchoring material; and leave 1/8-inch (3-mm) build-up, sloped away from post, till flush with edge of hole. No recess shall be left to retain water.

3.4 CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with matching material.

B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint shall be done in accordance with the finish manufacturers recommendations.

3.5 PROTECTION

A. Protect finishes of handrails from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at the time of Substantial Completion.

B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit or provide new units.

END OF SECTION 05 52 14

SECTION 31 10 01

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract including General and Supplementary Conditions, and General Requirements apply to the work specified in this Section.

1.2 SECTION INCLUDES

A. Work Included: Providing all Site Preparation as shown on the Drawings, and as specified, including, but not necessarily limited to the following:

1. Review of existing conditions and subsurface data.
2. Provide and install safety barriers, construction fencing and temporary signage as necessary and as directed by the Owner and Engineer.

1.3 EXISTING CONDITIONS - It shall be the obligation of each bidder to satisfy himself by examination of the site that the existing conditions, existing elevation grades, and existing improvements shown are accurate. No claim for extra compensation for inaccuracies of existing conditions will be allowed.

1.4 ADDITIONAL INFORMATION - Upon award of contract, the Contractor may make their own subsurface and site investigations to substantiate existing subsurface soil conditions.

1.5 JOB CONDITIONS

A. Contact Call-Before-You-Dig services for Connecticut (1.800.922.4455) to locate underground utilities prior to commencing site preparation operations.

B. The Contractor shall perform all work necessary to provide for maintenance and protection of vehicular traffic and pedestrian through traffic along sidewalks during the entire construction period. The Contractor shall coordinate work with the Engineer and the Owner in this regard.

C. No areas under construction shall be left accessible to pedestrians at any time. The Contractor shall take all necessary steps, as requested or approved by the Engineer, to secure the site. When making water, sewer drainage or any other utility connections, the Contractor is responsible for securing work areas that occur outside of the proposed construction fence line for the entire time construction is taking place.

D. For construction access to the site, the Contractor shall use entrances as approved by the Owner for access and egress to the site. All damage to pavement, grounds and trees to remain caused by vehicular access to the site shall be repaired at the Contractor's expense to the satisfaction of the Engineer and the Owner.

E. The Contractor is responsible for protecting survey monuments, benchmarks and property boundary pins within the contract limits shown. The Contractor shall locate, maintain, raise, lower, or remove and replace to suit the new field conditions or if damaged by Contractor's

operations. Town of Bethany requirements and specifications for monument location and installation must be followed.

F. Peripheral areas outside of the limit of work line shall not be disturbed or used for storing or stockpiling materials without the prior written approval of the Owner.

G. Stockpile Areas shall be as shown on the Plans and as approved by the Engineer prior to placement of material stockpiles. Stockpiles shall be maintained in accordance with the 2024 Connecticut Guidelines for Soil Erosion and Sediment Control.

PART 2 PRODUCTS

2.1 TEMPORARY SIGNAGE

A. All safety signs and barricades shall conform to standards specified in the "Manual on Uniform Traffic Control Devices" unless otherwise noted.

PART 3 EXECUTION

3.1 CONSTRUCTION FENCE

A. Review all limits of construction fencing and barriers with the Engineer and Owner prior to installation. No work shall commence until all construction fencing is in place. Fencing shall be provided and maintained as necessary and as directed by the Engineer throughout the duration of the Contract.

B. Install in a manner that will prevent people, dogs, and other animals from easily entering site except by entrance gates.

C. Remove fencing upon completion of the Contract, or as directed.

D. Additional Barricades, Warning Signs, and Lights: Comply with State of CT DOT standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.

1. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch thick exterior plywood.

3.2 PROTECTION AND MAINTENANCE OF TRAFFIC

A. Supply, install, relocate and maintain signs and other approved devices for warning, controlling, routing, directing and detouring traffic as directed by the Engineer and in accordance with the "Manual on Uniform Traffic Control Devices."

B. Provide access for emergency vehicles at all times.

3.3 DEMOLITION REQUIREMENTS

A. Conduct demolition operations in a manner that will prevent damage to adjacent structures, utilities, pavements and other facilities to remain.

B. Cease operations immediately if any damage, settlement or other adverse effect on adjacent structures occurs. Immediately notify the Owner and regulatory authorities. Do not resume operations until conditions are corrected, damage repaired and approval has been received from the Owner.

3.4 FILLING VOIDS

A. Completely fill excavation areas and voids resulting from demolition or removal of structures including tree stumps and root systems, utilities, underground fuel storage tanks, wells and cisterns with suitable material.

B. Areas to be filled shall be free of standing water, frost, frozen, and unsuitable material prior to fill placement.

C. Place and compact fill materials in conformance with the requirements of Section 31 20 00. Fill shall be placed in horizontal layers not exceeding 8-inches in loose depth.

D. Grade filled area surface to match adjacent grades and slope to provide surface drainage.

3.5 REMOVAL AND ABANDONMENT OF UTILITIES

A. All existing structures, utilities, and appurtenances of any kind shall be completely removed within the limits of excavation for the new playground. Protect existing utilities to remain.

B. Outside the limits of excavation for the new playground, all abandoned utilities and utility structures greater than 8 inches in diameter located at least 4 feet below bottom of finished grade shall be sealed with concrete slurry or brick masonry at the limit of excavation. All utilities shall be entirely removed, if they are within 4 feet of finished grade.

C. Manholes and catch basins designated to be abandoned shall have all lines plugged with brick and mortar prior to filling with sand or gravel. The top 4 feet of these structures shall be removed and the bottom slab broken up prior to filling.

D. The Contractor shall remove frames, covers, and grates from manholes, catch basins and gate valves and satisfactorily store and protect them until they are required for reuse in the work. Existing frames, covers and grates judged to be unsuitable for reuse shall be removed from the site and disposed of by the Contractor.

3.6 DISPOSAL OF DEBRIS

A. Remove from the site all materials resulting from demolition operations and all debris resulting from clearing and grubbing operations.

B. No burning of any material will be allowed.

C. Confirm with Engineer items that are to be salvaged. All demolished, excavated and removed materials not scheduled to be salvaged by the Owner for re-use on site or for future projects shall be removed and disposed of off-site legally and promptly.

D. All waste material shall be disposed of legally off site.

END OF SECTION 31 10 01

SECTION 31 10 10

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 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.
6. Temporary erosion- and sedimentation-control measures.

B. Related Sections:

1. Division 01 Section "Temporary Facilities and Controls" for temporary utility services, construction and support facilities, security and protection facilities**.**

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. 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. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches (50 mm) in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.

E. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.

F. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction.

G. 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 disposed of legally.

1.5 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 capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 QUALITY ASSURANCE

A. Pre-installation Conference: Conduct conference as requested by 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.

B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.

1. Do not proceed with work on adjoining property until directed by Architect.

C. Salvagable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises as directed by Owner.

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

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

F. 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.

G. Do not direct vehicle or equipment exhaust towards protection zones.

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

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

PART 2 - PRODUCTS

2.1 MATERIALS – Not Application to this Section.

PART 3 - EXECUTION

3.1 PREPARATION

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

B. Locate and clearly identify trees, shrubs, and other vegetation to remain.

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 erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.

B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

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

D. 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 as directed by Landscape Architect, or Owner.

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 Architect.

3.4 EXISTING UTILITIES

A. 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 Landscape Architect not less than 48 hours 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.
   2. Remove stumps and roots, in their entirety.
   3. Use only hand methods for grubbing within protection zones.
   4. Chip removed tree branches and dispose of off-site.

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 (200 mm), 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 to depth indicated on Drawing (6" minimum) 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 (50 mm) 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 72 inches (1800 mm).
   2. Do not stockpile topsoil within protection zones.
   3. Legally dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
   4. Stockpile surplus topsoil to allow for respreading deeper topsoil.

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 to remain before removing adjacent existing pavement. Saw-cut faces vertically.

2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. 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.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION 31 10 10

SECTION 31 20 00

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. The General Provisions of the Contract, including General and Supplementary Conditions, and Division One General Requirements apply to the work specified in this section.

B. Form 819 shall mean the State of Connecticut, Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, Form 819 or its latest edition and any supplemental specifications.

1.2 SUMMARY

A. This Section includes the following:

1. All earthwork, not included under other sections, required for grading, trenching, paving, curbs, playground construction, and reconstruction of structures, or any other subsurface structures. The Contractor shall place, compact and dispose of excess excavated materials in accordance with the plans, specifications and directions of the Engineer.

2. Unclassified Excavation shall include the removal of existing pavements, curbs, earth, boulders, buried timber, tree stumps, broken concrete pieces, existing foundations (e.g. concrete block), brick and other materials of any nature that may be encountered.

3. The Contractor shall procure and place borrow fill and backfill material in accordance with this specification.

4. The Contractor shall saw cut existing pavements and/or saw cut existing curbs in accordance with the plans, specifications and direction of the Engineer.

5. Classified Excavation shall consist of either “Unsuitable Material” or “Rock Excavation” as defined herein, which shall be paid for on a unit basis as described in the General Conditions.

1.3 DEFINITIONS

A. “Suitable Material” or “Acceptable Material”

1. ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM; free of rock or gravel larger than 6 inches in any dimension, debris, waste, frozen material, vegetation and other deleterious material

2. Any mineral (inorganic) soil, blasted or broken rock and similar materials of natural or man made origin, including mixtures thereof, are considered acceptable materials.

B. “Unacceptable Material” or “Unsuitable Material” - ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH and PT.

C. "Rock Excavation" shall include the excavation, removal and disposal of solid rock, concrete and all boulders three (3) cubic yard or more in volume that require drilling and splitting. Boulders of less than three (3) cubic yard in volume or other materials found in excavations, however stiff, heavy and compact, including ripable rock, which, in the opinion of the Engineer, can be removed without drilling and wedging, shall not be considered as rock excavation. No soft or disintegrated rock, or mortared structures exterior of the lines specific, which is practical to excavate with a pick, or with an excavator with an operating weight of at least 50,000 pounds will be allowed as rock. No rock is payable if the excavator is under 50,000 pounds.

PART 2 PRODUCTS

2.1 MATERIALS

A. Backfill and Borrow Fill Materials: Backfill and Borrow Fill Materials: Fill shall consist of mineral sandy soil, free of organic materials, plastic, metal, wood, loam, trash, wood, snow, ice, frozen soil, clay and other compressible or deleterious materials. Common Fill shall have physical properties such that it may be readily spread and compacted without excessive weaving or instability. Common Fill shall conform to the following gradation.

Sieve (ASTM D422)	Percent Finer by Weight
8-inch **	100
No. 4	20-90
No. 40	10-80
No. 200	0-30

"**" when used in trenches within 2 feet of utilities, or within 2 feet of foundation walls the largest particle dimension shall be 3 inches. The size of the largest particle shall be less than 2/3 of the lift thickness.

B. Subbase: Conform to Form 819, Section M.02.02 - Subbase.

C. Base: Conform to Form 819, Section M.05.01 – Processed Aggregate Base (Broken Stone option).

D. Bedding Material: Sand or sandy soil, all of which passes a 3/8" sieve, and not more than ten percent (10%) passes a No. 200 sieve.

PART 3 EXECUTION

3.1 GENERAL

A. The entire area of work shall be brought to the required lines and grades by excavation and filling. Excavated materials, acceptable in the opinion of the Engineer, shall be used in making embankments and filling the low areas of the work, and at such places as the Engineer may direct.

B. Construct base course to required depths and elevations below all pavements and finish surfaces.

C. Construct bedding course below all drainage and utility structures.

D. Construct acceptable material below all playground areas, lawn and landscaped areas.

3.2 COMPACTION REQUIREMENTS

A. Per ConnDOT Form 819.

3.3 EXCAVATION

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

B. Protect subgrade and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

C. Provide erosion and control measures to prevent erosion or displacement of soils and discharge of soil-bearing water run-off or airborne dust to adjacent properties and watercourses, in accordance with the Sediment and Erosion Control Plan and as directed by the Engineer.

D. Subbase: All soft, boggy, clayey or other objectionable material below the proposed subbase shall be removed, and the area refilled with acceptable material.

E. Boulders: The Contractor shall remove all boulders, stone or pieces of concrete, lumber, iron or other material that project above subgrade. Any stone larger than two (2) cubic feet in volume shall not be placed within two (2) feet of the finished surface.

F. Excavating for Foundations: All excavations shall be cut accurately to required lines and dimensions for work on drawings and shall be large enough to provide adequate clearance for the proper execution of the work.

G. Bottoms of Excavations: The Contractor shall level the bottoms of all excavations, to receive footings or other work supported on soil, accurately, to the lines and levels shown on the plans or as directed by the Engineer.

Where excavation for a foundation has been carried below the indicated level by error on the part of the Contractor, he will be required to fill and compact the space between the incorrect and required depth with concrete at no additional cost to the Owner.

H. Storage and Placement: All those excavated materials which in the opinion of the Engineer are suitable for backfill shall be stored or placed within the limits of the Contract, where directed by the Engineer.

I. Surplus: All surplus materials and materials not suitable for backfill shall be removed from the site and disposed of legally by the Contractor. No additional payment will be made for this, but the cost thereof shall be deemed included in the lump sum bid price.

J. Shoring: Wherever necessary to maintain the banks of excavation in a safe and stable condition, the Contractor shall furnish and install temporary sheet piling or planks, braces and shores of good sound timber of adequate strength, and shall remove such piling or shoring as the foundation work progresses.

Sheeting and bracing of a type approved by the Engineer, shall be installed when the Contractor's employees are required to enter into excavations which exceed four (4) feet in depth.

The foregoing shall include the construction and removal of sheeting and bracing, the excavation and maintenance of temporary ditches, and the furnishing and operation of pumps or other appliances needed to properly drain the work. No direct compensation will be made for this work, but payment therefore shall be deemed included in the price bid.

K. Inspection: When the excavations have been carried to the required depth as shown on the drawings, the Contractor shall do no more work until after inspection by the Engineer, who shall order the foundation or other work to proceed, or further excavation, as the conditions indicate and no foundation or other work shall be done until the excavations have been approved by the Engineer.

L. Bailing and Draining: The Contractor shall furnish all materials, appliances and labor required to keep the site free from water, ice and snow during construction.

M. Utilities and Services: When any sewer, water, gas, electric or other utility service connections are encountered in the excavation operations, the service shall not be interrupted or disturbed by the Contractor unless called for on the plans and/or directed by the Engineer. It is the Contractor's responsibility to detect and protect existing utilities (to remain) from damage during construction. The Contractor shall locate buried utilities, to the best of his ability, using electronic probes, or other methods, prior to the start of excavation. The Contractor shall then proceed cautiously and perform hand excavation, as necessary, to protect the utility as directed by the Engineer, at no extra cost to the Owner. If a utility is inadvertently damaged, it is the Contractor's responsibility to restore that utility to operating condition, equal to that existing prior to damage. The Contractor shall remain at the site with the damaged utility until it has been restored and there is no danger to the public (i.e. exposed live electrical wires, etc.).

Should the Contractor need to cut off utilities or services during the performances of the work, he shall notify the City Department or Utility Company owning or controlling services, to cut off these services.

Any services cut off or interrupted by the Contractor's operations shall be restored at the Contractor's expense.

3.4 FILL

A. Remove all vegetation, topsoil, debris, wet and unsatisfactory soil materials, obstructions, and deleterious materials from the ground surface prior to placing fills.

B. Fill and Compacting shall be carried out as directed by the Engineer, and shall be constructed in successive horizontal layers not over 6 inches in depth. It shall be spread by a "Bulldozer", or other acceptable methods, and shall be thoroughly compacted by rolling with a self-propelling roller weighing not less than ten (10) tons and completed to the satisfaction of the Engineer. In places where the character of the material makes the use of this roller impracticable or where drains or other construction may be damaged a lighter one may be substituted, or the area shall be compacted by vibratory tamping, all with the approval, and to the satisfaction of the Engineer.

C. All hollows and depressions which develop during the process of rolling and compacting shall be filled with acceptable material, and the subgrade shall again be compacted. This process of filling and compacting shall be repeated until no depressions develop.

D. Plow, strip or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing surface.

E. When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface to depth required, pulverize, moisture-condition or aerate soil and recompact to required density.

3.5 BACKFILL

A. After inspection and approval of foundations and other work which is to be covered by backfill, the excavated voids shall be filled with clean excavated material, puddled and rammed solid every 6" of depth.

B. After areas and trenches have been excavated and structures constructed therein, the spaces around and above them shall be carefully backfilled with acceptable material. Backfill shall be placed on both sides of structures to approximately the same elevation at the same time. All backfill shall be thoroughly tamped and rammed in place in layers not over eight (8) inches in depth, using rammers of a weight acceptable to the Engineer. If directed by the Engineer, the backfill shall be thoroughly saturated with water as it is placed.

C. Backfill adjacent to foundation walls shall be pneumatically compacted.

D. Backfilling around masonry manholes and catch basins shall not take place until the mortar has hardened and the possibility of movement is slight. Backfilling shall take place uniformly around all sides of the structure.

E. When sheeting is being withdrawn, all cavities left thereby shall be filled with acceptable material, tamped in place so as to fill all voids thoroughly. Backfill inside of sheeting shall be placed before sheeting is removed.

3.6 UTILITY TRENCHES

A. Trench excavation shall be as described in Form 819, Article 2.86, under the "Drainage Trench Excavation" classifications presented therein.

B. Construction methods shall conform to Articles 2.86.03 and 10.01.03 of Form 819, where applicable.

C. Excavate trenches to uniform widths to provide a working 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.

D. Clearance: 12 inches minimum each side of pipe or conduit.

E. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove stones and sharp objects to avoid point loading.

F. Place and compact bedding material on rock or other unyielding bearing surfaces and to fill unauthorized excavations. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

3.7 SAW CUTTING

A. All work shall be done by competent mechanics in an approved manner to the satisfaction of the Engineer.

B. All saw cutting shall be carried out to the full depth of the pavement, curb or concrete walk to be cut. Saw cutting shall be done to accurate, neat and straight lines marked previous to commencement of work. Saw cutting shall be done with approved power saws specifically designed and manufactured for such a purpose. Compressor, backhoe or spade-cutting of the pavement will not be allowed.

C. Workmen shall wear safety clothing and eye protection while operating saw equipment and shall be thoroughly familiar in the safe operation of the equipment.

3.8 ROCK EXCAVATION

A. Rock excavation shall include the excavation, removal and disposal of solid rock, concrete and all boulders three (3) cubic yard or more in volume that require drilling and splitting. Boulders of less than three (3) cubic yard in volume or other materials found in excavations, however stiff, heavy and compact, including ripable rock, which, in the opinion of the Engineer, can be removed without blasting or drilling and wedging, shall not be considered as rock excavation.

B. All loose, unsound or semidetached rock fragments, as determined by the Engineer, which may be detrimental to the proposed structure or installation shall be removed from the excavation. Excavation beyond the necessary limits, made to remove damaged rock shall be backfilled by the Contractor with compacted gravel fill at no additional cost to the Owner.

D. Where boulders are on the sides of or in the bottom of excavations, they shall be wholly or partially removed at a minimum to the limits as specified and/or as determined by the Engineer. In removing boulders lodged in the sides of the excavations, the Contractor shall not disturb or undermine adjacent pavement or structures. Pavement surfaces damaged beyond reasonable limits as determined by the Engineer, shall be repaired by the Contractor at no additional cost to the Owner. In general, boulders or rock fragments which extend under paved surfaces shall be removed by mechanical splitting.

E. Unauthorized excavations in rock, or excavations made beyond or below the indicated limits shall be refilled and compacted with approved gravel fill at no additional cost to the Owner.

F. Depressions below the required grade resulting from the removal of boulders and rock fragments shall be refilled with compacted gravel fill at no additional cost to the Owner.

G. Rock payment lines are to be measured “in place” and are limited to the following:

1. Two feet outside of concrete work for which forms are required, except footings.

2. In pipe trenches, 6" below invert elevation of pipe and 2 feet wider than the inside diameter of pipe, but not less than 3 feet minimum trench width.

3. Neat outside dimensions of concrete work where no forms are required.

END OF SECTION 31 20 00

SECTION 32 13 13

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. "Form 819" shall mean the State of Connecticut, Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, Form 819-2004 or its latest edition and any supplemental specifications.

1.2 SUMMARY

A. This Section includes specifications for cast-in-place and precast concrete.

1.3 RELATED SECTIONS

A. Section 31 20 00 "Earth Moving"

1.4 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, expansive hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

1.5 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

B. Design Mixes: For concrete pavement mix.

C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials. Contractor shall pay for all testing of concrete materials.

D. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:

1. Cementitious materials and aggregates.

2. Steel reinforcement and reinforcement accessories.

3. Admixtures.

4. Curing compounds.

5. Applied finish materials (i.e., traffic paint).

6. Joint fillers.

1.6 QUALITY ASSURANCE, CAST IN PLACE CONCRETE

A. Materials and methods of construction shall comply with the following standards:

1. American Society for Testing and Materials (ASTM)

2. American Concrete Institute (ACI)

3. State of Connecticut DOT Standard Specifications (DOT Form 819)

B. Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in

construction with a record of successful in-service performance.

C. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer must be certified according to the National Ready Mix Concrete Association's Plant Certification Program.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant and each aggregate from one source. Do not change source of brands of cement, aggregate materials, or batching plant during course of work.

E. ACI Publications: Comply with all ACI requirements unless modified by the requirements of the Contract Documents.

Part 2 – PRODUCTS

2.1 FORMS

A. Conform to Article 8.11.03-3 and 9.21.03-3 of ConnDOT Form 819, latest revision.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.2 REINFORCING MATERIALS:

A. Reinforcing Bars and Tie Bars: ASTM A 615, Grade 60, deformed.

B. Plain, Cold-Drawn Steel Wire: ASTM A 82.

C. Steel Welded Wire Fabric (Sheet): ASTM A 185.

D. Joint Dowel Bars: Plain steel bars, ASTM A 615, Grade 60. Cut bars true to length with ends square and free of burrs.

E. Supports for Reinforcement: Chairs, spacers, dowel bar supports and other devices for spacing, supporting, and fastening reinforcing bars, welded wire fabric, and dowels in place. Use wire bar-type supports complying with CRSI specifications.

1. Use supports with sand plates or horizontal runners where base material will not support chair leg.

F. Bending: All reinforcement shall be bent cold. Only competent mechanics shall be employed for cutting and bending, and proper appliances shall be provided for such work. The reinforcement shall be bent to the shapes shown on the plans. Bends for stirrups and ties shall be made around a pin having a diameter not less than two times the minimum thickness of the bar. Bends for other bars shall be made around a pin having a diameter not less than six times the minimum thickness of the bar, except that for bar larger than one inch the pin shall not be less than eight times the minimum thickness of the bar. Reinforcement shall be formed to the dimensions indicated on the plans before it is embedded in the concrete.

G. Splices: All Splicing shall be as specified in American Concrete Institute (ACI) Building Code.

H. Placing and Fastening: Placing and Fastening shall be as specified in ACI Standards. Before any concrete is placed, all mortar shall be cleaned from the reinforcement. No concrete shall be poured until the Engineer has inspected the placing of the reinforcing metal and permission to place concrete is granted. All concrete placed in violation of this provision shall be rejected and removed.

2.3 CONCRETE MATERIALS

A. General: Use the same brand and type of cementious material from the same manufacturer throughout the Project.

B. Concrete: Conform to the requirements of Form 819-2021, Article M.03.01, as noted on the Plans and ASTM C-94. Batch mixing at project site not acceptable.

C. Compressive strength: Min. 4,000 psi at 28 days unless otherwise noted on the Plans.

D. Entrained air: 5 to 7%.

E. Reactive aggregates and calcium chloride are not allowed.

F. Water: Potable.

2.4 ADMIXTURES

A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cement and to be compatible with other admixtures.

B. Air-Entraining Admixture: ASTM C 260.

C. Water-Reducing Admixture: ASTM C 494, Type A.

D. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.

2.5 CURING MATERIALS

A. Conform to Article 4.01.03, Item F7 “Curing”, Form 819-2021.

2.6 CONCRETE MIXING

A. Ready-Mixed Concrete: Comply with requirements and with ASTM C 94 and ASTM C 1116.

1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

2.7 CONCRETE MIX

A. Prepare design mixes for each type and strength of normal-weight concrete by either laboratory trial batch or field experience methods as specified in ACI 301. For the trial batch method, use a qualified independent testing agency for preparing and reporting proposed mix designs.

B. Proportion mixes to provide normal-weight concrete with the following properties:

1. Compressive Strength (28-Day): Min. 4000 psi or as shown on Plans.

2. Slump Limit at Point of Placement: 2 to 4 inches.

3. Air Entrainment of Between 4-6%. Air entrainment agent shall conform to ASTM C260.

C. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, project conditions, weather, test results, or other circumstances warrant.

2.8 EXPANSIONS JOINTS

A. Premolded joint filler: ASTM D-994, premolded, resilient, non-extruding, joint filler, as distributed by A. H. Harris, New Britain, CT or approved equal.

1. Expansion joint filler shall be preformed bituminous cellular type conforming to the requirements of ASHTO M213.
2. Thickness: as indicated on the drawings.
3. Depth: to match concrete section

B. Joint Sealer (for non-colored concrete): Two component polyurethane elastomeric type complying with FS-TT-S-00227, self-leveling, designed for foot traffic, as manufactured by SIKA, Pecora, or approved equal.

1. Color to match finished/cured concrete. Final color to be approved by Owner.
2. Provide backer rod and primer per manufacturer recommendation.

2.9 RELATED MATERIALS

A. Epoxy Adhesive: ASTM C 881, two-component material suitable for dry or damp surfaces. Provide material type, grade, and class to suit requirements.

B. Products: Subject to compliance with requirements, provide one of the following:

1. Epoxy Adhesive:
   a. Burke Epoxy M.V.; The Burke Co.
   b. Resi-Bond (J-58); Dayton Superior.
   c. Euco Epoxy System #452 or #620; Euclid Chemical Co.
   d. Concresive Standard Liquid; Master Builders, Inc.
   e. Rezi-Weld 1000; W.R. Meadows, Inc.
   f. Sikadur 32 Hi-Mod; Sika Corp.
   g. R-600 Series; Symons Corp.

PART 3 – EXECUTION

3.1 SURFACE PREPARATION

A. Proof-roll prepared subbase surface to check for unstable areas and verify need for additional compaction. Do not begin concrete work until such conditions have been corrected and are ready to receive concrete.

B. Remove loose material from compacted subbase surface and excavations immediately before placing concrete. Comply with Section 312000 “Earth Moving” for construction of base and subbase material.

3.2 FORMS

A. Set, brace, and secure forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so that forms can remain in place at least 72 hours after concrete placement.

B. Check completed formwork and screeds for grade and alignment to following tolerances:

1. Top of Forms: Not more than 1/8 inch in 10 feet.
2. Vertical Face on Longitudinal Axis: Not more than ¼ inch in 10 feet.

C. Clean forms after each use and coat with form release agent as required to ensure separation from concrete without damage.

D. Form recess to receive brick facing masonry in exposed ramp wall as detailed in the Drawings.

3.3 PLACING REINFORCEMENT

A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars" for placing and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.4 JOINTS

A. General: Construct contraction, construction, and isolation joints true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to the centerline, unless indicated otherwise.

1. When joining existing paving, place transverse joints to align with previously placed joints, unless indicated otherwise.

B. Contraction Joints: Provide weakened-plane contraction joints, sectioning concrete into areas as shown on Drawings. Construct contraction joints for a depth equal to at least ¼ of the concrete thickness, as follows:

1. Tooled Joints: Form contraction joints in fresh concrete by grooving and finishing each edge of joint with a radiused jointer tool.

2. Inserts: Form contraction joints by inserting premolded plastic, hardboard, or fiberboard strips into fresh concrete until top surface of strip is flush with paving surface. Radius each joint edge with a jointer tool. Carefully remove strips or caps of two-piece assemblies after concrete has hardened. Clean groove of loose debris.

C. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than 2 hour, unless paving terminates at isolation joints.

1. Provide preformed galvanized steel or plastic keyway-section forms or bulkhead forms with keys, unless indicated otherwise. Embed keys at least 1-1/2 inches into concrete.

2. Continue reinforcement across construction joints unless indicated otherwise. Do not continue reinforcement through sides of strip paving unless indicated.

3. Provide tie bars at sides of paving strips where indicated.

D. Isolation Joints: Form isolation joints of preformed joint filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

1. Locate expansion joints at intervals of 20 feet, unless indicated otherwise.

2. Extend joint fillers full width and depth of joint, not less than 2 inch or more than 1 inch below finished surface where joint sealant is indicated. Place top of joint filler flush with finished concrete surface when no joint sealant is required.

3. Furnish joint fillers in one-piece lengths for full width being placed wherever possible. Where more than one length is required, lace or clip joint filler sections together.

4. Protect top edge of joint filler during concrete placement with a metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

E. Installation of joint fillers and sealants shall conform applicable sections of Form 819.

F. Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt-coat one half of dowel length to prevent concrete bonding to one side of joint.

3.5 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.

B. Remove snow, ice, or frost from subbase surface and reinforcing before placing concrete. Do not place concrete on surfaces that are frozen.

C. Moisten subbase to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are at the required finish elevation and alignment.

D. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

1. When concrete placing is interrupted for more than 2 hour, place a construction joint.

E. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

F. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete complying with ACI 309R.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocating reinforcing, dowels, and joint devices.

G. Screed paved surfaces with a straightedge and strike off. Use bull floats or darbies to form a smooth surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces prior to beginning finishing operations.

H. Place concrete in two operations; strike off initial pour for entire width of placement and to the required depth below finish surface. Lay welded wire fabric or fabricated bar mats immediately in final position. Place top layer of concrete, strike off, and screed.

1. Remove and replace portions of bottom layer of concrete that have been placed more than 15 minutes without being covered by top layer or use bonding agent if acceptable to Engineer.

I. Curbs and Gutters: Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete.

J. Cold-Weather Placement: Comply with provisions of ACI 306R and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.

2. Do not use frozen materials or materials containing ice or snow.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.

K. Hot-Weather Placement: Place concrete complying with ACI 305R and as specified when hot weather conditions exist.

1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F. Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.

3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.6 CONCRETE FINISHING

A. Float Finish: Begin floating when bleed water sheen has disappeared and the concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Finish surfaces to true planes within a tolerance of ¼ inch in 10 feet as determined by a 10-foot-long straightedge placed anywhere on the surface in any direction. Cut down high spots and fill low spots. Refloat surface immediately to a uniform granular texture.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across concrete sidewalk surface perpendicular to line of traffic to provide a uniform fine line texture finish.

B. Final Tooling: Radius: 3/8 inch. Tool edges of paving, curbs, and joints formed in fresh concrete with a jointing tool to the following radius. Repeat tooling of edges and joints after applying surface finishes. Eliminate tool marks on concrete surfaces.

C. Rubbed Finish: Conform to Form 819, Section 6.01.03.

3.7 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with the recommendations of ACI 306R for cold weather protection and ACI 305R for hot weather protection during curing.

B. Evaporation Control: In hot, dry, and windy weather, protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply according to manufacturer's instructions after screeding and bull floating, but before floating.

C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

D. Curing Methods: Cure concrete by curing compound, as follows:

1. Curing Compound: Apply uniformly in continuous operation by power spray or roller

according to manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.8 FIELD QUALITY CONTROL TESTING

A. Employ a qualified independent testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement as directed by the Bethany Board of Education.

B. The Contractor will employ a qualified testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement. Sampling and testing for quality control may include the following:

1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.

   a. Slump: ASTM C 143; one test at point of placement for each compressive-strength test but no less than one test for each day's pour of each type of concrete. Additional tests will be required when concrete consistency changes.

   b. Air Content: ASTM C 231, pressure method; one test for each compressive-strength test but no less than one test for each day's pour of each type of air-entrained concrete.

   c. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each set of compressive-strength specimens.

   d. Compression Test Specimens: ASTM C 31; one set of four standard cylinders for each compressive-strength test, unless directed otherwise. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.

   e. Compressive-Strength Tests: ASTM C 39; one set for each day's pour of each concrete class exceeding 5 cu. yd. but less than 25 cu. yd., plus one set for each additional 50 cu. yd. Test one specimen at 7 days, test two specimens at 28 days, and retain one specimen in reserve for later testing if required.

2. When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.

3. When total quantity of a given class of concrete is less than 50 cu. yd., the Engineer may waive strength testing if adequate evidence of satisfactory strength is provided.

4. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.

5. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi.

C. Test results will be reported in writing to the Engineer, concrete manufacturer, and Contractor within 24 hours of testing. Reports of compressive strength tests shall contain the

Project identification name and number, date of concrete placement, name of concrete testing agency, concrete type and class, location of concrete batch in paving, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day and 28-day tests.

3.9 REPAIRS AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective, or does not meet the requirements of this Section.

B. Drill test cores where directed by the Engineer when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with Portland cement concrete bonded to paving with epoxy adhesive.

C. Protect concrete from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep concrete paving not more than 2 days prior to date scheduled for Substantial Completion inspections.

3.10 PROTECTION/CLEAN-UP

A. Protect work completed until acceptance of project. Replace or repair concrete if damaged prior to acceptance. As work proceeds, maintain premises free of unnecessary accumulation of tools, equipment, surplus materials and debris related to this work.

END OF SECTION 32 13 13

SECTION 32 31 14 – CHAIL LINK FENCING AND GATES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Poly Vinyl Chloride (PVC) coated chain link fabric with PVC color coated galvanized steel framework, gates and accessories.

1.2 RELATED SECTIONS

A. Section– Site Concrete

1.3 SYSTEM DESCRIPTION

A. Provide and install chain link fencing and gates as shown on the Drawings. Coordinate with the work of other trades to supply mounting hardware, sleeves and other items as may be necessary.

1.4 STANDARDS

A. Provide chain link fencing, gates and backstops as complete units with each produced by a single manufacturer, including all necessary erection accessories, fittings and fasteners.

B. Installer: Shall be fully experienced in fence installations.

C. Standards: Comply with the standards of the Chain Link Manufacturer's Institute for materials and installation.

D. Handicapped accessibility: all gate latches and other operable hardware shall be in full conformance with ADA and other applicable codes for handicapped accessibility.

1.5 SUBMITTALS

A. In accordance with Division 1 requirements, submit manufacturers' data certifying that furnished materials comply with specifications.

B. Submit shop drawings including details delineating fence heights, size of posts, rails, braces, footings and accessories.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Framework: Steel pipe Type II: Cold formed electric resistance welded steel pipe complying with ASTM F1043 Group IC having minimum steel yield strength of 50,000 psi (344 MPa). External protective coating F1043 Type B, 0.9 oz/ft² (270 g/m²) minimum hot-dip zinc coating plus a chromate conversion and a clear polymer coating, plus a minimum 10 mil (0,254 mm) thermally fused PVC color coating in accordance with F1043. Internal coating F1043 Type D, 81% nominal zinc pigmented coating minimum 3 mils (0.0076 mm) thick or Type B, minimum 0.9 oz/ft² (275 g/m²) zinc.

a. Top, Bottom, and Brace Rails: 1-5/8" O.D. Top rail couplings (6" min. length) shall be spaced at 21' o.c. maximum. Fabric tie wire shall be spaced at 12" o.c. maximum.

b. 4’ CLF - (end and corner posts) 2-3/8" O.D., 2 7/8” Gate Posts, standard weight galvanized steel pipe with 2.0 ounces of hot-dipped zinc in accordance with ASTM-A120.

B. Truss Rod: 3/8" diameter galvanized steel solid rod with pressed steel tightener, in accordance with ASTM F626

C. Tie Wires: 9 gage aluminum or 11 gage galvanized steel.

D. Post Tops: Galvanized steel caps to provide a secure weather-tight closure.

E. Miscellaneous: All fittings to be PVC thermally fused color coated having a minimum thickness of 0.006" (0.152 mm) per ASTM F626. PVC color to match fabric and framework. Moveable parts, nuts and bolts to be field coated with PVC liquid touch up after installation. Provide all other fittings and parts necessary for a complete fence installation.

F. Vinyl-Coated Chain Link Fabric: PVC coating (7 mil thickness) thermally fused and bonded to 9 gage zinc-coated steel core wire in 2" mesh pattern per ASTM F 668 Class 2, unless detailed otherwise. Fabric shall be knuckled at both the top and bottom selvage. Color of PVC Coating shall be black.

G. PVC Coated Finish (Posts, Rails and other Components): Supplemental color coating of 10-15 mils thermally fused and bonded to zinc-coated components per ASTM F 1043. Color shall match color of chain link fabric.

H. Concrete for Footings: Standard mix Portland cement concrete with a minimum compressive strength of 3,000 psi at twenty-eight (28) days. Comply with all applicable requirements of Site Concrete.

I. Epoxy Grout: Fast setting, expansive concrete cement or epoxy grout. Submit manufacturer's data for approval.

J. Gates

i. For Double Gates, provide minimum 3/4-inch diameter drop rod on each gate pair. Drop rod assembly and related latches shall be configured to secure gate in a closed position and accept padlock as an integral part of the latch system.

PART 3 - EXECUTION

3.1 INSPECTION

A. General: Do not commence fencing installation before final grading is complete, with finish elevations established.

B. Inspection: Examine the conditions under which all new fencing is to be installed. Installation of fencing shall not proceed until all unsatisfactory conditions, if any, have been corrected.

3.2 FOOTINGS

A. Drill/excavate holes of diameters and spacing as detailed for post footings in firm, undisturbed or compacted soil. Excavate hole depths approximately 6" lower than the post bottoms.

3.3 POST INSTALLATION

A. Preparation: Remove all loose and foreign materials from sides and bottoms of holes and moisten soil prior to placing concrete.

B. Placement: Center and align posts in holes 6" above bottom of excavation.

C. Place concrete around posts in a continuous pour, and vibrate or tamp for consolidation. Check each post for vertical and top alignment, and hold in position during placement and finishing operations.

D. Keep exposed concrete surfaces moist for at least forty-eight (48) hours after placement, or cure with membrane curing materials, or other acceptable curing method.

3.4 CHAIN LINK FABRIC INSTALLATION

A. General: Install as detailed at locations as shown on the Drawings.

B. Timing: Allow concrete footings to attain at least seventy-five percent (75%) of minimum twenty-eight (28) day compressive strength, but in no case sooner than forty-eight (48) hours after placement, before fabric is installed. Do not stretch or apply tension to fabric until the concrete has attained its full design strength.

C. Rails: Install all rails as detailed. Rails shall be parallel to finished grade.

D. Braces: Provide brace and truss assemblies at all terminal posts, gate posts and at both sides of corner and pull posts. Locate brace rail at mid-height of fence fabric. Install braces so posts are plumb when truss rod is under proper tension.

E. Fabric: Leave approximately 1½" between finish grade and bottom of fabric selvage. Pull fabric taut and tie to posts and rails. Install fabric on side of fence as detailed and anchor to framework so that fabric remains in tension after pulling force is released.

F. Ties: Thread stretcher bars through or clamp to fabric 4" o.c., and secure to posts with metal bands.

G. Use U-shaped tie wire, conforming to diameter of pipe to which attached, clasping pipe and fabric firmly with ends twisting at least two (2) full turns. Bend ends of wire to minimize hazard to persons or clothing.

H. Hardware: Install hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

END OF SECTION

SECTION 32 92 19

PART 1 -

1.1 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

A. Soil amendments and fertilizing.

B. Seeding.

C. Establishment of seeded areas

D. Maintenance.

1.3 RELATED SECTIONS

A. Section 31 20 00 – Earth Moving.

B. Section 32 92 10 , Topsoil

C. Section 32 93 43, Plantings

1.4 STANDARDS

A. All landscaping work shall be done by a single firm specializing in landscape work.

1.5 QUALITY CONTROL

A. General: furnish certificates of inspection of landscape materials, to accompany shipments, as required by governmental authorities. Comply with applicable federal, state, county, and local regulations governing landscape materials.

B. Contractor qualifications: engage an experienced contractor who has successfully completed landscape installations similar in scope and complexity to this project, with at least 5 years experience on similar projects.

C. The use of pesticides (including fungicides, insecticides and herbicides) shall be performed in strict accordance with applicable state law. Pesticide applications shall only be performed by individuals holding a registered commercial applicator license.

D. Do not make substitutions. If specified landscape material is not obtainable, submit to Landscape Architect, proof of non-availability and proposal for use of substitute material. When authorized, adjustment of contract amount will be made.

E. Analysis and standards: for standard products, submit manufacturer's certified analysis. For other materials, submit analysis by recognized laboratory made in accordance with methods established by the Association of Official Agricultural Chemists and/or the American Association for Laboratory Accreditation, wherever applicable or as further specified.

F. Furnish vendor's certified statement of composition, mixture and percentages of purity, germination, weed seed, other crop seed and other inert ingredients for each grass seed species required.

G. Testing: Unless otherwise approved by Landscape Architect, obtain topsoil testing service's recommendations provided under Topsoil Section, for correcting topsoil pH to required level, including nutrient additives.

1.6 SUBMITTALS

A. Refer to Section 01 33 00.

B. Certification: submit certificates of inspection as required by governmental authorities. Submit manufacturer's or vendor's certified analysis for soil amendments and fertilizer materials. Submit seed vendors certified statement for each grass seed mixture required, stating botanical and common name, date of testing, percentage by weight, and percentages of purity, germination, and weed seed for each grass seed species, tested within last 6 months from projected date of seeding on job. Submit other data substantiating that all other materials comply with specified requirements.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver seed, fertilizers, additives, amendments and other materials in original, sealed bags and containers with original tags and label securely attached.

1. Labels and tags will show vendor's, producer's or manufacturer's name, weight, and material analysis.

B. Deliver and store materials so that they remain uniform in composition, dry and free-flowing and do not deteriorate or lose effectiveness.

C. Have materials delivered and stored on site in supply sufficient to complete work without further shipments. Obtain Architect's inspection of supply and approval of seals, tags and labels prior to opening bags and containers and beginning any installation and application.

1.8 JOB CONDITIONS

A. General: cooperate with other contractors and trades in and adjacent to the landscape work area. Examine drawings which show the development of the entire site and become familiar with the scope of other work required.

B. Planting time:

1. Turf Seed: Sow turf seed in the Fall between August 15th and October 20th or in the Spring between March 15 and May 1st, or at such other times as approved by the Landscape Architect.

C. Coordination with lawns: plant trees and shrubs after final grades are established, and prior to planting of lawns, unless otherwise acceptable to the Landscape Architect. If planting of trees and shrubs occurs after lawn work, protect lawn areas and promptly repair damage to lawns resulting from planting operations.

D. Weather Conditions: Do bed preparation when soils are in workable condition, neither too wet nor too dry.

1. Sow seed on dry or moderately dry soil at times when wind does not exceed velocity of 8 kph (5mph).

1.9 WARRANTIES

A. Turf Areas: warranty turf areas through the specified maintenance period, and until final acceptance.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Limestone: natural ground limestone containing not less than 85% of total carbonates, ground so that not less than 90% passes a 10 - mesh sieve and not less than 50% passes a 100 - mesh sieve.

B. Lawn fertilizer: complete fertilizer containing Nitrogen (N), Phosphate and Potash in ratio 10-20-10. Fertilizer shall be uniform in composition, dry and free flowing and suitable for application with standard fertilizer equipment. Fertilizer shall be delivered in bags or suitable containers, each fully labeled with manufacturer's guaranteed analysis. Fertilizer which has become damaged or caked will be deemed unsuitable for use, and unacceptable to the Landscape Architect.

C. Seed mulch: straw. Straw shall be oats, wheat, rye or other approved crop, free of noxious weeds.

D. Seed: provide fresh, clean, new crop grass seed complying with the tolerance for purity and germination established by the Official Seed Analysts of North America. All seed shall have been tested within the 6 months immediately preceding the date of sowing such material on this job. Seed mixtures shall not contain more than 2.5% weed seed. Seed containing prohibited or restricted noxious weeds will not be accepted. Seed shall be of the species, percentage, minimum purity and minimum germination as stated below.

E. Grass seed mix for general turf areas shall be a “Low Mow” mixture, composed of

- Hard Fescue
- Sheep Fescue
- Chewings Fescue
- Red Fescue
- Creeping Red Fescue

Seed shall be “No Mow Lawn Seed Mix” as supplied by Prairie Nursery, Inc., Westfield, WI (tel: 1-800-476-9453; website: www.prairienursery.com), or equal as approved by landscape architect.

PART 3 - EXECUTION

3.1 PRE-CONSTRUCTION MEETING

A. The Landscape Contractor shall attend a pre-construction meeting with the Landscape Architect prior to the commencement of any landscaping work. Contact the Landscape Architect at least 14 days in advance of the anticipated start of landscape work to schedule and coordinate the pre-construction meeting.

3.2 INSPECTION

A. Examine the conditions under which landscape work is to be performed. Landscape work shall not proceed until all unsatisfactory conditions, if any, have been corrected.

B. Examine the grades and ensure their accuracy with the contract documents. If any discrepancy exists, contact the Landscape Architect immediately, and do not proceed with any work until all discrepancies have been resolved.

3.3 SOIL AMENDMENTS WITHIN SEEDED AREAS

A. Soil amendments: using an approved applicator or other suitable device, spread limestone evenly over areas to be seeded. Application rate of limestone shall be as required to correct soil acidity to the optimum pH for seeding (pH 6.5) based upon topsoil test results. Notify Landscape Architect of topsoil test results for pH. Cultivate and mix limestone uniformly to a depth of 6” with a chisel plow or other approved equipment.

1. Do not apply soil amendments without soil test results.

3.4 PREPARATION FOR SEEDED AREAS

A. Follow seed supplier recommendations for preparation of seeding areas to eliminate perennial weeds. Methodologies may include cultivation and/or herbiciding options. Methods shall be reviewed and approved by landscape architect.

B. After topsoil has been spread, rake up large stiff clods, hard lumps, roots, litter, other foreign matter and stones larger than ½” in any dimension. Remove from the premises or dispose where directed in a satisfactory manner. Do not finish grade during unsuitable weather.

C. Fine grading: final grades shall be within 0.1’ of required elevations for Turf Areas

D. Loosen sub-grade of seeding areas to a minimum depth of 4". Remove rocks over 1-1/2" in any dimension. Remove all sticks, roots, rubbish, weeds and other extraneous matter. Limit preparation to areas which will be planted promptly after preparation.

E. Spread topsoil to provide minimum 6" depth to meet lines, grades, and elevations shown, after light rolling and natural settlement.

1. Area where new topsoil is not placed shall be raked to a depth of 6” to remove stones in excess of 1 ½”.

F. Place approximately 1/2 of total amount of topsoil required. Work into top of loosened sub-grade to create a transition layer and then place remainder of topsoil.

Add specified soil amendments and mix thoroughly into upper 4" of the topsoil by means of a rotary tiller.

G. Apply specified commercial fertilizer at rates specified and thoroughly mix into upper 2" of topsoil. Delay application of fertilizer if lawn planting will not follow within a few days. See "Schedule of Planting Soil Mixture Requirements".

1. Apply fertilizer to Turf areas only, and as recommended by soil and alysis and seed supplier.

H. Apply crabgrass pre-emergent control as specified by manufacturer, if spring seeding (not required for fall seeding).

I. Fine grade TURF areas to smooth, even surface with loose, uniformly fine texture. Limit fine grading to areas which can be planted immediately after grading.

J. Apply Roots™ biostimulant at rate recommended by manufacturer.

K. Moisten prepared turf areas before planting if soil is dry. Water thoroughly and allow surface moisture to dry before planting lawns. Do not create a muddy soil condition.

L. Restore lawn areas to specified condition if eroded or otherwise disturbed after fine grading and prior to planting.

3.5 SEEDING OPERATIONS

A. Inspection: Notify the Landscape Architect to perform an inspection of topsoil conditions prior to seeding. Seeding operations shall not proceed until all unsatisfactory conditions, if any, have been corrected. No seeding is to be done until the site has been brought to proper elevations and all underground work has been completed. No seeding is to be performed until written approval of topsoiling, fine grading and seed bed preparation has been received from the Landscape Architect.

B. Scope: Seed TURF areas as shown on the drawings, and all other topsoiled areas that are not indicated for other plantings and/or seeding.

C. Schedule: Seed shall be sown only between August 15 and October 15, and only during periods when weather conditions are favorable, unless otherwise approved by the Landscape Architect.

D. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.

E. Fertilizing: apply fertilizer (10-20-10) at 440 pounds per acre and incorporate to a depth of 1” +/- with a spike tooth harrow or other suitable equipment for TURF areas only.

1. Fertilizer application shall be based on topsoil analysis. Excess fertilizer may inhibit fescue growth, and may encourage weed growth.

F. Seeding: using a cultipacker seeder (Brillion or equal), distribute seed over all general lawn areas. Do not seed when wind velocity exceeds 5 mph. Total seed quantity shall be divided into two equal portions and the seeding shall be performed in 2 passes over the area with the second pass being at a 75 degree angle to the first pass.

1. Hydroseed or Drill seed when approved by Landscape Architect.

G. Sow rate:

1. Turf Seed at the rate of 7 lbs. per 1000 s.f. minimum (may vary depending on seed mix utilized)

H. Rake turf seed lightly into top 1/8" of soil, roll lightly to ensure good seed-soil contact, and water with a fine spray.

I. Mulch: Protect seeded areas against erosion by spreading specified lawn mulch after completion of seeding operation. Spread clean straw mulch evenly over seeded areas at the rate of 1-1/2 tons per acre. Spread uniformly to form a continuous blanket not less than 1-1/2" loose measurement over seeded areas. Provide and stake netting where required.

J. Water newly planted turf areas and keep moist until new grass is established and until they are accepted by Landscape Architect.

K. Hydroseeding:

1. Hydroseeding may be an acceptable alternate method. If elected, contractor shall submit a detailed program including mix ratios, schedules, application rates, etc., for Landscape Architect review and approval. All other specifications shall be met by hydroseeding, including mixing amendments into soil before hydroseeding.

2. Mix specified seed, fertilizer and pulverized mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogenous slurry suitable for hydraulic application.

3. Apply slurry uniformly to all areas to be seeded. Rate of application shall meet specified seed sowing rate. Mask and/or thoroughly clean all paving, building and other non-lawn areas.

4. Apply and anchor straw mulch as approved by netting or adhesive spray.

3.6 TURF MAINTENANCE

A. Maintenance period: lawn maintenance shall begin immediately following seeding operations. MAINTAIN TURF FOR A PERIOD OF **90 DAYS**, FOLLOWING **ACCEPTANCE** OF THE ESTABLISHED TURF AREA BY THE LANDSCAPE ARCHITECT, OR LONGER AS REQUIRED.

B. Protection: protect newly seeded areas from disturbance by equipment and other construction activities throughout the entire maintenance periods and until final acceptance.

C. Maintenance operations: maintain lawns by watering, fertilizing, weeding, mowing, trimming, and other operations, such as rolling, re-grading and reseeding as required to establish a smooth, acceptable lawn, free of eroded or bare areas. At a minimum, perform the following operations.

1. Watering:

1) Seeds shall be watered every other morning for 15 to 30 minutes during the first four to six weeks after planting.
2) Once established, the grass shall be watered during dry periods with deep soaking.
3) During periods of drought the No Mow Lawn shall be watered preemptively *before exhibiting symptoms of drought stress,* such as turning yellow or brown. During periods of hot, dry weather, the lawn should receive at least 2 inches of water per week, preferably with 1 or 2 deep soakings.

2. Mowing: Do not mow lower than 4 inches. Mow to 4 inch height when seed heads appear.

1) Areas defined for more frequent mowing shall be cut to a height of 4 inches beginning in the spring. Do not remove more than the top one third of leafy growth.
2) Fall Mowing – at the end of the growing season, mow to a height of 2", following the dropping of leaves. Do not allow leaves to smother the turf area.

3. Fertilizing: Only fertilize, if dictated by Soil analysis. Fertilize with a slow release 10-10-10 fertilizer grade 2 weeks after seeding. (See schedule below.) Fertilize at a rate of 440 pounds per acre to supply 44 pounds of nitrogen, phosphate and potassium per acre respectively. All of the nitrogen is to be in a water soluble form. Another grade of fertilizer with the same ratio may be used in place of the 10-10-10 with the rate adjusted to supply the same amount of nitrogen, phosphate and potassium noted above.

4. Apply additional fertilizer applications (only if soil testing indicates need) using IBDU (31-0-0) in conformance with following schedule:

Weeks after seeding	Fertilizer Grade	Fertilizer Rate (pounds per acre)
2 weeks	10-10-10	440
4 weeks	31-0-0	142
6 weeks	31-0-0	106
8 weeks	31-0-0	106

D. Overseeding (if necessary): overseed bare and eroded areas and all other areas that do not present a thick growth of dense turf. Overseed with specified seed mix.

E. Weed control (if necessary): apply approved herbicide at manufacturer's recommended rates to control and eliminate weed growth, and where permitted by local laws.

3.7 INSPECTION AND FINAL ACCEPTANCE – TURF AREAS

A. Satisfactory Initial Seeded Lawn: At end of the 90 day maintenance period, the contractor shall notify the Landscape Architect to perform a review of turf areas. Turf shall exhibit a healthy, uniform, close stand of grass has been established, free of

weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. area, and bare spots not exceeding 5 by 5 inches.

3.8 MAINTENANCE AND WARRANTY COMPLETION

A. Inspection: at the end of the **90 day**, submit a written request to the Landscape Architect to make an inspection of landscaping work. Final end of maintenance and warranty period inspection shall be made in the presence of the Contractor and the Owner.

B. Maintenance and warranty completion: if all landscape work has been satisfactorily completed, the work will be accepted and the maintenance and warranty periods will end for turf areas. When work is found to be unsatisfactory or deficient in any manner, perform corrective actions and continue maintenance period at no additional cost to the contract sum.

3.9 CLEAN UP AND PROTECTION

A. General: during landscape work, keep pavements clean and work area in an orderly condition.

B. Protection: protect landscape work and materials from damage due to landscape operations, operations by other contractors and trades and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed.

C. Clean up: prior to final acceptance, remove all debris and rubbish accumulated as a result of this work, and dispose of off-site.

END OF SECTION

SECTION 32 93 43

PART 1 – GENERAL

1.1 SUMMARY

A. The work in this section includes, but is not limited to, the following:

1. Locate, purchase, deliver and install all specified plantings.
2. Mulch, fertilize, and prune all specified plantings.
3. Provide maintenance of all specified plantings.

1.2 RELATED DOCUMENTS AND REFERENCES

A. Related Sections:

1. Section - Topsoil
2. Section – subsurface drainage

B. References:

1. ANSI Z60.1 – 2004 American Standard for Nursery Stock, most current edition.
2. ANSI A 300 – Standard Practices for Tree, Shrub and other Woody Plant Maintenance, most current edition.
3. Interpretation of plant names and descriptions shall reference HORTUS THIRD – A Concise Dictionary of Plants Cultivated in the United States and Canada, Cornell University, L.H. Bailey Hortorium, MacMillian Publishing Co., New York, NY, most current edition.
4. Pruning practices shall conform with recommendations in An Illustrated Guide to Pruning, Second Edition, Edward F Gilman, Delmar Publishing, Albany, NY, most current edition.
5. Glossary of Arboricultural Terms, International Society of Arboriculture, Champaign Il, most current edition.

1.3 DEFINITIONS

All terms in this specification shall be as defined in the "Glossary of Arboricultural Terms" or as modified below.

A. Container: All types of plastic or fabric containers that have been certified by the grower to produce root systems with roots approximately radial to the trunk, reasonably free of stem girdling and kinked roots.

B. Field Grown Trees: Trees growing in field soil at the time of harvest. Field grown tree shall have been root pruned after each transplant cycle to remove Stem Girding and Kinked Roots or which are grown in root safe container systems during earlier parts of the production cycle.

C. Kinked Root: A root within the root package that bends 60 degrees or greater, around the trunk, or up, or down including roots deflected by the current or previous container.

D. Plant Acceptance: The date at the end of the plant installation where the Town accepts that all work in this section is complete and the Warranty period has begun. This date may be different that the date of substantial completion for the other sections of the project.

E. Plant Final Acceptance: The date when the Town accepts that the plants and work in this section meet all the requirements of the warranty.

F. Reasonable and Reasonably: When used in this specification relative to plant quality, it is intended to mean that the conditions cited will not affect the establishment or long term stability, health or growth of the plant. This specification recognizes that it is not possible to produce plants free of all defects. This specification also recognizes that some decisions cannot be totally based on measured findings and that profession judgment is required. In cases of differing opinion, the Town's expert shall determine when conditions within the plant are judged as reasonable.

G. Root Ball: The mass of roots including any soil or potting mix that is shipped with the tree within the root ball package.

H. Root Ball Package. The material that surrounds the root ball during shipping.

I. Root Crown: The area where the majority of the main roots join the plant stem, usually at or near ground level (also known as the trunk flare). A single root emerging root perpendicular from the trunk ABOVE the Root Crown and / or the swelling of the trunk at the point of a previous graft should not be considered the root crown. For trees that develop two locations, one above the other, where three or more main roots emerge from the stem, the upper set shall be considered as the root crown.

J. Root Safe Container: Container systems and propagation methods that have been certified by the grower to produce root systems in container plants with roots approximately radial to the trunk, reasonably free of stem girdling and kinked roots.

K. Shrub: Woody plants with mature height approximately less than 5 meters.

L. Spade Harvested And Transplanted: Field grown trees that are mechanically harvested and immediately transplanted to the final growing site without being removed from the digging machine.

M. Stem: The trunk of the tree. The portion of the plant above the roots.

N. Stem Girdling Root: Any root, 1/2 inch –in diameter or greater, within the root package that crosses over the top of a structural root approximately tangential to the trunk circumference. Roots shall be considered as Stem Girdling that have or are likely to have root to trunk bark contact.

O. Structural Root: Large woody root emerging from the root crown, approximately radial to the trunk and at approximately the same depth, with a diameter approximately 1/2 to 1/3 of the root crown diameter.

P. Tree: Single and multi-stemmed plants with mature height approximately greater than 5 meters.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer product data and literature describing all products required by this section to the Town for approval. Provide submittal eight weeks before the installation of plants.

B. Plant Growers Certificates: Submit Plant Growers certificates for all plants indicating that each plant meets the requirements of the specification, including the requirements root system quality, to the Town for approval. Provide submittal eight weeks before the installation of plants.

C. Samples: Submit samples of each product and material where required by the specification to the Town for approval. Label samples to indicate product, characteristics, and locations in the Work. Samples will be reviewed for appearance only. Compliance with all other requirements is the exclusive responsibility of the contractor.

D. Plant Sources: Submit sources of all plants as required by Article – "Selection of Plants" to the Town

for approval.

E. Close Out Submittals: Submit to the Town for approval.

1. Plant maintenance data and requirements.

F. Warranty Period Site Visit Record: After each site visit during the warranty period, by the contractor, as required by this specification, submit a written record of the visit, including any problems, potential problems, and any recommended corrective action to the Town for approval.

1.5 QUALITY ASSURANCE

A. Plant Acceptance:

1. The Town will inspect all work for Plant Acceptance upon written request of the Contractor. The request shall be received at least ten calendar days before the anticipated date of inspection.

2. Plant Acceptance by the Town shall be for general conformance to specified size, character and quality and not relieve the Contractor of responsibility for full conformance to the contract documents, including correct species.

3. Any plant that is deemed defective as defined under the warranty provisions below shall not be accepted.

4. The Contractor is responsible for the condition and quality of work and materials during construction, and until Plant Acceptance. Contractor shall bear the total cost of replacing any and all plants until this time.

B. Warranty:

1. The contractor agrees to replace defective Work and plants as defined below.

2. Plants warranty shall begin on the date of Plant Acceptance and continue for the following periods:

Trees.
a. Trees – Two (2) Year.
b. Shrubs – Two (2) Years
c. Groundcover / Perennials – One (1) Year

3. When the work is accepted in parts, the warranty periods shall extend from each of the partial acceptances to the terminal date of the last warranty period. Thus, all warranty periods for each class of warranty, shall terminate at one time.

4. All plants shall be warranted to be healthy, reasonably free of defects, in flourishing condition, and shall bear foliage of normal density, size, and color for the species at the end of the warranty period.

5. Defective Plants: Plants shall be deemed defective that are dead, diseased, insect infested, or not in a vigorous, thriving condition, during or at the end of the warranty period. The following conditions shall be deemed as indicating a defective plant.

a. Any plant that has a canopy or root system with 25% or more of its volume dead, diseased, insect infested, or not in a vigorous, thriving condition.

b. Evidence of damage to plants, which diminishes the aesthetic character and form or structural integrity of the plant or group of plants. Plants that have had more than 25% of the canopy reduced by removed limbs that were not removed under the direction of the Town.

c. Plants that do not meet the requirements for Stem girdling and kinked roots and proper depth

of the root crown.

d. Plants packaged with non-biodegradable fabrics or twine that have not been removed during the planting process.

e. Any tree that has open wounds (not completely healed over) that penetrates the cambium into the wood on trunks or major limbs, the removal of which would result in the loss of 25% or more of the structure and form of the tree.

f. The Town shall make the final determination that plants are defective.

6. Plants determined to be defective shall be replaced without cost to the Town, as soon as weather conditions permit and within the specified planting period.

7. Any work required by this specification or the Town during the progress of the work, to remediate plant defects including the removal of roots or branches, or planting plants that have been bare rooted during installation to inspect for or correct root defect shall not be considered as grounds to void any conditions of the warranty. In the event that the contractor feels that such remediation work may compromise the future health of the plant, the plant or plants in question shall be rejected and replaced with plants that do not contain defects that require remediation.

8. The Contractor is exempt from replacing plants, after Plant Acceptance and during the warranty period, that are removed by others, lost or damaged due to occupancy of project, lost or damaged by a third party, vandalism, or any natural disaster.

9. Replacements shall closely match adjacent specimens of the same species. Replacements shall be subject to all requirements stated in this specification. Make all necessary repairs due to plant replacements. Such repairs shall be done at no extra cost to the Town.

10. The warranty of all replacement plants shall extend for an additional one-year period from the date of their acceptance after replacement. In the event that a replacement plant is not acceptable during or at the end of the said extended warranty period, the Town may elect one more replacement items or credit for each item. These tertiary replacement items are not protected under a warranty period.

11. During and by the end of the warranty period, remove all tree wrap, ties, and guying unless agreed to by the Town to remain in place. All trees that have leaned shall be straightened.

C. Plant Final Acceptance:

1. At the end of the warranty period, the Town shall inspect all warranted work, upon written request of the Contractor. The request shall be received at least ten calendar days before the anticipated date for final inspection.

2. Plant Final Acceptance will be given only when all the requirements of this specification have been met.

D. Contractor's Quality Assurance Responsibilities: The contractor is solely responsible for quality control of the Work.

E. Qualified Installer: the installer shall be a firm having at least 5 years of successful experience of a scope similar to that required for the Work, including the handling and planting of large specimen trees in urban areas. The installer of the work in Sections: Planting Soil, Shrubs and Ground Covers, and or Lawns, where applicable, shall be the same firm installing the work in this section.

1. The bidders list for work under this section shall be approved by the Town.

2. Installer Field Supervision: When any planting work is in progress, installer shall maintain, on site, an experienced full-time supervisor who can communicate in English with the Town.
3. Installer's field supervisor shall have certification from the Professional Landcare Network: Certified Landscape Technician - CLT-Exterior.
4. The installer's crew shall be experienced in the installation of plantings and large trees and interpretation of planting plans in urban areas.
5. Submit references of past projects, employee training certifications that support that the contractors meets all of the above installer qualifications.

F. Regulatory requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of federal, State and municipal authorities having jurisdiction. Obtain necessary approvals from all such authorities.

1.6 SELECTION AND INSPECTION OF PLANTS

A. Submit to the Town, for approval, Plant Sources including the names and locations of nurseries proposed as sources of acceptable plants, and a list of the plants they will provide. The plant list shall include the botanical and common name and the size at the time of selection. Inspect all nursery materials to determine that the materials meet the requirements of this section.

1. Trees shall be purchased from the growing nursery. Re-wholesale plant suppliers shall not be used as sources unless the contractor can certify that the required trees are not directly available from a growing nursery. When Re-wholesale suppliers are utilized, the contractor shall submit the name and location of the growing nursery from where the trees were obtained by the re-wholesale seller. The re-wholesale nursery shall be responsible for any required plant quality certifications

B. Schedule with the Town, trips for viewing plants at nurseries. Ensure that there is sufficient material of the required size, quality and quantity at the nursery before scheduling a trip. The trips to the nurseries shall be efficiently arranged to allow the Town to maximize viewing time. Where possible each trip should include visiting more than one nursery. Compliance with all other requirements is the exclusive responsibility of the contractor.

C. The contractor shall require the grower or re-wholesale supplier to permit the Town to inspect the root system of all plants including random removal of soil around the base of the plant. Inspections may be as frequent and as extensive as needed to verify that the plants meet the requirements of the specifications and conform to the grower's root quality certifications.

1. For field grown plants, viewing of plants by the Town may be at the growing nursery prior to the harvesting of the plant.

D. Each field grown tree shall have a numbered seal applied by the contractor. The seal shall be placed on a lateral branch the north side of the tree, to identify the tree orientation during the installation process. The seal shall be a tamper proof plastic seal bearing the contractors name and a unique seven-digit number embossed on the seal.
1. Do not place seals on branches that are so large that there is not sufficient room for the branch growth over the period of the warranty.

E. The Town may choose to attach their seal to each plant, or a representative sample. Viewing and/or sealing of plants by the Town at the nursery does not preclude the Town's right to reject material while on site. The Contractor is responsible for paying any up charge for the Town to attach their seal to specific plants.

F. Where requested by the Town, submit photographs of plants or representative samples of plants. Photographs shall be legible and clearly depict the plant specimen. Each submitted image shall contain a height reference, such as a measuring stick. The approval of plants by the Town via photograph does not preclude the Town's right to reject material while on site.

G. Growing nurseries shall be located in USDA plant cold hardiness zones 5-6; USDA plant heat hardiness zones 4-5 and no more than 250 miles from the project site.

1.7 PLANT SUBSTITUTIONS FOR PLANTS NOT AVAILABLE

A. Submit all requests for substitutions of plant species, or size to the Town, for approval, prior to purchasing the proposed substitution. Request for substitution shall be accompanied with a list of nurseries contacted in the search for the required plant and a record of other attempts to locate the required material. Request shall also include sources of plants found that may be of a smaller or larger size than specified, or plants of the same genus and species but different cultivar origin, or which may otherwise not meet the requirements of the specifications, but which may be available for substitution.

1.8 SITE CONDITIONS

A. It is the responsibility of the Contractor to be aware of all surface and sub-surface conditions, and to notify the Town, in writing, of any circumstances that would negatively impact the health of plantings. Do not proceed with work until unsatisfactory conditions have been corrected.

B. It is the responsibility of the Contractor to be familiar with the local growing conditions, and if any specified plants will be in conflict with these conditions. Report any potential conflicts, in writing, to the Town.

C. This specification requires that work in Section Planting Soils, be completed and accepted prior to the installation of any plants.

D. Do not install plants into saturated or frozen soils. Do not install plants during inclement weather, such as rain or snow or during extremely hot, cold or windy conditions.

1.9 PLANTING AROUND UTILITIES

A. Contractor shall carefully examine the civil, record, and survey drawings to become familiar with the existing underground conditions before digging.

B. Determine location of underground utilities and perform work in a manner that will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until parties concerned mutually agree upon removal.

C. Notification of *Local Utility Locator Service*, is required for all planting around utilities with root balls deeper than 18 inches: The Contractor is responsible for knowing the location and avoiding utilities that are not covered by the Notification of “Call Before You Dig” , tel.: 1-800-922-4455, is required for all planting around utilities with root balls deeper than 18 inches: The Contractor is responsible for knowing the location and avoiding utilities that are not covered by the “Call Before You Dig” service.

PART 2 – PRODUCTS

2.1 PLANTS: GENERAL

A. Standards and measurement: Provide plants of quantity, size, genus, species, and variety or cultivars as shown and scheduled in contract documents.

1. All plants shall conform to ANSI Z60.1 “American Standard for Nursery Stock”, unless modified by provisions in this specification. In the event that there is a conflict between this specification and ANSI Z60.1, this specification section shall be considered correct.
2. Caliper measurement shall be taken at a point on the trunk 6 inches above root crown for trees smaller than 4" in caliper, and at a point 12" above the root crown for trees 4" in caliper or larger.
3. Plants larger than specified may be used if acceptable to the Town. Use of such plants shall not increase the contract price. If larger plants are accepted the root ball size shall be increased in proportion to the size of the plant. Larger plants may not be acceptable if the resulting root ball cannot be fit into the required planting space.
4. If a range of size is given, no plant shall be less than the minimum size and not less than 50 percent of the plants shall be as large as the maximum size specified. The measurements specified are the minimum size acceptable and are the measurements after pruning, where pruning is required.

B. Plant Quality:

1. General: Provide healthy, vigorous stock, grown in a recognized nursery and reasonably free of disease, insects, eggs, bores, and larvae. At the time of planting all plants shall have root system, stem, and branch form that will not restrict normal growth, stability and vigor for the expected life of the plant.
2. Plant quality above the soil line:
   a. Plants shall be of exceptional quality with the color, shape, size and distribution of trunk, stems, branches, buds and leaves normal to the plant type specified.
   b. Trees shall not have co dominant leaders or significant branch unions with included bark between stems. All trees are assumed to be single leader plants unless a different form is specified in the plant list or drawings.
   c. Tree trunks shall be reasonably straight with lateral limbs reasonably symmetrical and evenly distributed along the trunk.
   d. The trunk and branches shall be reasonably free of knots, scrapes, broken or split wood, fresh limb cuts, sunscald, injuries, and abrasions. All graft unions, where applicable, shall be completely healed without visible sign of graft rejection. All grafts shall be visible above the soil line.
3. Plant quality at or below the soil line:
   a. The roots shall be reasonably free of scrapes, broken or split wood.
   b. A minimum of three structural roots reasonably distributed around the trunk shall be found in each plant.
      1.) Plants with structural roots on only one side of the trunk (J roots) shall be rejected.
   c. The root crown must not be more than 2 inches below the soil line. The top two structural roots shall be no more than 3 inches below the soil line and the rest of the structural roots shall be no more than 5 inches below the soil line when measured 4 inches radial to the trunk. The grower may request a modification to this requirement for species with roots that rapidly descend, provided that the grower removes all circling roots above the structural roots across the top of the root ball.
   d. The root system shall be reasonably free of stem girdling roots above the root collar, vertical roots and or kinked roots from nursery production practices. Stem girdling roots, vertical and kinked roots include roots on the interior of the root ball.
      1.) The final plant grower shall be responsible to have determined that the plants have been root pruned at each step in the plant production process to remove stem girdling roots and

kinked roots, or that the previous production system use Root Safe Containers or practices that produce a root system throughout the root ball that meets these specifications. Regardless of the work of previous growers, the plant's root system shall be modified at the final production stage to produce the require plant root quality. The final grower shall certify in writing that all plants are reasonably free of stem girdling and kinked roots as defined in this specification, and that the tree has been grown and harvested to produce a plant that meets these specifications.

C. Submittals: Submit for approval the required plant quality certifications from the grower where plants are to be purchased, for each plant type. The certification must state that each plant meets all the above plant quality requirements.
   1. The grower's certification of plant quality does not prohibit the Town from inspecting any plant or rejecting the plant if it is found to not meet the specification requirements.

2.2 ROOT BALL PACKAGE OPTIONS: The following root ball packages are permitted. Specific Root Ball Packages shall be required where indicated on the plant list or in this specification. Any type of Root Ball Packages that is not specifically defined in this specification shall not be permitted.

A. BALLED AND BURLAPPED PLANTS

1. All Balled and Burlapped Plants shall be field grown, and the root ball packaged in a burlapped and twine and or burlap and wire basket package.

2. Plants shall be harvested with the following modifications to standard nursery practices.

   a. Prior to digging any tree, using hand tools or an air spade, carefully removed the soil from the top of the root ball of each plant to locate the root crown. Care must be exercised not to damage the surface of the root crown and the top of the structural roots.

   b. Balled and burlapped trees shall be dug prior to leafing out (bud break) in the spring or during the fall planting period except for plants know to be considered as fall planting hazards. Plants that are fall planting hazards shall only be dug prior to leafing out in the spring. Plants to be shipped or installed when in leaf shall be pre-dug prior to bud break and stored appropriately protected storage yards with adequate water.

   c. If wire baskets are used to support the root ball, a "low profile" basket shall be used. A low profile basket is defined as having the top of the highest loops on the basket no less that 4 inches and no greater than 8 inches below the shoulder of the root ball package.

   d. Twine and burlap used for wrapping the root ball package shall be natural, biodegradable material. If the burlap decomposes during the storage period the root ball shall be re-wrapped prior to shipping.

3. CONTAINER GROWN PLANTS

1. Container grown plants may be permitted only when indicated on the drawing, this specification or approved by the Town.

2. Provide plants established and well rooted in removable containers

3. Container class size shall conform to ANSI Z60.1 for container plants for each size and type of plant.

4. Container-grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its potting medium together but not so long as to have developed

Stem Girdling or matted, circling around the edge of the container. Plants that fail to meet this requirement may be modified to correct deficiencies as describe in Part 3 Execution if approved by the Town.

B. CONTAINERIZED PLANTS

1. Containerized plants may be permitted only when indicated on the drawing, this specification or approved by the Town.
2. Provide field grown plants in containers of similar size as the ANSI Z60.1 requirements for Balled and Burlapped plants.
3. Place the field grown plant in the container at the correct depth of the root crown as defined in section Plants: General, sub paragraph Quality, above.
4. Containerized plants shall not held in the container more than 12 months.
5. Remove all stem girdling above the root collar or circling roots around the edge of the container prior to planting as describe in Part 3 Execution if approved by the Town.

2.3 MULCH

A. Mulch shall be double shredded hardwood or milled coniferous bark. Material shall be mulching grade, uniform in size and foreign matter. Wood content shall not exceed 15% by volume. Mulch that has become saturated with water and presents an anaerobic odor shall be rejected.

B. Submit manufacturers product data that product meets the requirements and one gallon sample for approval.

2.4 ANTI-DESICCANT

A. Anti-Desiccant shall be emulsion type, film-forming agent similar to Dowax by Dow Chemical Company, or Wilt-Pruf by Nursery Specialty Products, Inc., Croton Falls, New York, designed to permit transpiration but retard excessive loss of moisture from plants. Deliver in manufacturer’s fully identified containers and use in accordance with manufacturer’s instructions.

B. Submit manufacturers product data for approval.

2.5 TREE STAKING AND GUYING MATERIAL

A. Tree guying to be flat woven polypropylene material, 3/4" wide, 900 lb break strength. Color to be Green. Product to be ArborTie, manufactured by Deep Root Partners, L.P. (800) 458-7668, or approved equal.

B. Stakes shall be 2”x2" hardwood stakes free of knots and of lengths appropriate to the size plant required for to adequately support the plant.

C. Dead men for Large Trees where required on the drawings shall be 4" x 4" x 4' long, wood. Wood shall NOT be treated to protect from rot.

D. Submit manufacturers product data for approval.

2.6 TREE BARK PROTECTOR

A. Tree Bark Protectors shall be black extruded resin mesh, 100mm diameter, 5 feet long. As manufactured by Industrial Netting, Minneapolis, MN, USA or approved equal.

B. Fasten the split side of the Tree Bark Protector together in three places with black plastic tape.

C. Submit manufacturers' product data for approval.

2.7 WATERING BAGS

A. Watering bags shall be Treegator Irrigation Bags, sized to the appropriate model for the requirements of the plant, manufactured by Spectrum Products, Inc, Youngsville, NC 27596. Or approved equal.

B. Submit manufacturers product data for approval.

2.8 CHEMICAL OR BIOLOGICAL ADDITIVES

A. Chemical or Biological Additives: Chemicals and biological materials designed to increase soil fertility. All material shall be delivered to the site in unopened containers and stored in a dry enclosed space suitable for the material and meeting all environmental regulations. Biological additives shall be protected from extreme cold and heat. All products shall be freshly manufactured and dated for the year in which the products are to be used.
   1. Chemical or Biological Additives: Chemicals and biological materials designed to increase soil fertility. All material shall be delivered to the site in unopened containers and stored in a dry enclosed space suitable for the material and meeting all environmental regulations. Biological additives shall be protected from extreme cold and heat. All products shall be freshly manufactured and dated for the year in which the products are to be used.
   2. Fertilizer: Fertilizer for planting shall be organic fertilizer with a salt index of 25 or less. The majority of the nutrient elements are from organic sources. Fertilizer selections shall be based on the recommendations of the soil test.
      a. Bonemeal: Commercial, raw, finely ground; minimum of 4 percent nitrogen and 20 percent phosphoric acid.
      b. Superphosphate: Commercial, phosphate mixture, soluble; minimum of 20 percent available phosphoric acid.
      c. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea-form, phosphorous, and potassium in the following composition:
         1.) Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.
      d. Slow-Release Fertilizer: Granular fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
         1.) Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.
   3. Lime: ASTM C602-95a, Class T, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent, with a minimum 99 percent passing a No. 8 (2.36 mm) sieve and a minimum 75 percent passing a No. 60 (250 micrometer) sieve.
      a. Provide lime in the form of dolomitic limestone.
   4. Aluminum Sulfate: Commercial grade, unadulterated.
   5. Sand: Clean, washed, natural or manufactured sand, free of toxic materials.
   6. Structural Enhancing Materials
      a. Vermiculite
      b. Expanded of Calcined Clay, such as "Ridgelite", or approved equal.
      c. Diatomaceous Earth, such as "Isolite", "Axis", or approved equal.
      d. Perlite, horticultural soil amendment grade.
   7. Mycorrhizal Inoculant: A mycorrhizal (ecto- and endomycorrhizal) inoculation, such as Horticultural Alliance's DIEHARD™ Transplant, (P.O. Box 5744, Sarasota, FL 34277, Tel: 800-628-6373) or approved equal.

8. Hydrogel Soil Amendment:: Shall be Terra-Sorb Hydrogel, an acrylamide copolymer gel, of Medium or Coarse Grade, as supplied by Plant Health Care, Inc., 440 William Pitt Way, Pittsburgh, PA 15238, tel 800-421-9051, or approved equal.
9. Submit manufacturers product data for approval.

PART 3 – EXECUTION

3.1 SITE EXAMINATION

A. Examine the surface grades and soil conditions to confirm that the requirements of Specification Section – Planting Soil and the soil and drainage modifications indicated on the Planting Soil Plan and Details have been completed. Notify the Town in writing of any unsatisfactory conditions.

3.2 DELIVERY, STORAGE AND HANDLING

A. Protect materials from deterioration during delivery and storage. Adequately protect plants from drying out, exposure of roots to sun, wind or extremes of heat and cold temperatures. If planting is delayed more than 24 hours after delivery, set plants in a location protected from sun and wind. Provide adequate water to the root ball package during the shipping and storage period.

1. Using a soil moisture meter, periodically check the soil moisture in the root balls of all plants to assure that the plants are being adequately watered.

B. Do not deliver more plants to the site than there is space with adequate storage conditions. Provide a suitable remote staging area for plants and other supplies.

1. The Town shall approve the duration, method and location of storage of plants.

C. Provide protective covering over all vehicles during delivery of all plants.

D. Before shipping, apply 1/8 inch thick, wax sealed, corrugated cardboard trunk protection around the trunk of all trees from the top of the root ball package to the first branch. Cardboard shall be coated to reduce water penetration, and fabricated for this application. Secure the cardboard with plastic tape.

E. If trees are moved when in full-leaf, spray with anti-desiccant per manufacturer's recommendations at nursery no greater than 48 hours prior to digging, and again two weeks after transplanting. Spraying should take place in early morning hours with foliage at maximum turgidity.

3.3 PLANTING SEASON

A. Planting shall only be performed when weather and soil conditions are suitable for planting the materials specified in accordance with locally accepted practice. Install plants during the planting time as described below unless otherwise approved in writing by the Town. In the event that the contractor request planting outside the dates of the planting season, approval of the request does not change the requirements of the warranty.
1. Deciduous trees and shrubs April 1 to June 15 and September 1 to December 1
2. Evergreen trees and shrubs April 1 to June 15 and September 1 to October 15.
3. Plants identified as "Fall Planting Hazards" shall not be installed unless they have been secured as "Spring Dug Material", certified by the Nursery.

3.4 COORDINATION WITH PROJECT WORK

A. The Contractor shall coordinate with all other work that may impact the completion of the work.

B. Prior to the start of Work, prepare a detailed schedule of the work for coordination with other trades.

C. Coordinate the relocation of any irrigation lines, heads or the conduits of other utility lines that are in conflict with tree locations. Root balls shall not be altered to fit around lines. Notify the Town of any conflicts encountered.

3.5 LAYOUT AND PLANTING SEQUENCE

A. When applicable, plant trees before other plants are installed. Where spacing dimensions or locations are not clear, notify the Town before installation.

B. Notify the Town, one (1) week prior to layout. Lay out all individual tree and shrub locations. Place plants above surface at planting location or place a labeled stake at planting location. Layout bed lines with paint for the Town's approval. Secure the Town's acceptance before digging and start of planting work.

C. It is understood that plants are not precise objects and that minor adjustments in the layout will be required as the planting plan is constructed. These adjustments may not be apparent until some or all of the plants are installed. Make adjustments as required by the Town including relocating previously installed plants.

3.6 SOIL PROTECTION DURING PLANT DELIVERY AND INSTALLATION

A. Protect soil from compaction during the delivery of plants to the planting locations, digging of planting holes and installing plants.

1. Where possible deliver and plant trees that require the use of heavy mechanized equipment prior to final soil preparation and tilling.

2. Till and restore grades to all soil that has been driven over or compacted during the installation of plants.

3.7 INSTALLATION OF PLANTS: GENERAL

A. Inspect each plant after delivery and prior to installation for damage of other characteristics that may cause rejection of the plant. Notify the Town of any condition observed.

B. The root system of each plant, regardless or root ball package type, shall be inspected by the contractor, at the time of planting to confirm that the roots meet the requirements for plant root quality in Part 2 Products: Plants General: Quality. The contractor shall undertake at the time of planting, all modifications to the root system required by the Town to meet these quality standards.

1. Modifications, at the time of planting, to meet the specifications for the depth of the root crown and removal of stem girdling roots and circling roots may make the plant unstable or stress the plant to the point that the Town may choose to reject the plant rather than permitting the modification.

2. Any modifications required by the Town to make the root system conform to the plant quality standards outlined in Part 2 Products: Plants General: Quality or other requirements related to the permitted root ball package shall not be considered as grounds to modify or void the plant warranty.

3. The contractor remains responsible to confirm that the grower has made all required root modifications noted during any nursery inspections.

C. Container Root Ball Shaving: The outer surfaces of ALL plants in containers, including the top, sides and bottom of the root ball shall be shaved to remove all circling and matted roots. Shaving shall be performed using saws, knives, sharp shovels or other suitable equipment that is capable of making clean

cuts on the roots. Shaving shall remove a minimum of one inch of root mat or deeper as required to remove all roots that are not growing reasonably radial to the trunk and all kinked and vertical roots.

D. Exposed Stem Tissue after Modification: The required root ball modifications may result in stem tissue that has not formed trunk bark being exposed above the soil line. If such condition occurs, wrap the exposed portion of the stem in a protective wrapping such as Dewitt Tree Wrap fabric. Secure the fabric with biodegradable tape such as "3M Scotch 234 or 232" masking tape. DO NOT USE string, twine or any other material that may girdle the trunk if not removed.

E. Using hand tools, back hoe or mini-excavator, excavate the planting hole into the Planting Soil to the depth of the root ball measured after any root ball modification to correct root problems, and wide enough for working room around the root ball or to the size indicated on the drawing.

1. The measuring point for root ball depth shall be the average height of the outer edge of the root ball after any required root ball modification.

2. Planting holes may not be dug with a mechanical auger.

F. For trees to be planted in prepared Planting Soil that is deeper than the root ball depth, compact the soil under the root ball using a mechanical tamper to assure a firm bedding for the root ball. If there is more than 12 inches of planting soil under the root ball excavate and tamp the planting soil in lifts not to exceed 12".

G. Set top outer edge of the root ball at the average elevation of the proposed finish. Set the plant plumb. The tree graft, if applicable, shall be visible above the grade. Do not place soil on top of the root ball.

H. Trees shall be oriented so their north side, as marked in the nursery, faces north. The Architect may require trees to be oriented slightly in another direction based on the form of the tree or other conditions.

I. Brace root ball by tamping Planting Soil around the lower portion of the root ball. Place additional Planting Soil around base and sides of ball in six-inch (6") lifts. Lightly tamp each lift using hand tools to settle backfill and eliminate voids.

J. Where indicated on the drawings, build a 3" high, level saucer of Planting Soil around the outside of the root ball to retain water. Tamp the saucer to reduce erosion of the saucer.

K. Thoroughly water the Planting Soil and root ball immediately after planting

L. Remove all nursery plant identification tags and ribbons. The Town's seals are to remain on plants until the end of the warranty period.

M. Remove corrugated cardboard trunk protection after planting.

N. Follow additional requirements for the permitted root ball packages.

3.8 PERMITTED ROOT BALL PACKAGES AND SPECIAL PLANTING REQUIREMENTS

A. The following are permitted root ball packages and special planting requirements that shall be followed during the planting process in addition to the above General planting requirements.

B. BALLED AND BURLAPPED PLANTS

1. After the root ball has been backfilled, remove all twine and burlap from the top of the root ball.

Cut the burlap away, do not fold down onto the Planting Soil.

2. If the plant is shipped with a wire basket that does not meet the requirements of a “Low Rise” basket, remove the top 6-8 inches of the basket wires just before the final backfilling of the tree.

C. CONTAINERIZED PLANTS

1. Remove the container.
2. Cut all circling roots on the perimeter of the root ball such that the roots are emerging out to remaining root system are oriented approximately radial to the trunk.
3. Remove all roots, root mat and potting soil above the root crown and the main structural roots.
4. Remove all potting soil at the bottom of the root ball that does not contain roots.

D. BOXED PLANTS

1. Remove the container.
2. Cut all circling roots on the perimeter of the root ball such that the roots are emerging out to remaining root system are oriented approximately radial to the trunk.
3. Remove all roots, root matt and potting soil above the root crown and the main structural roots.
4. Remove all potting soil at the bottom of the root ball that does not contain roots.
5. Using a hose, power washer or air knife, wash out the potting mix from around the trunk and top of the remaining root ball and find and remove all stem girding roots within the root ball above the top of the structural roots.

3.9 TREE STAKING AND GUYING

A. Do not stake or guy trees unless specifically required by the Contract Documents, or in the event that the Contractor feels that staking is the only alternative way to keep particular trees plumb.

1. The Town shall have the authority to require that trees are staked or to reject staking as an alternative way to stabilize the tree.
2. Trees that have had heavily modified root balls to meet the root quality standards may become unstable. The Town may choose to reject these trees rather than utilize staking to temporarily support the tree.

B. Trees that are guyed shall have their guys and stakes removed after one full growing season or at other times as required by the Town.

C. Tree guying shall utilize the tree staking and guying materials specified. Guying to be tied in such a manner as to create a minimum 12" loop to prevent girdling. Refer to manufacturer’s recommendations for installation. Plants shall stand plumb after staking or guying.

D. For trees planted in planting mix over waterproofed membrane, use dead men buried 24 inches to the top of the dead man, in the soil. Tie the guy to the dead man with a double wrap of line around the dead man followed by a double half hitch. When guys are removed, leave the deadmen in place and cut the guy tape 12" above the ground, leaving the tape end covered in mulch.

3.10 TREE BARK PROTECTION

A. For all trees, apply a Tree Bark Protector to each tree.

3.11 STRAIGHTENING PLANTS

A. Maintain all plants in a plumb position throughout the warranty period. Straighten all trees that move out of plumb including those not staked. Plants to be straightened shall be excavated and the root ball moved to a plumb position, and then re-backfilled.

B. Do not straighten plants by pulling the trunk with guys.

3.12 INSTALLATION OF FERTILIZER AND OTHER CHEMICAL ADDITIVES

A. Do not apply any fertilizer to plantings during the first year after transplanting unless soil test determines that fertilizer or other chemical additives is required. Apply chemical additives only upon the approval of the Town.

B. Fertilizers shall be applied according to the manufacturer's instructions and standard horticultural practices.

3.13 PRUNING OF TREES AND SHRUBS

A. Prune plants as directed by the Town. In general, preserve the natural character of the plant and follow recommendations in "An Illustrated Guide to Pruning, Second Edition".

B. All pruning shall be performed by a person experienced in landscape pruning.

C. Wherever possible and appropriate to the species, preserve or create a central leader.

D. Pruning of large trees shall be done using pole pruners or if needed, from a ladder or hydraulic man lift to gain access to the top of the tree. Do not climb in newly planted trees

E. Remove and replace excessively pruned or malformed stock resulting from improper pruning.

F. Pruning shall be done with clean, sharp tools.

G. No tree paint or sealants shall be used.

3.14 MULCHING OF PLANTS

A. Apply 1-2 inches of mulch top of root balls and planting beds, covering the entire planting bed area. Do not install mulch any closer than 8 inches to the trunk. I

B. For tree planted in lawn areas the mulch shall extend to a 6' diameter around the tree or to the extent indicated on the plans. Cut a clean, smooth edge between the mulch and lawn.

C. Lift all leaves, low hanging stems and other green portions of small plants out of the mulch if covered.

3.15 WATERING

A. The Contractor shall be fully responsible to ensure that adequate water is provided to all plants from the point of installation until the date of Plant Acceptance. The contractor shall adjust the automatic irrigation system, if available and apply additional water, using hoses as required.

B. Hand water root balls of all plants to assure that the root balls have adequate moisture. Test the moisture content in each root ball and the soil outside the root ball to determine the water content.

C. The Contractor shall install one set (two bags) of watering bags for each tree to be maintained and used for tree watering during the warranty period. Watering bags shall be removed between December 1 and March 1.

1. The watering bags shall remain the property of the Town at the completion of the work.

3.16 CLEAN-UP

A. During installation, keep the site free of trash, pavements reasonably clean and work area in an orderly condition at the end of each day.

B. Once installation is complete, wash all soil from pavements and other structures. Ensure that mulch is confined to planting beds and that all tags and flagging tape are removed from the site. The Town seals are to remain on the trees and removed at the end of the warranty period.

3.17 PROTECTION DURING CONSTRUCTION

A. The Contractor shall protect landscape work and materials from damage due to planting operations, operations by other Contractors or trespassers. Maintain protection during installation until Plant Acceptance. Treat, repair or replace damaged planting work immediately.

B. Damage done by the Contractor, or any of their sub contractors to plants, or any other parts of the work, shall be replaced by the Contractor at no expense to the Town.

3.18 PLANT MAINTENANCE PRIOR TO PLANT ACCEPTANCE

A. During the project work period and prior to Plant Acceptance, the Contractor shall maintain all plants.

B. Maintenance during the period prior to Plant Acceptance shall consist of pruning, watering, cultivating, weeding, mulching, removal of dead material, repairing and replacing of tree stakes, tightening and repairing of guys, repairing and replacing of damaged tree wrap material, resetting plants to proper grades and upright position, and furnishing and applying such sprays as are necessary to keep plantings reasonably free of insects and disease, and in healthy growing condition. The threshold for applying insecticides and herbicide shall follow established Integrated Pest Management (IPM) procedures. Mulch areas shall be kept reasonably free of weeds, grass.

3.19 MAINTENANCE DURING THE WARRANTY PERIOD

A. Once the project is Accepted, the Contractor shall make periodic site visits to inspect the Town's maintenance until the date of Plant Final Acceptance.

1. Notify the owner in writing if maintenance including watering, is not sufficient to maintain plants in a healthy condition. Such notification must be in a timely period so that the Town may take corrective action.

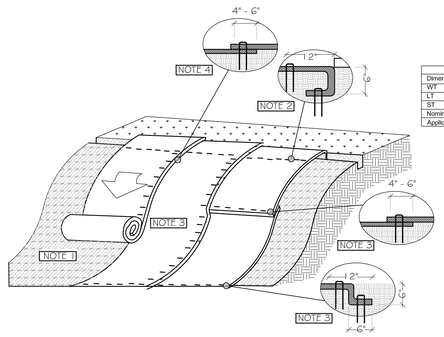
a. Notification must define the maintenance needs and describe any corrective action required.

2. In the event that the contractor fails to visit the site and or notify, in writing, the Town of maintenance needs, lack of maintenance shall not be used as grounds for voiding or modifying the provisions of the warranty.

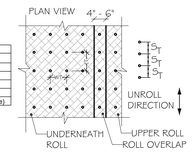
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APPENDIX B

CONTRACT DRAWINGS



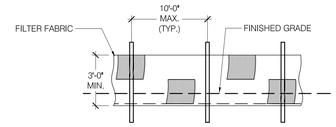
	Staple Pattern
Dimension	C
WT	30"
LT	30"
ST	18"
Nominal Frequency	1.7/SY
Application	ECB (Degradable)



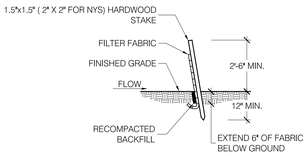
1. Prepare soil before installing ROLLED EROSION CONTROL PRODUCTS (RECPs), including any necessary applications of lime, fertilizer and seed. Ground surface must be free of debris, rocks, clay clods and raked smooth sufficiently to allow close contact of the RECP with the soil of the entirety of the installation.
2. Begin at the top of the slope by anchoring the RECP's in a 6" deep x 6" wide trench. Abnchore the RECP's with a row of staples/stakes/pins spaced at ST apart in the bottom of the trench. Backfill and compact the trench after stapling and fold the roll over downslope. Secure the RECP's over compacted soil with a row of staples / stakes/pins spaces at ST apart across the width of the RECP's.
3. Roll the RECP down the slope. RECP will unroll with appropriate side against the soil surface. All RECP must be securely fastened to soil surface by placing staples/stakes/pins in appropriate locations as shown in the staple pattern guide.
4. The edges of parallel RECP's must be stapled with approximately 4" - 6" overlap.
5. Consecutive RECP spliced down the slope must overlap with upstream mat stop the downstream mat. The overlap should be 4" - 6".
6. At the terminal end, secure each mat across the width with a row of staples/stakes/pins spaced at ST. If exposed to flow, foot traffic, wind uplift or other disruption, trench the terminal end in as shown in detail.
7. Fasteners should provide a minimum of twenty pounds of pullout resistance. Twelve 1" x 1-½" eleven-gauge staples are typically adequate. In loose soils, twist pins will provide greater pullout resistance. In hard or rocky soils, straight pins may be used where staples or twist pins are refused, provided the minimum pullout requirements are met.

A SLOPE EROSION CONTROL BLANKET

NTS



ELEVATION

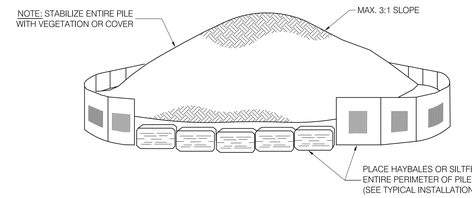


SECTION

SILT FENCE PROPERTIES (New York State)		
FABRIC PROPERTIES	MINIMUM ACCEPTABLE VALUE	TEST METHOD
GRAB TENSILE STRENGTH (LBS.)	110	ASTM D 4632
ELONGATION AT FAILURE (%)	20	ASTM D 4632
MULLEN BURST STRENGTH (PSI)	300	ASTM D 3786
PUNCTURE STRENGTH (LBS.)	60	ASTM D 4833
MINIMUM TRAPEZOIDAL TEAR STRENGTH (LBS.)	50	ASTM D 4533
FLOW THROUGH RATE (GAL./ MIN./ SF)	25	ASTM D 4491
EQUIVALENT OPENING SIZE	40 - 80	US STD. SIEVE ASTM D 4751
MINIMUM UV RESIDUAL (%)	70	ASTM D 4355

B SILT FENCE DETAIL

SCALE: N.T.S.

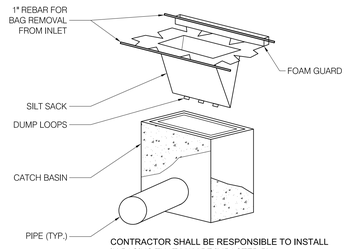


INSTALLTION NOTES:

1. AREA CHOSEN FOR STOCKPILE OPERATION SHALL BE DRY AND STABLE.
2. THE GROUND SURFACE SHALL SLOPE AWAY FROM THE STOCK PILE.
3. IF NECESSARY, PLACE TARP OR IMPERVIOUS MATERIAL BENEATH STOCKPILE TO PREVENT MIXING OF SOIL.
4. COVER STOCKPILE WITH FABRIC OR VEGETATION AS DIRECTED.
5. MAX. SLOPE OF STOCKPILE SHALL BE 3:1 (H:V) UNLESS OTHERWISE APPROVED.

C TEMPORARY SOIL STOCKPILE

SCALE: N.T.S.



CONTRACTOR SHALL BE RESPONSIBLE TO INSTALL IN BASINS THAT MAY BE IMPACTED BY CONSTRUCTION IF NOT IDENTIFIED IN PLAN.

D SILT SACK™- CATCH BASIN INSERT

SCALE: N.T.S.

SOIL, EROSION AND SEDIMENT CONTROL NOTES

PROJECT DESCRIPTION:

THE PROJECT CONSISTS OF THE RENOVATION AND IMPROVEMENTS TO ACCESSIBLE ROUTES AND STAIRWAYS AT THE BETHANY COMMUNITY SCHOOL, LOCATED AT 4 PECK ROAD, BETHANY, CT..

THE INTENT OF THE SEDIMENT AND EROSION CONTROL PLAN IS TO COLLECT SEDIMENT IN RUNOFF DURING CUTTING AND FILLING OPERATIONS BEFORE CONSTRUCTION AREAS ARE STABILIZED. SEDIMENT AND EROSION CONTROL MEASURES AS DESCRIBED HEREIN SHALL BE INSTALLED WHERE SHOWN IN THE PLANS AND AS DIRECTED BY THE LANDSCAPE ARCHITECT OR TOWN INSPECTOR. EXISTING DRAINAGE CHANNELS AND STORM DRAINAGE STRUCTURES WILL BE MAINTAINED AND PROTECTED DURING CONSTRUCTION UNTIL NEW DRAINAGE APPURTENANCES, WHERE PROPOSED, ARE OPERATIONAL.

SILTATION AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE "2024 CT DEEP GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL."

SEDIMENTATION AND EROSION CONTROL NOTES:

SILTATION AND EROSION CONTROL MEASURES SHALL BE INSTALLED AS NECESSARY PRIOR TO THE START OF GRADING AND MAINTAINED UNTIL ALL GROUND SURFACES ARE STABILIZED I.E. WITH TURF, PAVEMENT, ETC., AND SHALL CONSIST OF SILT FENCING, HAY BALES, TEMPORARY SEDIMENTATION BASINS AND SWALES, MULCH AND TEMPORARY SEEDING.

THE OWNER HAS THE AUTHORITY TO CONTROL THE SURFACE AREA OF EARTH MATERIALS EXPOSED BY CONSTRUCTION OPERATIONS AND TO DIRECT THE CONTRACTOR TO IMMEDIATEDLY PROVIDE PERMANENT OR TEMPORARY POLLUTION CONTROL MEASURES TO PREVENT CONTAMINATION OF ADJACENT STREAMS, WATERCOURSES, LAKES, PONDS, OR OTHER AREAS OF WATER IMPOUNDMENT. EVERY EFFORT SHALL BE MADE BY THE CONTRACTOR TO PREVENT EROSION ON THE SITE AND ABUTTING PROPERTY.

THE LANDSCAPE ARCHITECT HAS THE AUTHORITY TO DIRECT THE CONTRACTOR TO DIVERT SURFACE WATER RUN-OFF AWAY FROM EXPOSED RAW EARTH SURFACES THROUGH THE USE OF TEMPORARY BERMS, DIKES AND DIVERSION CHANNELS.

THE EROSION CONTROL FEATURES SHALL BE INSTALLED AND MAINTAINED BY THE CONTRACTOR AND SHALL BE CHECKED DAILY AND AFTER EACH SEVERE RAIN STORM FOR DAMAGE. UNTIL SUCH FEATURES ARE, IN THE OPINION OF THE LANDSCAPE ARCHITECT, NO LONGER NEEDED. ALL SEDIMENTATION TRAPS AND SEDIMENTATION BASINS SHALL HAVE THE ACCUMULATED SEDIMENT AND/OR CLEAN WATER REMOVED BEFORE IT SIGNIFICANTLY REDUCES THEIR STORAGE VOLUME OR FUNCTION, PRIOR TO THE NEXT RAIN STORM FORECAST FOR THE REGION.

THE CONTRACTOR SHALL, AT ALL TIMES, HAVE ON HAND THE NECESSARY MATERIALS AND EQUIPMENT TO PROVIDE FOR EARLY SLOPE STABILIZATION AND CORRECTIVE MEASURES TO DAMAGED SLOPES. THE CONTRACTOR SHALL RESPOND TO MAINTENANCE OR ADDITIONAL MEASURES ORDERED BY THE LANDSCAPE ARCHITECT WITHIN 24 HOURS.

THE CONTRACTOR SHALL OPERATE ALL EQUIPMENT AND PERFORM ALL CONSTRUCTION OPERATIONS SO AS TO MINIMIZE POLLUTION TO ADJACENT WATER COURSES OR WETLANDS AREAS. THE CONTRACTOR SHALL CEASE ANY OF HIS OPERATIONS WHICH WILL INCREASE POLLUTION DURING RAIN STORMS.

ALL SLOPES OF STOCKPILE MATERIAL AND OTHER DISTURBED AREAS SHALL BE STABILIZED AND PROTECTED BY SURROUNDING WITH SILT FENCING OR HAY BALES, OR OTHERWISE PROTECTED AS APPROVED BY THE LANDSCAPE ARCHITECT. ALL DAMAGED AREAS SHALL BE REPAIRED AS SOON AS POSSIBLE. THE LANDSCAPE ARCHITECT SHALL LIMIT THE SURFACE AREA OF EACH MATERIAL EXPOSED IF THE CONTRACTOR FAILS TO SUFFICIENTLY PROTECT THE SLOPES TO PREVENT POLLUTION.

MULCHES: SHALL BE HAY, STRAW, WOOD CELLULOSE, WOOD CHIPS, STONE, NETTING, BURLAP OR OTHER SUITABLE MULCH MATERIAL AS APPROVED BY THE LANDSCAPE ARCHITECT. MULCHES SHALL BE REASONABLY CLEAN AND FREE OF NOXIOUS WEEDS AND DELETERIOUS MATERIALS. ASPHALT SPRAYS WILL NOT BE ALLOWED. THE CONTRACTOR SHALL PREVENT STRAW, WOOD CHIPS, ETC., FROM ENTERING ANY RESERVOIRS OR WATERCOURSES.

HAY BALES: SHALL BE PLACED AROUND ALL EXISTING DRAINAGE INLETS OR AS DIRECTED BY THE LANDSCAPE ARCHITECT. THEY SHALL BE HELD IN PLACE BY TWO WOODEN STAKES IN EACH BALE. BALES SHALL BE MAINTAINED OR REPLACED AS ORDERED BY THE LANDSCAPE ARCHITECT UNTIL THEY ARE NO LONGER NECESSARY FOR THE PURPOSE INTENDED OR ARE ORDERED REMOVED BY THE LANDSCAPE ARCHITECT. HAY BALES SHALL BE MADE OF HAY WITH 40 POUNDS MINIMUM WEIGHT AND 120 POUNDS MAXIMUM WEIGHT. WOOD STAKES SHALL BE A MINIMUM OF 1 INCH BY 1 INCH NOMINAL SIZE BY A MINIMUM OF 3 FEET LONG.

SILT FENCE: SHALL CONSIST OF 3-FOOT WIDE GEOSYNTHETIC FABRIC WITH PREFABRICATED WOOD POSTS AS MANUFACTURED BY "MIRAFI" OR EQUAL. THE BOTTOM SIX INCHES OF FABRIC SHALL BE BURIED BY EITHER TRENCHING OR BY LAYING THE SIX INCH SECTION HORIZONTALLY ON THE GROUND AND BURYING BY RAMPING THE TOPSOIL UP TO THE CONTROL FENCE.

- MINIMUM LENGTH OF SILT FENCE IS 15 L.F.
- MAXIMUM POST SPACING IS 10 L.F.
- JOINTS IN FILTER FABRIC SHALL BE ONLY AT SUPPORT POSTS WITH MINIMUM 6" OVERLAP, SECURELY SEALED
- SILT FENCE SHALL NOT BE USED IN A WATER COURSE
- FABRIC SUSCEPTIBLE TO SUNLIGHT DAMAGE SHALL NOT BE USED IN ANY INSTALLATIONS WHERE EXPOSURE TO LIGHT WILL EXCEED 30 DAYS, UNLESS SPECIFICALLY AUTHORIZED IN WRITING BY THE LANDSCAPE ARCHITECT.

TEMPORARY SWALES AND SEDIMENTATION BASINS MAY BE CONSTRUCTED OF RIP-RAP, MULCH, HAY BALES OR JUTE MESH. PORTLAND CONCRETE OR BITUMINOUS CONCRETE WILL NOT BE ALLOWED.

TEMPORARY GRASS SEED SHALL BE PERENNIAL RYE-GRASS (LOLIUM PERENNE) OR AN IMPROVED VARIETY THEROF, SUCH AS MANHATTAN, HAVING A MINIMUM PURITY OF 98 PERCENT AND A MINIMUM GERMINATION OF 90 PERCENT. THE SEEDING MAY BE ALTERED BY THE LANDSCAPE ARCHITECT IF REQUESTED BY THE CONTRACTOR TO SUIT SPECIAL AREAS OR CONDITIONS.

AT THE COMPLETION OF THE PROJECT, AND AFTER ALL DISTURBED AREAS ARE STABILIZED, THE CONTRACTOR SHALL COMPLETELY REMOVE ALL SEDIMENTATION AND EROSION CONTROL MEASURES. SILT FENCING SHALL BE CUT FLUSH WITH THE GROUND AND ANY ACCUMULATED SEDIMENTATION SHALL BE THINLY SPREAD UPON EXISTING GROUND COVER. ALL MULCH, HAY BALES AND RIP-RAP SHALL BE REMOVED FROM THE SITE, UNLESS SPECIFICALLY ORDERED BY THE LANDSCAPE ARCHITECT TO REMAIN IN PLACE.

GENERAL NOTES

1. Plans may not accurately reflect existing site conditions. It is the responsibility of the Contractor to visit the site and familiarize themselves with site conditions.
2. The Contractor is responsible for any damage due to construction operations within and OUTSIDE the limits of construction as shown on the plans.
3. The Contractor shall restore all areas disturbed due to construction to original condition, at no additional expense to the Owner.
4. Underground utilities are based on information supplied by others. Other underground utilities may exist on the site, the existence of which are unknown. The existence, size and location of all such features must be determined and verified in the field by appropriate authorities prior to construction. Contact "Call Before You Dig" at 1-800-922-4455.
5. The contractor shall familiarize himself with all subsurface utilities prior to the start of work. Any field conditions that differ from the plans shall be brought to the attention of the landscape architect and owner immediately.
6. PROTECT existing utilities to remain from damage. Active utility lines damaged during construction operations shall be repaired or replaced as directed by the utility owner at no additional cost to the owner.
7. Provide, erect, and maintain barricades, warning lights, signs, etc, as required for safety of personnel, public and occupants of the facilities affected by the contractor's operations.
8. All materials and methods of construction shall conform to CONN DOT Form 819, latest edition, as amended, unless other shown on the drawings or specifications herein.
9. Remove all debris and unsuitable materials from site, and it shall become the property of the contractor and shall be removed from the site, and disposed of in accordance with all local, state, and federal laws.
10. Survey data based on point data received from John Paul Garcia and Associates, P.C. Contractor shall verify elevations as well as horizontal limits of proposed work.
11. The Contractor shall coordinate with owner for access so as not to impede school operations, and avoid conflicts with staff, school bus, visitor, or student traffic.

Tree Protection and Removal Notes

1. The contractor shall review existing tree retention *with the landscape architect prior to the start of construction. Removal of* existing trees noted to remain shall occur only if approved by the landscape architect.
2. Contractor shall provide tree protection for all existing trees to remain to the drip line (minimum) unless otherwise directed by landscape architect. Tree protection shall be 4' safety/warning fencing, maintained for the full contract until removal is approved by landscape architect.
3. Compensatory prune and fertilize oak as noted on plans. All pruning and fertilizing of trees shall be performed by licensed arborist and certified by the International Society of Arboriculture. Pruning includes removal of dead wood, decayed limbs without impacting structural integrity of tree, and for improved visual appearance of tree. Fertilizing shall be conducted with through deep root injection.
4. The contractor shall not stockpile materials, store construction equipment, nor have regular access within the driplines of remaining trees.

Concrete Washout Areas

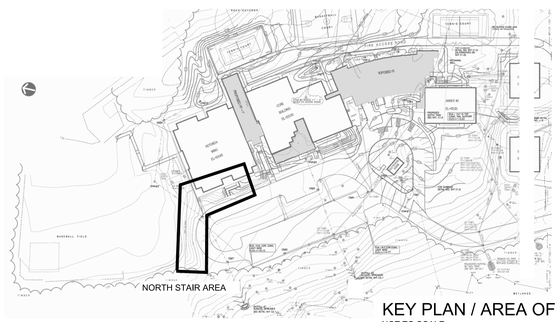
1. The Contractor shall designate an area for concrete washout to (a) collect and retain all the concrete washout water and solids in leak proof containers, and (b) recycle 100 percent of the collected concrete washout water and solids.
2. Wastewater shall be allowed to evaporate, or disposed of as wastewater offsite to remove metals and reduce its pH, for delivery in an acceptable manner to a municipal wastewater treatment plant.
3. Wastewater shall not be discharged to storm sewers, open ground, vegetated channels or permitted to infiltrate existing soils.
4. Hardened concrete that remains may be crushed and reused as a construction material as aggregate for road base, or as fill at the site only with approval with the Owner's Representative.
5. Unused wet concrete should not be dumped on bare ground.
6. Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile or dispose of as waste per regulations.
7. Do not place concrete washout facilities within 50 feet of storm drains, open ditches, or waterbodies.
8. Lining material for washout pits or containers shall be a minimum of 10 mil. polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material. Alternative means of washout shall be reviewed and approved by the Owner's Representative before the start of construction.
9. Concrete washout facilities should be inspected daily and after heavy rains to check for leaks, and identify any plastic linings and sidewalls that have been damaged by construction activities. Examine whether they have been filled to over 75 percent capacity. When the washout container is filled to over 75 percent of its capacity, the washwater should be vacuumed off or allowed to evaporate to prevent overflows. Washout facilities shall not exceed 75% capacity.
10. Damages to the container should be repaired immediately.
11. Before heavy rains, the washout container's liquid level should be lowered or the container should be covered to avoid an overflow during the rain events.

GRADING NOTES

1. Unless noted otherwise, meet line and grade to provide a smooth transition at all interfaces of new and existing curbs and pavements.
2. The slope along all accessible routes shall not exceed 5% (1:20). The cross slope of all accessible routes shall not exceed 2% (1:48).
3. Unless noted otherwise, pitch all concrete pads at doors @ 2% away from building.
4. Along accessible routes, changes in levels shall not exceed 1/4" (if vertical) or 1/2" (if beveled @ 45 degrees) and slopes shall not be greater than 1:20 unless ramps are provided.
5. Unless shown otherwise, cross-pitch all walks located along curbs @ 2% towards the curb.
6. Unless noted otherwise, meet line and grade to provide smooth transition at all interface of new and existing curbs and pavements.
7. Provide erosion control blanket for all slopes in excess of 25%.

LIST OF DRAWINGS

L-1 NOTES + MISCELLANEOUS DETAILS
L-2 NORTH STAIR AREA
L-3 MISCELLANEOUS DETAILS
L-4 PLANTING PLAN



KEY PLAN / AREA OF WORK

NOT TO SCALE

Project Title:

RENOVATIONS AT:

BETHANY COMMUNITY SCHOOL

44 PECK ROAD
BETHANY, CONNECTICUT 06524

ARIS LAND STUDIO
Sustainability + Land Architecture
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Bridgeport, CT 06604
www.arisls.com
203.606.3130

SILVER PETRUCELLI + ASSOCIATES
3190 WHITNEY AVENUE HAMDEN CT 06518
311 STATE STREET NEW LONDON CT 06320
203 230 9007 silverpetrucelli.com

Revision:	Description:	Date:	Revised By:
	-	-	

Drawing Title: NOTES + MISCELLANEOUS DETAILS

Project Phase: BIDDING

State Project Number:

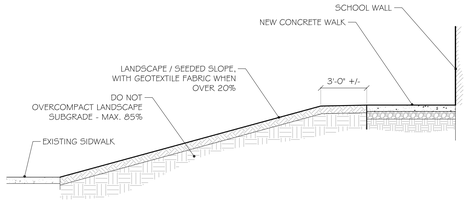
Date: 6/19/2025

Scale: AS NOTED

Drawn By:

Project Number: spa/24-087 , ais - 25-301

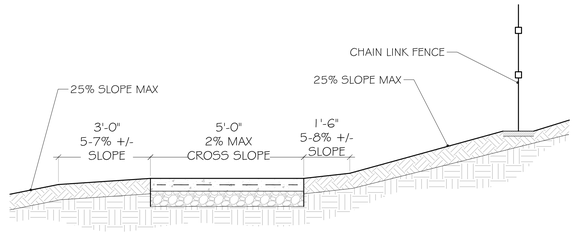
Drawing Number: L- 1



B WALK SECTION

SCALE 1/4" = 1'-0"

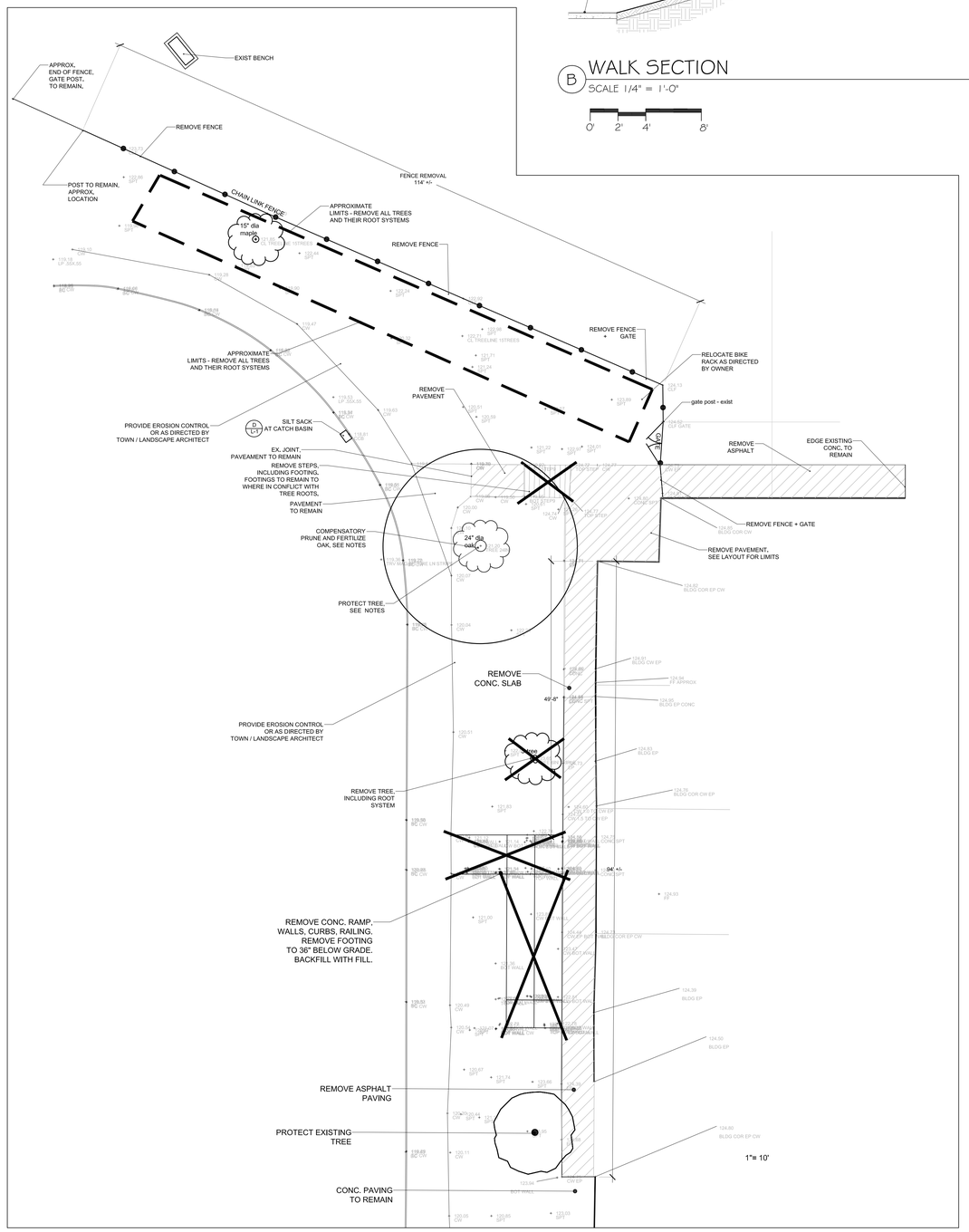
0' 2' 4' 8'

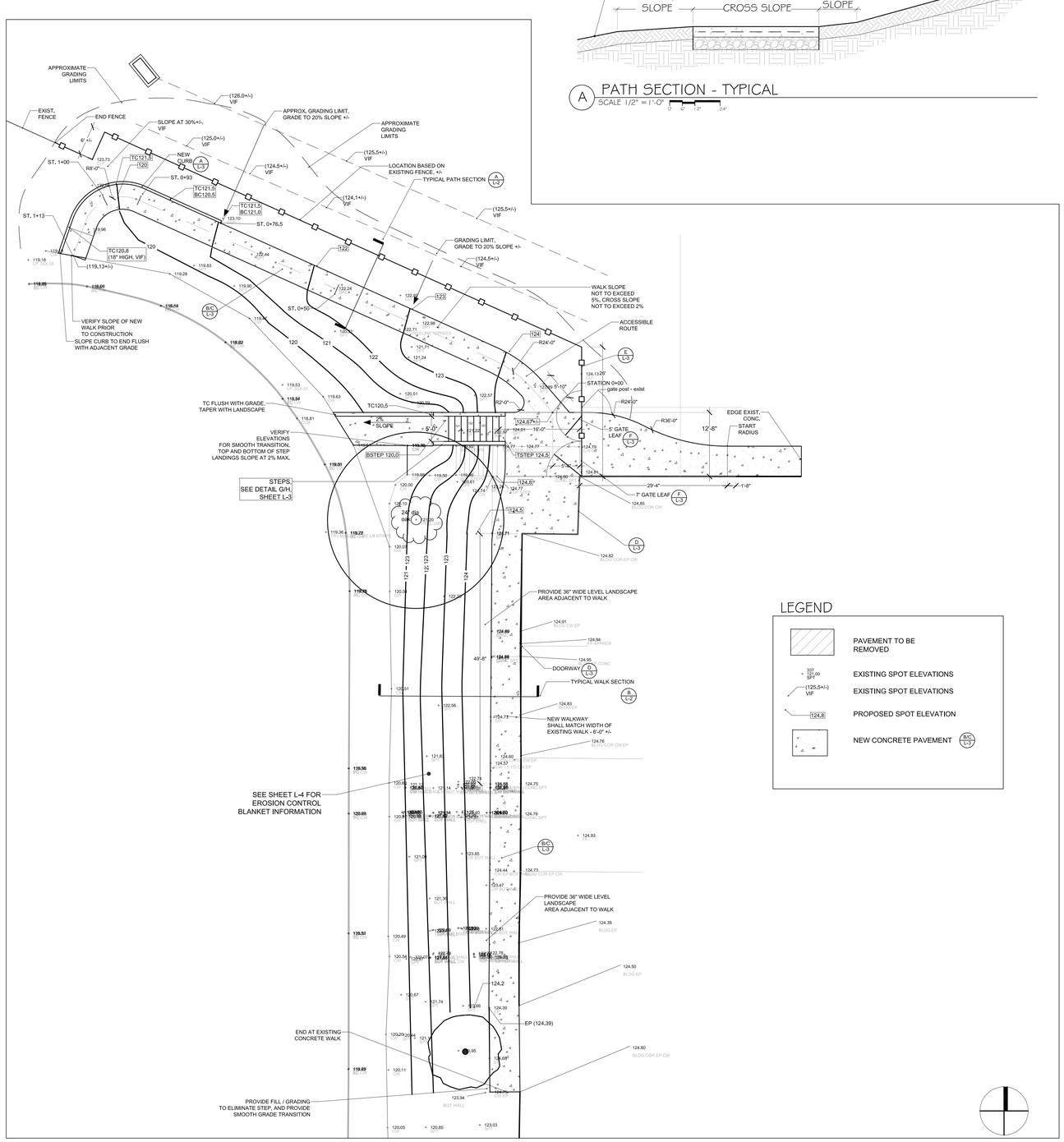


A PATH SECTION - TYPICAL

SCALE 1/2" = 1'-0"

0" 6" 12" 24"





LEGEND

- PAVEMENT TO BE REMOVED
- 337 / 121.00 SPT — EXISTING SPOT ELEVATIONS
- (125.5+/-) VIF — EXISTING SPOT ELEVATIONS
- 124.8 / 124.80 — PROPOSED SPOT ELEVATION
- NEW CONCRETE PAVEMENT (B/C L-3)

NORTH

0' 5' 10' 15' 20'

Project Title:

RENOVATIONS AT:

BETHANY COMMUNITY SCHOOL

44 PECK ROAD
BETHANY, CONNECTICUT 06524

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Revision:	Description:	Date:	Revised By:
	-	-	

Drawing Title: NORTH STAIR IMPROVEMENTS

Project Phase: BIDDING

State Project Number:

Date: 6/19/2025

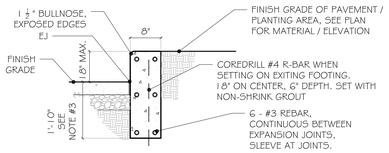
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Drawn By:

Project Number: spa/24-087 , ais - 25-301

Drawing Number: L-2

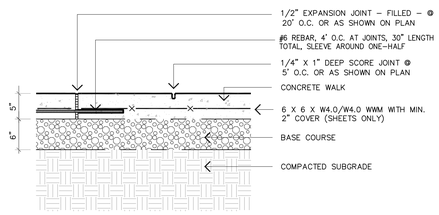
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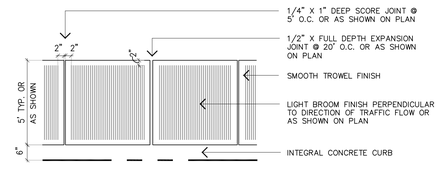
1. ALL EXPOSED CONCRETE SURFACES SHALL HAVE A RUBBED FINISH.
2. EXPANSION JOINTS SPACED AT 20'-0" O.C. MAX.
3. REDUCE DEPTH TO 12" FOR CURBS WITH REVEAL LESS THAN 8".

A HIGH CONCRETE CURB

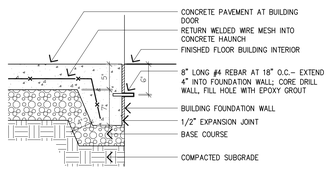
SCALE ½" = 1'-0"



B LIGHT DUTY CONCRETE PAVEMENT – SECTION NTS

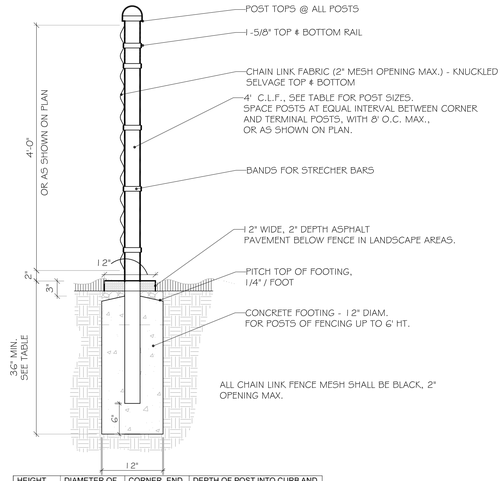


C LIGHT DUTY CONCRETE PAVEMENT – PLAN NTS



D CONCRETE PAV'T AT BUILDING DOOR NTS

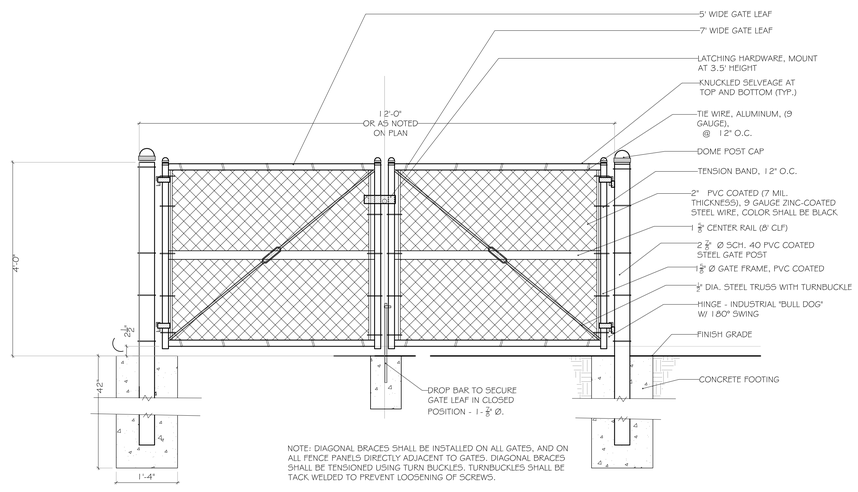
NOTE: THIS DETAIL TO BE INSTALLED WHERE NEW CONCRETE PAVEMENT ABUTS BUILDING DOORS.



HEIGHT OF FENCE	DIAMETER OF LINE POSTS	CORNER, END POSTS	DEPTH OF POST INTO CURB AND FOOTING AT:	
			LINE POST	END / CORNER POST
4'-0"	1 7/8"	2 3/8"	12"	18"

E CHAIN LINK FENCE

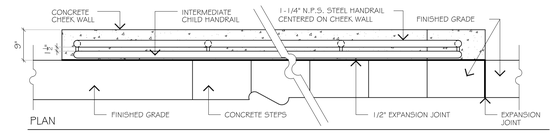
N.T.S.



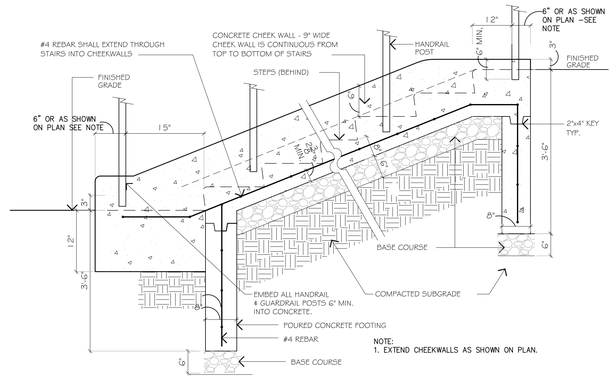
NOTE: DIAGONAL BRACES SHALL BE INSTALLED ON ALL GATES, AND ON ALL FENCE PANELS DIRECTLY ADJACENT TO GATES. DIAGONAL BRACES SHALL BE TENSIONED USING TURN BUCKLES. TURNBUCKLES SHALL BE TACK WELDED TO PREVENT LOOSENING OF SCREWS.

F CHAIN LINK FENCE DOUBLE GATE

SCALE: 3/4" = 1'-0"

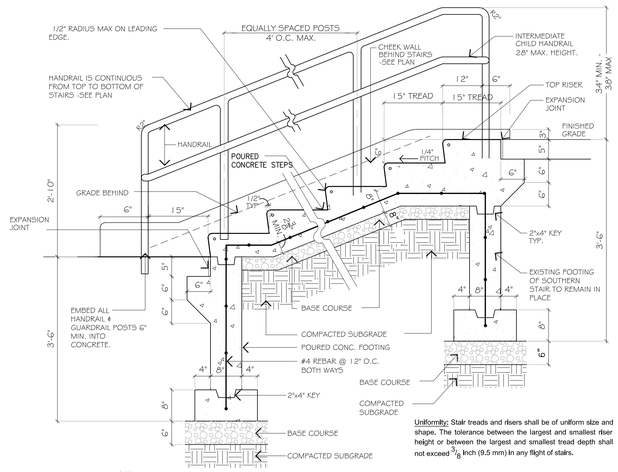


PLAN



SECTION

G CONCRETE CHEEK WALL NTS



Uniformity: Stair treads and risers shall be of uniform size and shape. The tolerance between the largest and smallest riser height or between the largest and smallest tread depth shall not exceed 3/8 inch (9.5 mm) in any flight of stairs.

NOTE:
1. HANDRAILS ARE CONTINUOUS FROM TOP TO BOTTOM OF STAIRS, INCLUDING CENTER LANDING.
2. SEE PLAN FOR LENGTH OF LANDINGS. LANDINGS ARE MEASURED FROM NOSE OF TOP STEP TO BOTTOM OF NEXT SET OF STAIRS.
3. LANDINGS SHALL HAVE A SLOPE NOT TO EXCEED 2%, FOR 5' MINIMU, OR THE LENGTH EQUAL TO THE WIDTH OF THE STAIRS.
4. FOR EACH RISER THERE IS A 15" TREAD INCLUDING TOP RISER.
5. SET HANDRAIL HEIGHT AT 37" ABOVE STAIR NOSING. SECOND RAIL SHALL BE SET AT NO MORE THAN 26.5" TO MAINTAIN 9" SPACE BETWEEN TOP AND LOWER RAIL PER ADA REQUIREMENTS.
6. CHEEKWALLS / STEPS MAY REUSE EXISTING FOOTINGS AT SOUTH STAIR. COREDRILL REINFORCEMENT INTO EXISTING CONCRETE FOOTING. VERIFY INTEGRITY OF EXISTING FOOTING.
7. NOSINGS- INSTALL AMSTEP PRODUCTS (WWW.AMSTEP.COM) MODEL 224A, SET BACK 1" FROM NOSING. COLOR SHALL BE RED, OR EQUAL AS APPROVED BY LANDSCAPE ARCHITECT. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

SECTION

H CONCRETE STEPS NTS

Project Title:

RENOVATIONS AT:

BETHANY COMMUNITY SCHOOL

44 PECK ROAD
BETHANY, CONNECTICUT 06524

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Revision:	Description:	Date:	Revised By:
	-	-	

Drawing Title:

MISCELLANEOUS DETAILS

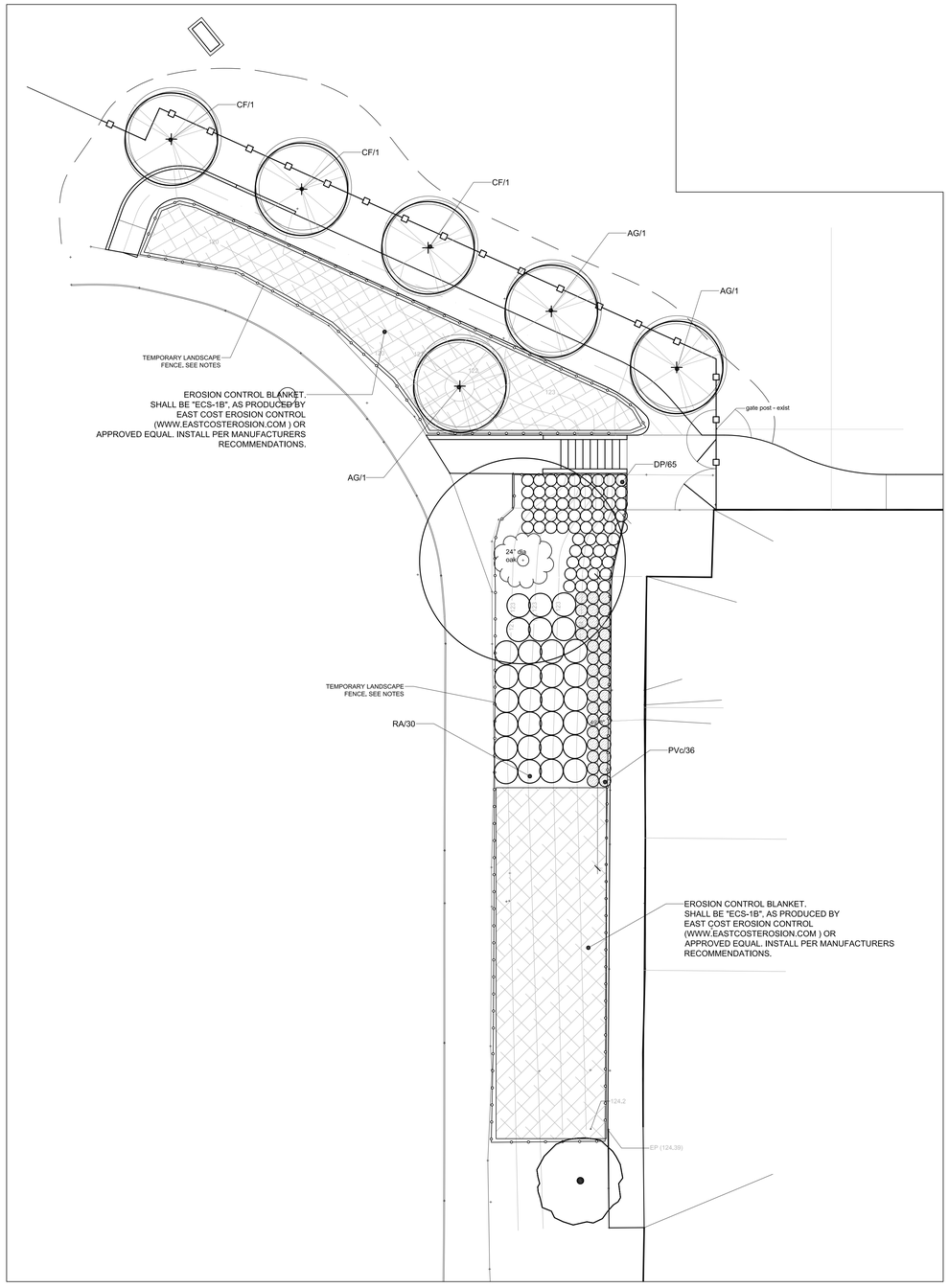
Project Phase:

BIDDING

State Project Number:

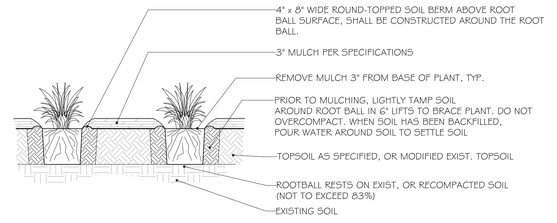
Date: 6/19/2025
Scale: AS NOTED
Drawn By:
Project Number: spa/24-087 , ais - 25-301

Drawing Number: L-3



NORTH STAIR PLANTING PLAN

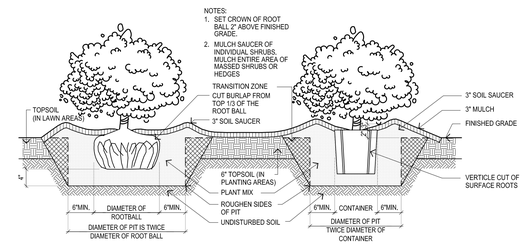
ADD-ALTERNATE #1



1. MINIMIZE SOIL COMPACTION TO PRESERVE INFILTRATION CAPACITY OF SOIL
2. SET PLANTS PLUMB AND FACET TO GIVE BEST APPEARANCE TO ADJACENT AREAS.
3. WHERE STORMWATER SOIL MEETS UNDISTURBED SOIL, SCARIFY SIDES AND BOTTOM OF EXCAVATION UP TO THE BOTTOM OF ROOTBALL.
4. SCARIFY ROOTS ALONG EDGE WHERE SWTORMWATER SOIL MEETS CONTAINERIZED PERENNIAL BEFORE PLANTINGS.
5. ROOTBALL SHALL REST ON UNDISTURBED SOILS, WHERE SOILS ARE NOT MODIFIED.

A PERENNIAL PLANTING

NTS

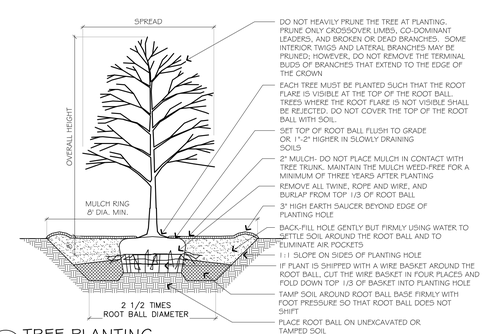


BALLED AND BURLAPPED MATERIAL

CONTAINER GROWN MATERIAL

B PLANT PIT FOR SHRUBS

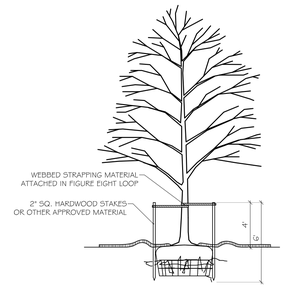
NTS



C TREE PLANTING

NTS

NOTE: THIS DETAIL ASSUMES THAT THE PLANTING SPACE IS LARGER THAN 8' SQUARE, OPEN TO THE SKY, AND NOT COVERED BY ANY PAVING OR GRATING.



STAKING FOR TREES 3" CALIPER OR LESS

NOTES:
-ALL STAKES SHALL BE DRIVEN OUTSIDE THE EDGE OF THE ROOT BALL.
-WIRE OR CABLE SIZES SHALL BE AS FOLLOWS: -TREES UP TO 2.5" CALIPER - 14 GAUGE -TREES 2-1/2" TO 3" CALIPER - 12 GAUGE
-TIGHTEN WIRE OR CABLE ONLY ENOUGH TO KEEP FROM SLIPPING. ALLOW FOR SOME TRUNK MOVEMENT. PLASTIC HOSE SHALL BE LONG ENOUGH TO ACCOMMODATE 1-1/2" OF GROWTH AND BUFFER ALL BRANCHES FROM THE WIRE.
-TUCK ANY LOOSE ENDS OF THE WIRE OR CABLE INTO THE WIRE WRAP SO THAT NO SHARP WIRE ENDS ARE EXPOSED.
-INSTALL THREE GUY WIRES PER TREE, SPACED EVENLY AROUND THE TRUNK.
-STAKES SHALL BE REMOVED NO LATER THEN THE END OF THE FIRST GROWING SEASON AFTER PLANTING.

D TREE STAKING

NTS

SUPPLEMENTAL PLANT CARE / FERTILIZER NOTES

Fertilizer Applications
Apply the following fertilizer mixture at time of installation.
Return every 3- weeks, during the first growing season following installation, to reapply, irrigate existing plantings with Fertilizer Mixture.

Fertilizer Mixture includes :

A. Fertilizer : Neptune's Harvest, Fish + Seaweed Fertilizer, 2-3-1
Outdoor Plants: Use 1/8 Cup (1 fl. Oz.- 1:128) per gallon of water. Feed herbacious plants, trees and shrubs. Apply until soil is saturated.
It is best to foliar feed early or late in the day.

B. Quantum - Total, Soil + Plant Microbial Inoculant (DO NOT MIX WITH FUNGICIDES OR PESTICIDES.)
New Plantings/Resets: 2 oz per tree At transplant with watering in solution. 2% Concentration (Mix per square foot = 32 ox).

C. Myco Apply, "Soluble Max", Mycorrhizal Inoculant
Plantings: potted plants, transplants at .05 -1.0 oz/ gallon
B&B trees & shrubs - 0.5 - 1.5 oz/inch of stem caliper.

PLANTING NOTES

1. If a discrepancy exists between plant quantities as shown on the drawing and in the plant list, the contractor shall be responsible for supplying and installing the quantity in the Plant List. Review planting locations with the Landscape Architect before installation.
2. All plant locations will be reviewed and approved by the Landscape Architect prior to installation.
3. Decompact soils impacted by construction operations in all landscape areas a minimum 24" below grade. Decompact soil prior to placing topsoil.
4. The Contractor shall install 3" mulch in all landscape beds following installation of plantings. The Contractor shall return in the fall to remove invasive plants. Twelve months after completion, the Contractor shall return to topdress the mulch beds. The Contractor shall review plant material health with the Owner at the time of Topdressing.
5. During the first 12 months after installation is accepted, the Contractor shall return a minimum of four (4) times to remove invasive plants.
6. See Specifications for Plant Material requirements and soil requirements.
7. All remaining turf / landscaped areas not noted on this plan to receive plantings or specific seed mix shall be seeded with general turf seed mix.
8. Contractor shall restore all disturbed landscape areas with turf seed. Seed shall be "Supreme #14" available from Planters Choice, Newtown, CT. Rake seeded areas to remove stones in excess of 1". Mulch seeded areas with shredded hay for moisture retention. Apply establishment fertilizer based on soil testing from State Certified soil testing laboratory.
9. The area requires preparation of the landscape area, by removing large stones, and placing a minimum of 6" topsoil (sandy loam).
10. All planting areas to receive 6" minimum of topsoil, unless otherwise noted in soil profile description.
11. All planting areas to receive 6" minimum of topsoil, unless otherwise noted in soil profile description. Topsoil shall be: ASTM D5268-02, pH range of 5.5 to 7.0, no less than 3% and no more than 5% (percent) organic material minimum; free of stones 1 inch (25 mm) or larger in any dimension and 97% - 100% will pass ¼" mesh sieve, and no other extraneous materials harmful to plant growth. Topsoil characteristics shall include: Texture: Sandy loam to silty clay loam; Structure: Granular, crumb, or fine subangular blocky. Loose or single-grained soils are discouraged; Soluble Salts: less than 200 ppm; Soils dominant in sand, silt, or clay singularly are not permitted.
12. The contractor shall install "green" safety fence to protect planting areas. Install with posts spaced maximum 10' on center. Fence shall be
    a. Heavy Duty, 48" height.
    b. Mesh size: 1.8" x 3.3"
    c. Tensile strength: 17 pounds per square inch.
    d. Post shall be 14 gauge, 6' height, green, with ground anchor for stability (U-channel style).
    e. Signs: Install signs, 8 ½" x 11", Every 100 feet along fence. "Landscape area. Keep out to allow for establishment of plantings and turf. Thank you".
    i. Sign shall be all weather, mounted to posts.

PLANT SCHEDULE

Quantity	Symbol	*Botanical name*	Common Name	Misc.	Size	notes
		TREES				
3	AG	*Amelanchier grandiflora 'Autumn Brilliance'*	Serviceberry		*6' HT.*	CLUMP / B&B
3	CF	*Comus Florida 'Cherokee Brave'*	Red Flowering Dogwood	Ruby Red	1 1/2" - 2" CAL	B&B
		SHRUBS				
30	RA	*Rhus aromatica 'Gro-Low'*	Low Grow Sumac	#3 Cont.		36" O.C.
		HERBACIOUS / PERENNIALS				
65	DP	*Dennstaedtia punctilobula*	Hay-Scented Fern	#1 Cont.		
36	PVc	*Panicum virgatum 'Cape Breeze'*	Cape Breeze Swithgrass	#1 Cont.		

0' 5' 10' 15' 20'

NORTH

Project Title:

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Revision:	Description:	Date:	Revised By:
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Drawing Title: PLANTING PLAN

Project Phase: BIDDING

State Project Number:

Date: 6/19/2025

Scale: 1"= 10'

Drawn By:

Project Number: spa/24-087 , als - 25-301

Drawing Number: L-4