

CONTRACT DOCUMENTS
FOR
HANOVER HIGH SCHOOL
TRACK IMPROVEMENTS
CONTRACT 1 (SITEWORK) PROJECT

SAU #70/DRESDEN SCHOOL DISTRICT

HANOVER, NEW HAMPSHIRE

March 1, 2023

Project No. 10021



ISSUED FOR BIDDING



PATHWAYS CONSULTING, LLC

Planning • Civil & Environmental Engineering • Surveying • Construction Assistance
240 Mechanic Street • Suite 100
Lebanon, New Hampshire 03766
(603) 448-2200 • Fax: (603) 448-1221

**CONSTRUCTION DOCUMENTS
for the
HANOVER HIGH SCHOOL TRACK IMPROVEMENTS
CONTRACT 1 (SITEWORK) PROJECT
SAU #70/DRESDEN SCHOOL DISTRICT**

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BID PLANS

[Pathways Plans entitled “Site Plans for SAU#70/Dresden School District, Hanover High School Track,” Sheets 1 through 9 (9 total sheets), dated March 1, 2023.]

ADVERTISEMENT FOR BIDS
HANOVER HIGH SCHOOL TRACK IMPROVEMENTS
CONTRACT 1 (SITEWORK) PROJECT
SAU #70/DRESDEN SCHOOL DISTRICT
HANOVER, NEW HAMPSHIRE

SAU #70/Dresden School District invites sealed bids for the Hanover High School Track Improvements Contract 1 (Sitework) Project in Hanover, New Hampshire (NH) in accordance with Contract Documents prepared by Pathways Consulting, LLC, 240 Mechanic Street, Suite 100, Lebanon, NH 03766.

SCOPE OF WORK: This Contract is for all Sitework excluding paving of track, track surfacing, and track specialties which are being bid under a separate Contract (Contract 2). This project involves the relocation and replacement of the existing track approximately 5 feet to the southwest of the current location. The project includes, but is not limited to, partial depth excavation and removal of the existing track and base materials; relocation and replacement of the track surface and select base course materials; removal and replacement of existing drainage structures and related trench patching for disturbed areas of existing pavement; installation of underdrains around the interior and exterior perimeter of the track; raising and relocating the track infield, football field, and field event areas; relocation of one section of fence along with temporary fence removal and resetting; relocation and resetting existing irrigation; turf establishment and sod (additive alternative); and sediment and erosion controls. Under this Contract, the Contractor will be responsible for bringing select materials to proper grade and rough grading the track, long jump/triple jump area, pole vault area, high jump area, shot put area, and discus area in preparation for Contract 2 (Paving and Surfacing). However, the Contractor shall make available personnel to be present during paving operations to deliver additional materials for fine grading and for verification that there is no conflict with their work. Even though the track paving and resurfacing is under the separate Contract 2, the Contractor must communicate all work with the parties involved with Contract 2 (Paving and Surfacing) in order to make sure there is no conflict in schedule or the work.

BIDS: Sealed bids will be received at the SAU #70 office, 41 Lebanon Street, Suite 2, Hanover, NH 03755 until 2:00 p.m., Eastern Standard Time, on Wednesday, March 29, 2023. Bids must be submitted in accordance with the “Instructions for Bidders” section of the Contract Documents.

The Owner reserves the right to reject any and all bids and to waive any informality in the bid.

CONTRACT COMPLETION TIME: Work is expected to begin in late June 2023 following the end of the school year. All turf establishment and sod work must be completed prior to August 1, 2023. Substantial Completion shall be achieved by August 15, 2023, and Final Completion shall be achieved by September 1, 2023.

PLANS AND SPECIFICATIONS: Contract documents may be examined at the following offices during regular business hours:

Physical Copies:

1. Pathways Consulting, LLC, 240 Mechanic Street, Suite 100, Lebanon, NH 03766
2. SAU #70 Office, 41 Lebanon Street, Suite 2, Hanover, NH 03755

Electronic Copies:

1. Construction Summary of NH, (603) 627-8856, www.constructionsummary.com

2. Dodge, Data & Analytics, (877) 958-5062,
<https://leads.construction.com/construction/projects>
3. Dresden School District Website, www.sau70.org/departments/current-bids

PDF copies of plans and specifications can be obtained on the SAU #70 website (www.sau70.org/departments/current-bids) at no cost to the Bidder. Additional hard copies of the Plans and Contract Documents may be obtained at the office of Pathways Consulting, LLC upon receipt of \$80.00 for each set, which is non-refundable. Checks should be made payable to Pathways Consulting, LLC. All requests for mailed documents must be accompanied by an additional fee of \$30.00 to cover the cost of postage and handling. All questions concerning obtaining the plans and specifications shall be directed to Pathways Consulting, LLC (603-448-2200, jeff.goodrich@pathwaysconsult.com).

PRE-BID SITE VISIT: A non-mandatory pre-bid site visit will be held for this project at 1:00 p.m. on Friday, March 10, 2023. Interested contractors should meet at the project site at the Hanover High School track facility located at 41 Lebanon Street, Hanover, NH. Contractors who do not attend the pre-bid site visit, but intend to submit a bid, should register with Jamie J. Teague (jamieteague@hanovernorwichschools.org) at the SAU #70/Dresden School District office to make sure that they receive any bid addenda or other contractor information. Failure to do so may result in a rejected bid.

INSTRUCTIONS FOR BIDDERS

SAU #70/Dresden School District invites sealed bids for the Hanover High School Track Improvements Contract 1 (Sitework) Project in Hanover, New Hampshire (NH) in accordance with Contract Documents prepared by Pathways Consulting, LLC, 240 Mechanic Street, Suite 100, Lebanon, NH 03766.

Sealed bids will be received at the SAU #70 office, 41 Lebanon Street, Suite 2, Hanover, NH 03755 until 2:00 p.m., Eastern Standard Time, on Wednesday, March 29, 2023. Bids must be marked and addressed to the attention of Jamie J. Teague, Business Administrator. If mailed, bids must be received no later than the time and date stated above. All bids should be sealed and clearly marked as “Hanover High School Track Improvements Contract 1 (Sitework) Project” and as indicated in the Instructions to Bidders. A bid bond will NOT be required for this project. Bids must be complete and include all required documentation requested in the Contract Documents. Bids may also be submitted electronically to jamieteague@hanovernorwichschools.org.

LOCATION: The site is located at the Hanover High School track facility, 41 Lebanon Street, Hanover, NH.

PROJECT SUMMARY: This Contract is for all Sitework excluding paving of track, track surfacing, and track specialties which are being bid under a separate Contract (Contract 2). This project involves the relocation and replacement of the existing track approximately 5 feet to the southwest of the current location. The project includes, but is not limited to, partial depth excavation and removal of the existing track and base materials; relocation and replacement of the track surface and select base course materials; removal and replacement of existing drainage structures and related trench patching for disturbed areas of existing pavement; installation of underdrains around the interior and exterior perimeter of the track; raising and relocating the track infield, football field, and field event areas; relocation of one section of fence along with temporary fence removal and resetting; relocation and resetting existing irrigation; turf establishment and sod (additive alternative); and sediment and erosion controls. Under this Contract, the Contractor will be responsible for bringing select materials to proper grade and rough grading the track, long jump/triple jump area, pole vault area, high jump area, shot put area, and discus area in preparation for Contract 2 (Paving and Surfacing). However, the Contractor shall make available personnel to be present during paving operations to deliver additional materials for fine grading and for verification that there is no conflict with their work. Even though the track paving and resurfacing is under the separate Contract 2, the Contractor must communicate all work with the parties involved with Contract 2 (Paving and Surfacing) in order to make sure there is no conflict in schedule or the work.

CONTRACT COMPLETION TIME: Work is expected to begin in late June 2023 following the end of the school year. All turf establishment and sod work must be completed prior to August 1, 2023. Substantial Completion shall be achieved by August 15, 2023, and Final Completion shall be achieved by September 1, 2023.

This contract shall not be subject to Liquidated Damages.

PLANS: PDF copies of plans and specifications can be obtained on the SAU #70 website (www.sau70.org/departments/current-bids) at no cost to the Bidder. Additional hard copies of the Plans and Contract Documents may be obtained at the office of Pathways Consulting, LLC upon receipt of \$80.00 for each set, which is non-refundable. Checks should be made payable to Pathways Consulting, LLC. All requests for mailed documents must be accompanied by an

additional fee of \$30.00 to cover the cost of postage and handling. All questions concerning obtaining the plans and specifications shall be directed to Pathways Consulting, LLC (603-448-2200, jeff.goodrich@pathwaysconsult.com).

PLANS, SPECIFICATION, AND PROPOSAL MAY BE VIEWED AT THE OFFICE OF:

Physical Copies:

1. Pathways Consulting, LLC, 240 Mechanic Street, Suite 100, Lebanon, NH 03766
2. SAU #70 Office, 41 Lebanon Street, Suite 2, Hanover, NH 03755

Electronic Copies:

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PRE-BID SITE VISIT: A non-mandatory pre-bid site visit will be held for this project at 1:00 p.m. on Friday, March 10, 2023. Interested contractors should meet at the project site at the Hanover High School track facility located at 41 Lebanon Street, Hanover, NH. Contractors who do not attend the pre-bid site visit, but intend to submit a bid, should register with Jamie J. Teague (jamieteague@hanovernorwichschools.org) at the SAU #70/Dresden School District office to make sure that they receive any bid addenda or other contractor information. Failure to do so may result in a rejected bid.

QUESTIONS: During the advertising phase of this project, all questions shall be addressed in writing solely to Jamie J. Teague, Business Administrator, SAU #70/Dresden School District, Phone (603) 643-6050 ext. 2008 or submitted in writing to jamieteague@hanovernorwichschools.org. No additional questions will be received after 5:00 p.m. on Friday, March 17, 2023, in order to allow for sufficient time to issue a final bid addendum, if required.

BID PREPARATION AND SUBMISSION:

- A. Bidders are expected to examine the specifications, drawings, all instructions, and the construction site. Failure to do so will be at the bidder's risk. A non-mandatory pre-bid conference is scheduled to present the proposed project and field conditions.
- B. All bids must be submitted on the forms provided by the OWNER. Bidders shall furnish all the information required by the solicitation. Bids must be signed and the bidder's name typed or printed on the bid sheet and each continuation sheet, which requires the information by the bidder. Erasures or other changes must be initialed by the person signing the bid. Bids signed by an agent shall be accompanied by evidence of the agent's authority; bidders should retain a copy of their bid for their own records.
- C. All bid documents shall be sealed in an envelope which shall be clearly marked with the words "Hanover High School Track Improvements Contract 1 (Sitework) Project", any project or other identifying number, the bidder's name, and the date and time for receipt of bids.
- D. This solicitation requires bidding on all items; failure to do so will disqualify the bid.
- E. Unless expressly authorized elsewhere in this solicitation, alternate bids will not be considered.
- F. Bids submitted by electronic methods, telegram, or facsimile (fax) machines will be considered, but the contractor is responsible for verifying receipt.
- G. All blank spaces under the page(s) headed "Bid Proposal" must be filled in with ink or

typewriter in both words and figures indicating the unit price for each respective bid item. The bid total shall also be written in words and figures.

- H. In case of a discrepancy between the bid total written in words and that entered as a figure, the price written in words shall govern.
- I. In case of a discrepancy between a unit price written in words and one entered in figures, the price written in words shall govern.
- J. The estimate quantities are not guaranteed but are given as a basis for the comparison of bids.

BID VALID PERIOD:

Bidder shall hold prices on bid form for 45 days from the date the bids are to be submitted. No bid bond is required.

EXPLANATION AND INTERPRETATION TO PROSPECTIVE BIDDERS:

- A. Any prospective bidder desiring an explanation or interpretation of the solicitation, specifications, drawings, etc., must request it in writing to Jamie J. Teague, Business Administrator, SAU #70/Dresden School District, Phone (603) 643-6050 ext. 2008, jamieteague@hanovernorwichschools.org. No additional questions will be received after 5:00 p.m. on Friday, March 17, 2023. SAU #70/Dresden School District will provide the appropriate addendum to answer bidder questions to all registered plan holders, a minimum of 5 working days before the bid due date.
- B. Any information obtained by, or provided to, a bidder other than by formal addendum to the solicitation shall not constitute a change to the solicitation.

ADDENDUM TO INVITATION TO BIDS AND INSTRUCTIONS TO BIDDERS:

- A. If this information is amended, then all terms and conditions which are not modified remain unchanged.
- B. Bidders shall acknowledge receipt of any addendum to this solicitation by identifying the addendum number and date on the bid form. Bids which fail to acknowledge the bidder's receipt of any addendum may result in the rejection of the bid if the addendum (addenda) contained information which substantively changed the OWNER'S requirements.

RESPONSIBILITY OF PROSPECTIVE CONTRACTOR:

- A. A prospective bidder/contractor may not have been suspended, debarred, voluntarily excluded, or determined ineligible by any Federal or State agency within the last three (3) years; or have a proposed suspension, debarment, voluntary exclusion or ineligibility determination pending; or have been indicted, convicted, or had civil judgment rendered against it by a court of law having jurisdiction in any matter involving fraud or official misconduct within the past three (3) years.
- B. A prospective bidder/contractor must be registered with the State of New Hampshire Secretary of State's office to do business within the State of New Hampshire by the execution date of any contract.
- C. A bidder may submit a unit bid price that is obviously below the cost of the bid item. If the OWNER awards and enters into a contract with a Bidder that has submitted a unit bid price that is obviously below cost, the contractor shall be obligated to perform the work under such item as indicated in the contract documents and/or directed by the Engineer.
- D. If a bidder submits a unit bid price of zero for a contract bid item, the bid will be declared informal and rejected from consideration.

- E. When “Alternate Bid Items” are indicated in the Proposal, bidders must bid on all pay items in each set of “Alternate Bid Items.” Failure to bid on all of the “Alternate Bid Items” in the proposal may result in rejection of the Bid.
- F. When it is indicated in the contract documents or drawings that the payment or costs of work are incidental or subsidiary to one or more other contract items (but not to specific other items), such costs shall be included by the bidder in the price bid for all other contract items.

AVAILABILITY OF LANDS FOR WORK, ETC.:

- A. All work shall be limited to within the limits of disturbance depicted on the Drawings. All additional lands and access thereto required for temporary construction facilities, construction equipment or storage of materials and equipment to be incorporated in the work are to be obtained and paid for by the Contractor. Use of those lands shall be compliant with all Federal, State, and local laws, regulations, and ordinances.

FAMILIARITY WITH LAWS, ORDINANCES, AND REGULATIONS:

- A. By submitting a bid, a prospective bidder/contractor certifies that it is familiar with all Federal, State, and local laws, ordinances, and regulations which affect in any way the materials, equipment, haul roads used in or upon the work, the conduct of the work, and the persons engaged or employed in the performance of the work to be performed pursuant to the contract.
- B. By submitting a bid, a prospective bidder/contractor certifies that it shall forthwith report in writing to the ENGINEER any provisions in the plans, proposal, specifications, or proposed contract that the bidder/contractor believes is in conflict with or inconsistent with any Federal, State, or local laws, ordinance, or regulation.
- C. By submitting a bid, a prospective bidder/contractor certifies that if, during its investigation of the work in the process of preparing its bid, it discovers or encounters subsurface or latent physical conditions at a project site differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract, it shall notify in writing the ENGINEER of the specific differing conditions immediately upon discovering or encountering the differing site conditions.
- D. A prospective bidder/contractor further certifies that if it fails to notify the Engineer of any differing site conditions as described above, it shall waive any and all rights that it might have to additional compensation from the OWNER for additional work as a result of the differing site conditions and that it shall not bring claim for additional compensation because of differing site conditions.
- E. By submitting a bid, a prospective bidder/contractor certifies that no claim or defense or ignorance or misunderstanding concerning Federal, State, or local laws, ordinances and/or regulations will be employed by a bidder/contractor or considered by the OWNER in claims, litigation, alternate dispute resolution procedures, or other matters concerning the contract for which the bid is submitted.

LATE SUBMISSION, MODIFICATIONS, AND WITHDRAWAL OF BIDS:

- A. Any bid received at a place designated in the solicitation after the exact time specified for receipt will not be considered.
- B. Any modification or withdrawal of a bid is subject to the same conditions as in Paragraph A of this provision.
- C. The only acceptable evidence to establish the time of the receipt by the OWNER is the time/date stamp of the OWNER on the proposal wrapper, or other documentary evidence

- of receipt maintained by the OWNER.
- D. Bids may be withdrawn in written notice at any time before the exact time set for opening of bids. A bid may be withdrawn in person by a bidder or its authorized agent if, before the exact time set for opening of bids, the identity of the person requesting withdrawal is established and the person signs a receipt for the bid.

REJECTION OF BIDS:

- A. A proposal may be declared “informal” and hence rejected if it shows any alteration of form, omissions or additions not called for in the proposal, lacks proper signatures, is a conditional bid, has alternate bids unless required in the proposal, has irregularities of any kind, has changes to the printed content, is submitted on a form not furnished by the OWNER, is incomplete, fails to acknowledge receipt of one or more addendums, or includes a clause in which a bidder reserves a right to accept or reject the contract award.
- B. A proposal may be rejected at the time of bid opening or following analysis to confirm the proposal.
- C. The OWNER may reject any or all proposals, waive any or all technicalities, and/or advertise for new proposals if in its sole judgment, or that of the awarding authority, the best interest of the OWNER, or the awarding authority, will be served.
- D. Bids that fail to acknowledge the bidder’s receipt of any addendum, will result in the rejection of the bid if the addendum (addenda) contained information which substantively changed the OWNER’S requirements.
- E. The OWNER will decide whether any bid prices are unbalanced above or below a reasonable cost analysis value as evaluated by the Design Engineer. Proposals in which bid prices are unbalanced, mathematically and/or materially, may be rejected at the sole discretion of the OWNER. For purposes of this subsection “mathematically unbalanced bid” and “materially unbalanced bid” shall have the same meaning as in 23 CFR Part 635-Construction and Maintenance.
- F. Prospective bidders may be disqualified for various reasons including (a) submission of more than one proposal for the same work by an entity under the same or different names, (b) evidence of collusion among bidders, or (c) any other cause for suspension or debarment.

CONTRACT AWARD:

- A. The OWNER will evaluate bids in response to this solicitation without discussions and will award a contract to the lowest responsive and responsible bidder whose bid, conforming to the solicitation, will be most advantageous to the OWNER considering only price and any price related factors specified in the solicitation.
- B. Opened proposals will be considered, and submitted bids confirmed, on the basis of the summation of the products of the quantities shown in each proposal’s Schedule of Items multiplied by the unit bid prices bid. In the event of a discrepancy between the written bid amount and the alpha numeric figure, the written amount shall govern. In the event of a discrepancy between a unit price and the calculated extension, the product based on the unit bid price and the mathematically correct summation of the products shall govern.
- C. A written award shall be furnished to the successful bidder within the period for acceptance specified in the bid and shall result in a binding contract without further action by either party.
- D. Signing of the agreement will follow once the required bonds and insurances are in hand with the OWNER.

CONTRACT BONDS:

- A. The successful bidder will be required to furnish a Performance Bond and Payment Bond in the amount of one hundred percent (100%) of the bid submitted. Surety companies executing the Bond must appear on the U.S. Treasury Department's most current list (Circular 570, as amended) and must be authorized to transact business in the State of New Hampshire.

SIGNING THE CONTRACT:

- A. A contract signing will be scheduled between the OWNER and the successful bidder/contractor following distribution of the Notice of Award.
- B. Failure to comply with any of the requirements of these provisions relative to signing the contract or failure to furnish the required surety prior to the contract signing shall be just cause for the annulment of the award of the contract.
- C. If the contract award or the contract is annulled, the OWNER may award the contract to the next lowest responsible bidder that has submitted a proposal that complies with all the provisions required to make it formal or advertise a new request for bids in the contract(s).
- D. Failure by the contractor to sign the contract within the time provided by this subsection shall not be a reason for an extension of the contract completion date.

TAXES AND INSURANCE REQUIREMENTS:

In accordance with the General Conditions.

PERMITS:

The work is subject to the conditions included in the following permits:

- A. None

BID PROPOSAL

Proposal of _____
(hereinafter called "BIDDER"), organized and existing under the laws of the State of

_____ doing business as _____
Corporation, Partnership, or an Individual

To SAU #70/DRESDEN SCHOOL DISTRICT (hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK for the construction of the HANOVER HIGH SCHOOL TRACK IMPROVEMENTS CONTRACT 1 (SITEWORK) PROJECT in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the prices stated below.

By submission of this BID, each BIDDER certifies, and in the case of a joint BID each party thereto certifies as to his own organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

The BIDDER will commence the WORK required by the CONTRACT DOCUMENTS within 10 calendar days after the date of the NOTICE TO PROCEED. All sod work must be completed prior to August 1, 2023. Substantial Completion shall be achieved by August 15, 2023, and Final Completion shall be achieved by September 1, 2023.

BIDDER ACKNOWLEDGES RECEIPT OF THE FOLLOWING ADDENDA:

BIDDER agrees to perform all WORK described in the CONTRACT DOCUMENTS for the following lump sums and/or unit prices.

**HANOVER HIGH SCHOOL
TRACK IMPROVEMENTS CONTRACT 1 (SITEWORK) PROJECT
BID PROPOSAL (BASE BID)**

BID ITEM	EST. QUANT.	DESCRIPTION	UNIT PRICE IN FIGURES	AMOUNT IN FIGURES
		UNIT BID PRICE IN WORDS		
1.01	1	Mobilization (Maximum 5% of Total Base Bid)		
	LS		\$	\$
1.02	1	Removal, Salvage, Relocation, Resetting, and Disposal of Existing Chain Link Fence, Posts, and Gates (Including Temporary Removal for Drainage Work)		
	LS		\$	\$
1.03	4	Removal and Disposal of Existing Concrete Drainage Structures		
	EA		\$	\$
1.04	1,000	Removal and Disposal of Existing Drainage Pipe (Separate Trench from New Drainage Work)		
	LF		\$	\$
1.05	1	Fill Drain Line with Grout and Cap		
	LS		\$	\$
1.06	1	Striping and Stockpiling Topsoil and Screening for Reuse		
	LS		\$	\$
1.07	1	Demo Existing Track, Long Jump/Triple Jump Runways and Sand Pits, Pole Vault Runway and Jump Pads, Shot Put Pad and Throw Area, High Jump Area, and Discus Pad		
	LS		\$	\$
1.08	1	Excavation and Stockpiling Existing Track Subbase Materials for Reuse in Football Field		
	LS		\$	\$
1.09	1	Common Excavation to Subgrade All Surfaces		
	LS		\$	\$
1.10	2,100	Clean Granular Fill for Track Infield and Outside Track Perimeter		
	CY		\$	\$

**HANOVER HIGH SCHOOL
TRACK IMPROVEMENTS CONTRACT 1 (SITEWORK) PROJECT
BID PROPOSAL (BASE BID)**

BID ITEM	EST. QUANT.	DESCRIPTION	UNIT PRICE IN FIGURES	AMOUNT IN FIGURES
		UNIT BID PRICE IN WORDS		
1.11	1	Relocate Discus Throw Area (Stone Subbase for Pad and Resetting Net Anchor Holes)		
	LS		\$	\$
1.12	1	Relocate Shot Put Area (Stone Subbase for Pad and Jock Sand Throw Area Arc)		
	LS		\$	\$
1.13	1	Relocate Pole Vault Area (Stone Subbase for Standard and Vault Box Pads)		
	LS		\$	\$
1.14	6,000	Non-Woven Separation Fabric Mirafi 180N Below Track Selects		
	SY		\$	\$
1.15	2,800	NHDOT Item 304.4 Fine Crushed Stone		
	CY		\$	\$
1.16	500	NHDOT Item 304.3 Crushed Gravel (Rough Grading Incidental for Preparation for Contract 2 Work)		
	CY		\$	\$
1.17	190	Bituminous Concrete Pavement (3½" Thickness, Trench Patch in Drainage Areas Only)		
	SY		\$	\$
1.18	11	18-inch Diameter Nyloplast Yard Drain With 2' Sump (18-inch Diameter Plastic Green Drop in Round Grate Pedestrian Grade)		
	EA		\$	\$
1.19	1	4-foot Diameter Precast Concrete Catch Basin with Frame and Grate		
	EA		\$	\$
1.20	1	4-foot Diameter Precast Concrete Drainage Manhole with Frame and Cover		
	EA		\$	\$

**HANOVER HIGH SCHOOL
TRACK IMPROVEMENTS CONTRACT 1 (SITEWORK) PROJECT
BID PROPOSAL (BASE BID)**

BID ITEM	EST. QUANT.	DESCRIPTION	UNIT PRICE IN FIGURES	AMOUNT IN FIGURES
		UNIT BID PRICE IN WORDS		
1.21	900	12-inch HDPE Drain Line (ADS N-12)		
	LF		\$	\$
1.22	350	12-inch HDPE Drain Line (ADS HP Storm Below Paved Surfaces)		
	LF		\$	\$
1.23	2,900	6-inch HDPE Underdrain (ADS Perforated Highway Single Wall Pipe in Stone and Fabric, Interior and Exterior of Track Surfaces)		
	LF		\$	\$
1.24	950	6-inch PVC Underdrain (SDR35 PVC Perforated in Stone and Fabric Below Paved Surfaces)		
	LF		\$	\$
1.25	1	Restoration of Lawn (6" Rolled Thickness Screened Loam, Seed, Starter Fertilizer, Lime, Straw Mulch)		
	LS		\$	\$
1.26	1	Hydromulch (Profile Cover grow or equivalent)		
	LS		\$	\$
1.27	19	Erosion Control Inlet Protection		
	EA		\$	\$
1.28	500	Erosion Control Sock		
	LF		\$	\$
1.29	1	Stormwater Pollution and Prevention Plan (SWPPP)		
	LS		\$	\$
1.30	50	Stormwater Pollution and Prevention Plan Monitoring (Max 2 Hours Per Visit NHDOT Guidelines)		
	HRS		\$	\$

**HANOVER HIGH SCHOOL
TRACK IMPROVEMENTS CONTRACT 1 (SITEWORK) PROJECT
BID PROPOSAL (BASE BID)**

BID ITEM	EST. QUANT.	DESCRIPTION	UNIT PRICE IN FIGURES	AMOUNT IN FIGURES
		UNIT BID PRICE IN WORDS		
1.31	1	Relocation and Resetting Existing Irrigation		
	LS		\$	\$
1.32	1	Miscellaneous Work and Cleanup (Max 3% of Total Base Bid)		
	LS		\$	\$

**HANOVER HIGH SCHOOL
TRACK IMPROVEMENTS CONTRACT 1 (SITEWORK) PROJECT
BID PROPOSAL (ADDITIVE ALTERNATIVES)**

BID ITEM	EST. QUANT.	DESCRIPTION	UNIT PRICE IN FIGURES	AMOUNT IN FIGURES
		UNIT BID PRICE IN WORDS		
AA1	244	Sod – Track Infield Area (Additional or Deduction in Cost to Item 1.25)		
	SY		\$	\$

ADDITIVE ALTERNATIVES: Contractor must bid on all additive alternatives listed above. The owner will chose if they intend to include them in the project or not.

**HANOVER HIGH SCHOOL
TRACK IMPROVEMENTS CONTRACT 1 (SITEWORK) PROJECT
BID PROPOSAL**

TOTAL BID SUMMARY

BASE BID SHEET SUMMARY

Subtotal, Page BP-2	\$ _____
Subtotal, Page BP-3	\$ _____
Subtotal, Page BP-4	\$ _____
Subtotal, Page BP-5	\$ _____
TOTAL BASE BID PRICE	\$ _____

Total Base Bid Price in Words

ADDITIVE ALTERNATIVE BID SUMMARY

Additive Alternative 1 (AA1), Page BP-6	\$ _____
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1. All prices must be written in ink. Unit prices must be written in words as well as figures for the entire proposal. In case of discrepancy, the amount written in words shall govern. The OWNER reserves the right to accept or reject any or all BIDS.
2. Measurement and Payment for all bid items shall be in accordance with section 01 15 00 "Measurement and Payment".
3. BIDS for this WORK will be compared on the basis of the aggregate sums of the products of the various unit prices and lump sum items multiplied by the quantities given in the Bid Schedule. Equal items in all sections of each individual bid proposal shall have the same unit price. All work depicted on the drawings or required by the Contract Documents that does not have a specific pay item shall be considered subsidiary and incidental to the contract.

(Signature of BIDDER)

(Title of BIDDER)

(Business Address of BIDDER)

(Town)

(State)

(Zip Code)

Dated at: _____ this _____ day of _____, 2022

The Bidder is requested to state below what works of a similar character to that included in the proposed contract he has done to give references that will enable the Owner to judge his experience, skill, and business standing.

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, add separate sheets.

1. Name of Bidder
2. Permanent Main Office address
3. When organized?
4. When incorporated?
5. Is bidder registered with the Secretary of State to do business in New Hampshire?
6. Is bidder pre-qualified with the New Hampshire Department of Transportation (NHDOT) for work of this scope?
7. How many years have you engaged in the contracting business under your present firm name?
8. Contracts on hand (Schedule these, showing gross amount of each contract and the approximate anticipated dates of completion).
9. General character of work performed by your company.
10. Have you ever failed to complete any work awarded to you?
_____ YES _____ NO If so, where and why?
11. Have you ever defaulted on a contract?
_____ YES _____ NO If so, where and why?
12. List the more important contracts recently executed by your company, stating approximate cost for each, and the month and year completed.
13. List your major equipment available for this contract.
14. List your key personnel such as Project Superintendent and foremen that will be available for this Contract. Provide resumes for each of the project managers and superintendents that you intend to use on the project and provide each person's relevant project experience.
15. List any SUBCONTRACTORS whom you would expect to use for the following (unless this work is to be done by your own organization):
 1. Civil Engineering _____

2. Utility Installation _____

3. Other work _____

16. With what banks do you do business?

Do you grant the Engineer permission to contact this (these) institutions?

_____ YES _____ NO

**NOTE: BIDDERS MAY BE REQUESTED TO
FURNISH THEIR LATEST FINANCIAL
STATEMENT AS PART OF THE AWARD
PROCESS.**

Respectfully Submitted:

_____	_____
Signature	Address
_____	_____

_____	_____
Title	Date

_____ being duly sworn, deposes and
says that he is _____ of _____

Name of Organization

and that the answers to the foregoing questions and all statements contained therein are
true and correct.

Sworn to before me this _____ day of _____, 20__.

Notary Public

My commission expires:

(SEAL if bid is by Corporation)

ATTEST _____

AGREEMENT

THIS AGREEMENT, made this _____ day of _____, 20____ by
and between SAU #70/Dresden School District, hereinafter called “**OWNER**”
(Name of OWNER)
and _____ doing business as (an individual,) or (a
partnership,) or (a corporation) hereinafter called “**CONTRACTOR**”.

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The **CONTRACTOR** will commence and complete the construction of

Hanover High School Track Improvements Contract 1 (Sitework) Project
(Project)

2. The **CONTRACTOR** will furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the **PROJECT** described herein.

3. The **CONTRACTOR** will commence the work required by the **CONTRACT DOCUMENTS** within 7 calendar days after the date of the **NOTICE TO PROCEED unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS**. Work on the project shall be as follows: All sod work must be completed prior to August 1, 2023. Substantial Completion shall be achieved by August 15, 2023, and Final Completion shall be achieved by September 1, 2023.

4. The **CONTRACTOR** agrees to perform all of the **WORK** described in the **CONTRACT DOCUMENTS** and comply with the terms therein for the sum of \$ _____
or as shown in the **BID** schedule.

5. The term “**CONTRACT DOCUMENTS**” means and includes the following:

- (A) ADVERTISEMENTS FOR BIDS
- (B) INSTRUCTIONS FOR BIDDERS
- (C) BID PROPOSAL
- (D) AGREEMENT
- (E) PERFORMANCE BOND
- (F) PAYMENT BOND
- (G) GENERAL CONDITIONS
- (H) NOTICE OF AWARD
- (I) NOTICE TO PROCEED
- (J) CHANGE ORDER(S)
- (K) CONTRACTOR’S AFFIDAVIT
- (L) CONTRACTOR’S RELEASE
- (M) CERTIFICATE OF SUBSTANTIAL COMPLETION

(O) DRAWINGS prepared by:

Pathways Consulting, LLC

numbered 1 through 9 and dated March 1, 20 23

(Q) SPECIFICATIONS prepared or issued by:

Pathways Consulting, LLC

and dated March 1, 20 23

(R) ADDENDA:

No. _____, dated _____, 20 _____

No. _____, dated _____, 20 _____

6. The **OWNER** will pay to the **CONTRACTOR** in the manner and at such times as set forth in the General Conditions such amounts as required by the **CONTRACT DOCUMENTS**.

7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in four (4) copies, each of which shall be deemed an original on the date first above written.

OWNER: _____

By: _____

Name: _____

(Please type)

(SEAL)

ATTEST: _____

Name: _____

Title: _____

CONTRACTOR: _____

By: _____

Name: _____

Address: _____

(SEAL)

ATTEST: _____

Name: _____

Title: _____

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of CONTRACTOR)

(Address of CONTRACTOR)

a _____, hereinafter called Principal,
(Corporation, Partnership or Individual)

and _____
(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

(Name of OWNER)

(Address of OWNER)

hereinafter called **OWNER**, in the total aggregate penal sum of _____ Dollars, \$ (_____)
in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the **OWNER**, dated the _____ day of _____ 20 ____, a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extension thereof which may be granted by the **OWNER**, with or without notice to the Surety and during the one year guaranty period, and if the Principal shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the **OWNER** from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the **OWNER** all outlay and expense which the **OWNER** may incur in making good any default, then this obligation shall be void: otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the specifications accompanying same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time alteration or addition to the terms of the contract or to the WORK or to the specifications.

PROVIDED, FURTHER, that it is expressly agreed that this BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the Contract as so amended. The term "Amendment", wherever used in this BOND and whether referring to this BOND, the contract or the loan Documents shall include any alteration, addition, extension, or modification of any character whatsoever.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in Six (6) counterparts, each one of which shall be deemed an original, this _____ day of _____, 20 ____ .

ATTEST:

By: _____
(Principal) Secretary

(SEAL)

BY

Principal

(Address)

By: _____
Witness as to Principal

(Address)

ATTEST:

By _____
Witness as to Surety

(Address)

BY

(Surety)

Attorney - in - Fact

(Address)

NOTE: Date of BOND must not be prior to date of Contract.

If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of New Hampshire.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of CONTRACTOR)

(Address of CONTRACTOR)

a _____, hereinafter called Principal,
(Corporation, Partnership or Individual)

and _____
(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

(Name of OWNER)

(Address of OWNER)

hereinafter called **OWNER** and unto all persons, firms, and corporations who or which may furnish labor, or who furnish materials to perform as described under the contract and to their successors and assigns, in the total aggregate penal sum of _____ Dollars, (\$ _____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the **OWNER**, dated the _____ day of _____ 20____, a copy of which is hereto attached and made a part hereof for the construction of:

Hanover High School Track Improvements Contract 1 (Sitework) Project

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, and corporations furnishing materials for or performing labor in the prosecution of the **WORK** provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such **WORK**, and for all labor cost incurred in such WORK including that be a SUBCONTRACTOR, and to any mechanic or materialman lienholder whether it acquires its lien by operation of State or Federal Law; then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, that beneficiaries or claimants hereunder shall be limited to the SUBCONTRACTORS, and persons, firms, and corporations having a direct contract with the PRINCIPAL or its SUBCONTRACTORS.

PROVIDED FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the **WORK** to be performed thereunder or the **SPECIFICATIONS** accompanying the same shall in any way affect its obligation on this **BOND**, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the **WORK** or to the **SPECIFICATIONS**.

PROVIDED, FURTHER that no suit or action shall be commenced hereunder by any claimant: (a) Unless claimant, other than one having a direct contract with the **PRINCIPAL** shall have given written notice to any two of the following: The **PRINCIPAL**, the **OWNER**, or the **SURETY** above named within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the **PRINCIPAL**, **OWNER**, or **SURETY**, at any place where an office is regularly maintained for the transaction business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer. (b) After the expiration of one (1) year following the date on which **PRINCIPAL** ceased work on said **CONTRACT**, it being understood, however, that if any limitation embodied in the **BOND** is prohibited by any law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

PROVIDED, FURTHER, that it is expressly agreed that this **BOND** shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the **PRINCIPAL** and the **SURETY** to the full and faithful performance of the Contract as so amended. The term "Amendment", wherever used in this **BOND** and whether referring to this **BOND**, the contract or the loan Documents shall include any alteration, addition, extension or modification of any character whatsoever.

PROVIDED FURTHER, that no final settlement between the **OWNER** and the **CONTRACTOR** shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in Six (6) counterparts, each one of
(number)

which shall be deemed an original, this _____ day of _____, 20 ____.

ATTEST:

By: _____
(Principal) Secretary

(SEAL)

BY

Principal

(Address)

By: _____
Witness as to Principal

(Address)

ATTEST:

(Surety)

BY

Attorney - in - Fact

By

Witness as to Surety

(Address)

(Address)

NOTE: Date of **BOND** must not be prior to date of Contract.
If **CONTRACTOR** is partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing **BONDS** must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of New Hampshire.

GENERAL CONDITIONS

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1. CONTRACT AND CONTRACT DOCUMENTS

The Plans shall form part of this contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The table of contents, titles, headings, running headlines, and marginal notes contained herein and in said documents are solely to facilitate reference to various provisions of the Contract Documents and in no way affect, limit, or cast light on the interpretation of the provisions to which they refer.

2. DEFINITIONS

- 2.1 Addenda - Written or graphic instruments which modify or interpret the Contract Documents, Drawings, and Specifications, by additions, deletions, clarifications, or corrections.
- 2.2 Change Order - A written order to the Contractor authorizing an addition, deletion, or revision in the Work within the general scope of the Contract Documents.
- 2.3 Contract Documents - The contract, including Advertisement for Bids, Information for Bidders, Bid, Bid Bond, Agreement, Performance Bond, Payment Bond, General Conditions, Supplemental General Conditions, Special Conditions, Notice of Award, Notice to Proceed, Change Order, Contractor's Affidavit, Contractor's Release, Certificate of Substantial Completion, Drawings, Specifications, and Addenda.
- 2.4 Contractor - The person, firm, or corporation which shall perform the Work.
- 2.5 Engineer - The person, firm, or corporation named as such in the Contract Documents.
- 2.6 Owner - A public or quasi-public body or authority, corporation, association, partnership, or individual for whom the Work is to be performed.
- 2.7 Plans - The Contract Drawings, or exact reproductions thereof, which show the scope, character, dimensions, and details of the work and which have been prepared or approved by the Engineer.
- 2.8 Specifications - A part of the Contract Documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship.
- 2.9 Special Conditions - Revisions or additions to these General Conditions or Specifications applicable to an individual project.
- 2.10 Supplemental General Conditions - Additions or modifications to these General Conditions supplying detailed information required for the project documents.
- 2.11 Work - All labor necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in the Project.

This list of definitions may be extended as required by an individual project.

3. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS

The Contractor will be furnished additional instructions and detail drawings as necessary to carry out the work included in the contract. The additional drawings and instructions thus supplied to the Contractor will coordinate with the Contract Documents and will be so prepared that they can be reasonably interpreted as part thereof. The Contractor shall carry out the work in accordance with the additional detail drawings and instructions. The Contractor and the Engineer will prepare jointly (a) a schedule, fixing the dates at which special detail drawings will be required, such drawings, if any, to be furnished by the Engineer in accordance with said schedule, and (b) a schedule fixing the respective dates for the submission of shop drawings, the beginning of manufacture, testing and installation of materials, supplies and equipment, and the completion of the various parts of the work; each such schedule to be subject to change from time to time in accordance with the progress of the work.

4. SHOP OR SETTING DRAWINGS

- 4.1 The Contractor shall furnish six hard copies or one electronic copy of the manufacturer's shop drawings, specific design data as required in the detailed specifications, and technical literature covering all equipment and fabricated materials which he proposes to furnish under this Contract in sufficient detail to indicate full compliance with the specifications. Shop drawings shall indicate the method of installing, the exact layout dimensions of the equipment or materials, including the location, size and details of valves, pipe connections, etc.
- 4.2 No equipment or materials shall be shipped until the manufacturer's shop drawings and specifications, or other identifying data assuring compliance with these specifications, are approved by the Engineer.
- 4.3 The Contractor shall check and verify all field measurements and shall be responsible for the prompt submission of all shop and working drawings so that there shall be no delay in the work.
- 4.4 Regardless of corrections made in, or approval given to such drawings by the Engineer, the Contractor will nevertheless be responsible for the accuracy of such drawings and for their conformity to the Plans and Specifications. The Contractor shall notify the Engineer in writing of any deviations at the time he furnished such drawings. He shall remain responsible for the accuracy of the drawings showing the deviations but not for the acceptance of the deviations from the original design shown in the plans and specifications.

Approval by the Engineer, or the Owner, of any deviation in material, workmanship, or equipment proposed subsequent to approval of the shop drawings or design data, shall be requested in writing by the Contractor.

5. MATERIALS, SERVICES, FACILITIES, AND WORKMANSHIP

- 5.1 Except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light,

power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver the work within the specified time.

- 5.2 New Materials: Unless otherwise specifically provided for in the Specifications, all workmanship, equipment, materials, and articles incorporated in the work shall be new and the best grade of the respective kinds for the purpose.
- 5.3 Equipment: The Contractor shall furnish to the Engineer for approval the manufacturer's detailed specifications for all machinery, mechanical and other special equipment, which he contemplates installing together with full information as to type, performance characteristics, and all other pertinent information as required.
- 5.4 Materials: Materials specified by reference to the number or symbol of a specific standard, such as an ASTM Standard, AWWA Standard, a Federal Specification or other similar standard, shall comply with requirements in the latest revision thereof and any amendment or supplement thereto.
- 5.5 Certification: For equipment or for materials, when requested by the Engineer, the Contractor shall submit Certificates of Compliance from the manufacturer, certifying that the equipment or the materials comply with the requirements of the specifications or the standards. Such certification shall be in the following general form:

(SAMPLE)
MANUFACTURER'S LETTERHEAD
CERTIFICATE OF COMPLIANCE
(Manufactured or Fabricated Material)

Date _____, 20____

WE HEREBY CERTIFY that _____
(Description, Kind of Material, Model #, etc.)

Furnished to _____
(Name of CONTRACTOR) (Prime or Sub.)

For Use On _____
(Project Name)

No. _____ OWNER _____

In the Amount of _____
(Quantity Represented)

Identified By _____
(Label, Marking, Seal No., Consignment, or Waybill No.)

Shipped on _____ 20____, Delivered on _____ 20____

Shipped Via _____
(Method of Shipment, Car No., Truck No.)

MEETS THE REQUIREMENTS OF THE PERTINENT PROJECT PLANS, SPECIAL
CONDITIONS, AND SPECIFICATIONS OF THE SUBJECT PROJECT IN ALL RESPECTS.
PROCESSING, PRODUCT TESTING, AND INSPECTION CONTROL OF RAW
MATERIALS ARE IN CONFORMANCE WITH ALL APPLICABLE SPECIFICATIONS,
DRAWINGS, AND/OR STANDARDS OF ALL ARTICLES FURNISHED.

All records and documents pertinent to this certificate and not submitted herewith will be
maintained available by the undersigned for a period of not less than three years from the date of
this certificate.

(Manufacturer)

Signed By _____

Title _____

6. CONTRACTOR'S WARRANTY OF TITLE TO MATERIALS

No materials, supplies, or equipment to be installed or furnished under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale, lease purchase, or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor shall warrant good title to all materials, supplies, and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed or placed thereon by him to the Owner free from any claims, liens, or charges. Neither the Contractor nor any person, firm, or corporation furnishing any material or labor for any work covered by this Contract shall have any right to a lien upon any improvement or appurtenance thereon. Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the Owner. The provisions of this paragraph shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

7. INSPECTION AND TESTING OF MATERIALS

- 7.1 All materials and equipment used in the construction of the project shall be subject to observation and testing by the Engineer in accordance with accepted standards at any and all times during manufacture or during the project construction and at any or all places where such manufacture is carried on.
- 7.2 The Contractor shall furnish promptly, upon a timely request by the Engineer, all materials required to be tested. All tests made by the Engineer will be performed in such manner and sufficiently ahead of scheduled installation, as not to delay the work of the Contractor unnecessarily. When required, testing of concrete, soils, and other materials will be made in accordance with provisions in the appropriate part of the Specifications.
- 7.3 Material required to be tested which is delivered to the job site shall not be incorporated into the work until the tests have been completed and approval or acceptance is given in writing by the Engineer.
- 7.4 Each sample submitted by the Contractor shall carry an identification label containing such information as is requested by the Engineer. It shall also include a statement that the samples are representative of the remaining materials to be used on the project.
- 7.5 Approval of any materials shall be general only and shall not constitute a waiver of the Owner's right to demand full compliance with the contract requirements.
- 7.6 The Engineer may, at his own discretion, undertake the inspection of materials at the source. In the event plant inspection is undertaken, the following conditions shall be met:
 - a) The Engineer shall have the cooperation and assistance of the Contractor and the producer with whom he has contracted for materials.

- b) The Engineer shall have full entry at all reasonable times to such parts of the plant as may concern the manufacture or production of the materials being furnished.
 - c) Adequate safety measures shall be provided and maintained at all times.
- 7.7 Except as otherwise specifically stated in the contract, the costs of sampling and testing will be divided as follows:
- a) The Contractor shall furnish the Engineer, without extra cost, all samples required for testing purposes. All sampling and testing, including the number and selection of samples, will be decided by the Engineer for his own information and use.
 - b) When testing of materials is specified in the appropriate section of the Specifications, the costs of same will be charged to the Owner. However, costs of equipment performance tests shall be borne by the Contractor, as detailed in the appropriate section of the Specifications.
 - c) When the Contractor proposes an item as equivalent to the item or items specified, reasonable tests may or may not be required by the Engineer. If the Engineer requires tests of a proposed equivalent item, the Contractor will be required to assume all costs of such testing.
 - d) Normally, any item which fails to pass tests required by the Engineer or by the Specifications will be rejected and shall be removed from the project site. However, if, upon request of the Contractor, retesting or further tests are permitted by the Engineer, the Contractor shall assume all costs related to such re-testing or further tests.
 - e) Neither the Owner nor the Engineer will in any way be charged for the manufacturer's costs in supplying certificates of compliance.

8. "OR EQUIVALENT" CLAUSE, SUBSTITUTIONS, AND CONTRACTOR'S OPTIONS

- 8.1 Whenever a material, article, or piece of equipment is identified on the plans or in the Specifications by reference to manufacturers' or vendors' names, trade names, catalogue numbers, etc., it is intended merely to establish a standard. Any material, article, or equipment of other manufacturers' and vendors', which will perform satisfactorily the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment so proposed is, in the opinion of the Engineer, of equivalent quality and function. The Engineer will determine equality based on such information, tests, or other supporting data they may require of the Contractor.
- 8.2 Furthermore, upon acceptance and approval by the Engineer of an equivalent product, it shall remain the responsibility of the Contractor to coordinate installation of the item with all other items to be furnished to assure proper fitting together of all items. Similar responsibility applies to items which are left to the Contractor's option. Any additional cost of equivalent items and any additional cost incidental to the coordination and/or fitting together of such items shall be borne by the Contractor at no extra cost to the Owner.
- 8.3 In the event that a specified or equivalent item is not available, or that delivery time is so long as to result in delays which are unacceptable to the Owner, the Contractor may propose a substitute item of less than equivalent performance and

quality. If this substitute is acceptable to the Engineer, any difference in purchase cost or costs incidental to the installation of such an item will be negotiated between the parties.

Neither equivalent nor substitute items shall be installed without written approval of the Engineer.

9. PATENTS

- 9.1 The Contractor shall hold and save the Owner and their officers, agents, and employees harmless from liability of any nature, including cost and expenses for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the contract, including its use by the Owner, unless otherwise specifically stipulated in the Contract Documents.
- 9.2 License or Royalty Fees: License and/or Royalty Fees for the use of a process in the design of the project, which is authorized by the Owner of the project, must be reasonable and paid to the holder of the patent, or his authorized licensee, direct by the Owner and not by or through the Contractor.
- 9.3 If the Contractor uses any design, device, or materials in the construction methods for the project covered by letters, patent, or copyright, he shall provide for such use by suitable agreement with the Owner of such patented or copyrighted design, device, or material. It is mutually agreed and understood, that, without exception, the contract prices shall include all royalties or costs arising from the use of such design, device, or materials, in any way involved in the work. The Contractor and/or his Sureties shall indemnify and save harmless the Owner of the project from any and all claims for infringement by reason of the use of such patented or copyrighted design, device or materials or any trademark or copyright in connection with work agreed to be performed under this contract, and shall indemnify the Owner for any cost, expense, or damage which it may be obliged to pay by reason of such infringement at any time during the prosecution of the work or after completion of the work.

10. SURVEYS

10.1 Land and Property

The Owner will provide all land surveys, if available, and will establish approximate property lines relating to the project, as necessary.

- 10.2 Construction Surveys: The Engineer will establish the locations of drainage structures for the project, and will establish one bench mark within the project site for the use and convenience of the Contractor, and for the Engineer's own reference in checking the work in progress.

The Contractor shall utilize the drainage structure location and bench mark established by the Engineer to set up whatever specific detail controls he may need for establishing elevation lines and grades for all project components. All

this work is subject to observation, approval, and continuous surveillance by the Engineer.

The Contractor shall provide the Engineer with a qualified man or men to assist in this checking as needed, and on request of, the Engineer.

- 10.3 Protection of Stakes: The Contractor shall protect and preserve all of the established field stake-out information, including stakes, nails, bench marks, or other controls placed by the Engineer. Offset stakes and/or nails and additional bench marks shall be established by, and used by, the Contractor to preserve existing field stake out and bench mark information set by the Engineer. Any of these items destroyed or lost through fault of the Contractor will be replaced by the Engineer at the Contractor's expense.

11. CONTRACTOR'S OBLIGATIONS

The Contractor shall and will, in good workmanlike manner, do and perform all work and furnish and pay for all supplies and materials, machinery, equipment, facilities, and means, except as herein otherwise expressly specified necessary or proper to perform and complete all the work required by this Contract, and any and all supplemental plans and drawings, in accordance with the directions of the Engineer as given from time to time during the progress of the work, whether or not he considers the direction in accordance with the terms of the Contract. He shall furnish, erect, maintain, and remove such construction plant and such temporary works as may be required. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements, and limitations of the Contract Documents, and shall do, carry on, and complete the entire work to the satisfaction of the Engineer and the Owner.

12. WEATHER CONDITIONS

In the event of temporary suspension of work, or during inclement weather, or whenever the Engineer shall direct; the Contractor will, and will cause his Subcontractors to, protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the Engineer, any work or material shall have been damaged or injured by reason of failure on the part of the Contractor, or any of his Subcontractors, to so protect his work, such materials shall be removed and replaced at the expense of the Contractor.

13. PROTECTION OF WORK AND PROPERTY - EMERGENCY

- 13.1 The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this Contract. He shall at all times safely guard and protect his own work, and that of adjacent property, from damage. The Contractor shall replace or make good any such damage, loss, or injury unless such be caused directly by errors contained in the Contract or by the Owner or his duly authorized representatives.
- 13.2 The Contractor shall take all necessary precautions for the safety of employees on the work, and shall comply with all applicable provisions of Federal, State, and Municipal safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the premises where the work is being performed. He

shall erect and properly maintain at all times, as required by the conditions and progress of the work, all necessary safeguards for the protection of workmen and the public and shall post danger signs warning against the hazards created by such features of construction as protruding nails, hoists, well holes, elevator hatchways, scaffolding, window openings, stairways, trenches and other excavations, and falling materials, and he shall designate a responsible member of his organization on the work whose duty shall be the prevention of accidents. The name and position of any person so designated shall be reported to the Engineer by the Contractor. The person so designated shall be available by phone during non-working hours.

13.3 In case of emergency which threatens loss or injury of property and/or safety of life, the Contractor will be allowed to act, without previous instructions from the Engineer, in a diligent manner. He shall notify the Engineer immediately thereafter. Any claim for compensation by the Contractor due to such extra work shall be promptly submitted in writing to the Engineer for approval.

13.4 When the Contractor has not taken action but has notified the Engineer of an emergency threatening injury to persons or damage to the work or any adjoining property, he shall act as instructed or authorized by the Engineer.

The intention is not to relieve the Contractor from acting, but to provide for consultations between Engineer and Contractor in an emergency which permits time for such consultations.

13.5 The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided in Article 17 (extra work and change orders) of the General Conditions.

14. OBSERVATION OF WORK FOR CONFORMANCE WITH PLANS AND SPECIFICATIONS

14.1 Observation: For purposes already specified and for any other purpose, the Owner, Engineer, and their agents and employees may enter upon the work and the premises used by the Contractor, and the Contractor shall provide safe and proper facilities therefore. The Engineer shall be furnished with every reasonable facility for ascertaining that the work is in accordance with the requirements and intention of this Contract, even to the extent of uncovering or taking down portions of finished work.

14.2 Conformance: During its progress and upon its completion, all work shall conform to the location, lines, levels, and grades indicated on the drawings or established on the site by the Engineer and shall be built in a thoroughly substantial and workmanlike manner, in accordance with the drawings and specifications and the supplementary directions given from time to time by the Engineer. In no case will any work in excess of the requirements of the drawings and specifications be paid for unless ordered in writing by the Engineer.

14.3 Unauthorized Work:

(a) Work not according to Plans and Specifications: Work considered by the Engineer to be outside of, or different from, the Plans and Specifications

and done without instruction by the Engineer, or in the wrong location, or done without proper lines or levels, may be ordered to be uncovered or dismantled.

- (b) Work done in the absence of the Engineer or his agent: Similarly, such work performed in the absence of the Engineer or his agent may be ordered to be uncovered or dismantled.
- (c) Should the work thus exposed or examined prove satisfactory, the uncovering or dismantling and the replacement of material and rebuilding of the work shall be considered as "EXTRA WORK."
- (d) Should the work thus exposed or examined prove to be unsatisfactory, the uncovering or dismantling and the replacement of material and rebuilding of the work shall be at the expense of the Contractor.

15. REPORTS, RECORDS, AND DATA

The Contractor shall submit to the Owner such schedule of quantities and costs, progress schedules, reports, estimates, records, and other data as the Owner may request concerning work performed, or to be performed, under this contract.

16. SUPERINTENDENCE BY CONTRACTOR

At the site of the work the Contractor shall employ a competent construction superintendent or foreman who shall have full authority to act for the Contractor. It is understood that such representative shall be acceptable to the Engineer and shall be one who can be continued in that capacity for the particular job involved unless he ceases to be on the Contractor's payroll.

17. EXTRA WORK AND CHANGE ORDERS

17.1 The Engineer and/or Owner may at any time by written order, and without notice to the Sureties, require the performance of such extra work or changes in the work as may be found necessary or desirable. Change in the work and written orders for extra work (Change Orders) must be approved in writing by the Engineer and Owner prior to the Contractor executing the work. The amount of compensation to be paid to the Contractor for any extra work so ordered shall be made in accordance with whichever of the following plans the Engineer elects: (1) a price agreed upon between the parties and stipulated in the order for the extra work; (2) a price based on the unit prices of the contract; or (3) a price determined by adding 15% to the "reasonable cost" of the extra work performed, such "reasonable cost" to be determined by the Engineer in accordance with the following paragraph.

17.2 In arriving at the "reasonable cost" for the purposes of (3) above, the Engineer shall include the reasonable cost to the Contractor of all materials used, of all labor, both common and skilled, of foreman, trucks, and the fair-market rental rate for all machinery and equipment for the period employed directly on the work. The reasonable cost for extra work shall include the cost to the Contractor of any additional insurance that may be required covering public liability for injury to persons and property, the cost of Workmen's Compensation Insurance, Federal Social Security, and any other extra work shall not include any cost or rental of small tools, buildings, or any portion of the time of the Contractor, his project

supervisor, or his superintendent as assessed upon the amount of extra work, these items being considered covered by the fifteen per cent (15%) added to the reasonable cost. Furthermore, no allowance for use of capital or premium on the bond will be considered unless the extra work includes an extension of time approved and authorized by the Owner.

- 17.3 In the case of extra work done by Subcontractors, whether these are under the specific Contract items provided herein or otherwise, if so approved by the Engineer, the 15% added to the reasonable cost of the work will be allowed only to the Subcontractor. On such work an additional percentage of the reasonable cost (before addition of the 15%) will be paid to the Contractor for his work in directing the operations of the Subcontractor, for administrative supervision, and for any overhead involved. Such percentage shall be in accordance with the following schedule: Reasonable cost up to and including \$50,000 – 10%; \$50,000 to and including \$100,000 – 7½%; greater than \$100,000 – 5%.
- 17.4 The Engineer may authorize minor changes or alterations in the work not involving extra cost and not inconsistent with the overall intent of the Contract Documents. These may be accomplished by a written Field Order. However, if the Contractor believes that any minor change or alteration authorized by the Engineer entitles him to an increase in the contract price, he may make a claim therefore as provided in Article 21.

18. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

- 18.1 The Contractor agrees that said work shall be prosecuted regularly, diligently, and uninterrupted at such rate of progress as will ensure full completion thereof within the time agreed upon. It is expressly understood and agreed by the Contractor that the time for the completion of the work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.
- 18.2 If the said Contractor shall neglect, fail, or refuse to complete the work within the time allowed, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree to pay to the Owner the amount agreed upon between the Owner and the Contractor specified in the contract, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the contract for completing the work.
- 18.3 The said amount is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain for delays and engineering services during the delay, and said amount shall be retained from time to time by the Owner from current periodical estimates.
- 18.4 It is further agreed that time is of the essence of each and every portion of this contract and of the specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new time limit

fixed by such extension shall be of the essence of this Contract. Provided that the Contractor shall not be charged with liquidated damages or any excess cost when the Owner determines that the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to the Owner. Provided, further, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due:

- (a) To any preference, priority, or allocation order duly issued by the Government;
- (b) To unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather; and
- (c) To any delays of Subcontractors or suppliers occasioned by any of the causes specified in subsections (a) and (b) of this article.

18.5 Provided, further, that the Contractor shall promptly notify the Owner in writing of the causes of the delay who shall ascertain the facts and extent of the delay and notify the Contractor within a reasonable time of their decision in the matter.

19. DEFECTIVE WORK

19.1 The Contractor shall promptly remove from the premises all materials and work condemned by the Engineer as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute his own work in accordance with the Contract, and without expense to the Owner, and shall bear the expense of making good all work of other Contractors destroyed or damaged by such removal or replacement.

19.2 All removal and replacement work shall be done at the Contractor's expense. If the Contractor does not take action to remove such condemned work and materials within 30 days after written notice, the Owner may remove them and store the material at the expense of the Contractor. If the Contractor does not pay the expense of such removal and storage within ten days time thereafter, the Owner may, upon ten days written notice, sell such materials at an auction or through private sale and shall pay to the Contractor any net proceeds thereof, after deducting all the costs and expenses that should have been borne by the Contractor.

20. SUBSURFACE CONDITIONS FOUND DIFFERENT

During the progress of the work, if subsurface or latent physical conditions are encountered at the Project Site differing materially from those indicated in the Contract, or if unknown physical conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the Contract are encountered at the site, the party discovering such conditions shall promptly notify the other Engineer in writing of the specific differing conditions before the site is disturbed and before the affected work is performed.

Upon written notification, the Engineer will investigate the conditions, and if it is determined that the conditions materially differ and cause an increase or decrease in the cost and/or time required for the performance of any work under the Contract, an adjustment, excluding anticipated profits, will be made and the Contract modified in writing accordingly. The Engineer will notify the Contractor of the determination as to whether or not an adjustment of the Contract is warranted.

No Contract adjustment which results in a benefit to the Contractor will be allowed unless the Contractor has provided the required written notice. No Contract adjustment will be allowed under this clause for any effects caused on unchanged work.

21. CLAIMS FOR EXTRA COST

21.1 No claim for extra work or cost shall be allowed unless the same was done in pursuance of a written order of the Engineer and approved by the Owner as aforesaid, or if the claim is presented with the first estimate after the changed or extra work is done. When work is performed under the terms of Article 17 (Extra Work and Change Orders), the Contractor shall furnish satisfactory bills, payrolls and vouchers covering all items of cost and, when requested by the Owner, give the Owner access to accounts relating thereto.

21.2 If the Contractor claims that any instructions by drawings or otherwise issued after the date of the Contract involve extra cost under the Contract, he shall give the Engineer written notice thereof after the receipt of such instruction, but in any event before proceeding to execute the work, except an emergency situation endangering life or property, and the procedure shall then be as provided for under Article 17. No such claim shall be valid unless so made.

22. RIGHT OF THE OWNER TO TERMINATE CONTRACT

22.1 In the event that any of the provisions of this contract are violated by the Contractor, or by any of his Subcontractors, the Owner may serve written notice upon the Contractor and the Surety of its intention to terminate the contract. Such notices are to contain the reasons for such intentions to terminate the contract and unless within ten (10) days after the serving of such notice upon the Contractor, such violation or delay shall cease and satisfactory arrangement for correction be made. The Contract shall, upon the expiration of said ten (10) days, cease and terminate. In the event of any such termination, the Owner shall immediately serve notice thereof upon the Surety and the Contractor and the Surety shall have the right to take over and perform the contract; provided, however, that if the Surety does not commence performance thereof within ten (10) days from the date of the mailing to such Surety of notice of termination, the Owner may take over the work and prosecute the same to completion by contract or by force account for the account and at the expense of the Contractor, and the Contractor and his Surety shall be liable to the Owner for any excess cost occasioned the Owner thereby, and in such event the Owner may take possession of and utilize in completing the work, such materials, appliances, and plant as may be on the site of the work and necessary therefore.

22.2 If the Contractor should be judged as bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse or should fail, except in cases for which extensions or time are provided to supply enough properly skilled workmen or materials, or if he should fail to make payments to Subcontractors or for material or labor, so as to affect the progress of the work, or persistently be guilty of a substantial violation of the contract, then the Owner, upon the written notice of the Engineer that sufficient cause exists to justify such action may, without prejudice to any other right or remedy and after giving the Contractor and his Surety seven (7) days written notice, terminate the employment of the Contractor and take possession of the premises and of all materials, tools, equipment and other facilities installed on the work and paid for by the Owner, and finish the work by whatever method he may deem expedient. In the case of termination of this Contract before completion from any cause whatever, the Contractor, if notified to do so by the Owner, shall promptly remove any part or all of his equipment and supplies from the property of the Owner. The Owner shall have the right to remove such equipment and supplies at the expense of the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner. The expense incurred by the Owner as herein provided, and the damage incurred through the Contractor's default, shall be certified by the Engineer.

22.3 Where the contract has been terminated by the Owner, said termination shall not affect or terminate any of the rights of the Owner against the Contractor or his Surety then existing, or which may thereafter accrue because of such default. Any retention or payment of monies by the Owner due the Contractor, under the terms of the Contract, shall not release the Contractor or his Surety from liability for his default.

23. CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES

23.1 Before starting the work, and from time to time during its progress as the Engineer may request, the Contractor shall submit to the Engineer a written description of the methods he plans to use in doing the work and the various steps he intends to take.

23.2 Before the first partial payment is made, the Contractor shall prepare and submit to the Engineer (a) a written schedule fixing the dates at which additional drawings, if any, will be required and (b) a written schedule fixing the respective dates for the start and completion of various parts of the work. Each such schedule shall be subject to review and change from time to time during the progress of the work.

24. PAYMENTS TO THE CONTRACTOR

24.1 Progress Payments

The Owner will, once a month and within 30 days of receipt of a certificate of payment from the Engineer, make a progress payment to the Contractor on the basis of an estimate of the total amount of work done to the time of such estimate and the value thereof as prepared by the Contractor and approved by the Engineer.

24.2 Retainage by Owner

The Owner will retain an amount of the progress payment in accordance with the following procedures:

- (a) Until construction is 50% complete, as determined by the Engineer, retainage shall be 10% of the monthly payments claimed.
- (b) After construction is 50% complete, and provided the Contractor has performed to the satisfaction of the Engineer and the Owner, and provided further that there is no specific cause for greater retainage, no further monies will be withheld. Retainage will remain at the same balance throughout the remainder of the project, unless drawn upon by the Owner in accordance with Articles 19 and 22.
- (c) Upon substantial or final completion (see Article 25, Acceptance and Payment) the amount of retainage will be reduced to 2% of the total contract amount, which shall include any contract amount increase or decrease resulting from change orders. An additional retainage amount will be developed and added to the 2% retainage based on the Engineer's estimate of the fair value of the punch list items and the cost of completing and/or correcting such items of work, with specified amounts for each incomplete or defective item of work. As these items are completed or corrected, they shall be paid for out of the additional retainage until the entire project is declared completed. The 2% retainage will be held by the Owner for a period of one year and will be released upon observation by the Engineer that there is no deficient work necessary to be corrected (see Article 25).

24.3 Payment for Materials

In reviewing monthly estimates of the value of work done, the Engineer may accept in the estimate, prior to subtracting the retainage, the delivered cost of certain equipment and nonperishable material which has been delivered to the site and which is properly stored and protected from damage. With the estimate, the Contractor shall furnish the Engineer receipted invoices as evidence that the material has been delivered to the site. Prior to submitting the next monthly estimate, the Contractor shall provide the Engineer with paid invoices or other evidence that the materials have been paid for. If the Contractor fails to submit such evidence, the Engineer may subtract the value of such materials or equipment, previously paid for by the Owner, from the next monthly estimate. The type of equipment and material eligible for payment prior to being incorporated in the work will be at the Engineer's discretion. In general, larger items of material and equipment, and material and equipment made specifically for the subject job, will be eligible for payment.

24.4 Care and Protection of Materials and Work

All material and work covered by partial payments made shall thereupon become the sole property of the Owner, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the Owner to require the fulfillment of all of the terms of the contract.

24.5 Owner's Right to Withhold Certain Amounts and Make Application Thereof

The Contractor agrees that he will indemnify and save the Owner harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If the Contractor fails to do so, then the Owner may, after having served written notice on the said Contractor, either pay unpaid bills of which the Owner has written notice, direct, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor or his Surety. In paying any unpaid bills of the Contractor, the Owner shall be deemed the agent of the Contractor, and any payment so made by the Owner shall be considered as a payment made under the Contract by the Owner to the Contractor and the Owner shall not be liable to the Contractor for any such payments made in good faith.

25. ACCEPTANCE AND FINAL PAYMENT

25.1 Substantial Completion and Payment Therefore

Substantial completion shall be that point at which the work has been completed to the extent that the Owner may occupy and make use of the project (or portion of the project) for which it was intended. Upon substantial completion there may be minor items, such as seeding, landscaping, etc., yet to be completed or items of work to be corrected.

Upon receipt of written notice from the Contractor that the work is substantially complete, the Engineer will promptly conduct a site visit to observe the status/condition of the project and completion thereof with the Owner, and when he finds the work acceptable under the terms of the Contract and the Contract substantially completed, he will issue a dated certificate and a punch list of all items to be completed or corrected over his own signature, stating that the work required by this Contract has been substantially completed and is accepted by him under the terms and conditions thereof. The entire balance due the Contractor less two percent (2%) of the total Contract amount, and less a retention based on the Engineer's estimate of the fair value of the punch list items and the cost of completing or correcting such items of work with specified amounts for each incomplete or defective item of work, will be due and payable.

The general guarantee period for the work substantially completed by the Contractor shall begin on the date of the certificate of substantial completion provided by the Engineer.

25.2 Final Completion and Payment Therefore

Final Completion shall be that point at which all work on the project or portion of the project has been completed, all defective work has been corrected, and all miscellaneous work and clean-up has been accomplished. Unless a certificate of substantial completion has been issued, the general guarantee period shall begin on the date of the certificate of final completion provided by the Engineer.

25.3 Final Acceptance

Following the termination of the general guarantee period for the entire project which has been certified completed or substantially completed, the Owner, through the Engineer, may, at the option of either, make a final inspection of all, or portions of, the project. When it is found that the work is still acceptable, and that no work has become defective under the terms of the Contract, the Owner will accept the entire project and make final payment, including therein any monies retained during the guarantee period.

25.4 If, however, the inspection discloses any work in whole or in part as being unsatisfactory, the Engineer will give the Contractor the necessary instructions for correction of such work, and the Contractor shall immediately comply with and execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection provided the work has been satisfactorily completed.

25.5 Before issuance of final payment, the Contractor shall certify in writing to the Engineer that all payrolls, material bills, and other indebtedness connected with the work have been paid, or otherwise satisfied, except that in case of disputed indebtedness or liens. If the Contract does not include a payment bond, the Contractor may submit in lieu of certification of payment a surety bond in the amount of the disputed indebtedness or liens, guaranteeing payment of all such disputed amounts, including all related costs and interest in connection with said disputed indebtedness or liens which the Owner may be compelled to pay upon adjudication.

25.6 If after the work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor and the Engineer so certifies, the Owner may, upon certificate of the Engineer, and without terminating the Contract, make payment of the balance due for the portion of the work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

25.7 The acceptance by the Contractor of final payment shall be and shall operate as a release to the Owner of all claims and all liability to the Contractor for all things done or furnished in connection with this work and for every act and neglect of the Owner and others relating to or arising out of this work. No payment, however, final or otherwise, shall operate to release the Contractor or his Sureties from any obligations under this contract of the Performance and Payment Bond.

26. PAYMENTS BY CONTRACTOR

The Contractor shall pay (a) for all transportation and utility services not later than the 20th day of the calendar month following that in which services are rendered, (b) for all materials, tools, and other expendable equipment to the extent of ninety percent (90%) of the cost thereof, not later than the 20th day of the calendar month following that in which such materials, tools, and equipment are delivered at the site of the project, and the balance of the cost thereof not later than the 30th day following the completion of that part of the work in or on which such materials, tools, and equipment are incorporated or used, and (c) to each of his Subcontractors, not later than the 5th day following each payment to the Contractor, the respective amounts allowed the Contractor on account of the work performed by his Subcontractors to the extent of each Subcontractor's interest therein.

27. INSURANCE

The Contractor shall not commence work under this Contract until he has obtained all the insurance required under this article and such insurance has been approved by the Owner. Nor shall the Contractor allow any Subcontractors to commence work on his subcontract until the insurance required of the Subcontractor has been so obtained and approved.

27.1 Compensation Insurance

The Contractor shall procure and shall maintain during the life of this Contract Workmen's Compensation Insurance as required by applicable State law for all of his employees to be engaged in work at the site of the project under this Contract and, in case of any such work, the Contractor shall require the Subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the Contractor's Workmen's Compensation Insurance. In case any class of employees engaged in hazardous work on the project under this Contract is not protected under the Workmen's Compensation Statute, the Contractor shall provide and shall cause each Subcontractor to provide adequate employer's liability insurance for the protection of his employees that are not otherwise protected.

27.2 Contractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance

The Contractor shall procure and shall maintain during the life of this Contract Contractor's Public Damage Insurance and Vehicle Liability Insurance in the amounts specified in the Special Conditions.

27.3 Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance

The Contractor shall either (1) require each of his Subcontractors to procure and to maintain during the life of his subcontract Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in the Special Conditions; or (2) insure the activities of his Subcontractors in his policy, specified in Article 27.2.

27.4 Scope of Insurance and Special Hazards

The insurance required under Articles 27.2 and 27.3 shall provide adequate protection for the Contractor and his Subcontractors, respectively, against damage claims which may arise from operations under this Contract, whether such operations be by the insured or by anyone directly or indirectly employed by him and also against any of the special hazards which may be encountered in the performance of this Contract as enumerated in the Special Conditions.

27.5 Proof of Carriage of Insurance

The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates, and dates of expiration of policies. Such certificates shall also contain substantially the following statement: "The insurance covered by this certificate will not be canceled or materially altered, except after ten (10) days written notice has been received by the Owner".

27.6 Owner's Protective Liability Insurance

The Contractor shall take out and furnish to the Owner and maintain during the life of this contract complete Owner's Protective Liability Insurance for Bodily Injury Liability Insurance and for Property Damage Liability Insurance.

The minimum limits of liability of such insurance shall be as follows:

Workmen's Compensation

Statutory Requirements apply

General (Comprehensive) Liability of Such insurance shall be as follows:

Bodily Injury or Death – Each Person	\$1,000,000
Bodily Injury or Death – Each Accident	\$1,000,000
Property Damage – Each Accident	\$1,000,000

Automobile and Truck Liability insurance shall be as follows:

Bodily Injury or Death – Each Person	\$1,000,000
Bodily Injury or Death – Each Accident	\$1,000,000
Property Damage – Each Accident	\$1,000,000
Property Damage – Aggregate	\$1,000,000

Owner's Protective Liability:

Bodily Injury (each occurrence)	\$1,000,000
Property Damage, including Explosion, Collapse, and Underground Coverage –	
Each Occurrence	\$1,000,000
Aggregate	\$1,000,000

Contractor shall supply Insurance Certificates as Additional Insured for the following project sponsors:

SAU #70/Dresden School District, 41 Lebanon Street, Suite 2, Hanover, NH 03755

28. CONTRACT SECURITY

28.1 The Contractor shall furnish a Performance Bond in an amount at least equal to one hundred percent (100%) of the Contract price agreed upon as security for the faithful performance of this Contract and also a Payment Bond in an amount not less than one hundred percent (100%) of the Contract price or in a sum not less than that prescribed by State or local law, as security for the payment of all persons performing labor on the project under this Contract and furnishing materials in connection with this Contract.

28.2 The State of Vermont requires that the aforementioned bonds be issued through a resident agent licensed to do business in the State of Vermont.

29. ADDITIONAL OR SUBSTITUTE BOND

If at any time the Owner for justifiable cause shall be or become dissatisfied with any Surety or Sureties for the Performance or Payment Bonds, the Contractor shall, within five (5) days after notice from the Owner, substitute an acceptable bond (or bonds) in such form and sum and signed by such other Surety or Sureties as may be satisfactory to the Owner. The premiums on such bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new Surety or Sureties shall have furnished such an acceptable bond to the Owner.

30. ASSIGNMENTS

The Contractor shall not assign the whole or any part of this Contract or any monies due, or to become due, hereunder without written consent of the Owner. In case the Contractor assigns all or any part of any monies due, or to become due, under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in, and to any monies due or to become due to the Contractor, shall be subject to prior claims of all persons, firms, and corporations for services rendered or materials supplied for the performance of the work called for in this Contract.

31. MUTUAL RESPONSIBILITY OF CONTRACTORS

If through acts of neglect on the part of the Contractor, any other Contractor, or any Subcontractor shall suffer loss or damage on the work, the Contractor agrees to settle with such other Contractor or Subcontractor by agreement or arbitration if such other Contractor or Subcontractors will so settle. If such other Contractor or Subcontractor shall assert any claim against the Owner on account of any damage alleged to have been sustained, the Owner shall notify the Contractor, who shall indemnify and save harmless the Owner against any such claim.

32. SUBCONTRACTING

32.1 The Contractor may utilize the services of specialty Subcontractors on those parts of the work which, under normal contracting practices, are performed by specialty Subcontractors.

- 32.2 The Contractor shall not award any work to any Subcontractor without prior written approval of the Owner.
- 32.3 The Contractor shall be as fully responsible to the Owner for the acts and omissions of his Subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.
- 32.4 The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind Subcontractor to the Contractor by the terms of the General Conditions and other Contract Documents insofar as applicable to the work of Subcontractors, and to give the Contractor the same power in regard to terminating any subcontract that the Owner may exercise over the Contractor under any provision of the Contract Documents.
- 32.5 Nothing contained in this Contract shall create any contractual relation between any Subcontractor and the Owner.

33. AUTHORITY OF ENGINEER AND HIS REPRESENTATIVES

- 33.1 The Engineer, acting on behalf of the Owner will have the authority to suspend the work in whole or in part for such periods as he may deem necessary due to the failure of the Contractor to correct conditions unsafe for the workmen or the general public; for failure to carry out provisions of the contract; for failure to carry out orders; for conditions considered unsuitable for the prosecution of the work, including unfit weather; or for any other condition or reason deemed to be in the public interest.

The purpose of the above articles is not in any way to relieve the Contractor of his responsibilities for the safety of workmen or the general public in the execution of the work. Attention is drawn to Article 13 of these Conditions which refers to the safety obligations of the Contractor.

The Engineer, acting on behalf of the Owner, has the authority to enforce corrective action for work not in accordance with the specifications or for conditions which he finds unsafe.

The Engineer, acting on behalf of the Owner, shall give all orders and directions contemplated under the contract and specifications relative to the execution of the work. The Engineer shall determine the amount, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for under this Contract and shall decide all questions which may arise in relation to said work and the construction thereof. The Engineer's estimates and decisions shall be final and conclusive, except as herein otherwise expressly provided. In case any question shall arise between the parties thereto relative to said contract or specifications, the determination or decision of the Engineer shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this Contract affected in any manner or to any extent by such question.

In addition, the Engineer, acting on behalf of the Owner is to ensure that the work is in accordance with the Contract Documents; he is not held responsible,

however, for the methods of construction, sequences, schedules, and procedures in the execution of the work. The Engineer does have the opportunity under 33.1 to reject the method of construction, work plan, schedule, and procedures as he thinks appropriate.

In any and all claims against the Owner or the Engineer, or any of their agents or employees, by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any Subcontractor under workmen's compensation acts, disability benefit acts, or other employee benefits acts.

The obligation of the Contractor under this paragraph shall not extend to the liability of the Engineer, his agents, or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs, or specifications.

The Engineer shall decide the meaning and intent of any portion of the specifications and of any plans or drawings where the same may be found obscure or be in dispute. Any differences or conflicts in regard to their work which may arise between the Contractor under this Contract and other Contractors performing work for the Owner shall be adjusted and determined by the Engineer.

- 33.2 The Engineer may appoint such assistants and representatives as he desires and they shall be granted full access to the work under the Contract. They shall have the authority to give directions pertaining to the work or to the safety and convenience of the public, to approve or reject materials, to suspend any work that is being improperly performed, to make measurements of quantities, to keep records of costs, and otherwise represent the Engineer. The Contractor may, however, appeal from their decision to the Engineer himself, but any work done pending settlement is at the Contractor's own risk.

Except as permitted and instructed by the Engineer, the assistants and representatives are not authorized to revoke, alter, enlarge, relax, or release any requirements of these specifications, nor to issue instructions contrary to the plans and specifications. They are not authorized to act as superintendents or foremen for the Contractor, or to interfere with the management of the work by the Contractor. Any advice which the assistants or representatives of the Engineer may give the Contractor shall not be construed as binding the Engineer or the Owner in any way, nor releasing the Contractor from the fulfillment of the terms of the Contract.

All transactions between the Contractor and the representative of the Engineer which are liable to protest or where payments are involved shall be made in writing.

34. STATED ALLOWANCES

The Contractor shall include in his contract price any cash allowances stated in the Supplemental General Conditions. The Contractor shall purchase the "Allowed

Materials” as directed by the Owner on the basis of the lowest and best bid of at least three competitive bids. If the actual price for purchasing the “Allowed Materials” is more or less than the “Cash Allowance,” the contract price shall be adjusted accordingly. The adjustment in contract price shall be made on the basis of the purchase price without additional charges for overhead, profit, insurance, or any other incidental expenses. The cost of installation of the “Allowed Materials” shall be included in the applicable sections of the Contract Specifications covering the work.

35. USE OF PREMISES, REMOVAL OF DEBRIS, SANITARY CONDITIONS

The Contractor expressly undertakes at his own expense:

- to take every precaution against injuries to persons or damage to property;
- to store his apparatus, materials, supplies, and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any other Contractors;
- to place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work;
- to clean up daily all refuse, rubbish, scrap materials, and debris caused by his operations to the end that at all times the site of the work shall present a neat, orderly and workmanlike appearance;
- before final payment to remove all surplus material, falsework, temporary structures, including foundations thereof, plant of any description, and debris of every nature resulting from his operations, and to put the site in a neat orderly condition;
- to effect all cutting, fitting, or patching of his work required to make the same to conform to the plans and specifications and, except with the consent of the Engineer, not to cut or otherwise alter the work of any other Contractor; and
- to provide and maintain in a neat, sanitary condition such toilet accommodations for the use of his employees as may be necessary to comply with the requirements of the State and local Boards of Health, or of other bodies or authorities having jurisdiction.

36. QUANTITIES OF ESTIMATE

Wherever the estimated quantities of work to be done and materials to be furnished under this Contract are shown in any of the documents, they are given for use in comparing bids and the right is especially reserved, except as herein otherwise specifically limited to increase or diminish them as may be deemed reasonably necessary or desirable by the Owner, to complete the work contemplated by this Contract, and such increase or diminution shall in no way vitiate this Contract, nor shall any such increase or diminution give cause for claims or liability for damages.

37. LANDS AND RIGHTS-OF-WAY

- 37.1 Prior to the start of construction, the Owner will obtain all lands and rights-of-way necessary for carrying out and completing the work to be performed under this Contract.
- 37.2 The Contractor shall not (except after written consent from the proper parties) enter or occupy with men, tools, materials, or equipment, any land outside of the

rights-of-way or property of the Owner. A copy of the written consent shall be given to the Engineer.

38. GENERAL GUARANTY

Neither the final certificate of payment nor any provision in the Contract Documents, nor partial or entire occupancy of the premises by the Owner, shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom which appear within the warranty period two years from the certified date of completion or substantial completion of the work unless a longer period is specified. The Owner will give notice of observed defects with reasonable promptness.

39. ERRORS AND INCONSISTENCY IN CONTRACT DOCUMENTS

Any provisions in any of the Contract Documents which may be in conflict with the paragraphs in these General Conditions shall be subject to the following order of precedence for interpretation:

- (1) Supplementary Conditions will govern Federal Conditions.
- (2) Technical Specifications will govern Supplementary Conditions and General Conditions.
- (3) Plans will govern Technical Specifications, Supplementary Conditions, and General Conditions.
- (4) Special Conditions will govern Plans, Technical Specifications, Supplementary Conditions, and General Conditions.

The Contractor shall take no advantage of any apparent error or omission in the plans or specifications. In the event the Contractor discovers such an error or omission, he shall immediately notify the Engineer. The Engineer will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the plans and specifications.

40. NOTICE AND SERVICE THEREOF

Any notice to the Contractor from the Owner relative to any part of this Contract will be in writing and will be considered delivered and the service thereof completed when said notice is mailed, by certified or registered mail, to the said Contractor at his last given address, or delivered in person to the said Contractor or his authorized representative on the work.

41. REQUIRED PROVISIONS DEEMED INSERTED

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

42. SAFETY AND HEALTH REGULATIONS

This project is subject to all of the Safety and Health Regulations (CFR 29, Part 1926, and all subsequent amendments) as promulgated by the U.S. Department of Labor on June 24, 1974. Contractors are urged to become familiar with the requirements of these regulations.

43. USE AND OCCUPANCY PRIOR TO FINAL ACCEPTANCE BY OWNER
(BENEFICIAL OCCUPANCY)

43.1 General

Use and occupancy of a portion or unit of the project upon substantial completion of that portion or unit, and before final acceptance of the entire project, shall be a condition of this Contract with the following provisions:

- (a) The Owner will make his request to the Contractor in writing.
- (b) There must be no significant interference with the Contractor's operations on other parts of the project.
- (c) The Engineer, upon request of the Owner and agreement by the Contractor that the portion or unit is substantially complete, will make an inspection of the subject part of the project to confirm its status of completion. The Engineer will then follow the procedures described in Article 25 (Acceptance and Final Payment).
- (d) Consent of the surety and endorsement of the insurance carrier must be obtained prior to use and/or occupancy by the Owner. Furthermore, in the case of building occupation, the Owner will secure the necessary insurance coverage on the building.
- (e) The Owner will have the right to exclude the Contractor from the subject portion of the project after the date stipulated in the Engineer's Certificate but will allow the Contractor reasonable access to complete or correct the items on the Engineer's punch list.

The provisions stated above do not apply during the installation or construction phase of this Contract, nor do those provisions restrict use and access by Contractor or the Owner obligated to perform work within the limits of the Project under legal contractual agreement, providing access and use do not infringe upon the work of this Contract.

43.2 Warranty Period

- (a) Pipeline or building: Upon use or occupancy of pipeline or building by the Owner, the warranty period shall begin and run for a period of two years.
- (b) Mechanical equipment, pumps, etc.: The warranty period of such equipment shall begin only after a specified test period has been completed and the equipment has demonstrated an ability to perform in accordance with the technical specifications.
- (c) Pavement: Upon issuance of certificate of substantial completion the warranty period shall extend for two years.

- (d) Loamed, Seeded and Mulched Areas: Upon issuance of certificate of substantial completion the warranty period shall extend for two years.

44. PHOTOGRAPHS OF THE PROJECT

The Contractor is required to furnish and submit pre-construction, construction, and post-construction photographs of the project to the Owner.

45. SUSPENSION OF WORK

45.1 The Owner may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to the Contractor and the Engineer which shall fix the date on which Work shall be resumed. The Contractor will resume the work on the date so fixed. The Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if he makes a claim therefore as provided in Articles 18 and 21.

45.2 In the event of a Suspension of Work initiated by the Contractor for any reason including, but not limited to, winter shut-down, settlement of claims, and/or delay in delivery of materials, the Owner shall receive thirty (30) days prior notice, in writing, giving detailed reasons for the suspension of work and an approximate date of resumption of work.

46. SIGNS

The Contractor shall furnish and erect roadway construction signs for the safety of the public and in accordance with the MUTCD, local, and state standards, and such additional signs as determined necessary by the Engineer and as shown on construction drawings.

47. PUBLIC CONVENIENCE AND TRAFFIC CONTROL

47.1 The Contractor shall at all times so conduct his work as to ensure the least possible obstruction to traffic for the general public and the residents along the project route and the protection of persons and property shall be provided for by the Contractor. The Owner shall be responsible for proper and timely notification to local residents before making any interruptions of their access.

47.2 Fire hydrants and water holes for fire protection on or adjacent to the project site shall be kept accessible to the fire apparatus at all times, and no obstructions shall be placed within 10 feet of any such facility. No footways, gutters, sewer inlets, or portions of highways adjoining the project site shall be obstructed more than is necessary. In the event that all or part of a roadway is officially closed to traffic during construction, the Contractor shall provide and maintain safe and adequate traffic accommodations, satisfactory to the Owner and Engineer, for residences and businesses along and adjacent to the roadway so closed.

47.3 When the maintenance of traffic is considered by the Engineer to be of minor significance, certain contracts may not show this work as a pay item. In such cases, the Contractor shall bear all expense of maintaining traffic over the sections

of the project undergoing improvements, and of constructing and maintaining such approaches, crossings, intersections, rights-of-way, and other features as may be necessary, without direct compensation.

48. PRE-CONSTRUCTION CONFERENCE

The Contractor shall not commence work until a conference has been held at which representatives of the Contractor, Engineer, and Owner are present. The pre-construction conference will be arranged by the Engineer.

49. MAINTENANCE DURING CONSTRUCTION

49.1 The Contractor shall maintain the work during construction and until the project is accepted. This maintenance shall constitute continuous and effective work, prosecuted day by day with adequate equipment and forces, to the end that roads or structures are kept in satisfactory condition at all times.

49.2 All cost of maintaining work during construction and before the project is accepted shall be included in the unit prices bid on the various pay items, and the Contractor will not be paid an additional amount for such work.

49.3 If the Contractor, at any time, fails to comply with the provisions above, the Engineer may direct the Contractor to do so. If the Contractor fails to remedy unsatisfactory maintenance within the time specified in any such order, the Engineer may immediately cause the project to be maintained and the entire cost of this maintenance will be deducted from money due or to become due the Contractor on this Contract.

50. COOPERATION WITH UTILITIES

50.1 The Contractor will notify all applicable utility companies, all pipeline owners, or other parties affected, and endeavor to have all necessary adjustments of the public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction made as soon as practicable.

50.2 Water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction which are to be relocated or adjusted are to be moved by the owners of such utilities at their expense, except as may otherwise be provided for in the Special Conditions, as shown or noted on the construction drawings and as specified in the Contract.

50.3 It is understood and agreed that the Contractor has considered all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans and as evident on the site, and that no additional compensation will be allowed for any delays, inconvenience, or damage sustained by him due to any interference from such utility appurtenances or the operation of moving them.

50.4 The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these

operations may progress in a reasonable manner, that duplication of rearrangement work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

- 50.5 In the event of interruption to water or utility services as a result of accidental breakage or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority and shall cooperate with the said authority in the restoration of services. If water service is interrupted, repair work shall be continuous with all necessary assistance by the Contractor until the service is restored. No work shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority. If any utility service is interrupted for more than 4 hours, the Contractor shall make provisions for temporary service at his own expense until service is resumed.

51. WORK PERFORMED AT NIGHT AND ON SUNDAYS AND HOLIDAYS

- 51.1 No work will be permitted at night or on Sundays or holidays except as approved in writing by the Engineer, and provided such work is not in violation of a local ordinance. When working at night, the Contractor shall provide flood lighting sufficient to ensure the same degree of accuracy of workmanship and the same conditions regarding safety as would be achieved in daylight.
- 51.2 Whenever Memorial Day or Fourth-of-July is observed on a Friday or a Monday and during the weekend of Labor Day, the Contractor may be required to suspend work for the three calendar days. Prior to the close of work, the project shall be placed in the best possible condition for the comfort and safety of the traveling public, and arrangements shall be made for responsible personnel to maintain the project in the above conditions.

52. LAWS TO BE OBSERVED

The Contractor shall keep fully informed of all Federal and State laws, all local laws, ordinances, and regulations, and all orders and decrees of bodies of tribunals having any jurisdiction or authority which, in any manner, affect those engaged or employed on the work or which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or his employees.

53. PERMITS

Permits to be obtained by the Contractor shall be in accordance with the following:

- 53.1 Permits and licenses of a temporary nature necessary for the prosecution of the work shall be obtained and paid for by the Contractor. Permits, licenses, and easements for permanent structures or permanent changes in existing facilities will be secured and paid for by the Owner. Permits to be secured by the Contractor may include:
- RSA 149-M:10 New Hampshire Bureau of Solid Waste - disposal of construction debris and/or demolition waste.

- NHDES Air Resources Division (burning permits).

53.2 Control of Pollution Due to Construction

- (a) During construction, the Contractor shall take precautions sufficient to avoid the leaching or runoff of polluting substances such as silt, clay, fuels, oils, bitumens, calcium chloride and any other polluting materials which are unsightly or which may be harmful to humans, fish, or other life, into groundwater and surface waters of the State.
- (b) In waters used for public water supply or used for trout, salmon, or other game or forage fish spawning or nursery, control measures must be adequate to ensure that turbidity in the receiving water will be increased not more than 10 standard turbidity units (s.t.u.) in the absence of other more restrictive locally established limitations, unless otherwise permitted by the NHDES. In no case shall the classification for the surface water be violated unless otherwise permitted by the NHDES.
- (c) In water used for other purposes, the turbidity must not exceed 25 s.t.u. unless otherwise permitted by the NHDES.

54. SUBCONTRACTORS

The Contractor will insert any subcontracts, articles 50 through 55, contained herein; also a clause requiring the Subcontractors to include these clauses in any lower tier subcontracts which they may enter into, together with a clause requiring this insertion in any further subcontracts that may in turn be made.

55. EQUAL EMPLOYMENT OPPORTUNITY

Under equal employment opportunity requirements and during the performance of this Contract the Contractor agrees to the following:

- 55.1 The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, national origin, or sex. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, creed, color, national origin, or sex. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, transfer, recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this non-discrimination clause.
- 55.2 The Contractor will in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, national origin, or sex.
- 55.3 The Contractor will send to each labor union or representative or workers with which he has a collective bargaining agreement, or other contract or understanding, a notice to be provided advising the labor union to work's

representative of the Contractor's commitment under section 202 or executive order no. 11246 of September 24, 1965, and 11375 of October 13, 1967, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

55.4 The Contractor will comply with all provisions of executive order numbers 11246 and 11375.

55.5 The Contractor will furnish all information and reports required by executive order numbers 11246 and 11375.

55.6 In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations, or orders, this Contract may be cancelled, terminated, or suspended in whole or in part by the Owner or the Department of Labor and the Contractor may be declared ineligible for further government contracts or federally-assisted construction. However, in the event the Contractor becomes involved in, or is threatened with, litigation with a Subcontractor or vendor as a result of such direction by the Department of Labor, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

56. INTEREST OF FEDERAL, STATE, OR LOCAL OFFICIALS

No Federal, State, or local official, shall be admitted to any share or part of this Contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this Contract if made with a corporation for its general benefit.

57. OTHER PROHIBITED INTERESTS

No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction, or material supply contract, or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part hereof. No officer, employee, architect, attorney, engineer, or inspector of or for the Owner who is authorized in such a capacity and on behalf of the Owner to exercise any legislative, executive, supervisory, or their similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

NOTICE OF AWARD

Dated _____, 20 ____

TO: _____
(BIDDER)

ADDRESS: _____

OWNER'S PROJECT NO: _____

PROJECT: Hanover High School Track Improvements Contract 1 (Sitework) Project

OWNER'S CONTRACT NO: _____

CONTRACT FOR: SAU #70/Dresden School District

(Insert name of OWNER as it appears in the Bid Documents)

You are notified that your Bid dated _____ for the above Contract has been considered. You are the apparent successful bidder and have been awarded a contract for:

Total Base Bid

(Indicate total Work, alternates or sections of Work awarded)

The Contract Price of your contract is _____

_____ Dollars (\$ _____).

four (4) copies of each of the proposed Contract Documents (except Drawings) accompany this Notice of Award. The same number of sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within ten days of receiving this Notice of Award.

1. You must deliver to the OWNER all of the fully executed counterparts of the Agreement including all the Contract Documents. Each of the Contract Documents must bear your signature on (the cover) (every) page.

2. You must deliver with the executed Agreement the Contract Security (Bonds) as specified in the Information for Bidders and General Conditions.

3. (List other conditions precedent).

Provide Certificate of Insurance

Failure to comply with these conditions within the time specified will entitle the **OWNER** to consider your bid abandoned, to annul this Notice of Award, and to declare your Bid Security forfeited.

Within ten days after receipt of acceptable performance BOND, payment BOND, and agreement signed by the party to whom the Agreement was awarded, the **OWNER** will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

(OWNER)

By

(AUTHORIZED SIGNATURE)

(TITLE)

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

By _____

The _____ day of _____, 20 _____

By _____

Title _____

Copy to ENGINEER
(Use Certified Mail, Return Receipt Requested)

NOTICE TO PROCEED

Dated _____, 20 _____

TO: _____
(Insert Name of CONTRACTOR as it appears in the Bid Documents)

ADDRESS: _____

OWNER'S PROJECT NO. _____

PROJECT: Hanover High School Track Improvements Contract 1 (Sitework) Project

OWNER'S CONTRACT NO. _____

CONTRACT FOR (OWNER): SAU #70/Dresden School District

You are notified that the Contract Time under the above contract will commence to run on _____, 20 _____. By that date, you are to start performing your obligations under the Contract Documents. In accordance with paragraph 3 of the Agreement, the dates of Substantial Completion and Final Completion are _____, 20 _____ and _____, 20 _____, respectively.

Before you may start any Work at the site, paragraph 27 of the General Conditions provides that you and OWNER must each deliver to the other (with copies to ENGINEER) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the site, you must:

(add other requirements)

Copy to ENGINEER

(Use certified Mail, return Receipt Requested)

(OWNER)

By

(Authorized Representative)

(Title)

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by:

(CONTRACTOR)

this the _____, 20 _____

Employer Identification Number:

By: _____

(Title)

CHANGE ORDER

No. _____

PROJECT:	<u>Hanover High School Track Improvements Contract 1 (Sitework)</u>	DATE OF	ISSUANCE:	_____
OWNER:	<u>SAU#70/Dresden School District</u>			
ADDRESS:	<u>41 Lebanon Street, Suite 2, Hanover, NH 03755</u>			
CONTRACTOR:	_____	OWNER's Project No.	_____	
CONTRACT FOR:	_____	ENGINEER	<u>Pathways Consulting, LLC</u>	
		ENGINEER's Project No.	<u>10021</u>	

You are directed to make the following changes in the Contract Documents.

Description:

Purpose of Change Order:

Justification:

Attachments: (List documents supporting change)

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIME
Original Contract Price \$ _____	Original Contract Time _____ (days or date)
Previous Change Orders \$ _____	Net change from previous Change Orders _____ (days)
Contract Price prior to this Change Order \$ _____	Contract Time prior to this Change Order _____ (days or date)
Net Increase (Decrease) of this Change Order \$ _____	Net Increase (decrease) this Change Order _____ (days)
Contract Price with all approved Change Orders \$ _____	Contract Time with all Change Orders _____ (days or date)

This document will become a supplement to the CONTRACT and all provisions will apply hereto. The attached CONTRACTOR's Revised Project Schedule reflects increases or decreases in Contract Time as authorized by this Change Order.

Stipulated price and time adjustment includes all costs and time associated with the above described change. CONTRACTOR waives all rights for additional time extension for said change. CONTRACTOR and OWNER agree that the price(s) and time adjustment(s) stated above are equitable and acceptable to both parties.

RECOMMENDED:	APPROVED:	APPROVED:	APPROVED:
By: _____	By: _____	By: _____	By: _____
Engineer/PM	OWNER	CONTRACTOR	DES, Name & Title
_____	_____	_____	_____
Date	Date	Date	Date

CONTRACTOR'S AFFIDAVIT

STATE OF: _____

COUNTY OF: _____

Before me, the undersigned, a _____
(Notary Public, Justice of Peace, Alderman)

in and for said County and State personally appeared, _____
(Individual, Partner or duly
authorized representative of corporate CONTRACTOR) who being duly sworn according to law

deposes and says that the cost of all the Work, and outstanding claims and indebtedness of whatever
nature arising out of the performance of the contract between SAU #70/Dresden School District
(OWNER)

and _____ of _____
(CONTRACTOR)

dated _____ for the construction of the Hanover High School Track

Improvements Contract 1 (Sitework) Project and necessary appurtenant installations have been
paid in full.

(Individual, Partner, or duly authorized representative of corporate CONTRACTOR)

(Title)

Sworn to and subscribed before me

this _____ day of _____, 20 ____

Notary Public

CONTRACTOR'S RELEASE

KNOW ALL MEN BY THESE PRESENTS that _____

(CONTRACTOR)

of _____, County of _____
and State of _____ do _____ hereby acknowledge that

(CONTRACTOR)

has on _____ (date) received from SAU #70/Dresden School District
(OWNER)
the sum of _____ Dollars
(\$ _____) and other valuable considerations in full and complete
satisfaction and payment of all sums of money owed, payable and belonging to

(CONTRACTOR)

by any means whatsoever, for on account of a Contract Agreement between

SAU #70/Dresden School District

(OWNER)

and _____
(CONTRACTOR)

dated _____ for _____
(Project)

NOW, THEREFORE, the said _____
(CONTRACTOR)

(for myself, my heirs, executors and administrators) (for itself, its successors and assigns)

do/does, by these presents remise, release, quit-claim, and forever discharge SAU #70/Dresden
(OWNER)

School District, of and from all claims and demands, arising from or in
connection with the said contract dated _____, and of and from all, and all manner of
action and actions, cause and causes of action and actions, suits, debts, dues, duties, sum and sums
of money, accounts, reckonings, bonds, bills, specialties, covenants, contracts, agreements,
promises, variances, damages, judgments, extents, executions, claims and demand, whatsoever in
law or equity, or otherwise, against SAU #70/Dresden School District
(OWNER)

its successors and assigns, which (I, my heirs, executors, or administrators) (it, its successors and

assigns) ever had, now have, or which (I, my heirs, executors, or administrators) (it, its successors and assigns) hereafter can, shall, or may have, for, upon or by reason of any matter, cause, or thing whatsoever, from the beginning of recorded time to the date of these presents.

IN WITNESS WHEREOF, _____

(CONTRACTOR)

has caused these presents to be duly executed this _____ day of _____, 20 _____

Signed, Sealed and Delivered in the presence of:

(Individual - CONTRACTOR) (seal)

(Partnership - CONTRACTOR) (Seal)

(seal) By _____
(Partner)

Attested:

(Corporation)

(Secretary) By _____
(President or Vice President)

(Corp. Seal)

CERTIFICATE OF SUBSTANTIAL COMPLETION

OWNER's Project No.: _____ ENGINEER's Project No.: 10021

Project: Hanover High School Track Improvements Contract 1 (Sitework) Project

CONTRACTOR: _____

Contract For: _____ Contract Date: _____

This Certificate of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

To: SAU #70/Dresden School District
(OWNER)

And To: _____
(CONTRACTOR)

The Work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR, and ENGINEER, and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on _____.

(Date of Substantial Completion)

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by CONTRACTOR within 10 calendar days of the above date of Substantial Completion.

The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance, and warranties shall be as follows:

RESPONSIBILITIES:

OWNER: _____

CONTRACTOR: _____

The following documents are attached to and made a part of this Certificate:

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

Executed by ENGINEER on _____, 20 _____

(Engineer)

By: _____

CONTRACTOR accepts this Certificate of Substantial Completion on _____, 20 _____

(CONTRACTOR)

By: _____

OWNER accepts this Certificate of Substantial Completion on _____, 20 _____

SAU #70/Dresden School District
(OWNER)

By: _____

CERTIFICATE OF FINAL COMPLETION

Owner's Project No. _____ Engineer's Project No. 10021
Project Hanover High School Track Improvements Contract 1 (Sitework) Project
Owner: SAU#70/Dresden School District
Contractor: _____
Engineer: Pathways Consulting, LLC

Agreement Date: _____
Notice to Proceed Date: _____
Contractual Substantial Completion Date as modified by Change Orders: _____
Actual Substantial Completion Date: _____
Contractual Final Completion Date as modified by Change Orders: _____

The Work to which this Certificate applies has been reviewed by authorized representatives of Owner, Contractor, and Engineer, the punch list has been completed and the Work of the Contract is hereby declared to be Finally Complete in accordance with the Contract Documents on:

Date of Final Completion

This Certificate does not constitute an acceptance of any Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents. The Warranty for all Work completed subsequent to the date of Substantial Completion expires one year from the date of this Final Acceptance.

Executed by Engineer on: _____, 20

By: _____

Contractor Accepts this Certificate of Final Completion on: _____, 20

By: _____

Owner Accepts this Certificate of Final Completion on: _____, 20

By: _____

SPECIFICATIONS

DIVISION 01
GENERAL REQUIREMENTS

<u>Section</u>		<u>No. of Pages</u>
01 10 00	Summary	2
01 10 10	Mobilization	1
01 10 30	Miscellaneous Work and Cleanup	2
01 10 40	Specifications and Drawings	2
01 10 90	Abbreviations and Terms	2
01 15 00	Measurement and Payment	10
01 40 00	Quality Requirements	5
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SECTION 01 10 00

SUMMARY

PART 1 - GENERAL

1.01 PROJECT IDENTIFICATION

The project name is the Hanover High School Track Improvements Contract 1 (Sitework) for the SAU #70/Dresden School District. The project is Job No. 10021 on the Contract Documents which were prepared by Pathways Consulting, LLC, Lebanon, New Hampshire.

1.02 DESCRIPTION OF WORK

A. Project Summary

This Contract is for all Sitework excluding paving of track, track surfacing, and track specialties which are being bid under a separate Contract (Contract 2). This project involves the relocation and replacement of the existing track approximately 5 feet to the southwest of the current location. The project includes, but is not limited to, partial depth excavation and removal of the existing track and base materials; relocation and replacement of the track surface and select base course materials; removal and replacement of existing drainage structures and related trench patching for disturbed areas of existing pavement; installation of underdrains around the interior and exterior perimeter of the track; raising and relocating the track infield, football field, and field event areas; relocation of one section of fence along with temporary fence removal and resetting; relocation and resetting existing irrigation; turf establishment and sod (additive alternative); and sediment and erosion controls. Under this Contract, the Contractor will be responsible for bringing select materials to proper grade and rough grading the track, long jump/triple jump area, pole vault area, high jump area, shot put area, and discus area in preparation for Contract 2 (Paving and Surfacing). However, the contractor shall make available personnel to be present during paving operations to deliver additional materials for fine grading and for verification that there is no conflict with their work. Even though the track paving and resurfacing is under the separate Contract 2, the Contractor must communicate all work with the parties involved with Contract 2 (Paving and Surfacing) in order to make sure there is no conflict in schedule or the work.

B. The Contractor will remove and dispose of and furnish and install all items necessary for the completion of the work and the installation and maintenance of all necessary erosion and sedimentation controls.

C. The Contractor shall take complete responsibility of the site while construction is underway.

D. The Contractor shall provide a complete system, accepted by the owner and ready for use.

1.03 COORDINATION

- A. The requirements of this Contract include complete coordination with the Dresden School District SAU #70 office and their representatives.
- B. This Contract also requires coordination and cooperation with all others working within the site area, including but not limited to, local municipal departments, various Contractors, local residents that live adjacent to the project areas, State and local regulatory personnel, and all others to whom access may not be restricted.

- C. Site Contacts

Engineer / Owner's Representative:

Scott A. Williams, P.E., Project Manager
Pathways Consulting, LLC
240 Mechanic Street Suite 100
Lebanon, New Hampshire 03766
Phone (603) 448-2200 Ext. 130, Fax (603) 448-1221
Email: scott.williams@pathwaysconsult.com

Owner:

Jamie J Teague, Business Administrator
SAU #70/Dresden School District
41 Lebanon Street, Suite 2
Hanover, New Hampshire 03784
Phone (603) 643-6050 Ext. 2008
Email: jamieteague@hanovernorwichschools.org

Owner:

Anthony Daigle, Director of Facilities
SAU #70/Dresden School District
41 Lebanon Street, Suite 2
Hanover, New Hampshire 03784
Phone (603) 643-3810
Email: anthonydaigle@hanovernorwichschools.org

1.04 PERMITS

- A. The project does not require any regulatory permits or approvals at this time. No additional impacts shall be allowed outside of the limits of disturbance depicted on the drawings.

END OF SECTION 01 10 00

SECTION 01 10 10

MOBILIZATION

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This item shall consist of preparatory work and operations, including, but not limited to, those necessary to the movement of personnel, equipment, supplies, and incidentals to the site of the work; and for all other work and operations which must be performed or for costs which must be incurred prior the beginning work on the various items.

PART 2 – PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.01 BASIS OF PAYMENT

- A. Partial payments for this item will be made approximately as follows:
 - (a) When 5 percent of the original Contract amount is earned, the accumulated total to be paid will be 25 percent of the amount bid, or 2-1/2 percent of the original Contract amount, whichever is the lesser.
 - (b) When 10 percent of the original Contract amount is earned, the accumulated total to be paid will be 50 percent of the amount bid, or 5 percent of the original Contract amount, whichever is the lesser.
 - (c) When 25 percent of the original Contract amount is earned, the accumulated total to be paid will be 60 percent of the amount bid, or 6 percent of the original Contract amount, whichever is the lesser.
 - (d) When 50 percent of the original Contract amount is earned, the accumulated total to be paid will be 100 percent of the amount bid, or 10 percent of the original Contract amount, whichever is the lesser.
- B. Upon completion of all work, payment of any amount bid for this item in excess of 10 percent of the original Contract amount will be paid.
- C. Upon written request by the Contractor made within 30 days of the Award of Contract, an amount equal to 25 percent of the amount bid for this item or 1 percent of the Contract amount, whichever is lesser, will be paid.
- D. The total sum of all payments will not exceed the original Contract amount bid for this item, regardless of the fact that the Contractor may have, for any reason, shut down his work on the project or moved equipment away from the project and then back again.

END OF SECTION 01 10 10

SECTION 01 10 30

MISCELLANEOUS WORK AND CLEANUP

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

Provide all labor, materials, and equipment necessary to complete miscellaneous items and cleanup not specified elsewhere. This section includes the following:

1. Installation and maintenance of daily erosion and sediment control items necessary to complete the work, frequent roadway maintenance, dust control and maintenance of dust along the project corridor, and daily project cleanup.
2. Construction of Stabilized Construction Entrance.
3. Temporary Facilities, Storage, Staging, and Controls.
4. The cost of all bonds and insurances.
5. Initial sampling will be required for all materials and a sieve completed.
6. Coordination and cooperation with the Contract 2 Contractor and the other Contractor's working in the area, the local Public Works Department, Project Abutters, SAU #70 staff, local utility companies, and other State and Local officials.
7. Protection of materials delivered to the site, stored on-site, and work which is in the process of completion, or that has been completed, on the project.
8. Record Survey of all work installed is included in this item. Contractor shall provide record in AUTOCAD format to the Engineer prior to Final Completion in accordance with 01 70 00 Execution and Closeout.
9. Collection and maintaining daily records of construction progress.
10. Disposal of unsuitable material(s) off-site at a location approved by the Owner and Engineer.
11. Excavation and work around existing utilities within the Project limits.
12. Temporary stabilization of all disturbed areas of the project if not stabilized within 2 weeks of final grading.
13. Temporary maintenance/bypass of all existing drainage flows pertaining to the project scope.
14. Maintenance and installation of stabilized construction entrances, haul roads, and construction lay down area.
15. Trench boxes, shoring, bracing, sheeting and all miscellaneous materials and equipment necessary to complete the project.
16. Full cost of hiring a private utility locating company to locate private utilities not located by DIG-Safe within the project limits.

17. Completion of test pits and exploratory excavation to verify existing utilities necessary to complete the work.
18. Development and distribution of utility disturbance and shutdown notices and coordination with abutting property owners throughout the project.
19. Temporary removal and replacement of electrical lines and conduit as noted on the drawings.

PART 2 – COOPERATIONS WITH OTHERS

2.01 COOPERATION WITH OTHERS

Delays in the Work caused by the actions of others shall be expedited as promptly as possible by the Owner(s). The Contractor shall notify the Owner of any delays caused by circumstances beyond his control.

2.02 SCHEDULE OF VALUES

- A. Contractor shall submit a detailed breakdown of miscellaneous work items in the form of a schedule of values with the Bid Proposal for review by the Engineer and the Owner prior to signing the Agreement. This breakdown will be used for partial payment of the included miscellaneous work items.
- B. Failure to comply with the requirements of related Sections or of items listed herein shall be cause for the withholding of sums defined in the lump sum breakdown schedule of values.

END OF SECTION 01 10 30

SECTION 01 10 40

SPECIFICATIONS AND DRAWINGS

PART 1 - GENERAL

1.01 CONTRACT DOCUMENT DRAWINGS

The Specifications and Drawings referenced in this section may be modified by addenda and will be issued for construction purposes. The Drawings may be supplemented or suspended by such additional general and detail Drawings as may be necessary as the work progresses. The Drawings issued for construction at that time or after the signing of the Contract Documents will become the Contract Drawings.

1.02 EXISTING AND ADJACENT CONDITIONS

Existing conditions and construction not intended as part of the Work are shown for informational purposes only. Before starting any work affected by such existing conditions, the Contractor shall have made himself familiar with all conditions affecting his work and shall not be entitled to extra compensation for any work or expense arising from or caused by his failure to have verified all existing conditions.

1.03 DIMENSIONS

In general, the Drawings are made to scale, but working dimensions shall be taken only from calculated dimensions or by actual measurements at the site. The Contractor shall compare all Drawings and verify all figures before laying out or constructing the work and shall be responsible for any and all errors in the work resulting from his failure to do so. Deviations from the Drawings and the dimensions given thereon shall be made only after corrected revision is obtained in writing from the Engineer. The Contractor shall take all measurements of existing established conditions regardless of the figured dimensions on the Drawings. When figured dimensions are not in agreement with the Contractor's measurements, the Contractor will adjust the measurement as necessary and provide the Engineer with justification for said revisions.

1.04 DISCREPANCIES

Any discrepancies discovered during the Work between the Drawings, Specifications, and actual conditions shall be immediately brought to the attention of the Engineer. Work performed after such discovery, without the Engineer's knowledge, shall be at the risk of the Contractor. If discrepancies are discovered by the Contractor and the Engineer is properly notified, the Engineer shall be given reasonable time to correct the issue prior to the Contractor continuing with work.

1.05 DIAGRAMMATIC DRAWINGS

- A. Plans or Drawings where work is shown diagrammatically indicate general working systems. Drawings of a purely representational nature shall not be used to take off the specific items of the Work. To carry out the true intent and purpose of the Contract Documents, correct working systems or installations shall be included as if detailed on the Drawings.
- B. The location of equipment shown on the Drawings, unless exactly dimensioned, shall be considered as approximate only. The Contractor shall adjust the position of the equipment in accordance with good working practices to avoid interferences, provide proper clearance and space for operation and maintenance.

1.06 TYPICAL DETAILS

Where shown on the Drawings, typical details shall apply to each and every item of the Contract Work where such items are incorporated and the detail is applicable.

1.07 COPIES OF DRAWINGS FURNISHED

- A. The Engineer or the Owner will furnish the Contractor, without charge, up to four (4) copies of the Drawings and Specifications for execution of the Contract Work. Additional copies will be furnished at the Contractor's expense when requested.
- B. All Drawings and Specifications are the property of the Engineer or of the Owner. The Contractor shall return all copies if so requested.

PART 2 - PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION 01 10 40

SECTION 01 10 90

ABBREVIATIONS AND TERMS

PART 1 - GENERAL

1.01 ABBREVIATIONS AND REFERENCES

A. The following abbreviations may be used in these Specifications:

AA	-	Aluminum Association
AAMA	-	Architectural Aluminum Manufacturers Association
AASHO	-	The American Association of State Highway Officials
ACI	-	American Concrete Institute
AGA	-	American Gas Association, Inc.
AGMA	-	American Gear Manufacturers Association
AIEE	-	American Institute of Electrical Engineers
AISC	-	American Institute of Steel Construction, Inc.
AITC	-	American Institute of Timber Construction
AMCA	-	- Air Moving and Conditioning Association
API	-	American Petroleum Institute
ARI	-	Air Conditioning and Refrigeration Institute
ASA	-	American Standards Association
ASCE	-	American Society of Civil Engineers
ASHRAE	-	American Society of Heating, Refrigeration, Air Conditioning Engineers
ASME	-	American Society of Mechanical Engineers
ASTM	-	American Society of Testing Materials
AWI	-	Architectural Woodwork Institute
AWPB	-	American Wood Preserves Bureau
AWS	-	American Welding Society, Inc.
AWWA	-	American Water Works Association
CIPRA	-	Cast Iron Pipe Research Association
CISPI	-	Cast Iron Soil Pipe Institute
CRSI	-	Concrete Reinforcing Steel Institute
CVEC	-	Connecticut Valley Electric Company
CVPS	-	Central Vermont Public Service Corporation
DIPRA	-	- Ductile Iron Pipe Research Association
Fed.Spec	-	Federal Specifications
FO&M	-	Facilities Operations & Maintenance - Dartmouth College
GSE	-	Granite State Electric Co.
Milspec	-	Military Specifications
NAAMM	-	National Association of Architectural Metal Manufacturers
NEC	-	National Electrical Code
NEES	-	New England Electric Service
NEMA	-	National Electrical Manufacturers Association
NEMI	-	New England Masonry Institute, Inc.

NET	-	NYNEX (formerly New England Telephone Co.)
NEWWA	-	New England Water Works Association
NFPA	-	National Fire Protection Association
NHDES	-	New Hampshire Department of Environmental Services
NHDOT	-	New Hampshire Department of Transportation
NYNEX	-	Bell Atlantic (formerly NYNEX)
SCPI	-	Structural Clay Products Association
SDI	-	Steel Door Institute
SMACNA	-	Sheet Metal and Air Conditioning CONTRACTORs National Association
U.L.	-	Underwriters Laboratory
VTrans	-	Vermont Agency of Transportation

- B. Where reference is made to a specification by one of the above mentioned or other organizations, it is understood that the latest revision thereof shall apply.
- C. In case of conflict, this Contract Specification shall take precedence over the above-noted specifications.
- D. Intention of Terms: In order to avoid cumbersome and confusing repetition of expressions in these specifications, it is provided that whenever anything is, or is to be, done, determined, directed, specified, authorized, ordered, given, designated, indicated, considered necessary, deemed necessary, permitted, reserved, suspended, established, suitable, accepted, satisfactory, unsatisfactory, sufficient, insufficient, rejected, or condemned, it shall be understood as if the expression were followed by the words "by the Engineer" or "to the Engineer".

PART 2 – PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION 01 10 90

SECTION 01 15 00

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section describes the measurement and payment for the Work to be completed under each bid item in the Proposal. Work that is specified or shown on the drawings but not specifically designated as a Bid Proposal Item is considered incidental to the Contract.
- B. Progress payment procedures are described elsewhere in the Contract Documents.
- C. Individual bid items referencing NHDOT item No.'s in the bid item name shall comply with the NHDOT Specifications for Road and Bridge Construction 2018 for the material referenced.

1.02 SUBMITTALS

- A. Within 7-days of the date of the Agreement, submit a schedule of values for all lump sum items. Break the items down in detail sufficient to determine the value of work at any degree of completion. Partial payment of lump sum items is based on the schedule of values as approved by the Engineer.
- B. Monthly applications for payment shall be on forms provided in these documents.

1.03 SCHEDULING

- A. Notify the Engineer or Owners Representative, as far in advance as possible, of the taking of measurements so that they may observe existing conditions, work being performed, and measurements being made.
- B. Allow for and afford Engineer or Owners Representative ample time, space and equipment to complete measurements and to verify contractor's measurements and elevations. If the contractor does not allow for the Engineer or Owners Representative to make their measurements, the Engineer or Owners Representative calculated quantities will govern.

1.04 PRODUCTS

- A. Provide all labor, materials, facilities, levels, measuring devices and all other equipment and items necessary to properly and accurately perform all measurements for payment purposes with the Engineer.

1.05 GENERAL REQUIREMENTS

A. GENERAL REQUIREMENTS AND STIPULATION

1. Perform all measuring required under this section.
2. No separate payments will be made for work under the contract. All costs in connection with the Work shall be included in one or more of the pay items as appropriate.
3. Each pay item shall be full compensation for all costs in connection with the item including but not limited to:
 - a. The furnishing of all materials, labor, equipment, tools, and all incidentals
 - b. The installation of all materials, equipment, tools, and incidentals.
 - c. The proper share of overhead and profit.
 - d. Any excavation, trenching, backfilling, dewatering, shoring, or testing required.
 - e. The restoration of unpaved surfaces.
 - f. Any temporary facilities or controls required or found necessary.
 - g. Protection of all work being installed from damage.
 - h. Cost of shipping, handling, storing necessary for all materials.
 - i. All required testing of work and materials on the project.
 - j. All required recordkeeping (record drawings) for work installed.
 - k. Disposal off-site of any and all materials and items remaining at completion of the work and items demolished as part of the work.
 - l. All related and incidental work and items necessary or required to complete the work and to provide completely connected and operational and approved systems capable of performing as required.
4. Each pay item which specifically involves excavation shall be considered to include full compensation for:
 - a. Excavation in earth.
 - b. Disposal of any surplus.
 - c. Handling of water/dewatering as required.
 - d. Installation and removal of sheeting, shoring, and bracing with all necessary personal protective equipment to comply with OSHA regulations.
 - e. Required, bedding and backfill materials.
 - f. Furnishing and installing insulation as required.
 - g. Compaction.

1.06 EXECUTION

- A. The names of the following items may or may not be abbreviated form of the Bid items as contained in the Bid Proposal forms. The names, as shown below or on the Bid Form, shall not be construed to represent a complete description of all the work included under such items are provided only as a means of identification and for ease of conversation.

PART 2 – MEASUREMENT AND PAYMENT

2.01 DESCRIPTION OF PAY ITEMS

- A. Item 1.01 - Mobilization (Not to Exceed 5% of Total Base Bid)
1. Payment: shall be at the lump sum price as stated in the Bid Proposal. Payment shall be in accordance with specification section 01 10 10.
 2. Measurement: shall be in accordance with specification section 01 10 10.
- B. Item 1.02 – Removal, Salvage, Relocation, Resetting, and Disposal of Existing Chain Link Fence, Posts, and Gates (Including Temporary Removal for Drainage Work)
1. Payment: shall be at the lump sum price as stated in the Bid Proposal. Payment includes removal and salvage of wire netting from approximately 85 feet of existing chain link fence (at south end of field), relocating fence in similar location, and resetting approximately 40 feet of fence and one 12-foot wide gate (at northwest end of field) where needed to match new grades, in accordance with final field layout per drawings. Item includes furnishing and installing all materials, fencing, posts, post bases, hardware, brackets, ties, netting, supports, cables, anchors, tools, equipment, labor, protection of work, disposal of excess materials off-site, and all else necessary to complete the work in accordance with the drawings. Temporary removal and resetting of existing fence in other locations for required drainage work, off-site disposal of excess posts and gates, and additional material for backfill of existing post holes is incidental to this work. Item includes two mobilizations by Fence Company (One to install posts, one to install netting and gates).
 2. Measurement: shall be measured based on the estimated percentage of work complete and approved by the Engineer. 50% of item will be paid when posts are installed, remaining 50% will be paid when final mesh work is complete.
- C. Item 1.03 – Remove and Dispose of Existing Concrete Drainage Structures
1. Payment: shall be at the unit price per each stated in the Bid Proposal. Inclusive of demolition/removal and disposal of drainage structures with various components identified for removal on the drawings.
 2. Measurement: for payment for this item shall be for each structure removed and disposed of off-site and approved by the Engineer.
- D. Item 1.04 – Removal and Disposal of Existing Drainage Pipe (Separate Trench from new Drainage Work)

1. Payment: shall be at the unit cost per linear foot as stated in the Bid Proposal. Inclusive of all work necessary to remove drainage piping as shown on the drawings outside of the proposed drainage trenching work. Additional material for backfill, and building concrete or brick bulkheads to seal existing penetrations in existing drainage structures is incidental to this work.
2. Measurement: will be for the actual number of linear feet of drainage piping removed and approved by the Owner. Pipe to be measured along the top of the pipe removed to the nearest foot.

E. Item 1.05 – Fill Drain Line with Grout and Cap

1. Payment: shall be at the lump sum price as stated in the Bid Proposal. Inclusive of building concrete or brick bulkheads, 2” CTS filler and air release pipes, grout and pumping, and all else necessary to properly fill the abandoned drainage line.
2. Measurement: shall be measured based on the estimated percentage of work complete and approved by the Engineer.

F. Item 1.06 – Stripping and Stockpiling Topsoil and Screening for Reuse

1. Payment: shall be at the lump sum price as stated in the Bid Proposal. Inclusive of all excavation necessary to remove existing vegetation and loam within work limits depicted on the drawings, stockpiling on-site, sampling, testing, screening, disposal of excess to location determined by Owner, hauling, protection of work, tools, equipment, labor, and all else necessary to complete work. Item includes testing of loam to be sent to laboratory early on for amendment requirements per the specifications, as well as screening the material for reuse.
2. Measurement: shall be measured based on the estimated percentage of work complete and approved by the Engineer.

G. Item 1.07 – Demo Existing Track, Long Jump/Triple Jump Runways and Sand Pits, Pole Vault Runway and Jump Pads, Shot Put Pad and Throw Area, High Jump Area, and Discus Pad

1. Payment: shall be at the lump sum price as stated in the Bid Proposal. Inclusive of all excavation necessary to remove pavement, concrete, sand pits, and subbase materials to subgrade in preparation for new surfaces or loam. Engineer to review grading in field with Contractor, and grading shall be in accordance with drawings. Item includes disposal of materials off-site.
2. Measurement: shall be measured based on the estimated percentage of work complete and approved by the Engineer.

H. Item 1.08 – Excavation and Stockpiling Existing Track Subbase Materials for

Reuse in Football Field

1. Payment: shall be at the lump sum price as stated in the Bid Proposal. Inclusive of all excavation necessary to remove existing subbase (sand/gravel) material within the existing track limits down to required subgrade for new track and/or underdrain trenches depicted on the drawings, stockpiling on-site, screening the material for reuse, placement within new football field limits, compaction, disposal of excess to location determined by Owner (only if needed), hauling, protection of work, tools, equipment, labor, and all else necessary to complete work.
2. Measurement: shall be measured based on the estimated percentage of work complete and approved by the Engineer.

I. Item 1.09 – Common Excavation to Subgrade All Surfaces

1. Payment: shall be at the lump sum price as stated in the Bid Proposal. Inclusive of all excavation necessary to establish subgrade for new gravels, select materials, and/or loam within limits depicted on the drawings or as otherwise approved by the Engineer. Exclusive of materials excavated under separate items (1.06, 1.07, 1.08).
2. Measurement: shall be measured based on the estimated percentage of work complete and approved by the Engineer.

J. Item 1.10 – Clean Granular Fill for Track Infield Area and Outside Track Perimeter

1. Payment: shall be at the unit cost per cubic yard as stated in the bid proposal. Inclusive of furnishing, installing, and compacting approved clean fill to subgrade in area of track infield, football field, and around new Triple and Long Jump location.
2. Measurement: for payment shall be by the in-place compacted section and average end-area calculation multiplied by the thickness required by the drawings to the nearest cubic yard.

K. Item 1.11 – Relocate Discus Throw Area (Stone Subbase for Pad and Resetting Net Anchor Holes)

1. Payment: shall be at the lump sum price as stated in the Bid Proposal. Inclusive of all excavation to subgrade, subgrade preparation, furnishing and installing $\frac{3}{4}$ " washed crushed stone subbase for pad, rough grading of subbase, and resetting net anchor holes in accordance with the details and drawings. Reconstruction of concrete pad by others (Contract 2).
2. Measurement: shall be measured based on the estimated percentage of work complete and approved by the Engineer.

L. Item 1.12 – Relocate Shot Put Area (Stone Subbase for Pad and Jock Sand Throw Area Arc)

1. Payment: shall be at the lump sum price as stated in the Bid Proposal. Inclusive of all excavation to subgrade, subgrade preparation, furnishing and installing ¾" washed crushed stone subbase for pad, rough grading of subbase, and new non-woven fabric and jock sand for throw area arc in accordance with the details and drawings. Reconstruction of concrete pad and circle by other (Contract 2).
 2. Measurement: shall be measured based on the estimated percentage of work complete and approved by the Engineer.
- M. Item 1.13 – Relocate Pole Vault Area (Stone Subbase for Standard and Vault Box Pads)
1. Payment: shall be at the lump sum price as stated in the Bid Proposal. Inclusive of all excavation to subgrade, subgrade preparation, furnishing and installing ¾" washed crushed stone subbase for four (4) standard pads and two (2) vault box pads, and rough grading of subbase in accordance with the details and drawings. Reconstruction of concrete pads by others (Contract 2).
 2. Measurement: shall be measured based on the estimated percentage of work complete and approved by the Engineer.
- N. Item 1.14 – Non-Woven Separation Fabric Below Track Selects
1. Payment: shall be at the unit cost per square yard as stated in the bid proposal. Inclusive of furnishing and installing approved fabric below gravels in accordance with the drawings. Overlap of joints is incidental to the item.
 2. Measurement: for payment shall be by the surface area of fabric installed as measured by the Engineer.
- O. Item 1.15, 1.16 – Select Materials (NHDOT Item 304.4, NHDOT Item 304.3)
1. Payment: shall be at the unit cost per cubic yard as stated in the bid proposal. Inclusive of furnishing and installing approved select materials below the track surfaces, long jump/triple jump runways, pole vault runway and jump pads, and high jump area. Rough grading of surfaces in preparation for contract 2 as well as providing additional material as needed for fine grading of track is incidental to this item.
 2. Measurement: for payment shall be by the in-place compacted section and average end-area calculation multiplied by the thickness required by the drawings to the nearest cubic yard.
- P. Item 1.17 – Bituminous Concrete Pavement (3½" Thickness, Trench Patch in Drainage Areas Only)
1. Payment: shall be at the unit price per square yard as stated in the bid

proposal. Includes furnishing and installing bituminous concrete pavement material to thickness required and in accordance with the approved drawings and specifications, hauling, handling, placing and compacting, grading, emulsified tack coat at all pavement joints, sweeping and cleaning base course pavement, raising and adjusting all frames and covers to finish elevations, labor and equipment, and all else necessary to complete the item. No additional payment will be made to the Contractor for repair work done by Contractor in maintaining bituminous concrete pavement.

2. Measurement: shall be by in-place surface area within limits depicted on the drawings or otherwise authorize by the Engineer.

Q. Items 1.18, 1.19, 1.20 – New Area Drains, Catch Basins, and Drainage Manholes

1. Payment: shall be at the unit price per each as stated in the bid proposal. Inclusive of furnishing and installing new structures as required by the drawings and specifications and various components with frames and grates/covers. All penetrations shall be properly sealed and water tight before payment shall be made. Includes all excavation, backfill, and compaction.
2. Measurement: shall be for reach structure installed and approved by the Engineer.

R. Items 1.21, 1.22 – HDPE Drainage Piping

1. Payment: shall be at the unit price per linear foot as stated in the bid proposal. Inclusive of furnishing and installing all required piping per the drawings, specifications, and manufacturer requirements. Fittings necessary to transition to other new and/or existing pipe are considered incidental to this item. Includes excavation, backfill and compaction. Connections to new and/or existing drainage structures, and removal of existing piping in same trench is incidental.
2. Measurement: shall for payment will be along the centerline of the pipe installed through all necessary fittings to the nearest foot.

S. Items 1.23, 1.24– HDPE and PVC Perforated Underdrain

1. Payment: shall be at the unit price per linear foot as stated in the bid proposal. Inclusive of furnishing and installing all required piping per the drawings, specifications, and manufacturer requirements. Fittings necessary to transition to other new and/or existing pipe are considered incidental to this item. Includes excavation, backfill and compaction. Fabric and stone, caps, connections to new and/or existing drainage structures, and removal of existing piping in same trench incidental.
2. Measurement: shall for payment will be along the centerline of the pipe installed through all necessary fittings to the nearest foot.

- T. Item 1.25 – Restoration of Lawn (6” Rolled Thickness Screened Loam, Seed, Starter Fertilizer, Lime, straw Mulch)
1. Payment: shall be at the lump sum price as stated in the Bid proposal. Item includes furnishing and installing approved screened loam using striped material stockpiled on the site and/or imported loam free of invasive species or weeds. Testing soil for required amendments, amending soil for optimum growth of lawns, fertilizer, lime, placing loam to required thickness, fine grading loam, rolling loam, furnishing and installing seed and straw mulch, fertilizer, lime, maintenance of lawns until vegetation is established including watering, and all else necessary to complete the work.
 2. Measurement: shall be based on the percentage of work completed based on a schedule of values submitted by the Contractor and approved by the Engineer. 50% of item will be withheld until lawn is accepted by the Owner in accordance with the specifications.
- U. Item 1.26 – Hydromulch (Profile Cover Grow or equivalent)
1. Payment: shall be at the lump sum price as stated in the Bid Proposal. Item includes furnishing and installing hydromulch on all seeded areas that require restoration within the limits of work, either by hydro-spray, spreader, or by hand in accordance with the required manufacturer application rates. This item excludes locations where erosion blankets or sod will be installed. Inclusive of all tools, equipment, labor, and all else necessary to complete work.
 2. Measurement: shall be measured based on the estimated percentage of work complete and approved by the Engineer.
- V. Item 1.27 – Erosion Control Inlet Protection
1. Payment: for this item shall be at unit price per each as stated in this Bid Proposal. Payment includes furnishing and installing silt sack inlet protection for existing and new drainage structures. Removal and maintenance incidental.
 2. Measurement: for payment shall be for the actual number of inlet protection devices installed and approved by the Engineer.
- W. Item 1.28 – Erosion Control Sock
1. Payment: shall be at the unit price per linear foot as stated in the Bid Proposal. Inclusive of furnishing and installing the item in accordance with the manufacturer’s specifications, stakes, supports, observation and maintenance, relocation as needed for work, and removal after work is complete. Silt Soxx will not be paid for if not installed correctly and approved by Engineer.
 2. Measurement: shall be along the top of the Silt Soxx to the nearest foot.

X. Item 1.29 – Stormwater Pollution and Prevention Plan

1. Payment: shall be a lump sum price as stated in the bid proposal. Inclusive of preparation of a SWPPP plans and document in accordance with the Construction General Permit. Filing an NOI and NOT. Providing copies of the SWPPP document to the Engineer and City.
2. Measurement: shall not be made and item will be paid in full upon approval by the Engineer.

Y. Item 1.30 – SWPPP Monitoring

1. Payment: shall be at the unit price per hour as stated in the Bid Proposal. Inclusive of SWPPP monitoring and reporting in accordance with the EPA Construction General Permit. A maximum of 2 hours will be allowed to be billed for each visit and report in accordance with NHDOT guidelines.
2. Measurement: shall be based on 2 hours per visit with up to one additional hour for detailed corrective actions or communication. Travel will not be paid for. Visits shall be once a week until the site is fully stabilized.

Z. Item 1.31 – Relocation and Resetting Existing Irrigation

1. Payment: shall be at the lump sum price as stated in the Bid Proposal. Payment includes removal and relocation of existing system (i.e., irrigation lines, control boxes, and sprinkler heads) where location conflicts with other proposed work, and resetting existing system to new finished grades, in accordance with the drawings. Item includes all excavation, backfill, and compaction, furnishing and installing all materials, hardware, tools, equipment, labor, protection of work, excavation, backfill, compaction, disposal of excess materials off-site, and all else necessary to complete the work in accordance with the drawings. Additional material for backfill of existing locations is incidental to this work.
2. Measurement: shall be measured based on the estimated percentage of work complete and approved by the Engineer.

AA. Bid Item 1.32 – Miscellaneous Work and Cleanup (Not to exceed 3% of total bid amount).

1. Payment: shall be at the lump sum price as stated in the Bid Proposal. Payment shall be in accordance with specification section 01 10 30.
2. Measurement: shall be in accordance with specification section 01 10 30.

AB. Item AA1 – Sod - Track Infield Area (ADDITIVE ALTERNATIVE)

1. Payment: shall be at the unit price per square yard as stated in the bid proposal. Limits of sod as depicted on the drawings. Inclusive of furnishing approved sod from local source, installing sod by professional experienced in sod installation, fine grading subsoils, furnishing and installing 4" rolled depth of screened loam (amended as needed) beneath sod prior to installation, rolling of sod following placement for uniform surface, starter fertilizer at 50% of manufacturers recommended application rate, daily watering for two weeks following installation, tools equipment, labor, and all else necessary to complete work.
2. Measurement: shall be by surface area of Sod installed and approved by the Engineer.

END OF SECTION 01 15 00

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section specifies administrative and procedural requirements for quality control services.
- B. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the Engineer, Owner, or Project Superintendent.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
- D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
 - 1. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as installation procedures.
 - 2. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
 - 3. Requirements for the Contractor to provide quality control services required by the Owner, Engineer or Superintendent, or authorities having jurisdiction are not limited by provisions of this Section.

1.02 RESPONSIBILITIES

- A. Contractor Responsibilities: The Owner shall provide inspections, tests and similar quality control services, specified in individual Specification Sections and required by governing authorities, except where they are specifically indicated to be the Contractor's responsibility, or are provided by another identified entity; these services include those specified to be performed by an independent agency and not by the Contractor.
 - 1. The Owner shall employ and pay an independent agency to perform specified quality control services on behalf of the Owner.
 - 2. Retesting: The Contractor is responsible for retesting costs where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.

- a. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility.
3. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to:
 - a. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
 - b. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
 - c. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
 - d. Security and protection of samples and test equipment at the Project site.
- B. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections shall cooperate with the Engineer, Owner, Project Superintendent, and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.
 1. The agency shall notify the Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
 3. The agency shall not perform any duties of the Contractor.
- C. Coordination: The Contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition, the Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
 1. The Contractor is responsible for scheduling times for inspections when the Engineer is not on site, tests, taking samples and similar activities.

1.03 SUBMITTALS

- A. The testing agency shall submit a certified written report of each inspection, test or similar service, to the Engineer. If the Contractor is responsible for the service, they must submit a certified written report of each inspection, test or similar service to the Engineer. The Contractor will provide copies of all testing reports.

1. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:
 - a. Date of issue.
 - b. Project title and number.
 - c. Name, address, and telephone number of testing agency.
 - d. Dates and locations of samples and tests or inspections.
 - e. Names of individuals making the inspection or test.
 - f. Designation of the Work and test method.
 - g. Identification of product and Specification Section.
 - h. Complete inspection or test data.
 - i. Test results and an interpretation of test results.
 - j. Location of sample or test in project.
 - k. Ambient conditions at the time of sample-taking and testing.
 - l. Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
 - m. Name and signature of laboratory inspector.
 - n. Recommendations on retesting.

1.04 QUALITY ASSURANCE

- A. Qualification for Service Agencies: The Owner will engage inspection and testing service agencies, including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.
 1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.

1.05 TRADESMEN & WORKMANSHIP

Ensure that tradesmen performing work at site are skilled and knowledgeable in methods and craftsmanship needed to produce required quality levels for workmanship in completed work. Remove and replace work which does not comply with workmanship standards as specified and as recognized in the construction industry for applications indicated. Remove and replace other work damaged or deteriorated by faulty workmanship or its replacement.

1.06 COORDINATION

Coordination: The Contractor shall coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.

- A. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
- B. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
- C. Make adequate provisions to accommodate items scheduled for later installation.

1.07 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore to eliminate deficiencies, including deficiencies in visual qualities of exposed work.
- B. Protect construction exposed by or for quality control service activities and protect repaired construction.
- C. Repair and protection are the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

1.08 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and movement.
- E. Recheck measurements and dimensions before starting each installation.
- F. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent damage.
- G. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

1.09 REPLACEMENT OF WORK

Within 24 hours after rejection of work pursuant to the General Conditions, remove all materials and equipment so rejected and immediately replace work, at the Contractor's cost, to the satisfaction of the Engineer and Owner. Should the work of the Owner or other Contractors be damaged by such removal or replacement, the Contractor shall reimburse the Owner or other Contractors for all costs incurred for correcting damage.

PART 2 - PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION 01 40 00

SECTION 01 60 10

SUBMITTALS

PART 1 - GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

- A. Submittal requirements specified in this section include shop drawings, product data, samples, and miscellaneous work-related items. Refer to other Contract Documents for the requirements of administrative submittals.
- B. Work-related submittals of this Section are categorized as follows:
 - 1. Shop Drawings include specially prepared technical data, including drawings, diagrams, data sheets, schedules, and instructions.
 - 2. Product Data include standard printed information on materials, products, and systems not specially prepared for this Project, other than the designation of selections from among products specified herein.
 - 3. Samples include fabricated examples of materials, natural materials, products, and units of work either for limited visual inspection or for testing and analysis to determine compliance with other Sections of the Specifications.
- C. Miscellaneous submittals related directly to the Work include warranties, maintenance agreements, workmanship bonds, construction schedules, survey data and reports, quality control testing and reports, copies of industry standards, operations, and maintenance reports and other similar information, devices, and materials applicable to the Work.

1.02 GENERAL SUBMITTAL REQUIREMENTS

- A. Coordination and sequencing of submittals shall be scheduled to precede work performance to avoid undue delays. Submittals that cover differing types of materials, but represent a complete part of the Work should be submitted as a whole, rather than as a unit.
- B. Submittal identification shall be consistent throughout the Project. Each submittal or group of submittals shall bear Project name, date, specification number, Contractor, Subcontractor, submittal name and information to distinguish it from other submittals. Show the Contractor's executed review stamp and provide space for the Engineer's review marking. Submittals received without the Contractor's review marking will be returned to the Contractor without action.
- C. Grouping of submittals to signify similar information or related parts of a whole is required. Partial submittals may be rejected as not complying with the Provisions

of the Contract Documents.

- D. Transmittal forms shall be attached to indicate Project, date, names of Subcontractor's, suppliers, manufacturers, category and type of submittal, purpose, copy routing, and signature of Contractor, agent, or supplier.
- E. Submit six (6) copies of each submittal. The Contractor may alternately submit submittals in an electronic form with all appropriate transmittal and routing documents.

1.03 SPECIFIC-CATEGORY SUBMITTAL REQUIREMENTS

- A. Shop Drawings shall be information of the latest revision, on reproducible sheets, with graphic information at accurate scale, with name of preparer indicated (firm name). Show dimensions and note those based on field measurement. Identify materials and products in the work shown. Indicate compliance with standards. Submit blue-line or black-line prints.
- B. Product Data: Collect required data into one submittal for each unit of work or system; and mark each copy to show which choices and options are applicable to project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special coordination requirements. Maintain one set of product data (for each submittal) at project site, available for reference by the Owner and others.
- C. Construction Schedule: Submit within 10 days of signing the Agreement a detailed schedule of construction activities and anticipated monthly payments.

PART 2 - PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION 01 60 10

SECTION 01 70 00

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Definitions: “Closeout” is defined as a checklist of general requirements near the Contract deadline, in preparation for final acceptances, final payment, normal contract completion or occupancy by the Owner and similar actions evidencing completion of work.
- B. “Closeout” is directly related to “substantial completion” and may be a single time period or a succession of time periods for segments of the work which have been certified by the OWNER as substantially complete on varying dates.

1.02 REQUIREMENTS FOR SUBSTANTIAL COMPLETION

- A. General: Prior to a request for Owner’s inspection for certification of substantial completion, complete the following list and include known exceptions in the request:
 - 1. Progress Payment Request: Show either 100% completion for work claimed, and value, or show incomplete items, value and reason for being incomplete.
 - 2. Include supporting documentation for completion as required by these Contract Documents.
 - 3. Advise Owner of impending insurance change-over requirements.
 - 4. Submit specific warranties, maintenance bonds and agreements, final certification and related documents.
 - 5. Deliver tools, spare parts, materials, O&M manuals, stocks and equipment to the Owner.
 - 6. Remove temporary facilities and utility services.
- B. Inspection Procedures: The Owner will proceed with Final Inspection upon receipt of Contractor’s request or notification of completion of above requirements. Following inspection, the Owner will either issue Certification of Substantial Completion or Punch List detailing work to be done prior to issuance of Certificate.

1.03 REQUIREMENTS FOR FINAL ACCEPTANCE

- A. General: Prior to requesting the OWNER'S final inspection for Certification of Final Acceptance and final payment as defined by General Conditions, satisfy the following criteria and list exceptions:
1. Submit final payment request with final releases, invoices and supporting documentation. Include Certificates of Insurance for products and equipment, if required.
 2. Submit updated final statement, accounting for final changes to Contract sum.
 3. Submit final punch list with corrected items endorsed by Engineer.
 4. Submit Record Drawing(s).
 5. Submit, if applicable, final liquidated damages statement, endorsed by Owner.
 6. Revise and submit evidence of final continuing insurance coverage meeting insurance requirements (General Conditions, etc.).
- B. Reinspection Procedure: Upon Contractor's notice that punch list work toward Certificate of Final Acceptance has been completed, Engineer will observe the work. Engineer will either prepare Certificate of Final Acceptance or order re-working of punch list items found deficient or not fulfilled as required for final acceptance.

1.04 RECORD DOCUMENTS SUBMITTALS

- A. General: See individual sections of these Specifications for specific requirements. Provide access to records for Owner's reference.
- B. Record Drawings: Maintain a field set of red-line Contract Drawings and Shop Drawings in clean, undamaged condition with mark-up of all items installed utilities depicting depth and as-built locations.
1. Organize Red-Line As-built Drawings into a cohesive, bound set with suitable dates, titles and locations shown clearly on front sheet and submit to the Engineer at completion of utility installation.
- C. Record Specifications: Where required, maintain one copy of notated Specifications showing Addenda and Change Orders. Show substitutions, options selected and similar information on work that is concealed. Cross reference to other documents.
- D. Record Product Data: Maintain one copy of each product data submittal. If a

change occurs from the original submittal, include both submittals for comparison. Pay particular attention to documenting concealed items, not readily identified at a later date.

PART 2 - PRODUCTS NOT USED

PART 3 – EXECUTON NOT USED

END OF SECTION 01 70 00

DIVISION 03
CONCRETE

Section

03 30 53

Miscellaneous Cast in Place Concrete

No. of Pages

12

SECTION 03 30 53

MISCELLANEOUS CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

Provide cast-in-place concrete work as depicted on the Drawings.

1.02 QUALITY ASSURANCE AND REFERENCES

- A. Codes and Standards: Comply with the provisions of the following codes and standards:
 - ACI 301 - "Specifications for Structural Concrete for Buildings"
 - ACI 318 - "Building Code Requirements for Reinforced Concrete"
 - ASTM C94 - "Specification for Ready-Mix Concrete"
 - CRSI - "Specifications for Placing Reinforcement"
 - NHDOT - "NHDOT Standards for Road and Bridge Construction"
- B. Testing and Services by Contractor: By an approved testing laboratory at the Contractor's expense:
 - 1. Aggregate tests.
 - 2. Concrete mix designs.
 - 3. All tests shall be the responsibility of the Contractor including retesting of rejected work or materials in-place. Contractor shall hire an independent laboratory certified in the State of New Hampshire to conduct field test of concrete mix and materials. Tests for slump, air content, temperature and compression test cylinders will be paid for by the Contractor for each concrete pour on the project. Test results shall be provided to the owner.
 - 4. Furnish equipment, buckets, shovels, wheelbarrows necessary for sampling of concrete mix, molds for compression test cylinders, curing and storing facilities, and labor to assist test technician.
- C. Tests for Small Placements: Placement of 15 cubic yards or less will require a digression from standard ASTM requirement of sampling the middle portion of a batch for testing. In order to prevent defective first portion of a defective batch from being placed, devise a first portion sampling and testing procedure acceptable to the Engineer.

1.03 SUBMITTALS

- A. Mix Design and Laboratory Test Reports: Submit laboratory test reports for concrete materials and mix design test as specified.

- B. Product Data: Submit manufacturer's product data with application and installation instructions for proprietary materials including reinforcement, forming accessories, admixtures, patching compounds, curing compounds, waterstops, chairs, inserts, finish materials, and others as requested by the Engineer.
- C. Shop Drawings, Reinforcement: Submit shop drawings for fabrication, bending and placement of concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures", showing bar schedules, stirrup spacing's, diagramming of bent bars and arrangement of concrete reinforcement, including special reinforcement at structure openings.
- D. Samples: Submit samples of materials specified or as otherwise requested by the Engineer. Include product names, sources, and descriptions.
- E. Material Certificates: Provide material certificates in lieu of laboratory test reports when permitted by the Engineer. Material certificates shall be signed by the manufacturer and Contractor, certifying that each material meets, or exceeds, specified requirements.

PART 2 - PRODUCTS

2.01 FORM MATERIALS

- A. Forms for Exposed-Finish Concrete: Construct formwork in accordance with ACI 347 "Recommended Practice for Concrete Formwork". For exposed concrete surfaces with plywood, metal or other acceptable panel type form materials, provide continuous, straight, smooth surfaces. Minimize the number or conform to joint systems shown on the Drawings.
- B. Forms for Unexposed Finish Concrete: Form concrete surfaces which will not be exposed with plywood, lumber, metal or other acceptable material.
- C. Form Coatings: Provide commercially formulated form-coating compounds that will not bond with, stain or physically change concrete surfaces, nor impair subsequent concrete surface treatments.
- D. Form Ties: Removable or Snap-off type, galvanized metal, fixed or adjustable length, with waterproofing washer, free of defects capable of leaving holes larger than 1 inch.
- E. Spreaders: Standard, non-corrosive metal form clamp assembly, of type acting as spreaders and leaving no metal within 1 inch of concrete face. Wire ties, wood spreaders or through bolts are not permitted.
- F. Form Anchors and Hangers:
 - 1. Do not use anchors and hangers leaving exposed metal at concrete surface.
 - 2. Symmetrically arrange hangers supporting forms from structural steel members to minimize twisting or rotation of member. Penetration of structural steel members is not permitted.
- G. Form Release Agent: Colorless mineral oil which will not stain concrete, or absorb moisture, or impair natural bonding or color characteristics of coating

intended for use on concrete. Accepted products include:

1. “Arcal-80”; Arcal Chemical Corporation.
 2. “Synthex”; Industrial Synthetics Company.
 3. “Nox-Crete Form Coating”; Nox-Crete Company.
 4. Substitutions; Section 01600 - Product Requirements.
- H. Corners: Fillet or Chamfer, rigid plastic or wood strip.
- I. Bituminous Joint Filler: ASTM D 1751.
- J. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Size, strength, and character to maintain formwork in place while placing concrete.
- K. Waterstops: Polyvinyl chloride, as shown on the plans or NHDOT Standard Specifications.

2.02 REINFORCING MATERIALS

- A. All concrete reinforcement materials shall be new, free from rust.
- B. Welded Wire Fabric: ANSI/ASTM A185 and AASHTO M55, welded steel wire fabric in the sizes and gages shown on the Drawings.
- C. Bar Reinforcement: ASTM A615 and AASHTO M31, Grade 60, new deformed billet steel bars in the sizes shown on the Drawings.
- D. Fiber Reinforcement: The fibers shall be discontinuous discrete fibers made from plastic, glass, and other acceptable materials. Material and applications shall conform to ACI 544.1R.
- E. Supports: Provide supports for reinforcement including bolsters, chairs, spacers, and other required devices for spacing, supporting, or fastening wire fabric in place.
- F. All other materials not specifically described but required for a complete and proper installation of concrete reinforcement shall be as selected by the Contractor subject to the approval of the Engineer.

2.03 CONCRETE MATERIALS

- A. Portland Cement: ANSI/ASTM C150, AASHTO M85, Type II, unless directed otherwise by the Engineer. Use a single cement manufacturer and type throughout the Project, unless otherwise permitted by the Engineer.
- B. Normal Weight Aggregates: ANSI/ASTM C33 and as specified herein. Provide aggregates from a single source for exposed concrete.
1. Local aggregates not complying with ASTM C33 but which have shown by test and historical use to produce concrete of adequate strength and durability may be used when acceptable to the Engineer.
- C. Water: Potable.
- D. Air-Entraining Admixture: ANSI/ASTM C260.

- E. Water-Reducing Admixture: ANSI/ASTM C494, Type A with not more than one percent chloride ions.
- F. High-Range Water-Reducing (HRWR) Agent (Super-Plasticizer): ASTM C494 Type F or G with not more than one percent chloride ions.
- G. Calcium Chloride: Not permitted.
- H. General Concrete Joint Filler: Where used with caulking or sealants, the joint filler shall be non-extruding, self-expanding filler strips conforming to ASTM D1752, Type III, and ASHTO M153, Type III, as manufactured by Celotex Corporation, W.R. Meadows, Inc., W.R. Grace and Company, or equal approved by the Owner. Where no sealant or caulking is required, strips may be non-extruding bituminous type in accordance with ASTM D1751.
- I. Sidewalk Expansion Joint Filler: The expansion/contraction joint filler shall be a resilient, non-extruding cellular fiber joint, uniformly saturated with asphalt, conforming to ASTM D1751 and AASHTO M213 as manufactured by W. R. Meadows, Inc., or equal approved by the Owner.
- J. Sealant: Polyurethane or polysulfide elastomeric sealant. Color: Concrete gray or in a color to closely match the color of the concrete.
- K. Dowels: Smooth stainless steel dowels and sleeves in sizes indicated on the Drawings or as specified in Section 3.03.D.a.

2.04 PROPORTIONING AND DESIGN OF MIXES

- A. Design concrete mixes to provide normal weight concrete with the following properties:
 - 1. Sidewalks, Ramps, and Slabs:

Minimum 28-day compressive strength:	4000 psi
Maximum water/cement ratio:	0.40
Minimum cement content:	660 lbs./cubic yard
Slump: General use concrete:	2 inch minimum 4 inch maximum
Foundations/slabs:	1 inch minimum 3 inch maximum
Concrete w/HRWR admixture:	8 inch maximum
Maximum coarse aggregate size:	¾ inch
Air content:	6% plus or minus 1% by volume.
 - 2. Concrete Fill and Other Concrete:

Minimum 28-day compressive strength:	3000 psi
Maximum water/cement ratio:	0.49
Minimum cement content:	564 lbs./cubic yard
Slump: General use concrete:	1 inch minimum

	4 inch maximum
Concrete	
w/HRWR admixture:	8 inch maximum
Maximum coarse aggregate size:	¾ inch
Air content:	5.0% plus or minus 1% by volume.

- B. Adjustment to Concrete Mixes: Mix design adjustments may be requested by the Contractor when material characteristics, job requirements, weather, test results or other circumstances dictate; adjustments submitted and accepted by the Owner shall be accomplished at no additional cost to the Owner. Laboratory test results of adjusted mixes must be submitted to, and accepted by, the Owner before use in the Work.

2.05 CONCRETE MIXES

- A. Ready-mixed concrete: Truck-mixed concrete shall be batched, mixed and transported in accordance with ASTM C94.
- B. Truck mixes shall be capable of combining the ingredients into a thoroughly mixed, uniform mass within industry-specified times or revolutions per load. Concrete shall be centrally dry-batched with final truck mixing at the job site. Provide batch ticket with each batch discharged and accepted in the work. Indicate project name; job number; date; mix type and volume of water introduced. Batches not placed within one hour of batching time shall be rejected for placement.
- C. Job-site mixing: Mix materials for concrete in an appropriate drum-type batch machine mixer. Minimum mixing times for 1 cubic yard, or smaller shall be 1½ minutes after initial mixing has become homogenous. For mixers of capacity greater than 1 cubic yard increase mixing beyond homogeneity by 15 seconds per fraction over 1 cubic yard.

PART 3 - EXECUTION

3.01 FORMS

- A. Design and fabricate formwork to withstand the weight of concrete during preliminary curing period.
- B. Tolerances for Formed Surfaces: Maintain formwork tolerances as required by ACI 347, Recommended Practice for Concrete Formwork.
- C. Place formwork for thrust blocks to assure the proper surface bearing for the soil encountered. Refer to the "Thrust Block Bearing Area" schedule shown on the Drawings.
- C. Earth forms are not permitted.
- D. General:
1. Provide top form for sloped surfaces steeper than 1.5 horizontal to 1

vertical to hold shape of concrete during placement, unless it can be demonstrated that top forms can be omitted.

2. Construct forms to correct shape and dimensions, mortar-tight, braced, and of sufficient strength to maintain shape and position under imposed loads from construction operations.
3. Camber forms where necessary to produce level finished soffits unless otherwise shown on Drawings.
4. Carefully verify horizontal and vertical positions of forms. Correct misaligned or misplaced forms before placing concrete.
5. Complete wedging and bracing before placing concrete.

E. Forms for “Smooth Finish” Concrete:

1. Use steel, plywood or lined board forms.
2. Use clean and smooth plywood and form liners, uniform in size, and free from surface and edge damage capable of affecting resulting concrete finish.
3. Install form lining with close-fitting square joints between separate sheets without springing into place.
4. Use full size sheets of form lines and plywood wherever possible.
5. Tape joints to prevent protrusions in concrete.
6. Use care in forming and stripping wood forms to protect corners and edges.
7. Level and continue horizontal joints.
8. Keep wood forms wet until stripped.

F. Forms for Surfaces to Receive Membrane Waterproofing: Use plywood or steel forms. After erection of forms, tape form joints to prevent protrusions in concrete.

- H. Erect formwork, shoring, and bracing to achieve design requirements.
- I. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- J. Obtain Contractor’s/Engineer’s approval before framing openings in structural members that are not indicated on Drawings.

- L. Install fillet and chamfer strips on external corners of all exposed concrete components.
- M. Install void forms in accordance with manufacturer's recommendations.
- N. Do not reuse wood formwork more than three times for concrete surfaces to be exposed to view. Do not patch formwork.
- O. Application of Form Release Agent:
 - 1. Apply form release agent on formwork in accordance with manufacturer's recommendations.
 - 2. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
 - 3. Do not apply form release agent where concrete surfaces are indicated to receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.
 - 4. Reuse and Coating of Forms: Thoroughly clean forms and reapply form coating before each reuse. For exposed work, do not reuse forms with damaged faces or edges. Apply form coating to forms in accordance with manufacturer's specifications. Do not coat forms for concrete indicated to receive "scored finish." Apply form coatings before placing reinforcing steel.
- P. Inserts, Embedded Parts, and Openings:
 - 1. Provide formed openings where required for items to be embedded in passing through concrete work.
 - 2. Locate and set in place items required to be cast directly into concrete.
 - 3. Coordinate with Work of other sections in forming and placing openings, slots, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.
 - 4. Install waterstops continuously without displacing reinforcement.
 - 5. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
 - 6. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.
 - 7. Form Ties:
 - a. Use sufficient strength and sufficient quantity to prevent spreading of forms.
 - b. Place ties at least one inch away from finished surface of concrete.

- c. Leave inner rods in concrete when forms are stripped.
 - d. Space form ties equidistant, symmetrical, and aligned vertically and horizontally unless otherwise shown on Drawings.
- 8. Arrange formwork to allow proper erection sequence and to permit form removal without damage to concrete.
- 9. Construction Joints:
 - a. Install surfaced pouring strip where construction joints intersect exposed surfaces to provide straight line at joints.
 - b. Just prior to subsequent concrete placement, remove strip and tighten forms to conceal shrinkage.
 - c. Show no overlapping of construction joints. Construct joints to present the same appearance as butted plywood joints.
 - d. Arrange joints in continuous line straight, true, and sharp.
- 10. Embedded Items:
 - a. Make provisions for pipes, sleeves, anchors, inserts, reglets, anchor slots, nailers, waterstops, and other features.
 - b. Do not embed wood or uncoated aluminum in concrete.
 - c. Obtain installation and setting information for embedded items furnished under other Specification sections, or as directed.
 - d. Securely anchor embedded items in correct location and alignment prior to placing concrete.
 - e. Verify conduits and pipes, including those made of coated aluminum, meet requirements of ACI 318.
 - f. Install accessories straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- 11. Openings for Items Passing Through Concrete:
 - a. Frame openings in concrete where shown on Drawings. Establish exact locations, sizes, and other conditions required for openings and attachment of work specified under other sections.
 - b. Coordinate work to avoid cutting and patching of concrete after placement.
 - c. Perform cutting and repairing of concrete required as result of failure to provide required openings. Use a core drilling process or sawing process which produces clean, sharp edges and the minimum hole size which accommodates the piping, conduit, or equipment requiring the opening. Locations of holes and payment for this work will be by other trades and must be approved by the Engineer.
- 12. Screeds:

- a. Set screeds and establish levels for tops of concrete slabs and levels for finish on slabs.
- b. Slope slabs to drain where required or as shown on Drawings.
- c. Before depositing concrete, remove debris from space to be occupied by concrete and thoroughly wet forms. Remove freestanding water.

13. Screed Supports:

- a. For concrete over waterproof membranes and vapor barrier membranes, use cradle, pad or base type screed supports which will not puncture membrane.
- b. Staking through membrane is not permitted.

14. Cleanouts and Access Panels:

- a. Provide removable cleanout sections or access panels at bottoms of forms to permit inspection and effective cleaning of loose dirt, debris and waste material.
- b. Clean forms and surfaces against which concrete is to be placed. Remove chips, saw dust, and other debris. Thoroughly blow out forms with compressed air just before concrete is placed.

Q. Form Cleaning:

1. Clean forms as erection proceeds, to remove foreign matter within forms.
2. Clean formed cavities of debris prior to placing concrete.
3. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
4. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

R. Form Removal:

1. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads and removal has been approved by Engineer. Apply curing compound immediately after removing forms.
2. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
3. Store removed forms in a manner such that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.
4. Leave forms in place for minimum number of days as specified in ACI 347 or minimum of 7 days if no curing is to be done.

3.02 PLACING REINFORCEMENT

- A. Comply with CRSI recommended practice for placing reinforcing steel, supports, and details.
- B. Clean reinforcement of loose rust, mill scale, earth, ice, and any other materials which effect the bond with concrete.
- C. Accurately position, support or secure reinforcing steel against displacement by formwork, construction procedures or concrete placement operations. Secure reinforcement with appropriate ties, metal chairs, bolsters, hangers, or spacers as required.
- D. Position reinforcement to obtain required coverages. Set wire ties with ends directed inward away from exterior concrete surfaces.
- E. Install welded wire fabric in lengths as long as practicable and lap adjoining pieces a minimum of two full meshes. Lace splices with wire. Support welded wire fabric on 1½ inch with cement brick. Offset end laps in adjacent widths to prevent continuous laps in any direction.
- F. Fiber reinforcement shall be furnished in conjunction with of welded wire fabric for sidewalks and other applications approved by the Owner. The fiber reinforcement per volume of concrete shall be 1.5 pounds per cubic yard.
- G. Bending:
 - 1. Fabricate all reinforcement in strict accordance with the approved Shop Drawings.
 - 2. Do not use bars with kinks or bends not shown on the Drawings or on the approved Shop Drawings.
 - 3. Do not bend or straighten steel in a manner that will injure the material.
- G. Placing: No concrete shall be placed before the placing and typing of reinforcement has been inspected and approved by the Engineer. Contractor shall notify the Engineer not less than 48 hours prior to placing of concrete.
- H. Splicing:
 - 1. Horizontal Bars:
 - a. Place bars in horizontal members with minimum laps at splices sufficient to develop the strength of the bars.
 - b. Lapped ends of bars may be placed in contact and securely wired or may be separated sufficiently to permit the embedment of the entire surface of each bar in concrete.
 - c. Wherever possible, stagger the splices of adjacent bars.
 - d. Splice 40 bar diameters minimum.

2. Wire Fabric: Make all splices in wire fabric at least two squares.
3. Other Splices: Make only those other splices that are indicated on the approved Shop Drawings or specifically approved by the Engineer.
4. Dowels: Place all required steel dowels and securely anchor them into position before the concrete is placed.
5. Obstructions: In the event conduits, piping, inserts, sleeves, or any other items interfere with placing reinforcement as indicated on the Drawings or as otherwise required, immediately consult the Engineer and obtain approval of new procedure before placing concrete.

3.03 CONCRETE PLACEMENT

- A. Consolidate concrete by rodding or spading to prevent voids forming between concrete and undisturbed soils or fitting.
- B. Provide low-slump concrete for sloped sidewalk.
- C. Wrap fitting glands and bolts with roofing paper or polyfilm to prevent concrete from adhering.
- D. Expansion joints shall be placed along the building foundations and curbing materials. Expansion joints, shall be placed at a maximum interval of twenty feet (20'), unless otherwise directed by the Owner. For longer lengths, place sections alternately with a minimum of 24 hours of curing time between sections.
- E. Construction joints shall have 18" long smooth stainless steel dowels, 9" penetration into each slab, 12" o/c, with dowels 6" in from each side.
- F. Sidewalks shall have light broom finish perpendicular to normal pedestrian traffic to provide a non-skid surface. Handicap ramps shall have a heavy broom finish to allow for better traction.
- G. Furnish trowel finished borders 1½ inch wide, or as shown on the Drawings.

3.04 CONCRETE CURING AND PROTECTION

- A. Comply with ACI 308. Protect freshly placed concrete from excessive cold or hot temperatures.
- B. Provide curing of thrust block concrete by prompt backfill after initial curing period or as directed by the Owner.
- C. Protect from destruction by vehicle and pedestrian traffic or vandals until concrete has set-up.
- D. Water-cure sidewalks with burlap and soaker hoses for the first 24 hours. Curing compounds are not permitted for sidewalks.

3.05 DEFECTIVE WORK AND REMEDIES

- A. Any work which fails to comply with the requirements of this section, Chapters 17 and 18 of ACI 301, or the "Thrust Block Bearing Area" schedule shall not be

accepted.

- B. Deficient work shall be removed and replaced at the Contractor's expense.

END OF SECTION 03 30 53

SECTION 31 14 00

EARTH STRIPPING AND STOCKPILING

PART 1 - GENERAL

1.01 DESCRIPTION

This section includes earth stripping where required to assure necessary quality of the work and conservation of topsoil.

1.02 QUALITY ASSURANCE

- A. Confine grubbing operations to within the following limits:
 - 1. Within grading limits as shown on the drawings.
 - 2. Within easements and property lines of the Owner.
 - 3. Within all areas where work is required but to the minimum extent possible to install the work.
- B. Requirements of regulatory agencies: State and local codes shall control the disposal of organic material. No cutting or disturbing of trees or shrubs in a public way shall be performed until such time as the Contractor has obtained a permit from the local governing authority.
- C. Protect the area beyond the limit of clearing from damage by erecting barricades, fencing, wrapping, or other erosion control methods.

1.03 JOB CONDITIONS

- A. All excess topsoil stripped that is not reused shall be provide to the Dresden School District for reuse. The location of the final Stockpiling of that excess material shall be coordinated with the SAU#70 office.

PART 2 - PRODUCTS

2.01 EQUIPMENT

- A. Equipment shall be at the Contractor's option and acceptable to the Engineer.

PART 3 - EXECUTION

3.01 GRUBBING

- A. Grubbing shall consist of the removal and disposal of stumps, roots larger than three (3) inches in diameter and matted roots from areas to be grubbed. This material, together with other organic matter and other debris which is not suitable for subgrade or foundation purposes, shall be excavated to a depth of not less than 18 inches below original ground surface.

DIVISION 31
SITE WORK

<u>Section</u>		<u>No. of Pages</u>
31 14 00	Earth Stripping and Stockpiling	2
31 23 00	Excavation and Fill	6
31 23 16.13	Trenching	6
31 23 19	Dewatering	4
31 23 23.23	Compaction	5
31 25 00	Erosion and Sedimentation Controls	4

- B. The limits of grubbing shall coincide with the limits of clearing. All stumps and trees shall be removed by the Contractor.

3.02 STRIPPING

- A. Strip topsoil from all areas that will be substantially disturbed by or during construction. Avoid mixing topsoil with subsoil and stockpile it in areas on the site as approved by the Engineer. Topsoil shall be stockpiled free from brush, trash, stones and other extraneous material and protected until it is placed. Any topsoil remaining after all work is in place shall remain the property of the Owner and shall be disposed of by the Contractor as directed by the Engineer.

3.03 DISPOSAL

- A. All organic material, rubbish, and debris of whatever nature shall be removed from the site. Ultimate disposal shall be provided as part of the work.
- B. All disposal methods shall conform to applicable federal, state, and local requirements.

END OF SECTION 31 14 00

SECTION 31 23 00

EXCAVATION AND FILL

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all sections within DIVISION 01 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the specifications.

1.02 DESCRIPTION

- A. Work Included: Provide labor, materials and equipment necessary to complete the work of this section, including but not limited to the following.
 - 1. Earth Stripping and Stockpiling of work areas as shown or noted on the Drawings and as specified in Section 31 14 00.
 - 2. Excavating, stockpiling, and handling of common fill materials.
 - 3. Disposal and handling of unsuitable materials.
 - 4. Placing, shaping, and compacting of fill areas.
 - 5. Grading and fine grading of subbase for roadways and parking areas.
 - 6. Placement, fine grading, and compacting of crushed gravel surface, slopes, and shoulders in roadways and parking areas.
 - 7. Excavating, shaping and compacting of drainage ditches.

1.03 QUALITY ASSURANCE

- A. Compaction testing shall be conducted as indicated required by the contract. Aggregate gradation analyses shall be paid for by the Owner. Moisture maximum density tests and compaction test fees shall be paid by the Owner. Retesting for any failed tests shall be paid by the Contractor.
- B. Surfaces under paved areas shall be shaped to grade, line and cross-section within ½-inch positive or negative tolerance relative to subgrade elevations.
- C. Source Quality Control: Where materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to the site. If tests indicate materials do not meet specified requirements, change material and retest.

1.04 REFERENCE STANDARDS

- A. Reference Standard shall be the New Hampshire Department of Transportation, Standard Specifications for Road and Bridge Construction, hereinafter called NHDOT Standard Specifications.

- B. AASHTO T 180 - Standard Specification for Moisture - Density Relations of Soils Using a 10-pound Rammer and a 18-inch Drop; American Association of State Highway and Transportation Officials; 2001 (2004).
- C. ASTM C 136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2005.
- D. ASTM D 698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³); 2000a.
- E. ASTM D 2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth); 2004.
- F. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 2004.
- G. ASTM D 4318 - Standard Test Methods for Liquid Limit; Plastic Limit; and Plasticity Index of Soils; 2000.

1.05 SUBMITTALS

- A. Submittals shall be in accordance with Section 01 60 10 Submittals.
- B. Test reports of results of material gradations.
- C. Compaction test reports.

1.06 JOB CONDITIONS

- A. Site information data on subsurface conditions are not intended as representations or warranties of accuracy or continuity between borings or test pits. It is expressly understood that the Owner will not be responsible for interpretations or conclusions drawn there from by the Contractor. Additional test borings or test pits may be made by the Contractor with prior approval of the Engineer. Payment for exploratory excavations approved by the Engineer shall be incidental to the contract.
- B. Exploratory test pits shall be excavated where shown on the Drawings or as directed by the Engineer. Comply with the requirements for backfilling and compacting under this Section.
- C. Dust control shall be practiced in work areas and adjacent off-site stockpile areas. Dust shall be controlled by water or calcium chloride.
- D. Provide sufficient quantities of fill to meet the project schedule and requirements. When necessary, store materials on site in advance of need.
- E. When fill materials need to be stored on site, locate stockpiles where indicated.
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.

- G. Verify that survey benchmarks and intended elevations for the work are as indicated.

PART 2 - MATERIALS

2.01 DEFINITIONS

- A. Common Excavation or Fill shall consist of all excavation other than rock excavation, which is not specifically classified. Common Fill shall be free of trees, roots, frozen matter or rubble where the greatest stone size does not exceed six-inches (6") in greatest dimension. It shall be capable of being readily spread and compacted.
- B. Subgrade soils made unstable by error or negligence of the Contractor shall be removed and replaced by Select Backfill at the Contractor's expense.
- C. Unsuitable Material shall consist of deposits of saturated or unsaturated mixtures of soils and organic matter not suitable for foundation material regardless of moisture content. Unsuitable material shall also consist of any material containing excessive plastic silt, vegetation, debris, pavement, stones or boulders over six-inches (6") in greatest dimension, which, in the opinion of the Engineer, will not provide a suitable foundation or subgrade.
- D. Base course materials shall consist of hard, durable particles or fragments of stone or gravel. Materials that break up when alternately frozen and thawed or wetted and dried shall not be used for aggregate base course materials. Fine particles shall consist of natural or processed sand. The materials shall be free of harmful amounts of organic material. Unless otherwise specified, the percent wear of base course material shall not exceed 50 percent as determined by AASHTO T 96, Grading A.
- E. Crushed stone shall be processed material obtained from a source that has been stripped of all overburden. The processed material shall consist of clean, durable fragments of ledge rock of uniform quality and reasonably free of thin or elongated pieces. Acceptable sand may be blended as necessary to obtain the proper gradation for the fine aggregate portion.
- F. 3/4" Washed Gravel: The maximum size of stone particles shall not exceed 1". Material shall be screened and washed to remove all fines. Material shall consist of screened round gravel stone. The maximum percent passing the 3/4" sieve shall not exceed 35 percent. The maximum percent passing the # 4 sieve shall be 20 percent with 0-3 percent passing the No. 50 sieve.
- G. Medium Sand: The maximum size of any stone or fragment shall not exceed three-fourths of the compacted depth of the layer being placed but in no case larger than 3 inches. Sand shall consist of clean, sharp mineral particles free of organic matter. Sieve analysis by weight as follows:

<u>Sieve Size</u>	<u>% Passing by Weight</u>
3"	100%
No. 4	70-100%

*No. 200 0-10%

*(Based on the fraction passing No. 4)

- H. Gravel (NHDOT Item 304.2): The maximum size of stone particles shall not exceed three-fourths of the compacted thickness of the layer being placed but in no case larger than 6 inches. Gravel is characterized as hard, durable stone with coarse to fine sand. Sieve analysis by weight as follows:

<u>Sieve Size</u>	<u>% Passing by Weight</u>
6"	100%
No. 4	25-70%
*No. 200	0-12%

*(Based on the fraction passing No. 4)

- I. Sand (NHDOT Item 304.1): The maximum size of any stone or fragment shall not exceed three-fourths of the compacted depth of the layer being placed but in no case larger than 6 inches. Sand shall consist of clean, sharp mineral particles free of organic matter. Sieve analysis by weight as follows:

<u>Sieve Size</u>	<u>% Passing by Weight</u>
6"	100%
No. 4	70-100%
*No. 200	0-12%

*(Based on the fraction passing No. 4)

- J. Crushed Gravel (NHDOT Item 304.3): At least 50 percent of the material retained on the 1 inch sieve shall have a fractured face. Sieve analysis by weight as follows:

<u>Sieve Size</u>	<u>% Passing by Weight</u>
3"	100%
2"	95-100%
1"	55-85%
No. 4	27-52%
*No. 200	0-12%

*(Based on fraction passing No. 4)

- K. Crushed Aggregate for Shoulders (NHDOT Item 304.33): Sieve analysis by weight as follows:

<u>Sieve Size</u>	<u>% Passing by Weight</u>
1 1/2"	100%
1"	90-100%
No. 4	30-65%
*No. 200	0-10%

*(Based on fraction passing No. 4)

- L. Coarse Crushed Stone (NHDOT Item 304.5) and Fine Crushed Stone (NHDOT Item 304.4): Shall be clean angular rock fragments obtained by breaking and crushing rock material. Sieve analysis by weight as follows:

<u>Sieve Size</u>	<u>% Passing by Weight</u>
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	<u>Fine Stone (304.4)</u>	<u>Coarse Stone (304.5)</u>
3½"	--	100%
3"	--	85-100%
2"	100%	--
1½"	85-100%	60-90%
1"	--	--
¾"	45-75%	40-70%
#4	10-45%	15-40%
#200	0-5%	0-5%

- M. Pea Stone: Shall be naturally round aggregate, ¼" nominal size. Sieve analysis by weight:

<u>Sieve Size</u>	<u>% Passing by Weight</u>
½"	100%
¾"	90-100%
No. 4	20-55%
No. 8	5-30%
No. 16	0-10%
No. 50	0-3%

- N. Jock and/or Joc Sand identified in bidding is identified as a local source material from Twin State Sand and Gravel or Pike Industries, unless otherwise specified within Contract Documents or Plans.
- O. All material not herein specified, but necessary for completion of the Work shall conform to the requirements of the NHDOT Standards and Specifications for Roadway and Bridge Construction.

PART 3 EXECUTION

3.01 EXCAVATION

- L. Common excavation to subgrade shall be done so that the subgrade material does not become saturated with water or contaminated with organic matter to a degree that subgrade is unstable.
- M. Subgrade surfaces shall be dry and firm before placing granular surface materials. Subgrade material disturbed during excavation shall be thoroughly compacted in accordance with section 31 23 23.23.

3.02 FILL

- A. Scarify subgrade surface to a depth of 6 inches to identify soft spots.
- B. Fill to contours and elevations indicated using unfrozen materials.
- C. Fill up to subgrade elevations unless otherwise indicated.
- D. Employ a placement method that does not disturb or damage other work.

- E. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet frozen or spongy subgrade surfaces.
- F. Maintain optimum moisture content in fill materials to attain required compaction density.
- G. Correct areas that are over-excavated; use common fill, flush to required elevation, compacted to minimum 95 percent of maximum dry density.
- H. Compaction density unless otherwise specified or indicated.
- I. Reshape and re-compact fills subjected to vehicular traffic.

3.03 PLACING EMBANKMENTS

- A. Fill material shall be placed as specified by the NHDOT Standard Specifications. Lifts shall be thoroughly compacted to the required density prior to placing the next lift. Continuous grading and shaping shall be done simultaneously with compaction procedures to ensure uniform density throughout fill areas.
- B. Embankments shall be graded to ensure run-off of water. Areas saturated by water shall be corrected as indicated in 3.01B.
- C. No embankments shall be constructed on frozen earth materials. Fill materials shall be free of ice and frozen particles. When fill is free of frost and subgrade is frozen, the frozen layer may be removed prior to placement of the suitable layer.
- D. Sustained freezing temperatures shall result in the suspension of all embankment work, unless directed otherwise by the Engineer.

3.04 FINE GRADING

- A. Fine grading shall consist of the final grading required to level the subgrade, base, and surface courses to limits within the specified tolerances indicated in paragraph 1.02B.
- B. Base courses shall be placed in 8-inch maximum lifts and thoroughly compacted as required prior to successive lifts. Care shall be taken to prevent separation of granular materials during placement. Segregated materials shall be removed and replaced using methods calculated to reduce the separation of aggregates.

3.05 DISPOSAL OF EXCESS MATERIAL

- A. Disposal of surplus materials shall be at the express direction of the Engineer. Surplus excavated materials shall be stockpiled at an approved location.
 - 1. Unsuitable excavated materials such as boulders, rock, muck, and fill contaminated with stumps, roots, and organic debris shall be disposed of at the direction of the Engineer.
 - 2. Disposal, stockpiling and re-use of excavated material shall be considered a cost incidental to Common Excavation.

SECTION 31 23 16.13

TRENCHING

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all sections within DIVISION 01 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the specifications.

1.02 DESCRIPTION

- A. Work covered by this Section includes excavating, trenching and backfilling for the installation of underground lines, piping, structures and foundations as related to the site work.

B. Definitions:

1. Trench Common Excavation or Fill: Consists of all excavation other than rock excavation, that is not specifically classified. Common Fill shall be free of trees, roots, frozen matter or rubble where the greatest stone size does not exceed six inches (6") in greatest dimension. It shall be capable of being readily spread and compacted.
2. Crushed Stone: Approved, imported aggregate, ASTM C33, Size 67 (¾" A No. 4).

<u>Gradation:</u>	<u>% Passing by Weight</u>
1" Sieve	100%
¾" Sieve	90 - 100%
⅜" Sieve	20 - 55%
No. 4 Sieve	0 - 18%
No. 8 Sieve	0 - 5%

3. Select Fill: Consists of imported sand or other granular materials as approved by Engineer.
4. Sand Bedding and Blanket: Sand conforming to ASTM C33, fine aggregate. Material shall be obtained from approved sources, and shall consist of satisfactorily graded, free draining material. Reasonably free from Loam, Silt, Clay, and Organic Material.

<u>Gradation:</u>	<u>% Passing by Weight</u>
No. 4 Sieve	100%
*No. 200 Sieve	0 - 12%
*(Based on Fraction Passing No. 4)	

5. Earth Overburden: Earth overlaying solid rock and in place during blasting operations or earth not classified as Common Earth.

6. Unstable Material: Debris, frozen materials, topsoil, quicksand, and all wet, soft, or loose material which does not provide sufficient bearing capacity to satisfactorily support pipes or other work.
7. Unsuitable Material: Excavated material which does not meet requirements for backfilling purposes and includes solid and loose rock, earth overburden, and unstable material.
8. Topsoil: Surface layer of soil and sod suitable for use in seeding and planting and not containing debris, subsoil, stumps, roots, brush, stones, clay lumps, and similar objects greater than 1" in largest dimension and material toxic to plant growth.
9. Paved Areas: The area which lies directly under a paved surface whether it be asphalt, concrete, or other paving material.
10. Definitions not found herein may be found in Section 31 23 00 Excavation and Fill.

1.03 QUALITY ASSURANCE

- A. All fill material shall be subject to the approval of the Engineer.
- B. If trench widths are exceeded, redesign with stronger pipe, concrete cradles or other special installation procedures may be required. All additional costs, including the cost of redesigns, shall be borne by Contractor.
- C. Moisten or dry backfill to the proper moisture content as determined in accordance with ASTM D1557, Method C (Modified Proctor).
- D. Do not restrict access to any private road or driveway for more than one (1) hour. Provide and maintain suitable temporary crossings over open ditches where required to meet this condition.
- E. When excavating in or adjacent to the traveled portion of roadways, take whatever measures are necessary to protect the road surfaces.

1.04 SUBMITTALS

- A. Submittals shall be in accordance with Section 01 60 10 Submittals.
- B. Test Reports of all results of moisture-density tests and field compaction density tests.
- C. Gradations of all materials proposed for use in the Work.
- D. Results of grain size analyses, as required in these Specifications or as required by the Engineer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store topsoil separately from all other excavated materials on the site and preserve for reuse.
- B. Store excavated materials meeting the requirements for backfill in an orderly manner at a sufficient distance away from banks of excavations and trenches to avoid overloading and to prevent slides or cave-ins. Do not store materials on, over, or adjacent to structures or utilities, which may collapse or become damaged

due to the added weight. Remove excess excavated material promptly and dispose of away from the site.

- C. Promptly remove materials not specified to be stored or reused.
- D. Obstruction of roads, driveways, sidewalks, or interference's with drainage along gutters, ditches, or drainage channels with stored material is not permitted. If materials cannot be stored at the site to avoid such obstructions and interference's, they shall be stored away from the site and brought back when and as needed.
- E. Contactor shall protect all stock pile areas with required erosion prevention and sediment control measures.
- F. No construction activity, access, storage, or other use shall take place beyond the construction easement boundaries or limit of work depicted on the drawings.

1.06 JOB CONDITIONS

- A. Maintain excavations and trenches free of groundwater, sewage, storm water, ice and snow during the progress of the Work and until the finished Work is safe from injury.
- B. Protect subgrades against freezing by means of insulated blankets, hay, or other methods.
- C. Backfilling with frozen materials or when materials already in place are frozen is not permitted.

1.07 SCHEDULING AND SEQUENCING

- A. Do not backfill until the following conditions are met:
 - 1. Manholes: Manholes are to be given and to pass leakage tests prior to backfilling.
 - 2. Concrete: Concrete has had adequate time to cure, as specified in Division 03 Concrete.
 - 3. Mortar Plaster and Masonry: Mortar has set, but no sooner than three (3) days after the mortar was applied.
 - 4. Damp-proofed, Waterproofed, and Coated Surfaces: Only after materials have properly cured.
 - 5. Work in General: Engineer and testing laboratory have completed all inspections and tests.
- B. Except as noted above, or required by other Sections, or when approved or directed by the Engineer, backfill pipe and cable excavations within one day after installation. Backfill other excavations as soon as possible after all inspections and tests have been completed.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Wood Sheeting and Bracing: Sound timber, free from defects which might impair its strength and effectiveness.

- B. Steel Sheet piling and Bracing: ASTM A328.
- C. Backfill - General: To the extent suitable materials are available, backfill shall consist of excavated material. Where excavation does not provide sufficient approved material, import additional material from off-site.
- D. Backfill - Trenches: Select Fill from pipe bedding material up to a minimum of 12" over the top of pipe or top of sand encasement; suitable Common Earth or Select Fill for the remainder of the trench. Backfill materials shown on the Drawings and on the Drawing Details take precedence over this paragraph.
- E. Backfill - Around Structures: In paved areas, Select Fill, or a better material when required, for the full depth. In unpaved areas, Select Fill for the full depth. Backfill materials shown on the Drawings and on the Drawing Details take precedence over this paragraph.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Prior to Work of this Section, become thoroughly familiar with the site conditions and all portions of the Work covered by this Section.
- B. Verify that topsoil has been stripped to its full depth and stockpiled for subsequent reuse.
- C. Ascertain and verify the locations and character of structures, underground lines and subsurface conditions and verify that the work will not adversely affect them.

3.02 TRENCHING

- A. Excavate to the widths and depths shown on the Drawings, specified or directed by the Engineer. Trenches of narrower widths are permitted provided that the smaller widths do not adversely affect the proper installation of the Work.
- B. Where it is necessary for pipes to be laid in fill, place Select Fill in uniform horizontal layers not over 6" in compacted thickness. Compact each layer in accordance with Section 31 23 23.23 Compaction. Carry fill up to an elevation at least two feet above the elevation of the top of the pipe to be laid and then excavate the trench.
- C. Limit each day's trench excavation to the length of pipe that will be installed that day, and then to no more than 100' ahead of the pipe laying.

3.03 TRENCH BOTTOMS

The bedding required for each type of pipe is detailed on the Drawings.

3.04 EXCAVATING

Excavate for structures to the elevations indicated on the Drawings and extend a sufficient distance from foundation walls, piers, and footings to provide adequate clearances for construction operations, including sheeting and bracing, if required, and for inspection purposes.

3.05 SHEETING AND BRACING

- A. Provide and maintain adequate sheeting and bracing as required for the safety and protection of the Work, persons and adjacent property and structures in accordance with Federal, State and local laws, codes, ordinances and standards.
- B. The Engineer may, at his discretion, order sheeting and bracing to be cutoff and left in place. Where, in the opinion of Contractor, damage may result from withdrawing sheeting, he shall immediately notify the Engineer. Sheeting ordered left in place adjacent to piping shall be cut off not less than 12" over the top of the pipe.
- C. Contractor is fully responsible for the design and construction of all sheeting and bracing used and for all damages resulting from improper quality, strength, placing, maintenance or removal of sheeting and bracing.

3.06 UNSTABLE MATERIALS

- A. Remove unstable materials in excavations and trench bottoms which are incapable of supporting pipes or structures, to the extent and depths directed by the Engineer, and properly dispose of off-site. Refill and compact the excavation or trench as required, with Granular Fill, Stone Fill, or concrete.
- B. Whenever the material encountered is, in the Contractor's opinion, incapable of providing adequate support, he shall immediately notify the Engineer.

3.07 DISPOSAL OF EXCAVATED MATERIALS

- A. Excavated materials, which meet the requirements for embankment fill or backfill may be used for constructing embankments and backfilling, as applicable. Remove excess excavated materials and dispose of off-site.
- B. The storing or stockpiling of unsuitable material on-site is not permitted.

3.08 PREPARATION FOR BACKFILLING

Immediately prior to backfilling, remove all rubbish, debris, forms, and similar materials from the excavation.

3.09 BACKFILLING TRENCHES

- A. 12" Over Pipes - Provide 12" of sand bedding over the top of the pipe as detailed on the Drawings. Place fill by hand in not greater than 6" layers. Bring sand bedding up evenly on both sides of pipes and carefully and thoroughly compact under the pipe haunches. Do not displace pipe.
- B. 12" Over Sand Bedding - Provide 12" of Select Fill over the top of the sand. Place fill by hand in not greater than 6" compacted layers.
- C. Remainder of Trench - Paved Areas - Select Fill or Common Earth placed in not greater than 12" compacted layers.
- D. Remainder of Trench - Other Areas - Select Fill or Common Earth, placed in not greater than 12" compacted layers.

3.10 BACKFILLING AROUND STRUCTURES

- A. Uniformly spread and deposit backfill in horizontal layers, not over 8" in compacted thickness. Take special precautions to prevent damage to new construction.
- B. In paved areas, backfill with Select Fill for the full depth. In unpaved areas, backfill with Select Fill or Common Earth.

3.11 GRANULAR FILL UNDER SLABS & FOOTINGS

- A. Prior to placing granular fill, all organic material, topsoil, debris, and any other deleterious material shall be removed.
- B. Place material in maximum 8" lifts and compacted to 95% of maximum density at optimum moisture content, as determined by ASTM D1557 Method C (Modified Proctor).

3.12 GRANULAR FILL AS EMBANKMENTS

- A. Remove organic material, topsoil, and other deleterious material prior to placing granular fill.
- B. Place materials in maximum one (1) foot lifts compacted to 95% of maximum density at optimum moisture content as determined by ASTM D1557, Modified Proctor.

3.13 TOP OF BACKFILL

- A. Paved Areas: Carry backfill up to pavement subgrade ready to receive pavement. If paving is to be done at a later date, carry backfill up so as to provide a slightly mounded surface with edges flush with the existing pavement surface.
- B. Concrete Sidewalks: Carry backfill up to concrete subgrade.
- C. Unpaved Areas: Carry backfill up to adjacent finished grade, minus the depth of any required topsoil or topsoil and sod finish, and so as to provide a finished surface slightly mounded over the trench.
- D. Cover Over Pipe: Immediately notify the Engineer when the depth of cover over any pipe is less than 5-feet 6-inches.

3.14 COMPACTION REQUIREMENTS

See Section 31 23 23.23 Compaction.

3.15 ADJUST AND CLEAN

- A. Any trenches or excavations which have been backfilled and show any evidence of settlement or being improperly backfilled, or have been tested and failed, shall be re-excavated to the depth required for proper compaction and then properly refilled and compacted.
- B. Replace or repair any pipe or structure which has been damaged or displaced.

END OF SECTION 31 23 16.13

SECTION 31 23 19

DEWATERING

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all sections within DIVISION 01 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the specifications.

1.02 WORK INCLUDED

- A. Work covered by this section includes the maintenance of trenches and excavations free of water, snow, ice, and other liquids.
- B. Liquids, as used in this section, means sewage, water, stormwater, groundwater, or other liquid or fluid material.
- C. Furnish, operate, and maintain dewatering equipment for the control, collection, and disposal of ground and surface water entering trenches and excavations.

1.03 QUALITY ASSURANCE

- A. Conduct operations in a manner which will keep the work free of standing and flowing liquids, snow, and ice, and dispose of these materials in an approved manner so as not to damage or create a nuisance to the Work, the public, surface and ground waters, and adjacent properties.
- B. The accumulation of liquids, ice and snow in excavations, trenches, areas to be graded and adjacent areas during construction is not permitted.
- C. Unless otherwise noted or approved by engineer, the placement of work in a liquid is not permitted.
- D. The use of installed pipes, or pipes under construction, to drain excavations, trenches, and adjacent areas is prohibited, except in the case of drainage pipes where it is necessary to maintain flow from watercourses.
- E. Obtain all discharge and water quality permits from the State of New Hampshire applicable agencies. Fines resulting from noncompliance with the statutes, regulations and permit conditions set by the State of New Hampshire will be the sole responsibility of the Contractor.
- F. Prior to excavation in areas where dewatering may be required, submit the dewatering methods which are to be utilized to the Owner's representative for review.
- G. All dewatering activities shall be in accordance with the requirements included in Section 31 25 00, Erosion and Sedimentation Controls, and must comply with all permits.

PART 2 - PRODUCTS

2.01 GENERAL

Provide, operate and maintain a dewatering system to remove all water from excavations and trenches containing pumps, drains, wellpoints, piping, and any other facilities necessary to keep the excavations and trenches free of water, including spare units available for immediate use in the event of equipment breakdowns.

PART 3 - EXECUTION

3.01 PERFORMANCE

A. General:

1. Perform all ditching, diking, pumping, well pointing and bailing, and construct all drains and channels necessary to keep all work areas clear of liquids, ice and snow during the progress of the work and until the finished work is safe from injury.
2. Do not permit any liquid to rise over any work in place until such work is adequately protected.
3. Locate noise producing dewatering equipment as far from residences, businesses, and the public in general, so as to minimize noise pollution. When required, or directed by Engineer, provide acoustical enclosures or barriers to reduce noise to an acceptable level.

B. Dewatering Practices:

1. Discharging accumulated groundwater or storm water removed from excavations, trenches, foundations, vaults, or other similar points of accumulation are prohibited unless waters are first managed by appropriate controls. These include sediment basins, sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, filtration systems (e.g., bag or sand filter) or other measures designed to remove sediment.
2. Uncontaminated, non-turbid dewatering flows can be discharged without being routed to a control.
3. Discharge shall not include visible floating solids or foam.
4. If dewatering flow is found to contain oil, grease, or other products, an oil-water separator or suitable filtration device specifically designed to remove the contaminate must be used.
5. Vegetated upland areas should be used to infiltrate dewatering flows prior to discharge, to the extent feasible. Surface waters shall not be considered part of the treatment area.
6. Velocity dissipation devices, such as check dams, sediment traps, riprap, grouted riprap, diversion ditches and berms, must be used at all points

where dewatering flows are discharged.

7. Backwash water must be hauled away for disposal or returned to the beginning of the treatment process.
8. The filter media used in dewatering devices must be cleaned and/or replaced when the pressure differential equals or exceeds the manufacturer's specifications.
9. Dispose of water pumped or drained from the construction site in a suitable manner to avoid public nuisance, injury to public health, damage to public and private property, and damage to the work completed or in progress.
10. Do not allow ground or surface water to enter piped utilities.
11. The Contractor shall secure all permits and/or obtain written permission from landowners and appropriate government agencies prior to the disposal of any liquids.

C. Erosion and Sediment Control: All dewatering activities should be discharged on-site to the designated constructed sediment basins, or other approved measures. The use of silt bags is recommended during dewatering operations to reduce silt transportation to the sediment basin areas. The following are some additional considerations for dewatering practices:

1. Only "clean" water, free of sediment or contaminants, shall be allowed to flow downstream.
2. All contaminated water flow will be collected and treated using an approved treatment method at the outlet end of the discharge.
3. Regardless of whether water quality treatment is required, the discharge points for pumped or diverted water shall be stabilized with stone and/or check dams to prevent scouring and to decrease the velocity of the water downstream.
4. Locate sediment basins or other treatment devices on the upland, away from wetlands or jurisdictional areas.
5. Locate away from areas where water flow could impact vehicular or pedestrian travel, or flow onto adjacent properties outside the right-of-way or project area.
6. Line treatment area with stone fill, geo-textile material or other scouring protection.
7. Contain area with adequate perimeter controls, such as hay bales, silt fence, stone check dams, or other acceptable sediment trapping measures.
8. Set back as far as possible from wetlands and surface waters, and in all cases, with a minimum of 20-feet of undisturbed vegetated buffer from discharge point to downstream water bodies or wetlands.

D. Damage:

1. All damage resulting from the dewatering operations, or the failure of the Contractor to maintain the work in a suitable dry condition, shall be repaired by the Contractor, at no additional cost to the Owner.
2. Take all necessary precautions to protect new work from flooding during storms or from other causes.
3. Thoroughly brace or otherwise protect all pipelines and structures which are not stable, against flotation when necessary.

E. Disposal:

1. DO NOT permit liquids containing sewage, sludge, gas, oil, sediments, and other deleterious, poisonous, toxic, or oxygen demanding substances to enter streams, lakes, other surface waters or into the groundwater.
2. Dispose of all liquid, ice, and snow in a manner which will not create a hazard to public health, nor cause injury to public or private property, lives, work installed or in progress, or public streets, nor cause any interference in the use of streets and roads by the public, nor cause erosion
3. Secure written permission from the appropriate agency before utilizing a storm drain for the disposal of liquids. Do not overload sewers. Terminate the use of storm drains during any storm where the combined runoff and dewater will result in flooding.

3.02 PROTECTION

- A. Provide adequate protection from the effect of possible uplift due to storm or groundwater where buoyancy might lift installed work or cause joint or structure failure during construction.
- B. Protect the interior of installed work from the entering and accumulation of liquids, ice, and snow. Immediately remove and dispose any accumulation which may occur.

3.03 REMOVAL OF TEMPORARY WORKS

- A. After the temporary works have served their purposes, remove them, or level and grade them to the extent required to present a slightly appearance and to prevent any obstruction of the flow of water or any other interference with the operation of or access to the permanent works. Adjust, repair, replace, or clean all surfaces and property which may have been damaged as a result of any dewatering operation.

END OF SECTION 31 23 19

SECTION 31 23 23.23

COMPACTION

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all sections within DIVISION 01 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the specifications.
- B. The Owner will be responsible for hiring and coordinating the completion of compaction testing on this project. The Contractor must provide ample time for scheduling of this work, failure to do so may result in removal of the work.

1.02 DESCRIPTION

- A. Work Included: Provide labor, materials and equipment necessary to complete the work of this section, including but not limited to the following.
 - 1. This Section covers the requirements for soils compaction.

1.03 QUALITY ASSURANCE

- A. The taking of samples and the performing of field compaction density tests shall be done by an independent testing laboratory.
- B. Provide at least one qualified person who shall be present at all times during the soil compaction operations and who shall be thoroughly familiar with the various types of compaction equipment, proper compacting techniques and methods, and soils behavior, and who shall direct the compaction operations.

1.04 SUBMITTALS

- A. Submittals shall be in accordance with the contract.
- B. List and description of proposed compaction equipment.
- C. Copies of the results of the laboratory sieve analyses and moisture density tests, certified by the Testing Laboratory.

1.05 JOB CONDITIONS

- A. Compaction shall not take place in freezing weather or when materials to be compacted are frozen, too wet or moist, or too dry.
- B. Schedule the Work to allow ample time for laboratory tests and to permit the collecting of samples and the performing of field density tests during the backfilling and compaction operations.
- C. Protect pipes, structures and all other subsurface work from displacement or injury during compaction operations.

PART 2 - PRODUCTS

2.01 COMPACTION

Utilize the proper compaction methods and equipment to suit the soils and conditions encountered.

2.02 LABORATORY TEST REPORTS

- A. As a minimum, the laboratory moisture-density testing reports shall contain the following:
1. Laboratory's name.
 2. Date, time, and specific location from which sample was taken and name of person who collected the sample.
 3. Moisture - Density Curve plotted on graph paper to as large a scale as is practical with all points used to derive the curve being clearly visible.
 4. Designation of the test method used.
 5. The optimum density and moisture content.
 6. A description of the sample.
 7. The date the test was performed and the person who performed the test.
 8. The Project name, identification and Contractor's name.
 9. The signature of a responsible officer for the Testing Laboratory certifying to the information contained in the report.
- B. As a minimum, the field compaction density testing reports shall contain the following:
1. Laboratory's name.
 2. Date, time, depth, and specific location at which the test was made and the person's name who performed the test.
 3. Designation of the test method used.
 4. Designation of the material being tested.
 5. Test number.
 6. In place dry density and moisture content.
 7. Optimum density and moisture content.
 8. Percentage of optimum density achieved.
 9. The Project name, identification and Contractor's name.
 10. The signature of a responsible officer for the Testing Laboratory certifying to the information contained in the report.

2.03 OTHER MATERIALS

All other materials which are required to achieve adequate compaction shall be as selected by Contractor, subject to approval of the Engineer.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that layers of material are no thicker than the maximum thickness specified in other Sections.
- B. Verify that moisture content is nearly optimum.
- C. Do not begin compaction operations until conditions are satisfactory.

3.02 PERFORMANCE

- A. Compaction densities shown are percentages of the maximum density obtainable at optimum moisture content as determined by ASTM D1557, Method C (Modified Proctor).
- B. Moisten or dry each layer of material to achieve optimum moisture content. Unless otherwise specified or directed by Owner, compact each layer of material to the following required densities:

Location	Density
Under concrete slabs, foundations, and footings	95%
Backfill around Structures	95%
Embankments	95%
Paved Areas	95%
All Other Areas	95%
Remainder of Trench	95%
Bedding around pipes	95%

3.03 FIELD QUALITY CONTROL

- A. Perform a laboratory moisture density test for each type of soil proposed for use or encountered in the Work. Determine optimum moisture content in accordance with ASTM D1557, Method C (Modified Proctor).
- B. Engineer will designate the time, date and exact location of all field compaction density tests. Field density tests may be ordered by the Engineer in accordance with the following average frequencies. However, the Engineer may require that the testing laboratory perform tests at a greater or less frequency than the stated averages.
 - 1. Subgrade Track: One test for every 100-linear-feet along the track.
 - 2. Track Select Materials: One test for every 100-linear-feet along the track on each lift.

3. Trenches: One test for two feet of backfill at intervals of approximately 200-feet along the trench.
 4. Embankment: Three tests for each foot of compacted fill.
 5. Roads: One test for each layer of compacted fill and base material at intervals of approximately 200-feet along the roadway.
 6. Parking Areas and Sidewalks: One test at intervals of 100-feet along parking areas and one test at intervals of 100-feet along sidewalks.
- C. Testing frequency indicated in Paragraph 3.03 B is at the discretion of the Engineer and may be decreased as the Project progresses.
- D. Field density and moisture testing shall conform to the requirements of ASTM D1556 or D2922 and ASTM D3017. Soils shall be described in accordance with ASTM D2488, Visual-Manual Procedure.

3.04 COMPACTION REQUIREMENTS

- A. Compaction of base course gravel shall be done with an approved vibratory roller, producing a dynamic force of at least 20,000-pounds in an 8-inch lift.
- B. Compaction of base course crushed stone shall be done with an approved vibratory roller producing a dynamic force of 27,000-pounds in a 12-inch lift.
- C. Rolling and shaping of successive gravel base lifts shall be done parallel to roadway centerline and continue until each layer conforms to the required grade and cross-section.
- D. Material Density requirements shall be field determined in accordance with AASHTO T191 (Sand Cone) or ASTM D2922/AASHTO T238-239 (nuclear method). Maximum density shall be determined by ASTM D1557 Modified Proctor. Compaction of backfill material below foundations, above the bottom of foundations, and below pavement and building slabs shall be 95% of the maximum density.
- E. Material Density tests which indicate deficient material or insufficient compaction following a first failure shall be paid for by the Contractor.

Density tests resulting from a material change by the Contractor or repeated failures shall be paid for by the Contractor.
- F. Material which does not meet the minimum density requirements shall be reworked in accordance with the NHDOT Spec. or removed and replaced, at the Contractor's expense, with acceptable material.

3.05 COORDINATION

- A. Provide all assistance and cooperation during testing and coordinate operations to allow ample time for the required sampling and testing.

3.06 ADJUST AND CLEAN

- A. Replace or repair any pipe, structure or other work which has been displaced, damaged, or injured.
- B. Compacted soils not meeting compaction densities shall be re-excavated, re-compacted, and re-tested at the Contractor's expense until all requirements are met.

END OF SECTION 31 23 23.23

SECTION 31 25 00

EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Permanent erosion control shall consist of placing mulch or matting on surfaces prepared and seeded under other items, at locations shown on the Drawings or as directed by the ENGINEER.
- B. Temporary erosion control shall consist of the use of haybales, silt control fencing, crushed stone, wood chips, matting, and other erosion and sediment control devices at locations shown on the Drawings or as directed by the ENGINEER. When seeding is ordered, seed shown on control areas shall be of the type(s) specified in Section 3.01F.

1.02 QUALITY ASSURANCE

- A. Conform to all requirements of NHDES permits.
- B. Verify prior to start of work, areas and requirements of erosion control and discuss with ENGINEER.

Reference Standards for erosion control shall be Stormwater Management and Sediment Control Handbook for Developing Areas of New Hampshire, August 1992, USDA-Soil Conservation Service, Durham, New Hampshire, hereinafter called Erosion Control Handbook.

1.03 SUBMITTALS

- A. Prepare and submit to the ENGINEER for approval, erosion control program prior to construction start-up.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Haybales for Erosion Control shall consist of rectangular-shaped bales of hay or straw weighing at least 40 pounds per bale.
- B. Matting for Erosion Control shall consist of one of the following:
 - 1. Jute mat of open weave averaging 130 pounds per 14,400 yard spindle or 1.22 pounds per linear foot of weave 48 average inches wide.
 - 2. Excelsior mat of wood excelsior, 35 inches minimum width, weighing 0.8 pounds per yard. Mat shall have netting attached to a single side to facilitate

handling and to increase strength.

3. Staples used as matting anchors shall be No. 11 (or heavier) plain iron wire, made from lengths of 12 inches each.
- C. Mulch shall consist of cured hay. When air dried in the loose state, the contents of a representative bale shall lose not more than 15 percent of its resulting air-dry weight. It shall be free from weed seeds and foreign matter.
- D. Siltation fence, when required, shall be MIRAFL Environfence or approved equal.
- E. Wood chips and crushed stone.

PART 3 - EXECUTION

3.01 EXECUTION

- A. Clearing
 1. Movement of woods clearing equipment should not be through running water.
 2. Equipment travel routes should be limited as much as possible to proposed roadway routes.
 3. Vehicle tracks leading to wetland areas shall be blocked against run-off and siltation by haybale dikes or silt fencing.
 4. Organic waste and stumps shall not be buried on site.
- B. Grubbing and Stripping
 1. Stockpile excavated topsoil on-site for re-use.
 2. Strip in a manner to prevent concentrated run-off. Install silt fence or haybale dikes in an arc at run-off low-points. Seed and mulch as necessary.
 3. Do not strip toward wetland areas. Work materials uphill to designated stockpile areas away from wetlands.
 4. Create earth berms, dikes or silt fencing between stockpile and wetlands areas. Direct run-off to silt retention areas and treatment swales.
- C. Grading to Subgrade
 1. Complete subgrade as soon after cutting and filling as possible.
 2. Grade subgrade to shed water away from wetlands areas.
 3. Create temporary dikes and silt fence areas if heavy rain is expected or experienced.
- D. Maintenance of Disturbed Areas

1. Divert run-off from disturbed side slopes in cuts and fills.
2. Mulch for temporary stabilization.
3. Install, inspect and maintain erosion control fencing to trap products of erosion.
4. Use hay mulch, matting and seeding for temporary erosion control.

E. Completion of Roadways

1. During completion of roadway gravel fine grading or pavement placement stormwater drainage entrances shall be closed when rain is threatening. Direct resulting run-off to maximize collection of sediment.
2. Direct run-off appropriately until vegetation or riprap is in-place at drainage swales.

F. Stabilization of Surface - Temporary (if applicable)

1. Stabilize surfaces with vegetation or riprap.
2. Make every effort to seed during optimum growing periods.
3. Seed: Soil conservation mix composed of 20 pounds per acre of Tall Fescue; 20 pounds per acre of Creeping Red Fescue; 2 pounds per acre of Red Top or other acceptable seeding mixture shown on the Drawings.
4. Application Rate: 42 pounds per acre (0.95 pounds per 1,000 square feet) or the acceptable application rate shown on the Drawings.
5. Lime: Calcitic or dolomitic limestone applied at a rate of 2 tons per acre (100 pounds per 1,000 square feet), if deemed necessary by the ENGINEER.
6. Fertilizer: 10-20-20 applied at a rate of 500 pounds per acre (12 pounds per 1,000 square feet).

G. Stabilization of Surface - Permanent

See Section 31 23 00 Excavation and Fill and Section 32 92 00 Site Lawns and Grasses

H. Seeding shall be applied by broadcast or hydro-seeding method.

1. Mulch all seeded areas within 48 hours of application. Hay properly fluffed may be applied at approximately, but not in excess of, 3 tons per acre.
2. Matting, when installed on slopes, shall be installed in accordance with the State of New Hampshire, Department of Transportation, Standard Specifications for Road and Bridge Construction Section 644.3.

3.02 REMOVAL OF TEMPORARY EROSION CONTROL

- A. Remove temporary haybale, silt fence and berms once permanent soil stabilization has taken place.
- B. Remove unsuitable sediment and silt materials from the site, and dispose in a suitable manner.

END OF SECTION

DIVISION 32
EXTERIOR IMPROVEMENTS

<u>Section</u>		<u>No. of Pages</u>
32 12 00	Flexible Paving	4
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SECTION 32 12 00

32 12 00 FLEXIBLE PAVING

PART 1.00 - GENERAL

1.01 DESCRIPTION

- A. Work covered by this Section includes the furnishing and installation of asphalt concrete paving along the access drive and maintenance shed areas. Required pavement sections are shown on the Drawings.
- B. Definitions:
NHDOT Spec. - New Hampshire Department of Transportation, Standard Specifications for Road and Bridge Construction including all addenda.

1.02 QUALITY ASSURANCE

- A. Provide at least one person who shall be present at all times during the execution of this portion of the Work and who shall be thoroughly trained and experienced in the placing of the type of asphalt pavement specified and who shall direct all work performed under this Section.
- B. Use only personnel thoroughly trained and experienced in the skills required for installing and finishing asphalt concrete pavements and in operating the required equipment.
- C. All testing shall be performed by the approved testing laboratory. Engineer may use the testing laboratory for inspection services.
- D. Use only the materials and job-mix formula(s) approved by the Engineer.

1.03 SOURCE QUALITY ASSURANCE

All materials and the asphalt plant will be subject to observation and tests by Engineer and by the approved testing laboratory. Provide all equipment, materials, facilities and labor as specified in NHDOT Spec. Section 401.

1.04 JOB-MIX FORMULA

Do not commence paving until job-mix formula(s) has been submitted and approved by the Engineer. The required job-mix formula(s) shall comply with NHDOT Spec. Section 401. Provide all testing as required to clearly show that materials meet Specification requirements.

1.05 SUBMITTALS

- A. All submittals shall conform to Section 01 60 10 Submittals.
- B. Proposed job-mix formula(s) and certified materials tests.

- C. Name, address, and telephone number of the asphalt plant proposed for use and a certification that the plant conforms to the requirements of these Specifications.

1.06 SCHEDULING

- A. Coordinate work with the work of other Sections to avoid delays and damage.
- B. Notify the Engineer at least 48 hours in advance of the placing of any materials under this Section.
- C. Schedule work and operations to allow ample time for testing and observation. Cooperate with Engineer and the testing laboratory and provide access to all phases of the Work.
- D. Place temporary pavement within 21 days after backfilling and compaction has been completed.

1.07 JOB CONDITIONS

- A. Comply with the requirements concerning weather limitations as specified in NHDOT Spec. Section 401.
- B. Install permanent asphalt pavements between April 15th and November 15th, and then only when environmental conditions are satisfactory.

PART 2.00 - PRODUCTS

2.01 MATERIALS

- A. Binder Mix (Base Course) - Bituminous Concrete, ¾" Binder Mix, NHDOT Spec. Sections 401 and 403. (Minimum thickness 2 inch)
- B. Wearing Mix 1 (Wearing Course) - Bituminous Concrete, ½" Wearing Mix, NHDOT Spec. Sections 401 and 403. (Minimum thickness depth 1 ½ inch)

2.02 MIXES

All bituminous concrete shall be mixed at the approved asphalt mixing plant in accordance with NHDOT Spec. Section 401.

2.03 TACK COAT

- A. Material for tack coat shall conform to NHDOT Spec. Division 400.
- B. A tack coat shall be applied immediately prior to placement of pavement. The rate of application of emulsified asphalt shall be between 0.02 and 0.05 gal/sy as determined by the Engineer depending on the relative absorbance and texture of the pavement surface.
- C. Bituminous material shall be uniformly applied with an approved applicator. When ordered, a pressure distributor shall be used. The tack coat shall be applied

in such a manner as to offer the least inconvenience to traffic and to permit one-way traffic without pickup or tracking of the bituminous material.

- D. The existing surface shall be patched and shall be free of irregularities to provide a reasonably smooth and uniform surface to receive the treatment. Unstable corrugated areas shall be removed and replaced with suitable patching materials. The edges of existing pavements that are to be adjacent to new pavement shall be cleaned to permit the adhesion of bituminous materials.
- E. All abutting edges and joints within trench patching must have tack coat applied.
- F. Any bituminous material splashed or sprayed onto exposed surfaces of curbs, sidewalks, or other masonry structures shall be removed by sandblasting at the Contractor's expense.

PART 3.00 - EXECUTION

3.01 INSPECTION

- A. Prior to the work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete, tested and approved by Engineer and to the point where this installation may be properly performed. Particular attention shall be given to items such as pipelines to avoid excavating pavements at a later date.
- B. Verify that subgrades have been properly prepared.
- C. Do not proceed with installations until conditions are satisfactory.

3.02 INSTALLATION OF GRAVEL BASE COURSE

- A. Install base courses in accordance with Section 31 23 00 Excavation and Fill, and Section 31 23 16.13 Trenching.
- B. Compact to a minimum density of 95%.

3.03 FIELD QUALITY CONTROL

- A. Except where otherwise specified, Engineer will select the date, time, location, number and type of tests required. Coordinate all testing as required in Section 01 40 00 Quality Requirements and provide full cooperation and assistance. All sampling and testing shall be done in the presence of Engineer.
- B. Run gradations of gravel base and gravel shoulders and for all other materials which may be proposed. Provide additional gradations when previous gradations do not meet Specification requirements and when a new source of material is proposed.
- C. Laboratory maximum density tests and field compaction density tests will be made in accordance with Section 31 23 23.23 Compaction.
- D. When directed by Engineer, conduct thickness tests on the base, binder, and wearing courses. Hand dig holes not less than 3-inches in diameter through the

base course at locations designated by Engineer. Engineer will measure the thickness and, if it is found deficient, the base course must be removed, the subbase lowered, and refilled and compacted to the required thickness. These tests may be conducted on an average of one test every 250-feet.

- E. Traffic shall be limited to access on newly paved surfaces until surface temperatures are a maximum of 140-degrees. The Contractor is responsible for control of all traffic and preventing any damage, marking, cracking, or deformation caused by traffic. If damage is observed the Contractor is responsible for repair at there own expense.

3.04 ADJUST AND CLEAN

- A. When specified conditions and tolerances are not met, do all work required to correct the deficiencies in a manner approved by Engineer.
- B. If any irregularities or defects remain after compaction is completed, the entire affected area of the surface course shall be promptly removed and sufficient new material placed to form a true and even surface. Roll all minor surface projections, joints and minor honeycombed areas to a smooth finish. The final surface shall be of uniform texture conforming to the line, grade and cross section shown on the Drawings.
- C. If settlement occurs, do all work required to eliminate the settlement.
- D. Replace all asphaltic concrete where cores and samples were taken and blend in with surrounding pavement.
- E. Clean all paved surfaces of dirt, stones, and other debris and remove and dispose of off-site all discarded mix, boards, trash, and all other debris.

3.05 GUARANTEE

- A. The Contractor shall maintain pavement under this Contract during the guarantee period of one year.
- B. If settlement holes or defects appear in the pavement, the Contractor shall have one week after notification by the Engineer, or owner to make satisfactory repairs. If repairs made are unsatisfactory to the Engineer and the owner, the owner may do the work or have the work done by others and the cost of such repairs will be charges to the Contractor. In the case of unsatisfactory repairs, the Contractor will be given one week notice to correct work before the owner completes the repairs.

END OF SECTION 32 12 00

SECTION 32 92 00

LAWNS AND GRASSES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide restoration of growth in areas cleared for Work or as shown on the Drawings.
- B. Repair grassed areas disturbed during the Work.

1.02 QUALITY CONTROL AND STANDARDS

- A. Standard products used shall bear the manufacturer's certified analysis. For other materials, provide an analysis by a recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists.
- B. Reference Standard for Work shall be New Hampshire Department of Transportation Standard Specifications for Road and Bridge Construction.
 - 1. Hydroseed for use on this project must be on the NHDOT approved products list.

1.03 SUBMITTALS

- A. Certification of seed and fertilizer manufacturer's guaranteed analysis of materials shall be submitted in advance of starting the Work of this section.
- B. Seed analysis shall cite botanical and common names of each seed of the mixture required.
- C. **Three composite samples of loam to be used on the project shall be submitted for testing at the beginning of work.** Reports shall provide detail for the recommended amendments needed to produce a healthy lawn. Reports shall be provided to the Engineer with a plan by the Contractor to address the recommendations. This shall include adjustments to PH and fertilizer needed to provide proper growth. All loam shall be free of any and all invasive species plants or seed.

1.04 DELIVERING, STORAGE AND HANDLING

- A. Grass seed shall be delivered in original containers showing analysis, percentage of pure live seed, percent purity, year of production, net weight, percent germination and location of packaging.
- B. Seeding of restored areas shall be prioritized between April 1 and June 15; August 15 and October 10.

PART 2 - PRODUCTS

2.01 TOPSOIL

- A. The contractor may use stockpiled topsoil from on-site areas. Stockpiled material must be stored separate from other materials to prevent mixing, and shall not be mixed during removal with naïve subsurface soils. Topsoil must be screened and amended to meet the specifications below as needed. When stockpiled topsoil or humus is deficient or of insufficient quantity, provide additional topsoil as required.
- B. All topsoil shall be loose, friable material without refuse or chemicals toxic to growth. Loam shall be free of stones, lumps, stumps, roots or objects greater than one-half (1/2") inches in diameter. Conform to ASTM D5268 having a pH range 5.5 to 7 and four percent (4%) organic material minimum. Contractor shall reuse as much topsoil as possible that was stripped from the site by screening onsite.
- C. Topsoil: Additional topsoil for import as needed shall be obtained from approved local sources. Loam obtained from bogs or wet areas shall be unacceptable as topsoil, but may be used as noted on the Drawings. Up to a fifty percent (50%) amendment of biosolids or leaf compost would be advantageous for soil moisture control.

2.02 SOIL AMENDMENTS

- A. Lime shall be calcitic or dolomitic ground agricultural limestone containing not less than 95 percent of either calcium or magnesium carbonate, or both.
 - 1. Sieve analysis shall show a minimum of 40 percent passing a No. 100 sieve; 95 percent, passing a No. 8 sieve.
- B. Fertilizer: As recommended by soils report.
- C. Compost: Either biosolids or well decayed yard waste (2 years minimum) is allowable in up to a fifty percent (50%) mixture with the topsoil material. The addition of compost enhances the moisture content for droughty soil conditions.

2.03 GRASS MATERIALS

- A. Grass seed shall be fresh, clean, new-crop seed and shall meet the provisions of the New Hampshire Agricultural and Vegetable Seeds Law. Seed specified in this section shall meet the following analysis: (Northern Nurseries Landscape Utility Mix)

	<u>LBS/ACRE</u>
Fine Textured Perennial Rye Grass (50%)	120
Jamestown II Chewings Fescue (15%)	36
Creeping Red Fescue (15%)	36
Baron Kentucky Bluegrass (20%)	48
	<hr/>
	240 lbs/acre

- B. Seeding rates: shall be adjusted to meet the pure live seed percentages of the approved seeding mix.

Pure Live Seed (PLS) = %Germination x %Purity

For example, a 1-pound bag of grass seed might contain the following information: purity = 85%, germination = 75%. The PLS formula for this bag of grass seed would be: $0.85 \times 0.75 = 0.64$ PLS.

In other words, the 1-pound bag of grass seed actually contains 64% (or 0.64 pounds), of pure, live seed. It also means that 36% or 0.36 pounds is unneeded material.

In order to get one pound of pure live seed, it's best to set up a basic proportion equation which says ".64 pounds pure live seed is to one pound, as one pound is to x pounds pure live seed." The equation would look like this: $0.64:1 = 1:x$

Solving the equation you would find, $0.64x = 1$ and then, $x = 1/.64 = 1.56$ (lbs. bulk) Therefore in our example, you would need to purchase 1.56 pounds of bulk seed in order to get 1.0 pound of pure live seed.

PART 3 - EXECUTION

3.01 PREPARATION

- A. All areas to be seeded/sodded shall be graded uniformly. Foreign matter, plants, roots, stones and debris shall be removed from subgrade.
- B. Topsoil shall be applied to a minimum rolled depth of 4" under sod, and 6" for seeded areas. Lime and fertilizer shall be worked into the soil by raking, harrowing or dragging with a chain mat.
1. Lime shall be applied at a rate in accordance with soil test results.
 2. Fertilizer shall be applied in accordance with soil test results.
 3. Seed shall be applied at the recommended application rates shown.
- C. Seed shall be applied only after 24 hours have elapsed from the time of lime application and worked into the top three (3") inches of topsoil.
- D. Loamed areas shall be raked, rolled, and mulched as soon as possible.
- E. Hydro-seeded areas shall be done in accordance with approved manufacturers specifications.

F. Sod:

1. Sod-bed preparation: Limit preparation to areas that will be immediately sodded. Where weed growth has developed, remove all weeds and weed debris. Shape and fine grade sod-bed to remove washes or gullies, water pockets, and irregularities. Provide an even surface, true to grade and cross-section. Additional loam as needed is incidental.
2. Initial fertilizing: Provide a guaranteed analysis of 20-26-6 commercial fertilizer or the equivalent units of nitrogen(N), phosphate(P), and potash(K) by weight at a rate of 200 pounds per acre. Incorporate fertilizer into sod-bed to a depth of 1 ½ inches prior to placing sod.
3. Dampen dry soil prior to placing sod.
4. Firm or heal in soil prior to placing sod.
5. Carefully place sod in rows or strips evenly, with the longest edge parallel to the finished contour.
6. Tightly fit each strip against each other without voids. Do not overlap edges. Stagger joints at the ends of sod strips with adjacent strips of sod.
7. Minimize traffic on newly laid sod during installation. Provide plank or wood sheets to protect sod already laid from equipment and vehicles.
8. Where new sod joins existing lawns, cut straight and neatly into existing lawn and level subgrade with additional topsoil to match height.
9. Roll lightly-watered sod with a small mechanical or hand sod roller to sufficiently set or heal sod into soil and remove lumps. Roll as required to firm and level the sodded areas.
10. Fertilizing (Second Application): Apply second application of fertilizer with a guaranteed 10-10-10 commercial fertilizer or the equivalent units of nitrogen(N), phosphate(P), and potash(K) at a rate of 300 pounds per acre 2 weeks after laying sod and prior to final acceptance.
11. Watering: Water sod within 1 hour of placement. During initial watering, thoroughly wet sod and sod-bed. Water all sodded areas during the daily for two weeks from installation to maintain sod and soil moisture, supplement rainfall, promote growth and proper rooting, ensure sod survival, and prevent dormancy. Apply water uniformly and consistently on all sodded areas to prevent damage to sod, trees, and shrubs.

3.02 LAWN MAINTENANCE

- A. Maintain and establish lawns by watering, fertilizing, weeding, replanting and other operations as necessary. Roll, regrade and replant bare or eroded areas and mulch to provide uniformly smooth lawn. Maintain temporary protection fences as necessary to establish lawns.

- B. Watering: Water lawns as needed. The Contractor shall contact the Owner to review water source(s) availability and coordinate access to those source(s).
- C. The initial mowing and trimming shall be performed by the Contractor as soon as there is enough top growth to cut with a mower set at 3" high.
- D. Post fertilizer: Apply fertilizer to lawn after first mowing and when grass is dry, as necessary.

3.03 INSPECTION AND ACCEPTANCE

- A. Restoration of growth may be accepted in parts agreeable to the Engineer, provided the Work offered is complete, including maintenance. To be acceptable, a stand of grass shall show a reasonably thick, uniform stand, of the species listed, and free from sizeable areas of thin or bare spots.

3.04 WARRANTY

- A. The Contractor shall provide a one (1) year warranty for all restoration of growth after the date of Final Completion. The warranty shall provide a guarantee for the restoration area against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by the Owner or abutting individual landowners, abnormal weather conditions unusual for warranty period, or incidents that are beyond the Contractor's control.

END OF SECTION 32 02 00

DIVISION 33
UTILITIES

<u>Section</u>		<u>No. of Pages</u>
33 01 10.10	Existing Utilities and Underground Structures	2
33 41 00	Storm Utility Drainage Piping	3
33 44 00	Storm Utility Water Drains	3

SECTION 33 01 00.10

EXISTING UTILITIES AND UNDERGROUND STRUCTURES

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all sections within DIVISION 01 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the specifications.

1.02 JOB CONDITIONS

- A. Locations of existing utility installation and underground structures shown on the Contract Drawings are only approximate. It shall be the Contractor's responsibility to locate all utilities within the construction area prior to proceeding with construction.
- B. Wherever culverts, sewers, drains, manholes, catch basins, catch basin connections, water mains, valve chambers, electric conduits, telephone conduits, or any other underground constructions are encountered by the Contractor during construction they shall be protected and firmly supported by the Contractor, at his own expense, until the construction work is complete and the existing structures are made secure. Injury to any such utilities/structures caused by or resulting from the Contractor's work shall be repaired at the Contractor's expense. The authority having charge of any particular underground structure shall be notified promptly of injury to its structure.

No additional compensation will be allowed for any delays, inconvenience, or damage sustained by the Contractor due to any interference from said utility appurtenances or the operation of moving them by the utility companies.

- C. Whenever the Engineer may require, pipe or other underground structures encountered in excavating or trenching, shall be permanently supported with suitable supports across the excavation or trench.
- D. The restoration of existing property or structures shall be done as promptly as practicable and shall not be left until the end of the construction period.
- E. Cooperation with Utilities: The Contractor shall allow the Owner or its agents and other Contractors, and public service corporations, or their agents, to enter upon the work for the purpose of constructing, maintaining, repairing, removing, altering or replacing such pipes, sewers, conduits, manholes, wires, poles, or other structures, and appliances as are now located or as may be required or permitted at or on the work by the Engineer. The Contractor shall cooperate with all aforesaid parties and shall allow reasonable facilities for the prosecution of any other work by the Owner, or of public service corporation, to be done in connection with this work. Care shall be taken at all times to inconvenience abutters as little as possible.

- F. Temporary provisions shall be made by Contractor to ensure proper functioning of all gutters, sewer inlets, and drainage ditches, which shall not be obstructed except as approved by the Engineer.

END OF SECTION 330100.10

SECTION 33 41 00

STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all sections within DIVISION 01 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the specifications.
- B. Related Sections:
 - 31 23 16.13 Trenching
 - 31 23 19 Dewatering
 - 31 23 23.23 Soil Compaction
 - 33 44 00 Storm Utility Water Drains

1.02 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials and equipment necessary to complete the work of this section, including but not limited to the following:
 - 1. Storm drain pipe and fittings as shown on the Drawings.

1.03 QUALITY ASSURANCE

- A. Materials must be provided in accordance with the specification.
- B. Inspect all pipe upon receipt. Remove damaged pipe from the work site.
- C. All work must be completed in accordance with the applicable Federal, State, and local standards.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Schedule delivery to coincide with related work.
- B. Verify compliance with the Specifications at time of delivery.
- C. Store equipment in dry enclosed area, off the ground.
- D. Submit pipe material certificates of compliance with deliveries.

1.05 SUBMITTALS

- A. Submit manufacturer's product data and installation guide.
- B. Certified copies of test results on pipe units.
- C. Record Drawings showing depth and location of:
 - Structures
 - Pipe elevations

Pipe sizes

Pipe types

Repair to existing utilities

Record in a permanently bound notebook. Provide access to records for the project superintendent, Engineer, and Owner at all times. Submit records at substantial completion.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

- A. Provide fittings of a standard type and class of materials.
- B. PVC Drain Pipe (Perforated and Solid): (6"") ASTM D3034 and F679; strength requirement, SDR-35; push-on joints, ASTM 3212; gaskets ASTM F-477.
- C. HDPE Drain Pipe (Perforated): (6") HDPE underdrain shall be Perforated ADS Highway Single Wall Pipe. Caps shall be provided for seal at ends of sections.
- D. HDPE Drain Pipe (Solid): (12") Must be ADS N12 Pipe per manufacturer requirements except for runs that cross below the track. All piping that crosses below the Track shall be ADS HP Storm. Pipes to be supplied in 20' lengths.

2.02 MISCELLANEOUS

Flexible adaptors - Non-pressure pipe: Neoprene full circle sleeve with stainless steel strap, equal to those manufactured by Fernco. Use only in connecting new service to existing service pipe.

PART 3 - EXECUTION

3.01 INSTALLATION OF GRAVITY PIPE AND FITTINGS

- A. Methods: Install pipe and fittings in accordance with manufacturer's recommendations and NHDOT guidelines. Control line and grade with a laser beam unless otherwise authorized by the Engineer. Bed and secure each length of pipe before placing the next length. Wheel-load PVC pipe only after 30 inch minimum backfill cushion is in place.
- B. Line and Grade: Lay pipe to the line and grade shown on the Drawings. Lay pipe to uniform grade between manholes with a pipe laser. Line and grade may be adjusted from plan by the Engineer as conditions require.
- C. Laying Conditions: Lay pipe in a dry trench. When pipe-laying is not in progress, the open ends of pipe shall be closed by a watertight plug or other means as specified. The plug shall be fitted with a means for venting. When practical, the plug shall remain in place until the trench is pumped completely dry. Care must be taken to prevent pipe flotation if the trench fills with water. Prior to removal of the plug for extending the line or for any other reason, air and water pressure in the line shall be released. No trench water shall be allowed to enter pipe.

- D. Bedding Material shall be in accordance with the details.
- E. From 1-foot above the top of the pipe to grade or to the subgrade of the pavement, material containing stones up to 6 in. in their greatest dimension may be used, unless otherwise specified. Backfilling shall be completed in accordance with specification section 31 23 16.13, "Trenching." All backfill material shall be free from cinders, ashes, refuse, vegetable or organic material, boulders, rocks or stones, large pieces of concrete or masonry, frozen soil, or other unsuitable material that may be detrimental or cause damage to the pipe, fittings, valves. The excavated material shall be used as backfill unless otherwise stated on the approved plans within these documents, provided that this material consists of loam, clay, sand, gravel, or other suitable materials. Backfill material must be capable of meeting the compaction requirements listed within these documents.
- F. Flush all pipe of dirt and debris using a method approved by the Engineer. Gravity flushing of lines is not acceptable.

END OF SECTION 33 41 00

SECTION 33 44 00

STORM UTILITY WATER DRAINS

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all sections within DIVISION 01 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the specifications.
- B. Related Sections:
 - 312316.13 Trenching
 - 312319 Dewatering
 - 312323.23 Soil Compaction
 - 334100 Storm Utility Drainage Piping

1.02 DESCRIPTION OF WORK

Provide precast concrete units complete and in place as shown on the Drawings including:

- Yard Drains
- Nyloplast Drain Basins (Area Drain)
- Catch Basins
- Drain Manholes
- Frames and Grates
- Brick Inverts for Drain Manholes

1.03 QUALITY ASSURANCE

- A. Provide precast units and structures as indicated.
 - 1. Precast units shall be capable of supporting AASHTO H-20 loading.
 - 2. Precast units shall comply with ASTM C913 Standard Specifications for Precast Concrete Water and Wastewater Structures and ASTM C478.
- B. Inspect structures upon receipt. Remove damaged structures from the work site.
- C. All work must be completed in accordance with the applicable federal, state, and local standards.

1.04 SUBMITTALS

- A. Submit Shop Drawings for precast concrete items. Detail components to be used, thickness dimensions, reinforcing, elevations at tops of precast sections, base and pipe inverts, and location of pipe penetrations. Submit copies of manhole schedule indicating all of the above.

- B. Product data shall be submitted showing installation instructions and details for grates, precast items, manhole sleeves, and joint sealants.

PART 2 - PRODUCTS

2.01 YARD DRAINS

- A. Base Sections: Precast 24" square (inside) monolithic construction with formed pipe knockouts.
- B. Barrel: Precast sections.
- C. Pipe to Yard Drain Connections: Manhole connections at pipe penetrations shall be KOR-N-SEAL, CP series or LOCK-JOINT flexible rubber manhole sleeve sized to fit the diameter and type of pipe. Ribbed Pipe will require the use of special gaskets in accordance with the manufacturers requirements.
- D. Joints Between Sections: Flush with cement mortar joint and closure.

2.02 NYLOPLAST DRAIN BASINS (AREA DRAIN)

- A. Barrel: 18" diameter in accordance with the drawings. Shall be manufactured by Nyloplast with pipe penetrations factory molded at elevations in accordance with the drawings.
- B. Pipe to Nyloplast Connections: Connections shall be water tight seal with adaptors as needed to convert from HDPE pipe to Nyloplast penetrations.

2.03 CATCH BASINS

- C. Base Sections: Precast monolithic construction. Sump depths as shown on the Drawings.
- D. Barrel: Precast with cored or formed pipe openings.
- E. Top Sections: Shall be precast eccentric cone. Flat top slabs shall be used when manhole depth is less than five feet (5'). Flat top slabs shall withstand H-20 loading.
- F. Pipe to Catch Basin Connections: Manhole connections at pipe penetrations shall be KOR-N-SEAL, CP series or LOCK-JOINT flexible rubber manhole sleeve sized to fit the diameter and type of pipe. Ribbed Pipe will require the use of special gaskets in accordance with the manufacturer's requirements. Pipes larger than 18" diameter maybe brick and mortared per NHDOT specifications to be water tight. Finishes shall be smooth on interior with no brick penetrating into structure. Mortar shall be non-shrink hydraulic type.
- G. Joints Between Sections: Horizontal joints between sections of precast concrete barrels shall be of an overlapping type, sealed for water-tightness using a single row of an elastomeric or mastic type sealant.
- H. Steps: Not required.
- I. Exterior Coating: Not required.

2.04 FRAMES AND GRATES

- A. Coatings: Not Required.
- B. Cast iron: ASTM A48, Class 30, H20 Rated.
- C. Catch Basin/Yard Drain Frames and Grates:
 - 1. Square Grate: Neenah Foundry Company Catalog (14th Edition) No. R-3570 or approved equal. Bicycle safe as required. This type of grate shall be used for all catch basins, and yard drains of this specification, unless otherwise noted.
 - 2. Pedestrian Grate: Neenah R-2569 or approved equal.
- D. Nyloplast Frames and Grates
 - 1. Pedestrian Grate: Slip in Type Green Plastic by Nyloplast Inc. 18" diameter.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Placement: Place bases on compacted, level bedding material so that pipe inverts are at proper elevations. Align drains so that grates are in proper relationship to gutters or curbs.
- B. Joints: Install Butyl mastic on joints as specified. Plug lift holes inside and out.
- C. Frames and Grates: Set to grade as shown on the Drawings or as directed by the Engineer.

END OF SECTION 33 44 00

BID PLANS

[Pathways Plans entitled “Site Plans for SAU#70/Dresden School District, Hanover High School Track Improvements Project,” Sheets 1 through 9 (9 total sheets), dated March 1, 2023.]

SITE PLANS FOR

SAU #70 / DRESDEN SCHOOL DISTRICT

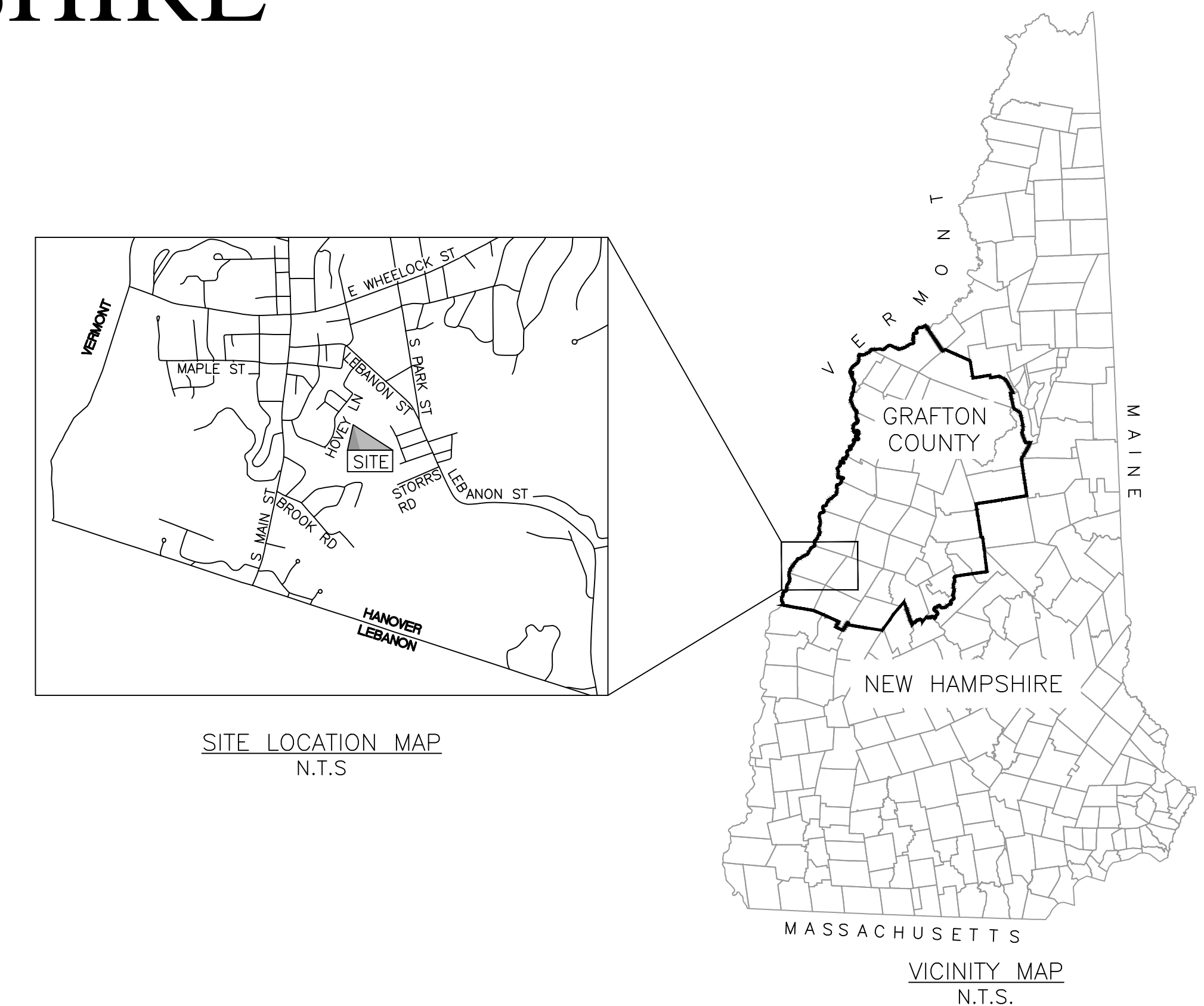
HANOVER HIGH SCHOOL

TRACK IMPROVEMENTS PROJECT

PROJECT NO. 10021

HANOVER, NEW HAMPSHIRE

MARCH 1, 2023



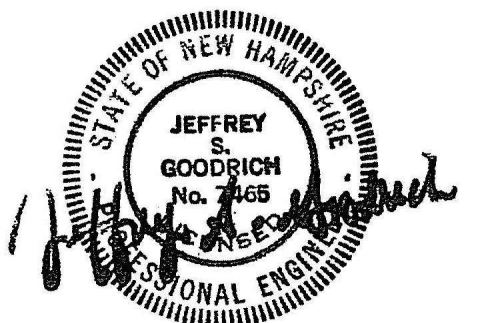
INDEX OF SHEETS

SHEET	1 OF 9	COVER, INDEX OF SHEETS & LOCATION PLAN
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SHEET	6 OF 9	DRAINAGE AND GRADING PLAN
SHEET	7 OF 9	TRACK DETAILS
SHEET	8 OF 9	GENERAL DETAILS
SHEET	9 OF 9	EROSION CONTROL DETAILS AND NOTES

FOR BIDDING ONLY
NOT FOR CONSTRUCTION

RECORD OWNER:
SAU #70 / DRESDEN SCHOOL DISTRICT
41 LEBANON STREET, SUITE 2
HANOVER, NEW HAMPSHIRE 03755
(603) 643-6050

CIVIL ENGINEER:
PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448-2200



CONSTRUCTION GENERAL NOTES:

1. THE "OWNER" OF THIS PROJECT IS SAU #70 / DRESDEN SCHOOL DISTRICT.
2. THE "OWNER'S REPRESENTATIVE" IS DEFINED AS THE ENTITY WHO HAS BEEN AUTHORIZED BY THE OWNER TO MAKE ENGINEERING DECISIONS FOR THE PROJECT.
3. ALL WORK MUST BE COORDINATED WITH THE OWNER AND/OR ITS DESIGNATED REPRESENTATIVE.
4. THE CONTRACTOR SHALL PROVIDE A SITE STAGING AND ACCESS PLAN TO THE ENGINEER FOR REVIEW PRIOR TO THE PRE-CONSTRUCTION MEETING. THIS SHALL INCLUDE LOCATIONS OF ANTICIPATED STOCKPILING, ACCESS RAMPS, JOB TRAILER LOCATION, ETC. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL STAGING AND ACCESS AS INCIDENTAL TO THE WORK ON THIS PROJECT.
5. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPROVED DRAWINGS, SPECIFICATIONS, MANUFACTURER REQUIREMENTS, AND ANY ISSUED ADDENDA.
6. THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE OWNER AND ENGINEER PRIOR TO PROCEEDING WITH WORK. A DETAILED CONSTRUCTION SCHEDULE SHALL BE PROVIDED BY THE CONTRACTOR TO THE ENGINEER PRIOR TO THE MEETING.
7. WRITTEN DIMENSIONS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN CASE OF CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND SPECIFICATIONS, THE ENGINEER AND OWNER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
8. EXPLORATORY EXCAVATION: THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETING EXPLORATORY EXCAVATION TO IDENTIFY CONFLICTS WITH EXISTING UTILITIES PRIOR TO ORDERING DRAINAGE COMPONENTS.
9. NO EXCAVATIONS SHALL BE LEFT OPEN AND UN-BACKFILLED AT THE END OF EACH WORK DAY UNLESS DISCUSSED AND APPROVED WITH THE OWNER. IF EXCAVATIONS ARE APPROVED TO BE LEFT OPEN, THEN THE WORK SHALL BE PROTECTED WITH FENCING AND OTHER MEASURES TO PREVENT ACCESS FROM THE PUBLIC.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS PREPARE BY PATHWAYS CONSULTING, LLC, DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS OR OWNER'S REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR ENGINEER HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY OR HEREAFTER BE INCORPORATED INTO THESE PLANS.
11. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE PROJECT AREA AND ALL CONDITIONS SURROUNDING IT THERON.
12. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE ALL PERMITS OBTAINED FOR THIS PROJECT.
13. GRADING SHALL BE DIRECTED TOWARD CATCH BASINS UNLESS OTHERWISE DEPICTED ON THE DRAWINGS.
14. NO DISTURBANCES SHALL OCCUR OUTSIDE THE LIMIT OF DISTURBANCE DEPICTED ON THE DRAWINGS.
15. THE ENGINEER MAY PROVIDE THE CONTRACTOR WITH EXISTING SURVEY CONTROL POINTS IF AVAILABLE. THE CONTRACTOR MAY UTILIZE THE PROVIDED CONTROL POINTS AND BENCH MARKS ESTABLISHED BY THE ENGINEER TO SET UP WHATEVER SPECIFIC DETAIL CONTROLS THEY MAY NEED FOR ESTABLISHING NORTHINGS, EASTINGS, AND ELEVATIONS FOR THE PROJECT COMPONENTS. CONTROL POINT AND BENCHMARK ACCURACY WAS CONFIRMED AT THE TIME OF THE SURVEY AND IT IS THE CONTRACTOR RESPONSIBILITY TO VERIFY THE ACCURACY OF THESE POINTS PRIOR TO USING THEM FOR CONSTRUCTION OR RECORDING RECORD INFORMATION. IF THE CONTRACTOR FINDS ANY POINT PROVIDED TO BE INACCURATE, THE CONTRACTOR MUST NOTIFY THE ENGINEER IMMEDIATELY IN WRITING. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR LAYOUT OF THE WORK AT THE PROJECT SITE.
16. IF THE CONTRACTOR ANTICIPATES AN OVERAGE IN MATERIAL QUANTITIES INCLUDED IN THE CONTRACT, THE CONTRACTOR MUST NOTIFY THE ENGINEER IMMEDIATELY PRIOR TO PROCEEDING.
17. ALL DRAINAGE PIPES SHALL BE INSTALLED WITH A PIPE LASER AND SHALL BE INSTALLED TRUE TO LINE AND GRADE PER THE DRAWINGS.
18. TRENCHES SHALL BE BACKFILLED IN LIFTS AS TO OBTAIN 95% DENSITY BASED ON A MODIFIED PROCTOR. THE CONTRACTOR IS RESPONSIBLE FOR HIRING A CERTIFIED TESTING COMPANY TO COMPLETE SIEVE ANALYSIS, MODIFIED PROCTORS, AND COMPACTION TESTING ON THIS PROJECT.
19. SMALLER DRAINAGE PIPES 15" OR LESS SHALL BE INSTALLED WITH FLEXIBLE RUBBER BOOTS AT THE STRUCTURE PENETRATIONS.
20. ALL DRAINAGE FLOWS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

EXISTING UTILITY NOTES:

1. UTILITY INFORMATION SHOWN HEREON WAS OBTAINED FROM THE BEST AVAILABLE SOURCE AND MAY OR MAY NOT BE EITHER ACCURATE OR COMPLETE. CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF EXISTING UTILITIES AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY UTILITY, PUBLIC OR PRIVATE, SHOWN OR NOT SHOWN HEREON. CONTRACTOR SHALL CONNECT OR RECONNECT ALL UTILITIES TO THE NEAREST SOURCE THROUGH COORDINATION WITH THE UTILITY OWNER.
2. EXPLORATORY EXCAVATION SHALL BE REQUIRED TO VERIFY LOCATION AND SIZE OF EXISTING UTILITIES AND REPORT FINDINGS. THE CONTRACTOR SHALL NOT DISTURB ANY EXISTING UTILITY SERVICE (PRIVATE OR PUBLIC) WITHOUT WRITTEN AUTHORIZATION FROM THE OWNER.
3. SUBSURFACE FEATURES SUCH AS ELECTRIC AND TELEPHONE LINES, WATER LINES, SEWER LINES, STORM DRAIN AND CULVERTS, ETC. ENCOUNTERED IN THE CONSTRUCTION OF THE PROJECT SHALL BE PROTECTED, SUPPORTED, OR REMOVED AND REPLACED BY THE CONTRACTOR UNLESS OTHERWISE NOTED ON THE PLANS. THE COST OF THIS WORK SHALL BE INCIDENTAL TO THE CONTRACT UNLESS PAYMENT IS SPECIFICALLY NOTED AS A SEPARATE PAY ITEM. THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AND HIGHWAY DEPARTMENTS WHEN THE WORK INVOLVES THEIR RESPECTIVE FACILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG-SAFE" (888-DIG-SAFE) AT LEAST 72 HOURS PRIOR TO DIGGING.
4. THE CONTRACTOR SHALL HIRE A PRIVATE LOCATING COMPANY TO LOCATE ALL UTILITIES IN THE PROJECT LIMITS PRIOR TO START OF CONSTRUCTION.
5. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
6. THE CONTRACTOR SHALL COORDINATE MATERIALS AND INSTALLATION SPECIFICATIONS WITH THE INDIVIDUAL UTILITY AGENCIES/COMPANIES, AND ARRANGE FOR ALL INSPECTIONS.
7. ALL DRAINAGE STRUCTURES IN PAVEMENT SHALL HAVE RIMS SET TO 1/2" BELOW FINISH PAVEMENT GRADE REGARDLESS OF ANY ELEVATIONS OTHERWISE SHOWN.



CONTACT DIG SAFE 72 HOURS
PRIOR TO CONSTRUCTION

THE LOCATION OF ANY UTILITY INFORMATION SHOWN ON
THIS PLAN IS APPROXIMATE. PATHWAYS CONSULTING, LLC, MAKES NO
CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. 72
HOURS PRIOR TO ANY EXCAVATION ON SITE, THE CONTRACTOR SHALL
CONTACT DIG-SAFE AT 1-888-DIG-SAFE.

PROJECT RECORDS:

1. (CONTRACT 1) THE CONTRACTOR MUST PROVIDE PROPER INSTRUMENTATION TO RECORD ACCURATE COORDINATES AS WELL AS ELEVATIONS TO WITHIN 0.01' FOR ALL NEW INFRASTRUCTURE. THIS SHALL INCLUDE DRAINAGE PIPE INVERTS AT STRUCTURES AND RIM ELEVATIONS, UNDERDRAIN CLEANOUTS, FITTINGS, AND CHANGES IN DIRECTION AND ELEVATION. DRAINAGE PIPE TO BE RECORDED AT THE LOCATION THIS INFORMATION MUST BE SUBMITTED IN AUTOCAD (DWG) FORMAT TO THE ENGINEER PRIOR TO SUBSTANTIAL COMPLETION ON THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR CHECKING THE ACCURACY OF THIS INFORMATION THROUGHOUT CONSTRUCTION. IF THE CONTRACTOR IS NOT CAPABLE OF COMPLETING THE RECORD WORK LISTED ABOVE, THEY MUST CONTRACT THIS WORK TO AN APPROPRIATE PARTY THAT HAS THE CAPABILITY AS SUBSIDIARY TO THIS WORK. SUBSTANTIAL COMPLETION WILL NOT BE AWARDED IF THIS IS NOT COMPLETED AND THE CONTRACTOR WILL BE SUBJECT TO LIQUIDATED DAMAGES.
2. (CONTRACT 2) THE CONTRACTOR IS RESPONSIBLE FOR HIRING A LICENSED LAND SURVEYOR TO COMPLETE A TRACK MARKINGS AND SLOPE CERTIFICATION FOR THE RUNNING TRACK, POLE VAULT, LONG/TRIPLE JUMP, AND HIGH JUMP RUNWAYS. OUTLINE FOR THIS CERTIFICATION ARE INCLUDED IN THE CONTRACT DOCUMENTS.
3. (CONTRACT 2) THE CONTRACTOR SHALL PROVIDE DIGITAL COPIES OF EACH MANUFACTURER'S DETAILED INSTRUCTIONS FOR MAINTENANCE OF THE TRACK SURFACE AND PROTECTION. A COPY OF THE SURFACING WARRANTY SHALL ALSO BE PROVIDED TO THE OWNER.

GENERAL CONSTRUCTION SEQUENCE (CONTRACT 1 SITEWORK):

1. ATTEND A PRE-CONSTRUCTION MEETING PRIOR TO PROCEEDING WITH WORK.
2. SUBMIT SHOP DRAWINGS AND MATERIAL SUBMITALS FOR APPROVAL.
3. A STORMWATER POLLUTION AND PREVENTION PLAN (SWPPP) MUST BE PREPARED FOR THIS PROJECT. THE CONTRACTOR MUST FILE A NOTICE TO PROCEED WITH THE EPA 14 DAYS PRIOR TO STARTING WORK. THE CONTRACTOR IS REQUIRED TO HIRE A QUALIFIED INSPECTOR TO COMPLETE INSPECTIONS IN ACCORDANCE WITH THE EPA CONSTRUCTION GENERAL PERMIT.
4. NOTIFY DISAFE AND HAVE PRIVATE LOCATING COMPANY COMPLETE MARKING OF EXISTING UTILITIES PER THE PLANS AND SPECIFICATIONS PRIOR TO ANY EXCAVATION WORK ON-SITE.
5. REMOVE AND DISPOSE OF EXISTING CHAIN LINK FENCE AND GATES AT THE PERIMETER OF THE TRACK.
6. INSTALL EROSION CONTROLS AS INDICATED ON THE SWPPP PLANS AND AT OTHER LOCATIONS AS DETERMINED BY ENGINEER. INSTALL OTHER TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES AS EARTHWORK PROCEEDS AND AS DETERMINED NECESSARY BY THE ENGINEER.
7. INSTALL GRADE STAKES AND RIBBON ALONG LIMIT OF DISTURBANCE LINES OR ORANGE CONSTRUCTION FENCE TO DELINEATE THE LIMITS OF WORK ON THE INTERIOR OF THE TRACK.
8. CONSTRUCT ANY NECESSARY APPROVED TEMPORARY ACCESS AND STAGING FACILITIES AND COMPLETE ANY REQUIRED EXPLORATORY EXCAVATION WORK TO VERIFY UTILITIES WITHIN THE WORK AREA.
9. STRIP TOPSOIL FROM FIELD AREA AND STOCKPILE FOR REUSE ON FINAL FIELD SURFACE.
10. REMOVAL OF EXISTING DRAINAGE INFRASTRUCTURE PER THE PLANS AND SPECIFICATIONS THAT IS NOT IN THE SAME TRENCH AS PROPOSED WORK. CONSTRUCT ALL NEW DRAINAGE INFRASTRUCTURE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. PROVIDE ANY NECESSARY DRAINAGE FLOW BYPASSES NEEDED TO COMPLETE THIS WORK. PAVEMENT TRENCH PATCHING IN DRAINAGE AREAS SHALL BE PART OF CONTRACT 1. THE CONTRACT 1 CONTRACTOR MAY COORDINATE PAVING WITH THE CONTRACT 2 SUBCONTRACTOR IF THEY CHOOSE UNDER A SEPARATE SUBCONTRACT.
11. DEMO AND REGRADE EXISTING TRIPLE/LONG JUMP, HIGH JUMP, POLE VAULT, DISCUS PAD, AND SHOT PUT AREAS.
12. EXCAVATE TO SUBGRADE OF TRACK, TRIPLE/LONG JUMP, POLE VAULT PAD AREA, DISCUS THROW PAD, AND SHOT PUT AREA. ONCE EXISTING PAVEMENT IS REMOVED FROM TRACK, REMOVE EXISTING SUB-BASE MATERIALS WITHIN EXISTING TRACK LIMITS AND RELOCATE IN FIELD AREA PER DETAILS. GRADE NEW SUBGRADE TO SLOPE TO THE UNDERDRAIN IN ACCORDANCE WITH THE APPROVED SECTION. UNDERDRAIN TO BE INSTALLED WITH SUBGRADE PREPARATION WORK. COMPACT SUBGRADE AND INSTALL NON-WOVEN FABRIC AS SEPARATION BARRIER. CONSTRUCT NEW SELECT BASE AND GRADE TOP SURFACE IN PREPARATION FOR CONTRACT 2. ASSIST CONTRACT 2 WITH HAULING ADDITIONAL MATERIAL AS NECESSARY DURING FINE GRADING TO OBTAIN DESIGN FINISH GRADE AND PROFILE. FINE GRADING, PAVING, AND RESURFACING OF TRACK WILL BE UNDER CONTRACT 2.
13. NEW CHAIN LINK FENCE POSTS TO BE INSTALLED PRIOR TO PAVING OPERATIONS TO PREVENT UNDERMINING TRACK. CONTRACTOR TO COORDINATE THIS WORK WITH SUBCONTRACTOR. FENCE FABRIC AND GATES NOT TO BE INSTALLED UNTIL PAVING OPERATIONS ARE COMPLETED TO AVOID DAMAGE.
14. FURNISH AND INSTALL SOD AND/OR TOPSOIL, SEED AND MULCH DISTURBED AREAS AFTER PAVING IS COMPLETE AND PRIOR TO SURFACING OF TRACK. WATER DAILY FOR TWO WEEKS. CARE SHALL BE TAKEN TO NOT PLACE ANY LOAM ON NEW PAVED SURFACES.
15. CONTRACT 2 CONTRACTOR TO ARRIVE AND BEGIN WORK.
16. COMPLETE SITE RESTORATION AND GRADING INCLUDING BUT NOT LIMITED TO GRAVELS, PAVING, AND RESTORATION OF LAWNS AND GRASSES.
17. ATTEND A SUBSTANTIAL COMPLETION WALK THROUGH WITH THE ENGINEER FOR PUNCH LIST DEVELOPMENT PRIOR TO THE DATE OF SUBSTANTIAL COMPLETION IN THE CONTRACT.
18. COMPLETE PUNCH LIST ITEMS IDENTIFIED DURING THE SUBSTANTIAL COMPLETION WALK THROUGH PRIOR TO THE DATE OF FINAL COMPLETION IN THE CONTRACT.
19. INSPECT AND MAINTAIN GRADING, EROSION CONTROL AND SEDIMENT CONTROL PRACTICES WEEKLY AND IMMEDIATELY AFTER ALL STORMS OF MORE THAN 1/4" IN 24 HOURS UNTIL VEGETATION IS PROPERLY ESTABLISHED. RESEED AREAS THAT HAVE NOT BEGAN TO ESTABLISH 2 WEEKS AFTER INITIAL SEEDING.
20. ATTEND A FINAL COMPLETION WALK THROUGH ONCE ALL PUNCH LIST ITEMS ARE BELIEVED TO BE COMPLETED AND ARE ACCEPTABLE TO THE OWNER.

GENERAL CONSTRUCTION SEQUENCE (CONTRACT 2, TRACK PAVING AND SURFACING):

1. ATTEND A PRE-CONSTRUCTION MEETING PRIOR TO PROCEEDING WITH WORK.
2. SUBMIT SHOP DRAWINGS AND MATERIAL SUBMITALS FOR TRACK LINE LAYOUT TO COMPLY WITH NFHS LINE MARKING REQUIREMENTS.
3. LAYOUT TRACK, TRIPLE/LONG JUMP, HIGH JUMP, POLE VAULT, DISCUS PAD, SHOT PUT AREAS. VERIFY GRADES BY CONTRACT 1 CONTRACTOR ARE CLOSE FOR FINE GRADING.
4. COMPLETE FINE GRADING. CONTRACT 1 CONTRACTOR TO DELIVER ADDITIONAL MATERIAL AS NEEDED AND STOCKPILE ON-SITE.
5. INSTALL TWO TRAY SYSTEM TAKEOFF BOARDS, AND CONSTRUCT SAND PITS WITH CURBS, RELOCATED SHOT PUT CIRCLE, RELOCATED DISCUS THROW PAD, AND POLE VAULT STANDARD, AND VAULT BOXES.
6. COMPLETE BASE PAVING FOR TRACK, TRIPLE/LONG JUMP AREAS, HIGH JUMP AREAS, AND RECONSTRUCTED POLE VAULT PAD AREA.
7. COMPLETE WEARING COURSE PAVING.
8. CONTRACTOR TO HAVE A LICENSED SURVEY COMPLETE A SURVEY OF SURFACE FOR SLOPE CERTIFICATION PRIOR TO SURFACING.
9. INSTALL NEW PLEXITRAC ACCELERATOR OR POLYURETHANE BETHON BSS-100 SURFACE (TO BE CHOSEN BY SAU #70). SURFACING TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER STANDARDS.
10. INSTALL NEW NFHS LINE MARKINGS.
11. ATTEND A WALKTHROUGH WITH THE ATHLETIC DIRECTOR, ENGINEER, AND FACILITIES SUPERINTENDENT PRIOR TO LEAVING THE SITE. WARRANTY AND OPERATIONS AND MAINTENANCE INFORMATION TO BE PROVIDED TO SAU #70 / DRESDEN SCHOOL DISTRICT.

GEOTECHNICAL:

1. GEOTECHNICAL PROBE REPORT APPENDED TO THE CONTRACT DOCUMENTS.

PERMITS:

1. THE CONTRACTOR MUST PREPARE A STORMWATER POLLUTION AND PREVENTION PLAN (SWPPP) AND FILE A NOTICE OF INTENT (NOI) AS NEEDED IN ACCORDANCE WITH THE EPA CONSTRUCTION GENERAL PERMIT (CGP). CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF EROSION CONTROLS (TEMPORARY/PERMANENT), INSPECTIONS AND REPORTING, AND MAINTAINING COMPLIANCE WITH THE CONDITIONS OF THE CGP PERMIT. COPIES OF SWPPP AND REPORTS SHALL BE PROVIDED TO THE ENGINEER.

GENERAL EARTHWORK NOTES:

1. GENERAL EARTHWORK:
 - A. ALL CONSTRUCTION MATERIALS AND WORK, WHERE SPECIFIED, SHALL CONFORM TO THE REQUIREMENTS OF THE NHDOT STANDARDS AND SPECIFICATIONS FOR ROADWAY AND BRIDGE CONSTRUCTION.
 - B. COMMON EXCAVATION SHALL CONSIST OF ALL EXCAVATION OTHER THAN ROCK AND BOULDER EXCAVATION THAT IS NOT SPECIFICALLY CLASSIFIED.
 - C. EXCAVATION TO SUBGRADE SHALL BE DONE SO THAT THE SUBGRADE MATERIAL DOES NOT BECOME SATURATED WITH WATER OR CONTAMINATED WITH ORGANIC MATTER TO A DEGREE THAT SUBGRADE IS UNSTABLE.
 - D. SUBGRADE SOILS MADE UNSTABLE BY ERROR OR NEGLIGENCE OF THE CONTRACTOR SHALL BE REMOVED AND REPLACED BY SELECT BACKFILL AT THE CONTRACTOR'S EXPENSE.
 - E. UNSUITABLE MATERIAL SHALL CONSIST OF DEPOSITS OF SATURATED OR UNSATURATED MIXTURES OF SOILS AND ORGANIC MATTER NOT SUITABLE FOR FOUNDATION MATERIAL REGARDLESS OF MOISTURE CONTENT. UNSUITABLE MATERIALS ENCOUNTERED DURING EXCAVATION SHALL BE REMOVED AND REPLACED BY COMMON OR SELECT BACKFILL, AS DIRECTED BY THE ENGINEER.
 - F. SUBGRADE SURFACES SHALL BE DRY AND FIRM BEFORE PLACING GRANULAR SURFACE MATERIALS. SUBGRADE MATERIAL DISTURBED DURING EXCAVATION SHALL BE THOROUGHLY COMPACTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 - G. ALL FILL MATERIAL SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.
 - H. BASE COURSE MATERIAL SHALL BE PLACED IN 8" MAXIMUM LIFTS AND THOROUGHLY COMPACTED AS REQUIRED PRIOR TO SUCCESSIVE LIFTS. CARE SHALL BE TAKEN TO PREVENT SEPARATION OF GRANULAR MATERIALS DURING PLACEMENT. SEGREGATED MATERIALS SHALL BE REMOVED AND REPLACED USING METHODS CALCULATED TO REDUCE THE SEPARATION OF AGGREGATES.
 - I. GRADING SHALL BE COMPLETED WITH A COMMERCIAL GRADER. THE OPERATOR SHALL HAVE SUFFICIENT EXPERIENCE TO COMPLETE THE WORK. ALL GRADING WORK SHALL BE APPROVED BY THE ENGINEER AND OWNER PRIOR TO PROVIDING PAYMENT. ALL AREAS GRADED IN ACCORDANCE WITH THE PLANS SHALL BE COMPACTED WITH A VIBRATORY ROLLER AFTER GRADING IS COMPLETE TO PREVENT WASHBOARDING AND EROSION.
 - J. GRAVEL (NHDOT ITEM 304.2): THE MAXIMUM SIZE OF STONE PARTICLES SHALL NOT EXCEED THREE-FOURTHS OF THE COMPACTED THICKNESS OF THE LAYER BEING PLACED BUT IN NO CASE LARGER THAN 6 INCHES. GRAVEL IS CHARACTERIZED AS HARD, DURABLE STONE WITH COARSE TO FINE SAND. SIEVE ANALYSIS BY WEIGHT AS FOLLOWS:

SIEVE SIZE	% PASSING BY WEIGHT
6"	100%
NO. 4	25-70%
* NO 200	0-12% (*BASED ON THE FRACTION PASSING NO. 4)

- K. CRUSHED GRAVEL (NHDOT ITEM 304.3): AT LEAST 50 PERCENT OF THE MATERIAL RETAINED ON THE 1 INCH SIEVE SHALL HAVE A FRACTURED FACE. SIEVE ANALYSIS BY WEIGHT AS FOLLOWS:

SIEVE SIZE	% PASSING BY WEIGHT
3"	100%
2"	95-100%
1"	55-85%
NO. 4	27-52%
* NO 200	0-12% (*BASED ON THE FRACTION PASSING NO. 4)

- L. SAND (NHDOT ITEM 304.1): THE MAXIMUM SIZE OF ANY STONE OR FRAGMENT SHALL NOT EXCEED THREE-FOURTHS OF THE COMPACTED DEPTH OF THE LAYER BEING PLACED BUT IN NO CASE LARGER THAN 6 INCHES. SAND SHALL CONSIST OF CLEAN, SHARP MINERAL PARTICLES FREE OF ORGANIC MATTER. SIEVE ANALYSIS BY WEIGHT AS FOLLOWS:

SIEVE SIZE	% PASSING BY WEIGHT
6"	100%
NO. 4	70-100%
* NO 200	0-12% (*BASED ON THE FRACTION PASSING NO. 4)

- M. COARSE CRUSHED STONE (NHDOT ITEM 304.5) AND FINE CRUSHED STONE (NHDOT 304.4): SHALL BE CLEAN ANGULAR ROCK FRAGMENTS OBTAINED BY BREAKING AND CRUSHING ROCK MATERIAL. SIEVE ANALYSIS BY WEIGHT AS FOLLOWS:

NHDOT 304.4		NHDOT ITEM 304.5	
SIEVE SIZE	% PASSING BY WEIGHT	SIEVE SIZE	% PASSING BY WEIGHT
2"	100%	3 1/2"	100%
1-3/4"	85-100%	3"	85-100%
3/4"	45-75%	1 1/2"	60-90%
NO. 4	10-45%	3/4"	40-70%
NO 200	0-5%	NO. 4	15-40%
		NO. 200	0-5%

2. PAVING
 - A. ALL PAVING SHALL CONFORM TO THE REQUIREMENTS OF THE NHDOT STANDARDS AND SPECIFICATIONS FOR ROADWAY AND BRIDGE CONSTRUCTION, AS WELL AS AMENDED IN THE PROJECT SPECIFICATIONS.
 - B. A PRE-PAVING MEETING MUST BE SCHEDULED PRIOR TO ALL PAVING OPERATIONS ON THE PROJECT. CONTRACTOR TO REQUEST MEETING TO REVIEW THE WORK WITH SAU #70 / DRESDEN SCHOOL DISTRICT, ENGINEER, AND PAVING CONTRACTOR ONE WEEK PRIOR TO PAVING OPERATIONS.
 - C. BASE PAVEMENT SHALL NOT BE INSTALLED WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 45 DEGREES FAHRENHEIT, NOR WHEN THE ROAD BASE TEMPERATURE IS BELOW 40 DEGREES FAHRENHEIT. WEARING COURSE PAVEMENT SHALL NOT BE INSTALLED WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 55 DEGREES FAHRENHEIT, NOR WHEN THE ROAD BASE TEMPERATURE IS BELOW 50 DEGREES FAHRENHEIT. PAVEMENT SHALL NOT FALL BELOW 185 DEGREES FAHRENHEIT PRIOR TO COMPLETION OF THE ROLLING PROCESS. PAVEMENT SHALL NOT BE INSTALLED WHEN THE SUBGRADE IS FROZEN OR THE GRADES ARE INCORRECT. TRAFFIC SHALL NOT BE ALLOWED ONTO NEWLY PAVED SURFACES UNTIL COMPACTION IS COMPLETED AND PAVEMENT SURFACE TEMPERATURE IS LESS THAN 150 DEGREES FAHRENHEIT. PAVING WILL NOT BE ALLOWED WHEN IT IS RAINING OR FOLLOWING RAIN THAT LEAVES THE SUBGRADE SOFT, WET, OR WITH STANDING WATER. WEARING COURSE PAVEMENT WILL NOT BE ALLOWED AFTER OCTOBER 1 OR BEFORE MAY 1. THE CONTRACTOR SHALL PROVIDE 24 HOURS NOTICE TO THE ENGINEER AND SAU #70 / DRESDEN SCHOOL DISTRICT PRIOR TO PAVING OPERATIONS WITH CLARIFICATION OF WEATHER FORECAST. ASPHALT, AIR, AND SURFACE TEMPERATURES ARE TO BE MONITORED BY THE CONTRACTOR, ENGINEER, AND AN INDEPENDENT TESTING AGENCY DURING INSTALLATION. THE PAVING CONTRACTOR SHALL HAVE THEIR OWN DESIGNATED REPRESENTATIVE PRESENT AT ALL TIMES VERIFYING AND MANAGING QUALITY CONTROL OF THE WORK. FAILURE TO DO SO MAY RESULT IN DELAY OR REJECTION OF WORK.
 - D. SWEEPING FOR BASE PAVEMENT AND CLEANING FOR PLACEMENT OF WEARING COURSE IS THE RESPONSIBILITY OF THE CONTRACTOR.
 - E. PAVEMENT CORE TESTING WILL BE COMPLETED BY THE CONTRACTORS TESTING AGENCY. CORE SAMPLES ARE TO BE COLLECTED AT LOCATIONS DETERMINED BY THE ENGINEER. COMPACTION AND THICKNESS MUST COMPLY WITH THE DESIGN DRAWINGS AND NHDOT STANDARD SPECIFICATIONS. FAILURE TO MEET THE STANDARDS MAY RESULT IN REJECTION OF WORK OR REQUIRED ADJUSTMENTS TO PAYMENT AS DETERMINED BY THE ENGINEER.
3. COMPACTION
 - A. MATERIAL DENSITY REQUIREMENTS SHALL BE FIELD DETERMINED IN ACCORDANCE WITH AASHTO T191 (SAND CONE) OR ASTM D2922/AASHTO T238-239 (NUCLEAR METHOD). MAXIMUM DENSITY SHALL BE DETERMINED BY ASTM D1557 MODIFIED PROCTOR. COMPACTION OF BACKFILL MATERIAL BELOW PAVEMENT AND STRUCTURES SHALL BE 95% OF THE MAXIMUM DENSITY.
 - B. FREQUENCY OF TESTING SHALL BE DETERMINED BY THE ENGINEER BASED UPON THE CONTRACTOR'S NOTIFICATION OF COMPLETED AREAS.
 - C. DENSITY TESTS RESULTING FROM A MATERIALS CHANGE BY THE CONTRACTOR OR REPEATED FAILURES SHALL BE PAID FOR BY THE CONTRACTOR.
 - D. MATERIAL WHICH DOES NOT MEET THE MINIMUM DENSITY REQUIREMENTS SHALL BE REWORKED IN ACCORDANCE WITH THE NHDOT SPEC. OR REMOVED AND REPLACED, AT THE CONTRACTOR'S EXPENSE, WITH ACCEPTABLE MATERIAL.
 - E. THE TAKING OF SAMPLES AND THE PERFORMING OF FIELD COMPACTION DENSITY TESTS SHALL BE DONE BY AN INDEPENDENT TESTING LABORATORY HIRED BY THE CONTRACTOR.
 - F. CONTRACTOR SHALL PROVIDE AT LEAST ONE QUALIFIED PERSON WHO SHALL BE PRESENT AT ALL TIMES DURING THE SOIL COMPACTION OPERATIONS AND WHO SHALL BE THOROUGHLY FAMILIAR WITH THE VARIOUS TYPES OF COMPACTION EQUIPMENT, PROPER COMPACTING TECHNIQUES AND METHODS, AND SOILS BEHAVIOR, AND WHO SHALL DIRECT THE COMPACTION OPERATIONS.
 - G. COMPACTION SHALL NOT TAKE PLACE IN FREEZING WEATHER OR WHEN MATERIALS TO BE COMPACTED ARE FROZEN, TOO WET OR MOIST, OR TOO DRY.
 - H. MOISTEN OR DRY EACH LAYER OF MATERIAL TO ACHIEVE OPTIMUM MOISTURE CONTENT. UNLESS OTHERWISE SPECIFIED OR DIRECTED BY ENGINEER. COMPACT EACH LAYER OF MATERIAL TO THE SPECIFIED REQUIREMENTS.

FOR BIDDING ONLY
NOT FOR CONSTRUCTION



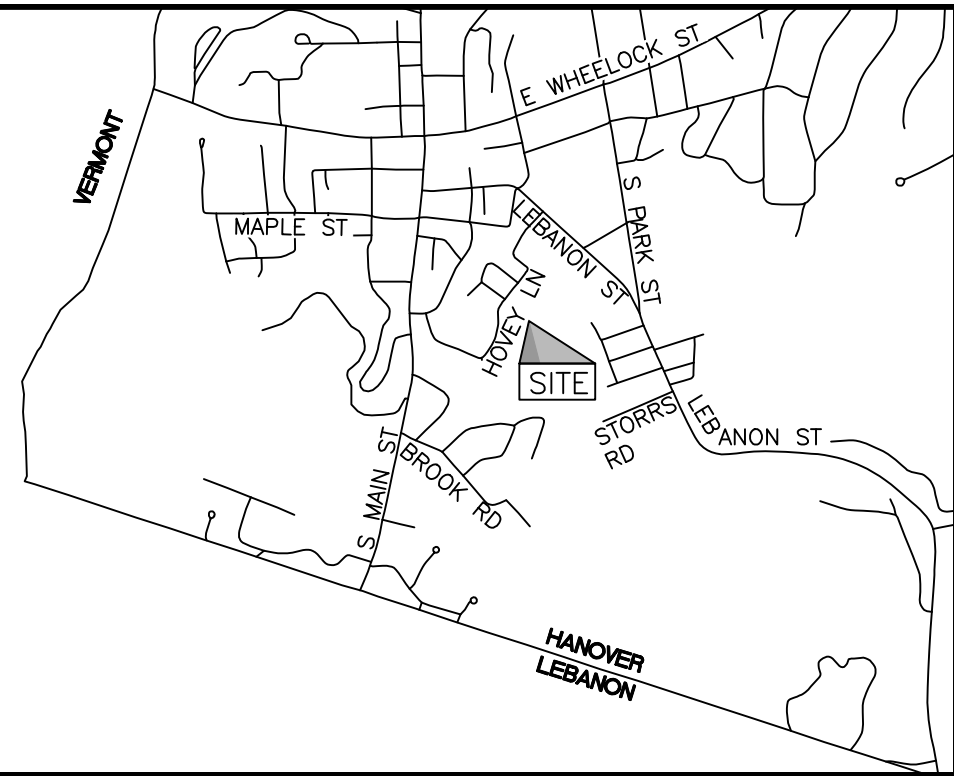
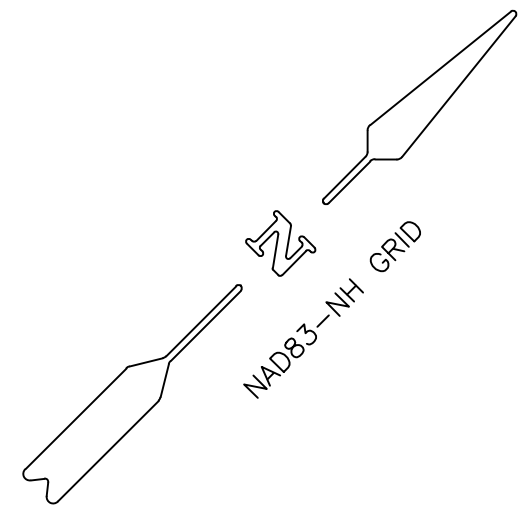
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PROJECT GENERAL NOTES FOR
HANOVER HIGH SCHOOL
TRACK IMPROVEMENTS PROJECT
LEBANON STREET – HANOVER, NEW HAMPSHIRE

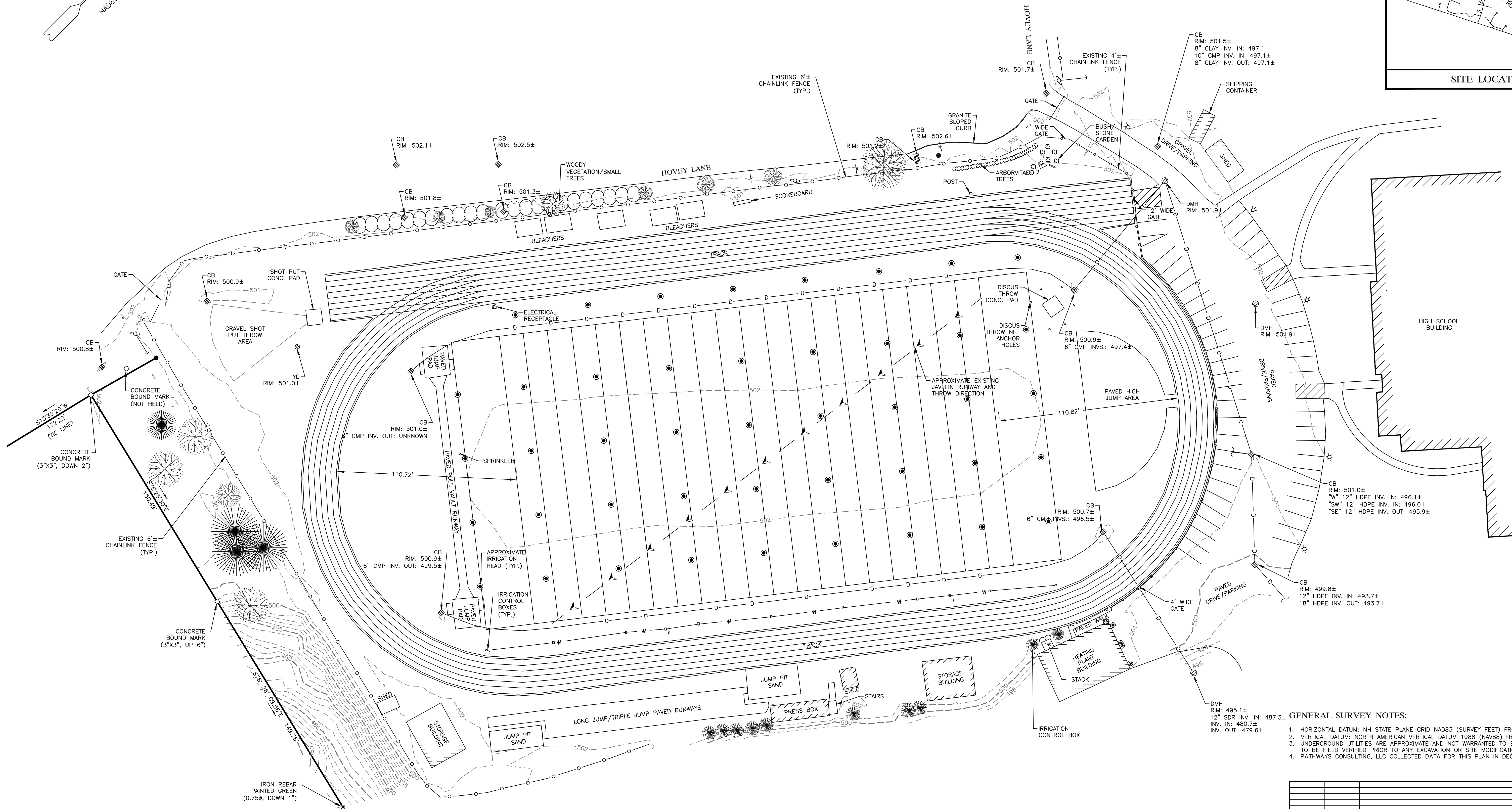
PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448-2200

SCALE: AS SHOWN
DESIGNED BY: JSG
DRAWN BY: DAS
CHECKED BY: JSG
DATE: 03/01/23
PROJ. NO. 10021

SHEET 2 OF 9



SITE LOCATION PLAN



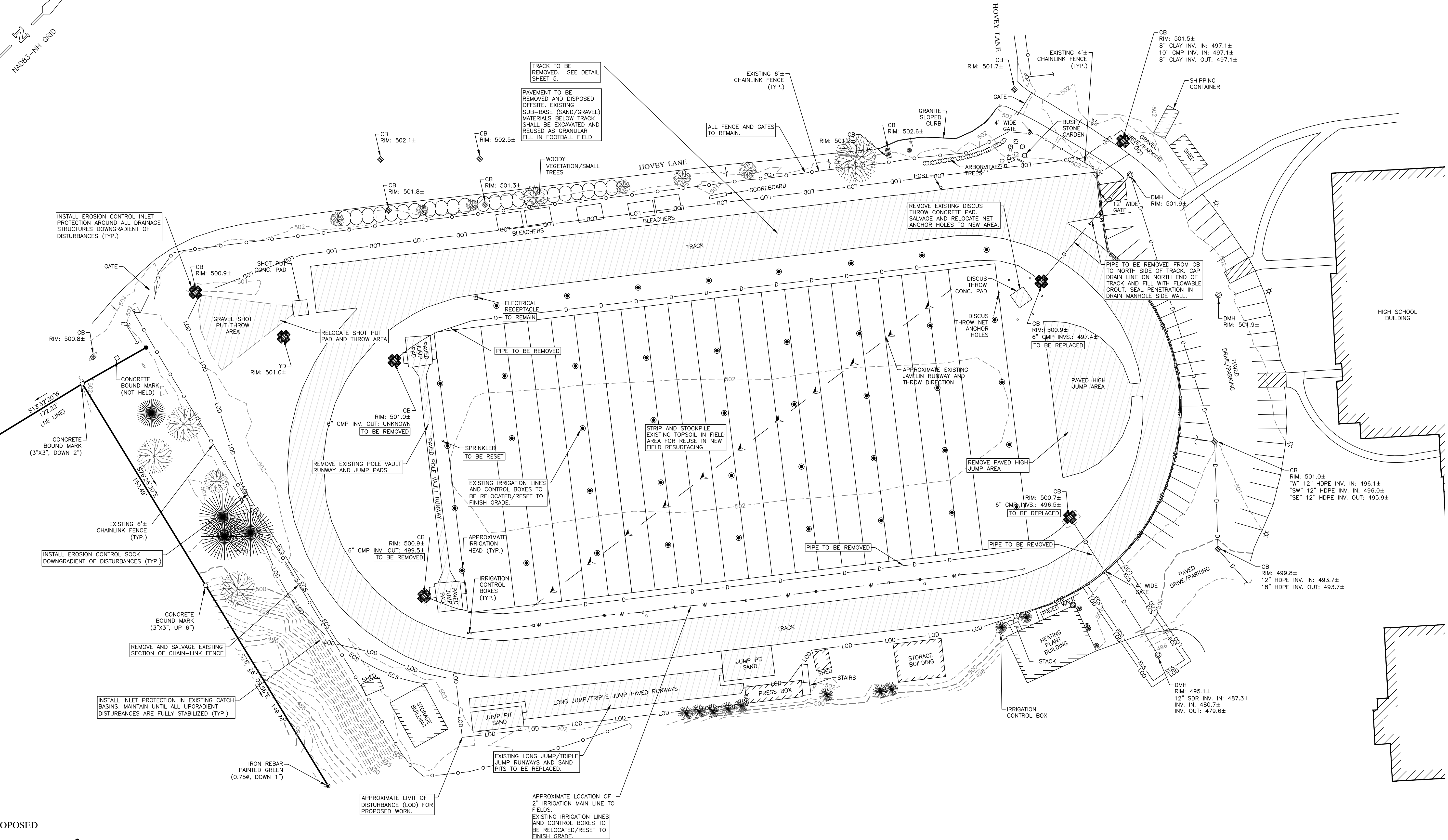
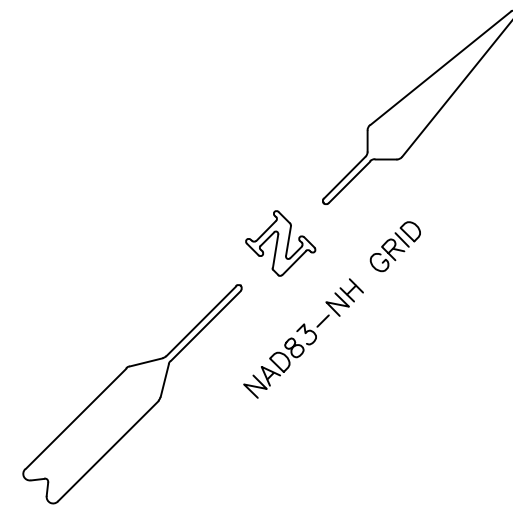
LEGEND: EXISTING

- COMPUTED POINT
- BOUNDARY LINE
- EDGE OF PAVEMENT
- CONTOUR
- CHAIN-LINK FENCE
- CATCH BASIN
- DRAIN MANHOLE
- UTILITY POLE/GUY WIRE
- LIGHT POLE
- BUSH
- HARDWOOD TREE
- SOFTWOOD TREE

- GENERAL SURVEY NOTES:
- HORIZONTAL DATUM: NH STATE PLANE GRID NAD83 (SURVEY FEET) FROM GPS OBSERVATION.
 - VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAV88) FROM GPS OBSERVATION.
 - UNDERGROUND UTILITIES ARE APPROXIMATE AND NOT WARRANTED TO BE EXACT OR COMPLETE AND ARE TO BE FIELD VERIFIED PRIOR TO ANY EXCAVATION OR SITE MODIFICATIONS.
 - PATHWAYS CONSULTING, LLC COLLECTED DATA FOR THIS PLAN IN DECEMBER 2022



REV. NO.	DATE	DESCRIPTION	MADE BY	CHKD BY	APP'D BY
EXISTING CONDITIONS PLAN FOR HANOVER HIGH SCHOOL TRACK IMPROVEMENTS PROJECT LEBANON STREET — HANOVER, NEW HAMPSHIRE					
PATHWAYS CONSULTING, LLC					
240 MECHANIC STREET, SUITE 100 LEBANON, NEW HAMPSHIRE 03766 (603) 448-2200					
SHEET: 3 OF 9 SCALE: AS SHOWN DES. BY: DRAWN BY: DPM CHKD. BY: JEN DATE: 03/01/23 PROJ. NO. 10021					



LEGEND: PROPOSED

COMPUTED POINT	•
BOUNDARY LINE	—
EDGE OF PAVEMENT	—
CONTOUR	— 500 —
PROPOSED CONTOUR	— 500 —
PROPOSED CHAIN-LINK FENCE	—
PROPOSED CATCH BASIN	■
PROPOSED DRAINLINE W/ MANHOLE	—
PROPOSED UNDER-DRAIN	—
LIMIT OF DISTURBANCE	LOD
PROPOSED SPOT GRADE	500.00

NOTES:
1. TOPOGRAPHIC INFORMATION COMPLETED BY PATHWAYS CONSULTING, LLC IN JANUARY 2023.
2. HORIZONTAL DATUM IS NEW HAMPSHIRE STATE PLANE AND VERTICAL DATUM IS NAVD 88.



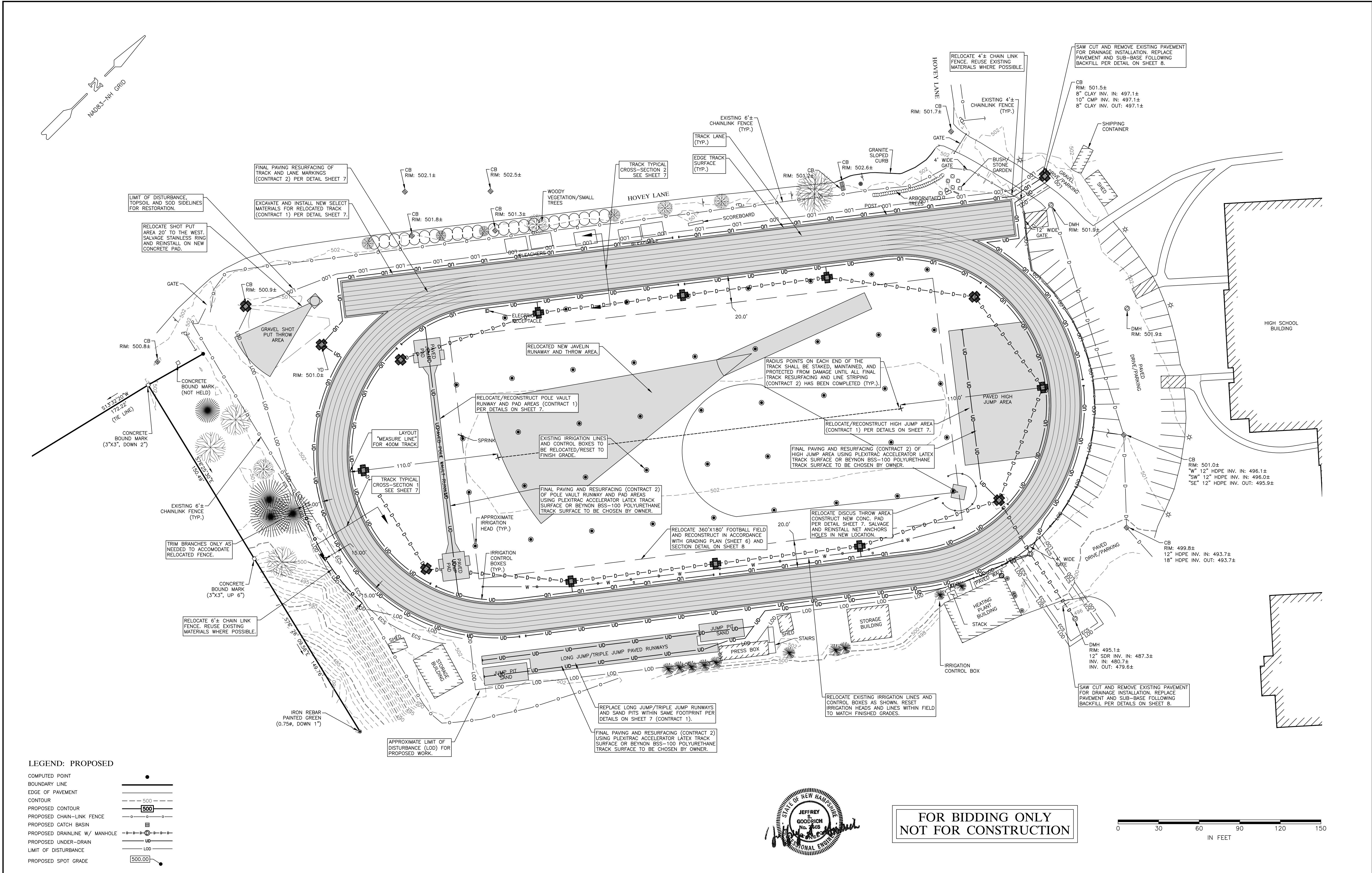
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REVISION NO.	DATE	DESCRIPTION	MADE BY	CHECKED BY	APPROVED BY

DEMOLITION PLAN FOR
HANOVER HIGH SCHOOL
TRACK IMPROVEMENTS PROJECT
LEBANON STREET - HANOVER, NEW HAMPSHIRE

PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448-2200

SCALE: AS SHOWN
DESIGNED BY: JSG
DRAWN BY: DAS
CHECKED BY: JSG
DATE: 03/01/23
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REVISION NO.	DATE	DESCRIPTION	MADE BY	CHECKED BY	APPROVED BY

SITE PLAN FOR
HANOVER HIGH SCHOOL
TRACK IMPROVEMENTS PROJECT
LEBANON STREET - HANOVER, NEW HAMPSHIRE

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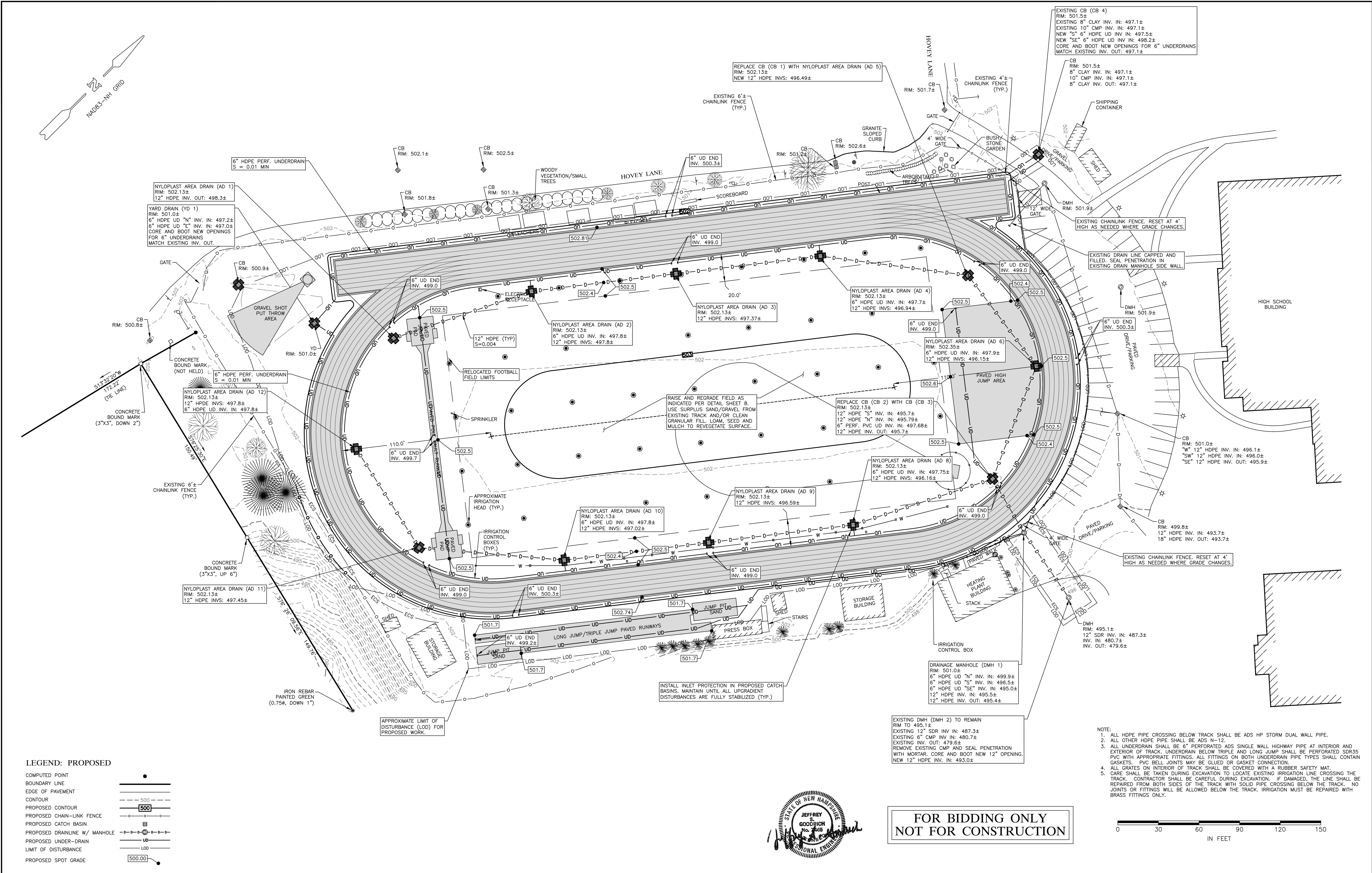
STATE OF NEW HAMPSHIRE
JEFFREY
GOODRICH
No. 7468
Professional Engineer

0 30 60 90 120 150
IN FEET

PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448-2200

SCALE: AS SHOWN
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DATE: 03/01/23
PROJ. NO. 10021

5
SHEET 5 OF 9



LEGEND: PROPOSED

COMPUTED POINT	●
BOUNDARY LINE	—
EDGE OF PAVEMENT	—
CONTOUR	--- 500 ---
PROPOSED CONTOUR	--- 500 ---
PROPOSED CHAIN-LINK FENCE	—o—o—o—
PROPOSED CATCH BASIN	■
PROPOSED DRAINLINE W/ MANHOLE	—o—o—o—
PROPOSED UNDER-DRAIN	—UD—
LIMIT OF DISTURBANCE	—LOD—
PROPOSED SPOT GRADE	500.00

REVISION NO.	DATE	DESCRIPTION	MADE BY	CHECKED BY	APPROVED BY

DRAINAGE AND GRADING PLAN FOR
HANOVER HIGH SCHOOL
TRACK IMPROVEMENTS PROJECT
LEBANON STREET – HANOVER, NEW HAMPSHIRE

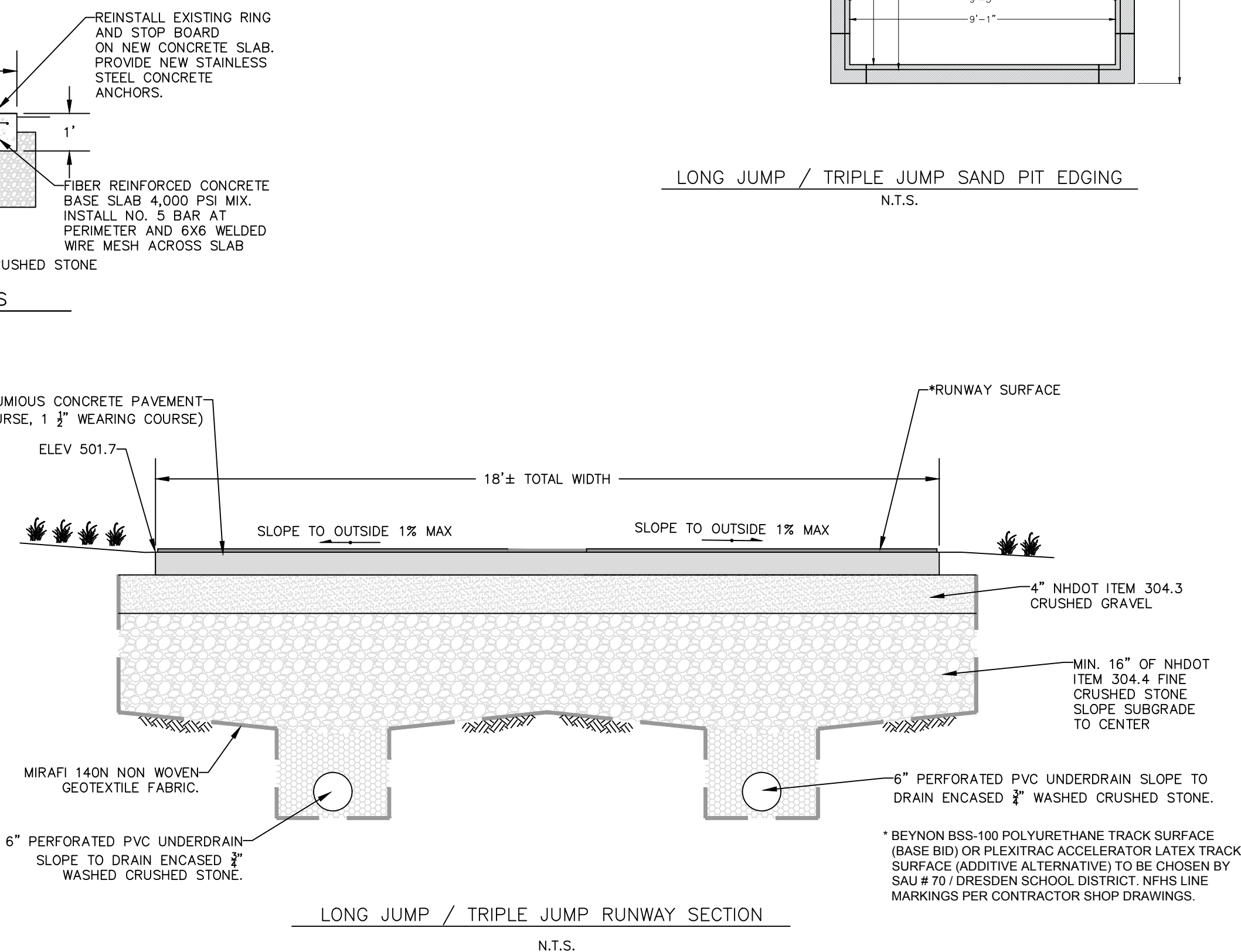
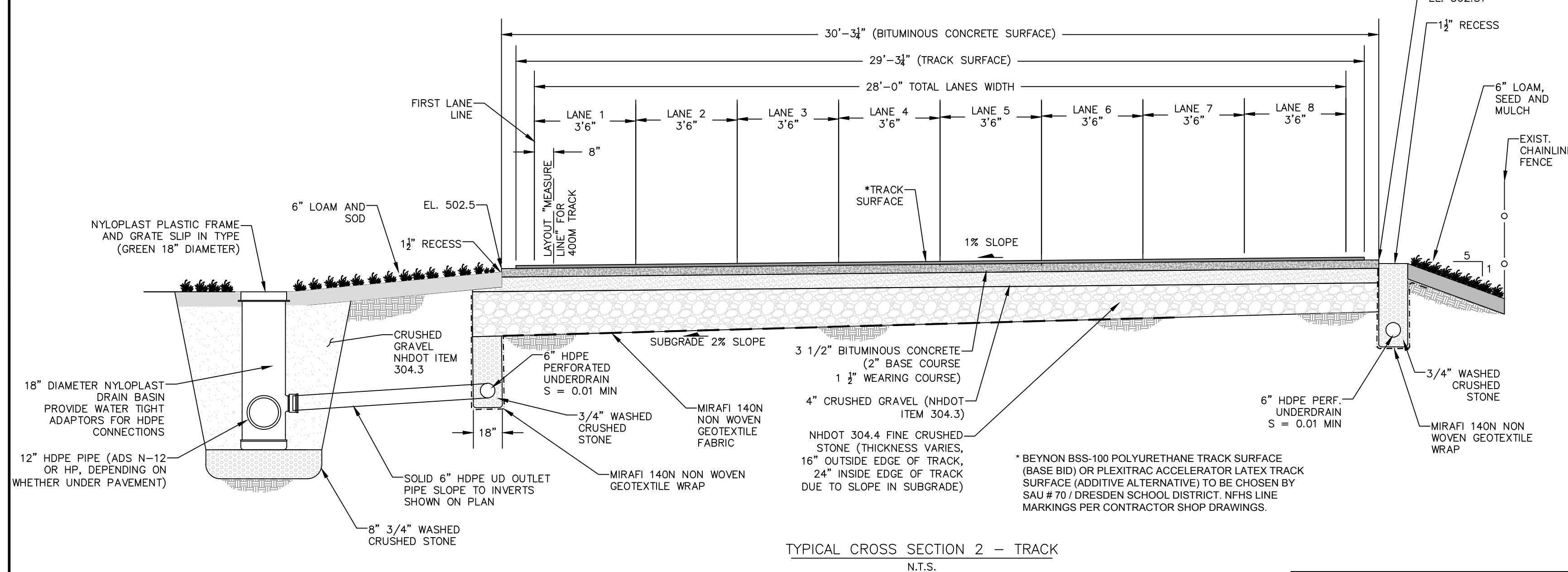
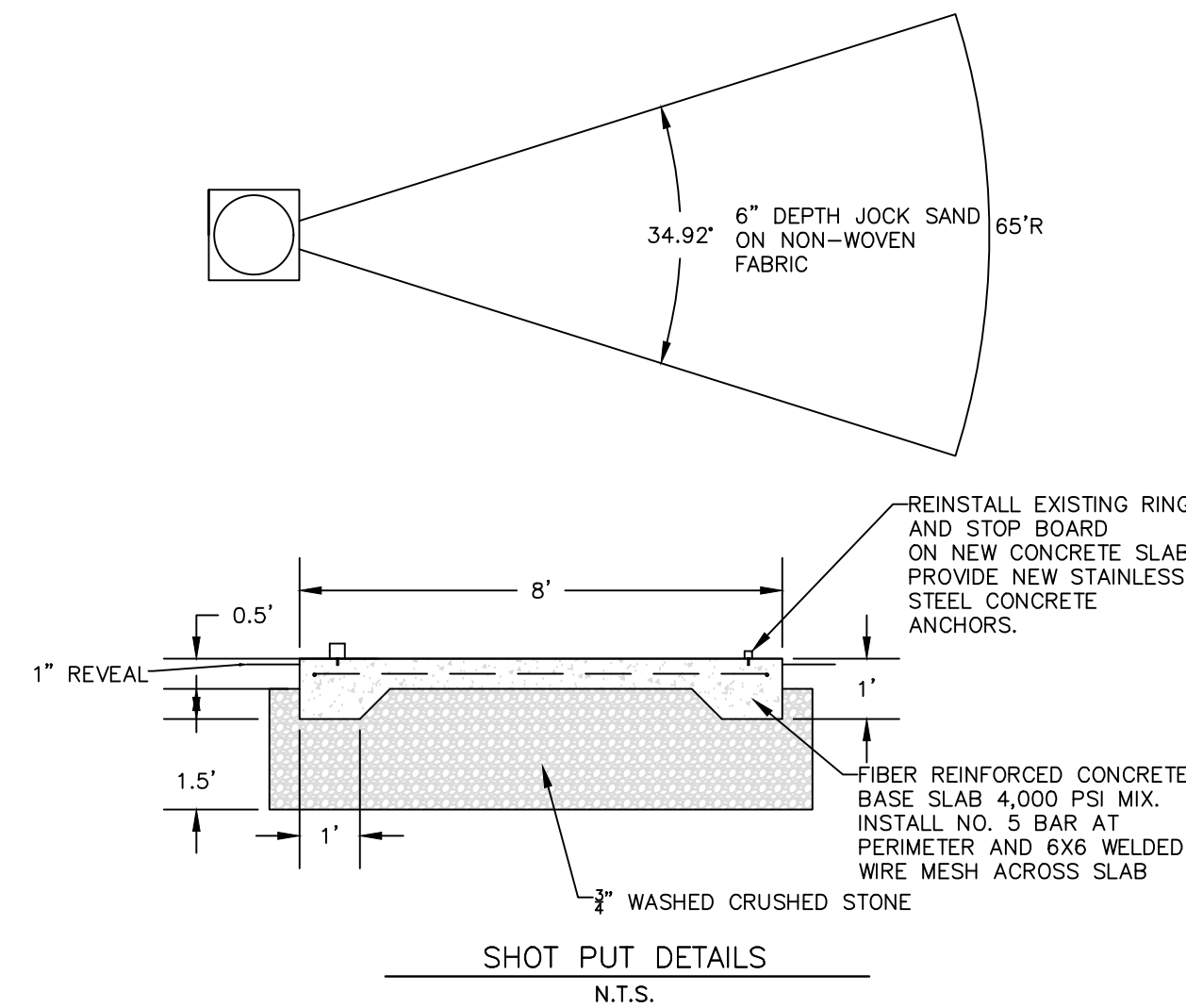
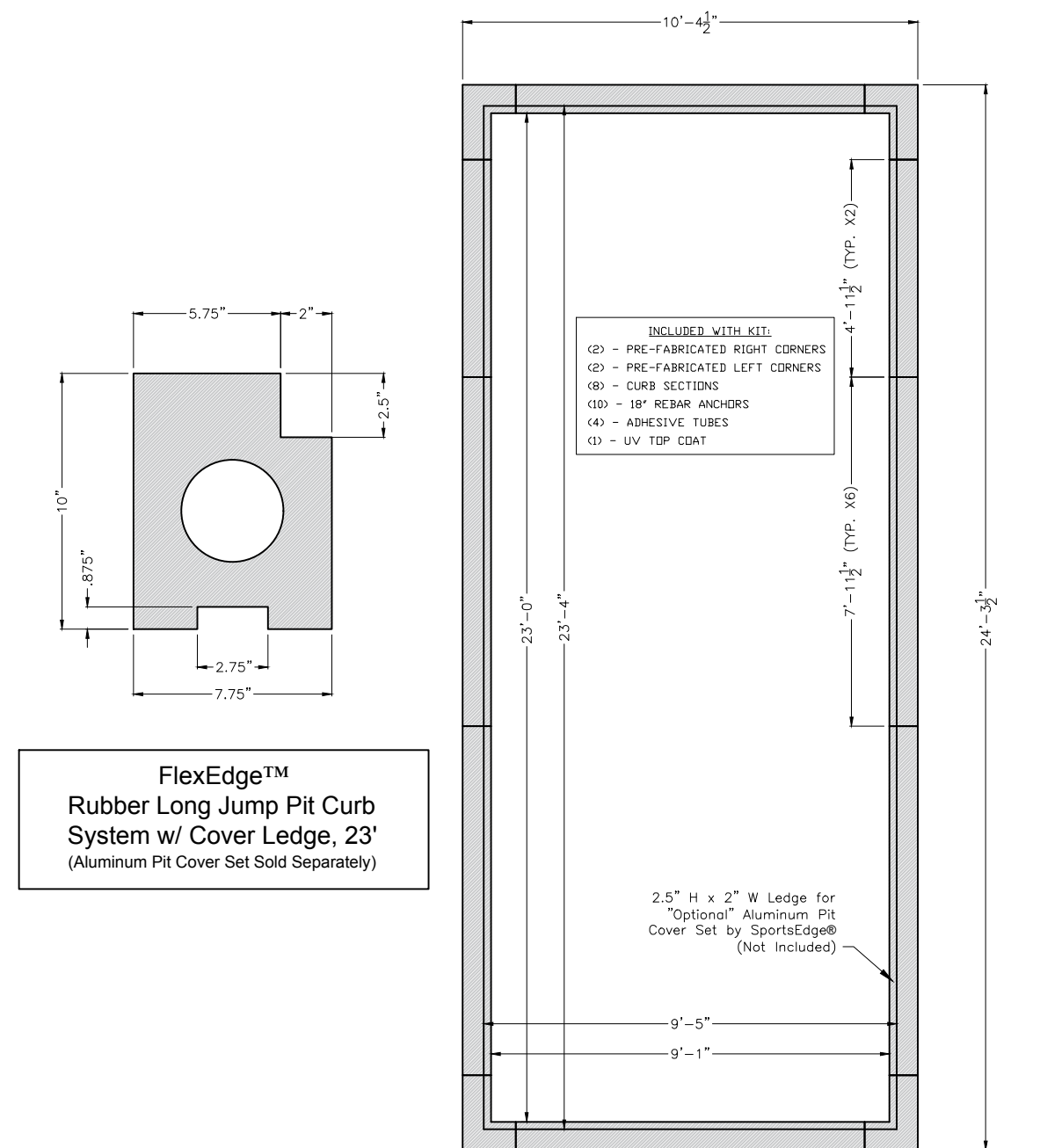
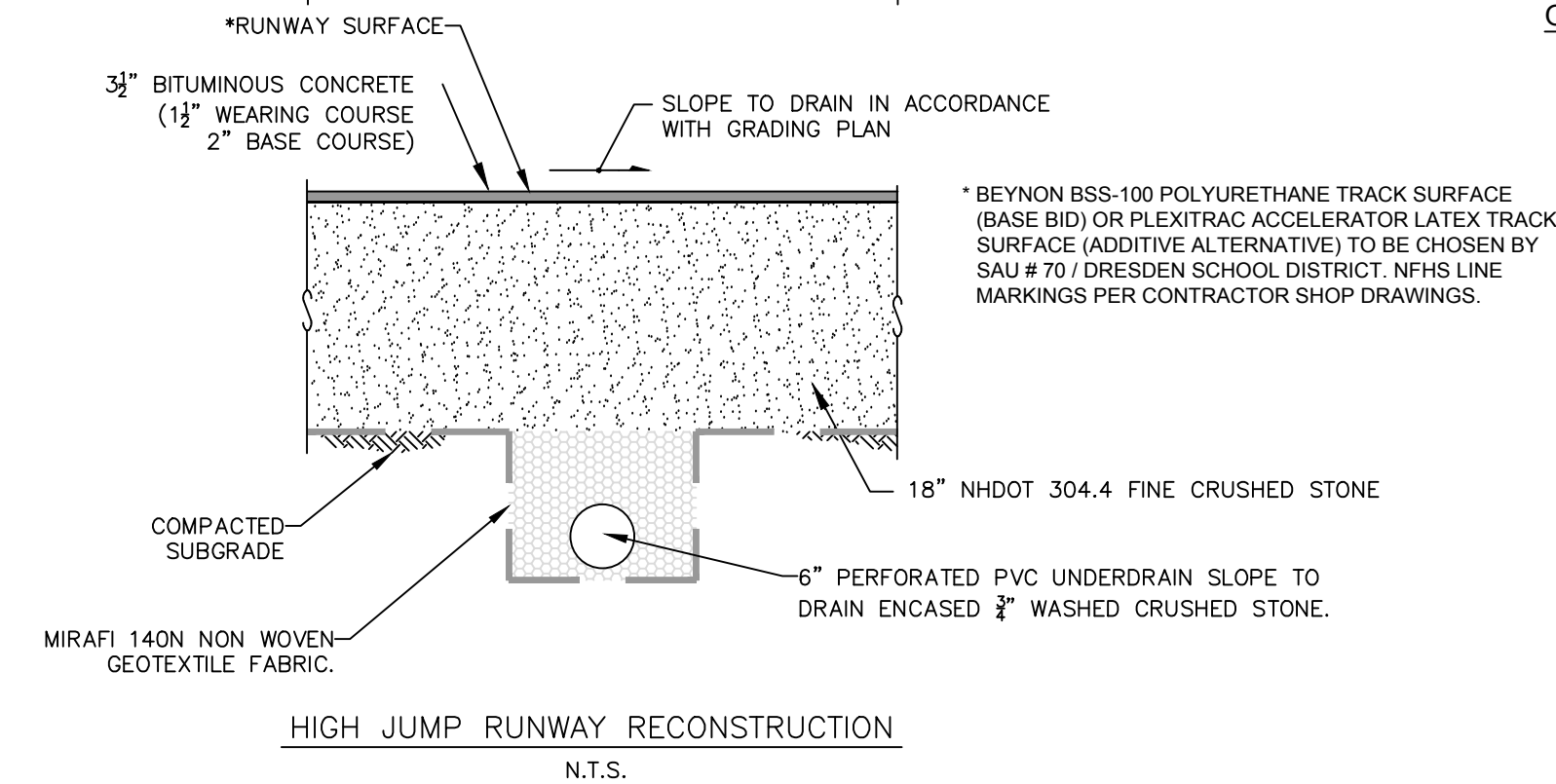
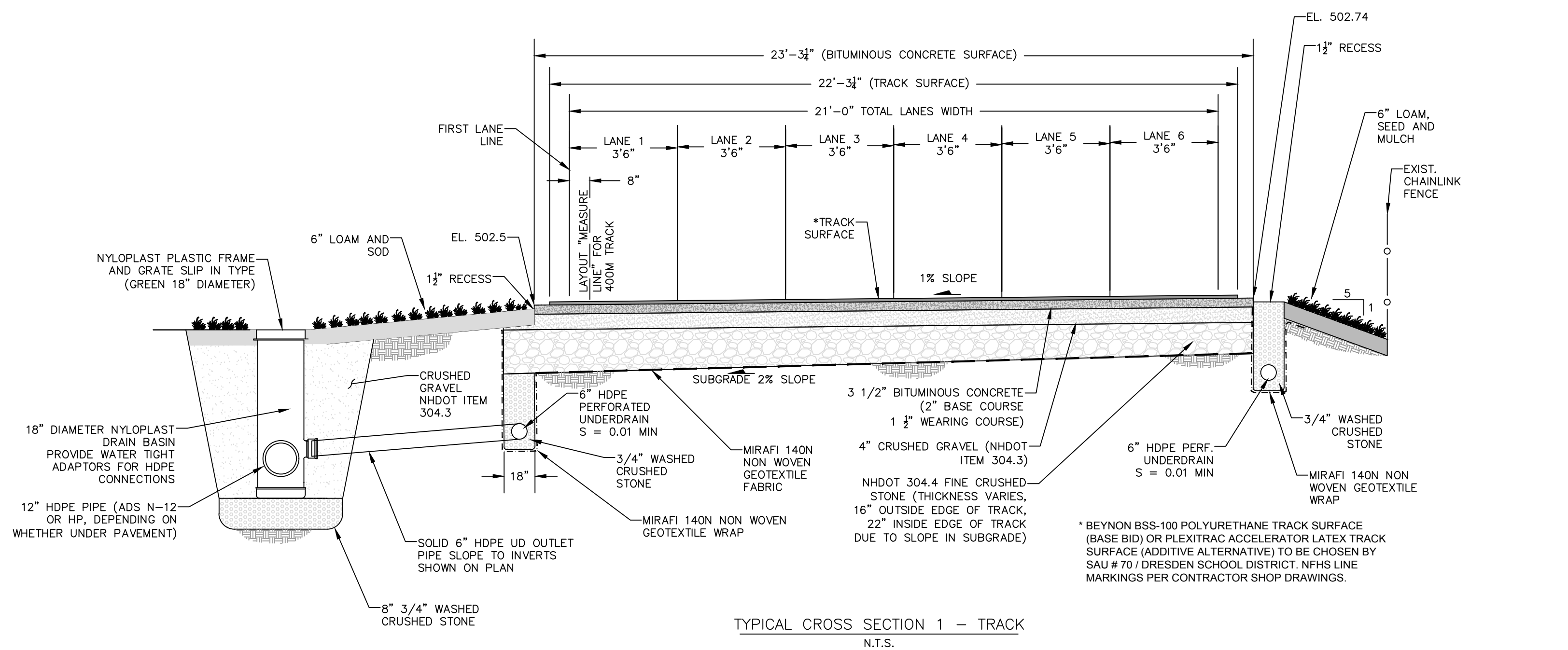
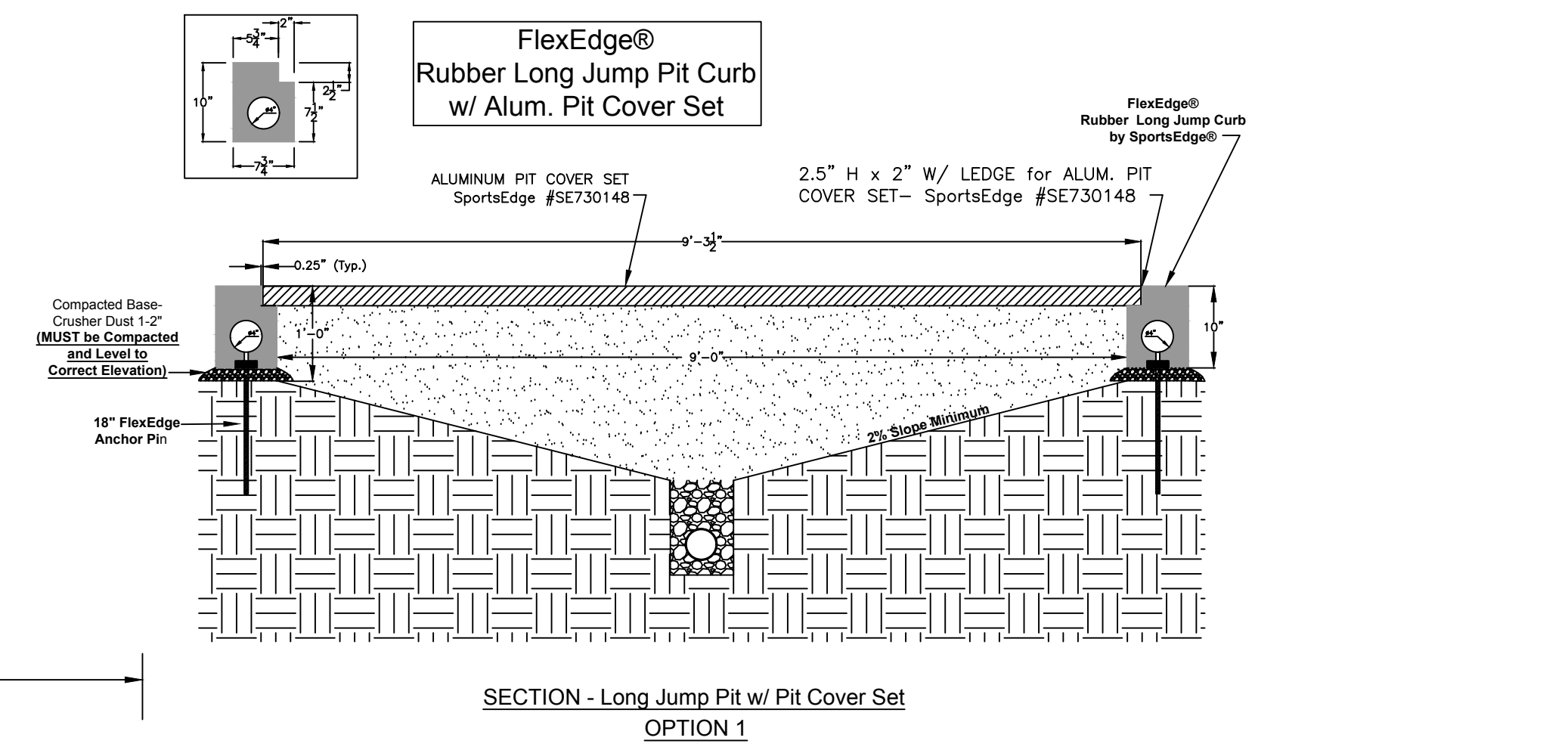
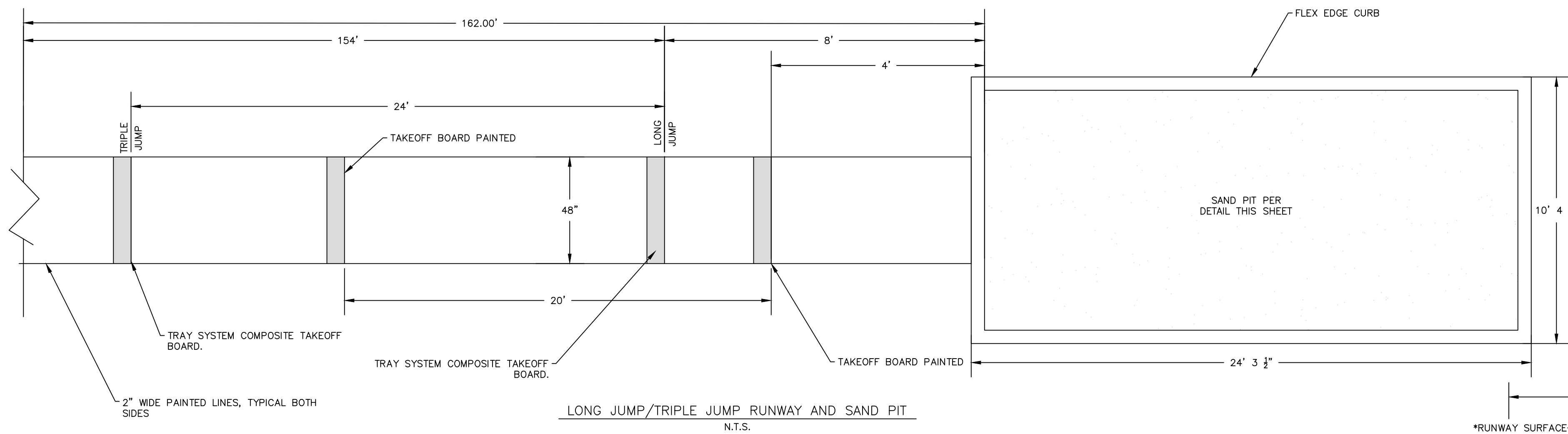


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PATHWAYS CONSULTING, LLC

240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
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TRACK DETAILS FOR
HANOVER HIGH SCHOOL
TRACK IMPROVEMENTS PROJECT
LEBANON STREET - HANOVER, NEW HAMPSHIRE

PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
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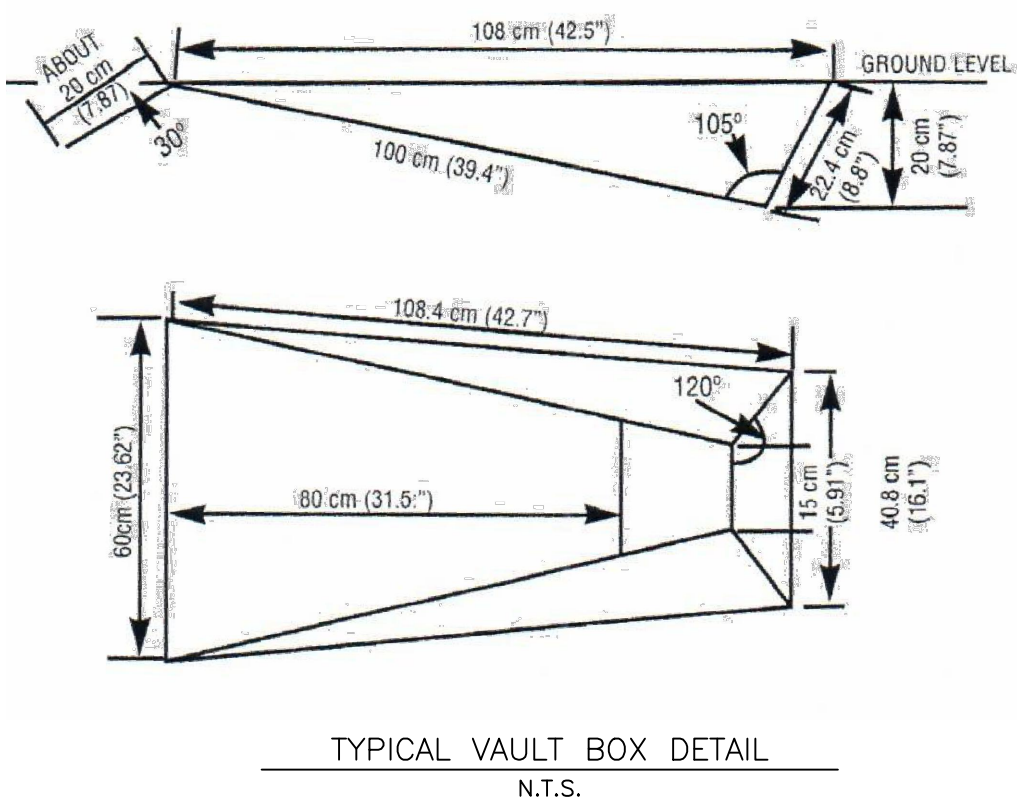
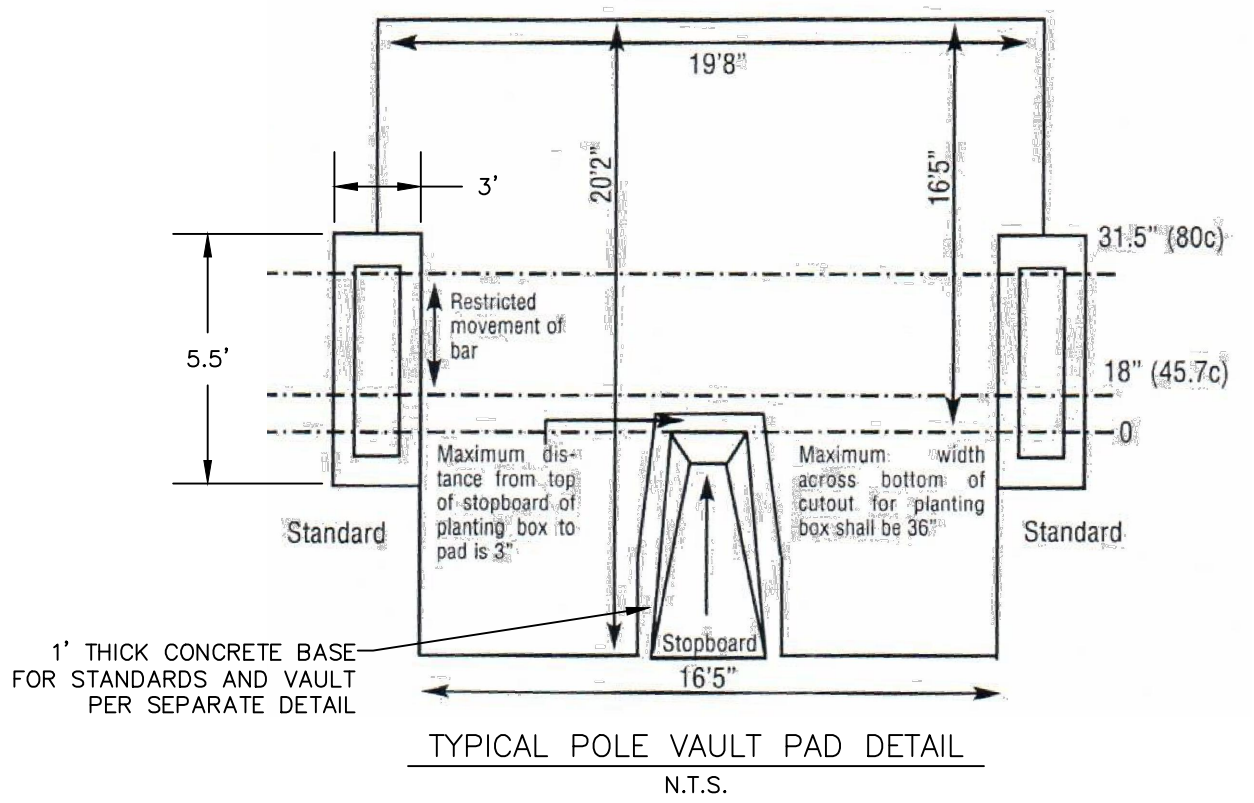
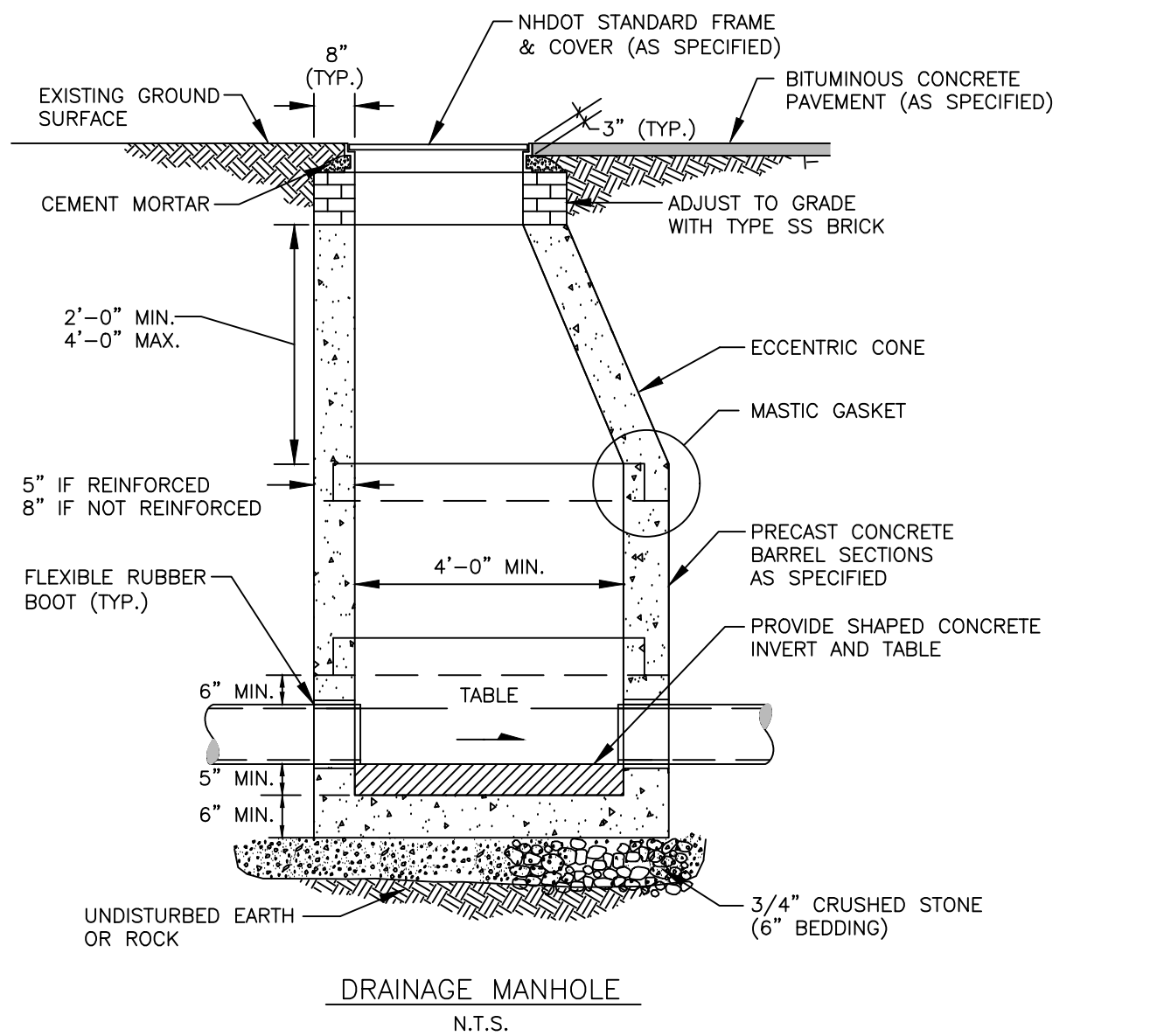
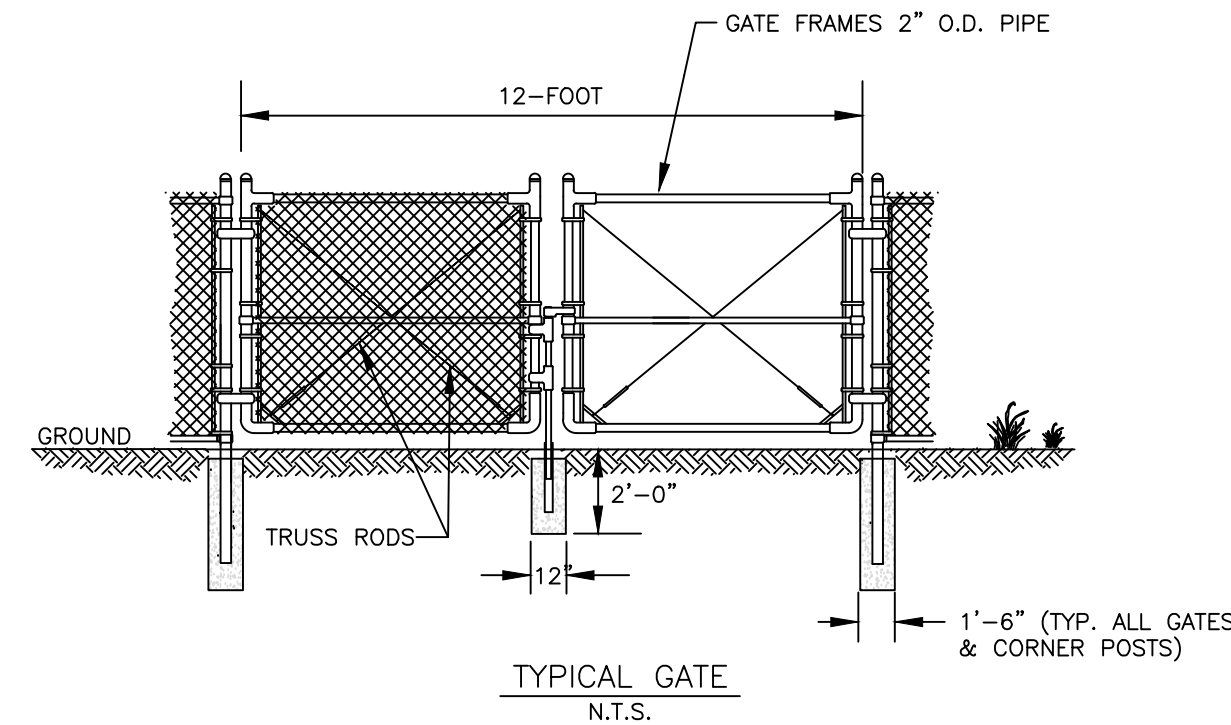
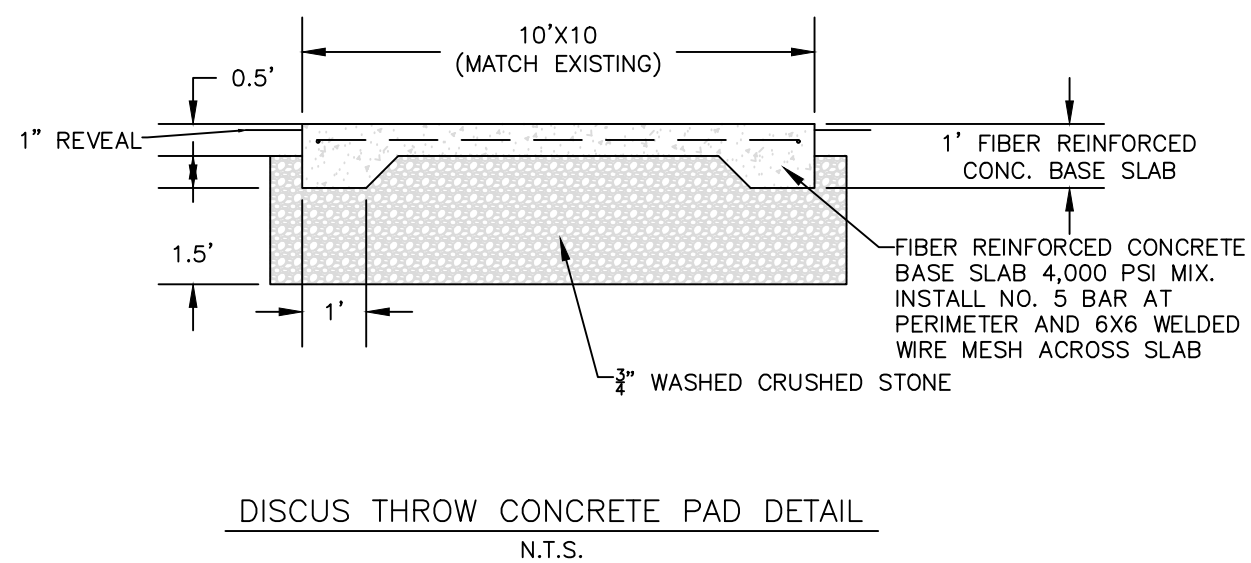
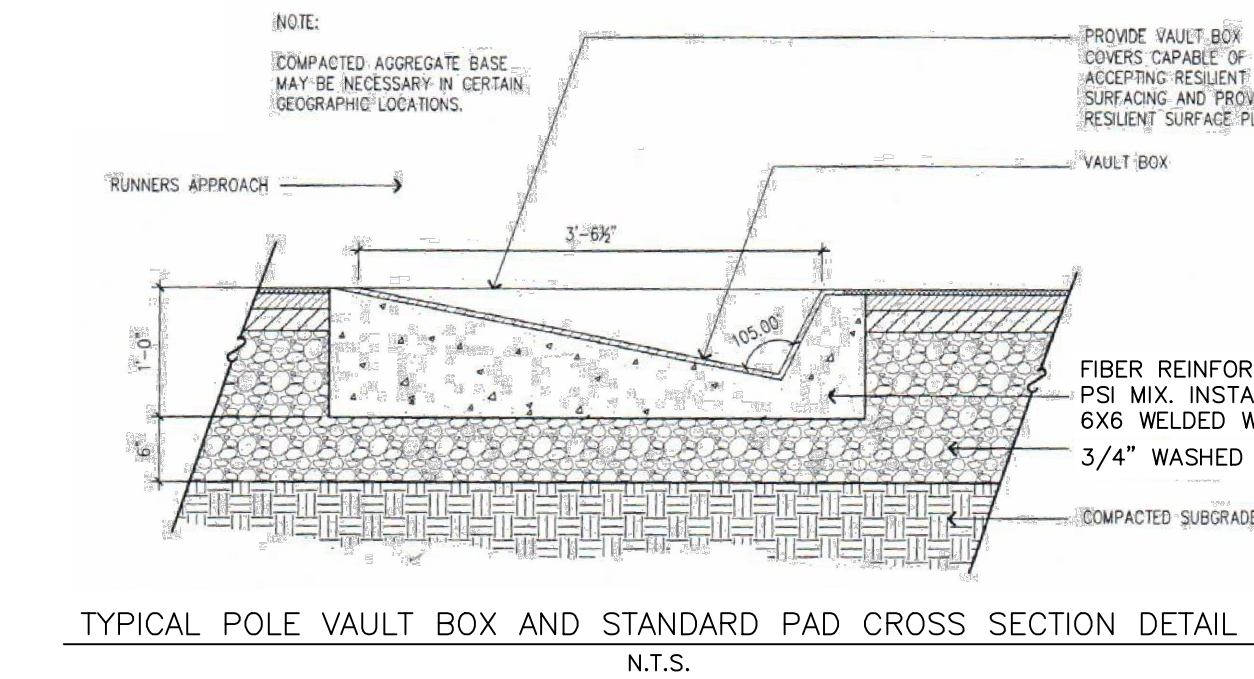
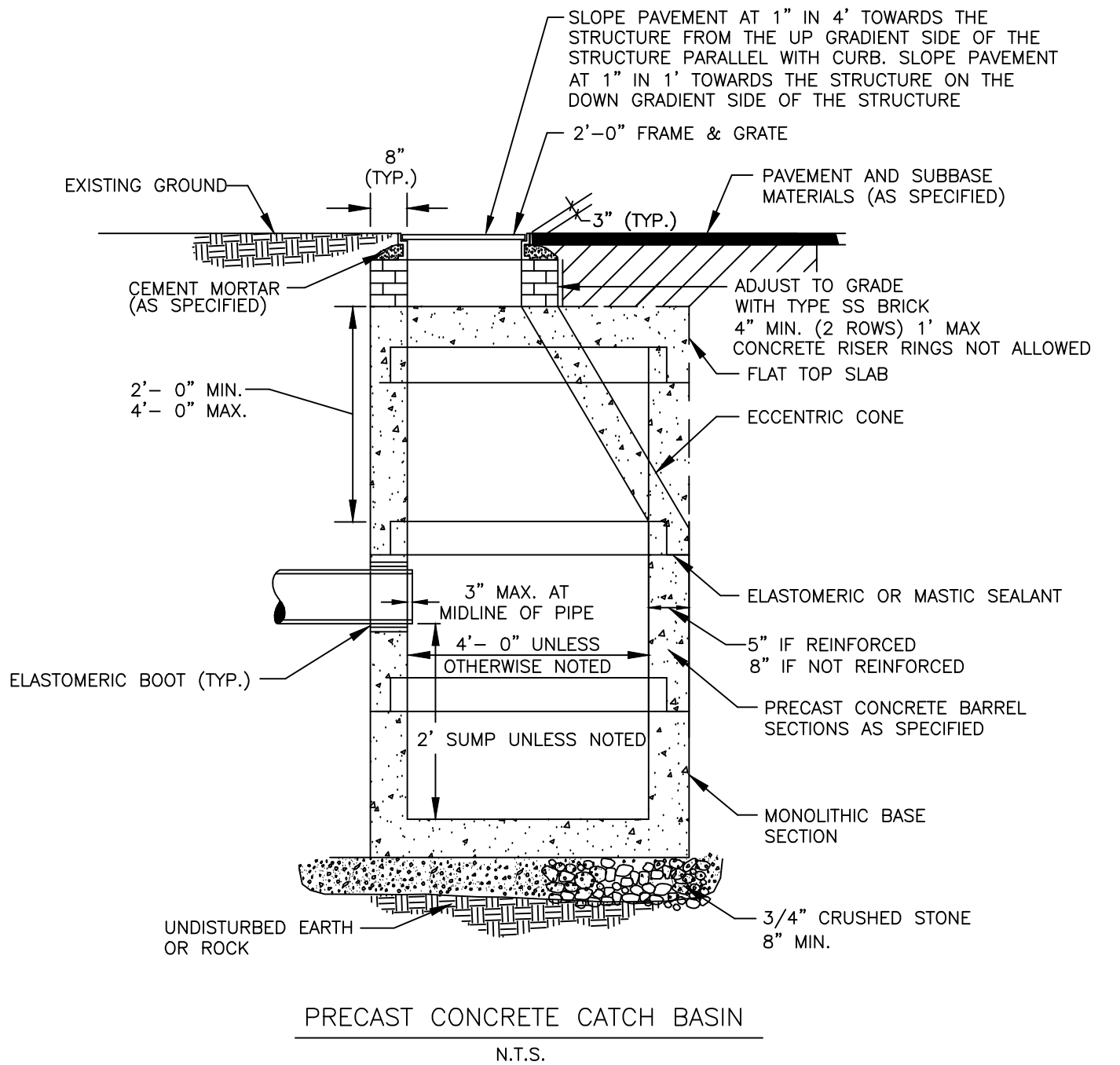
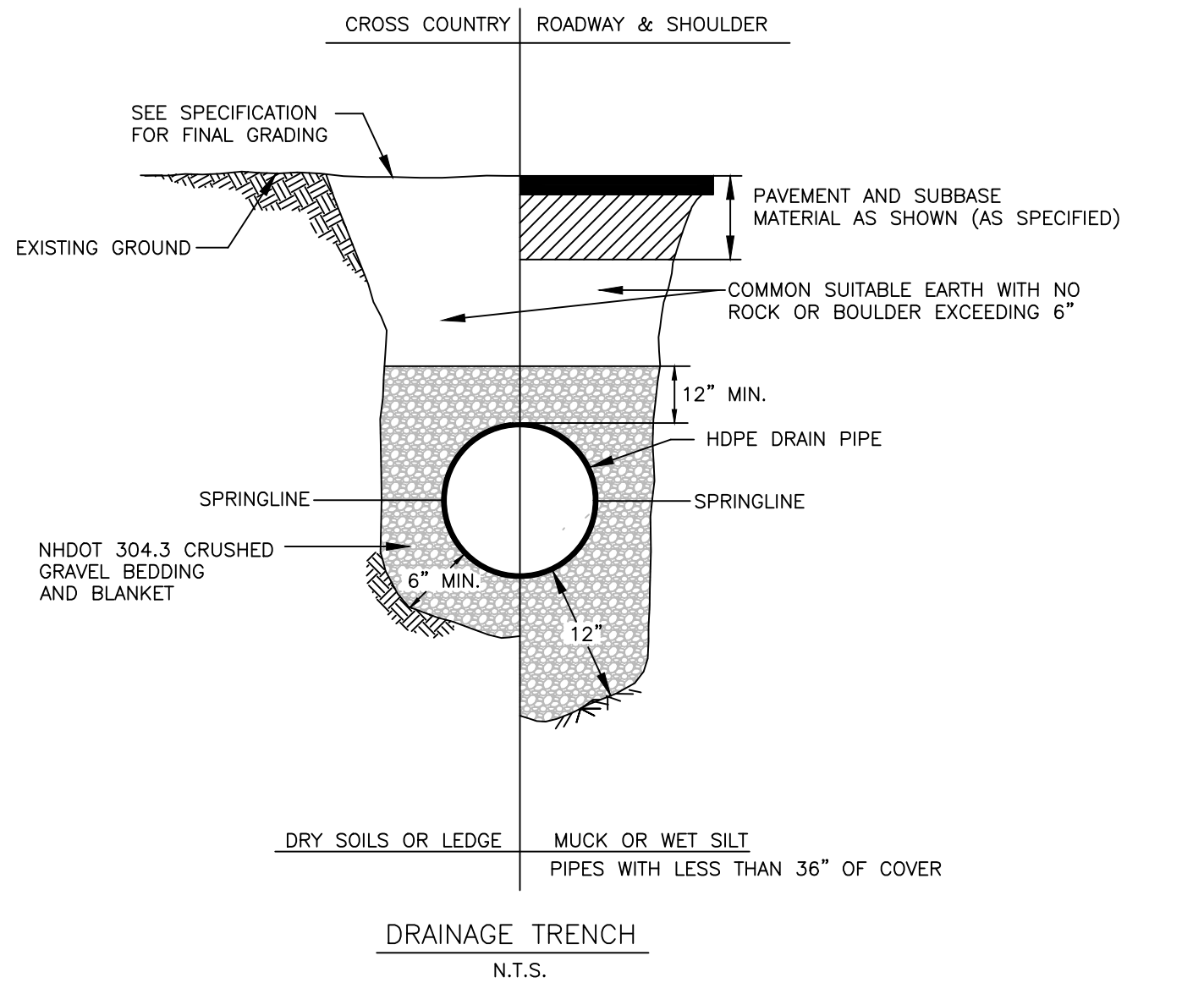
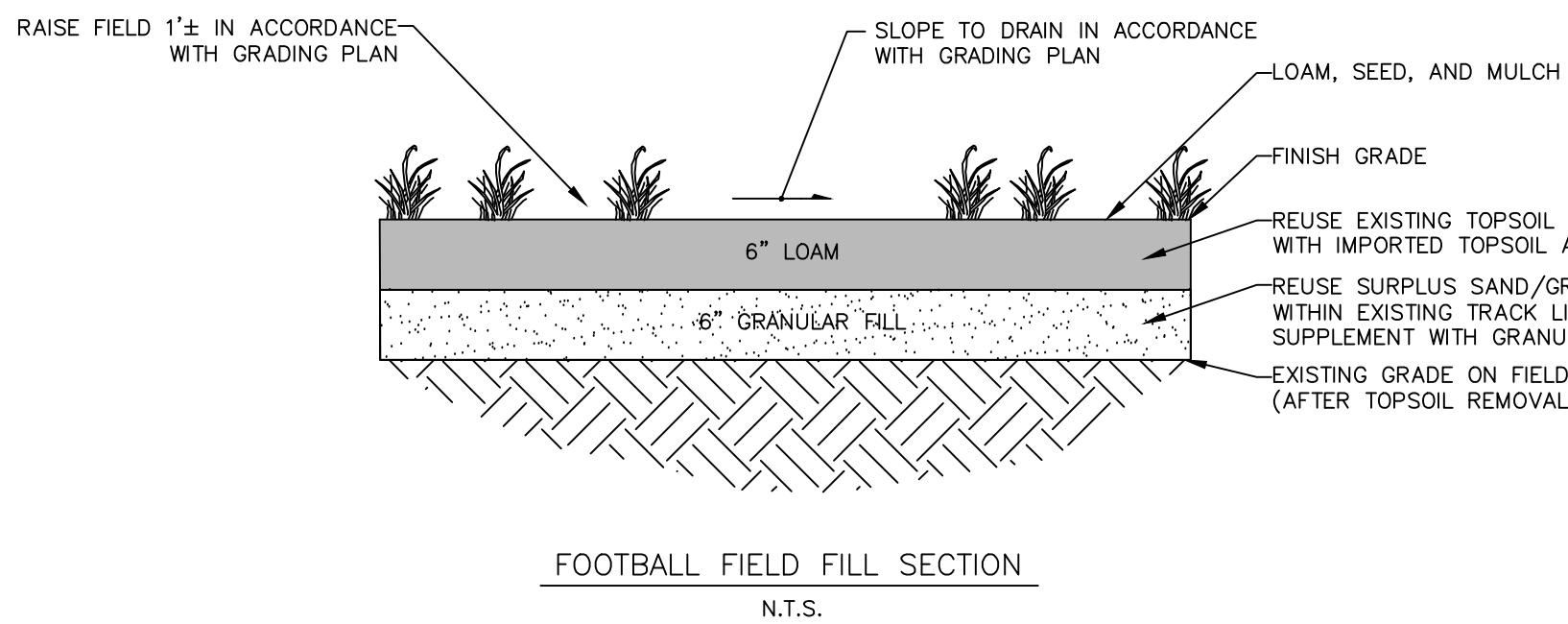
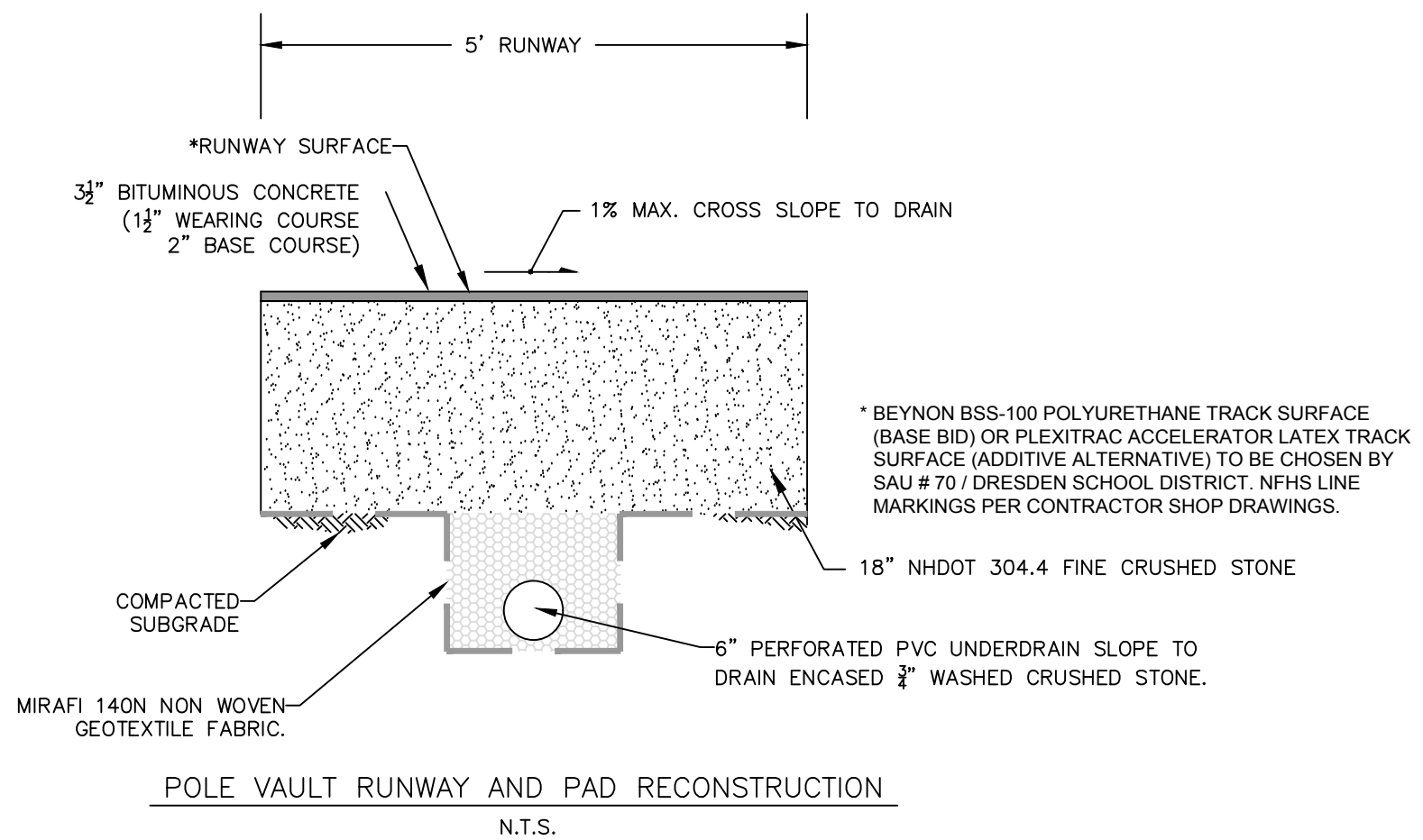
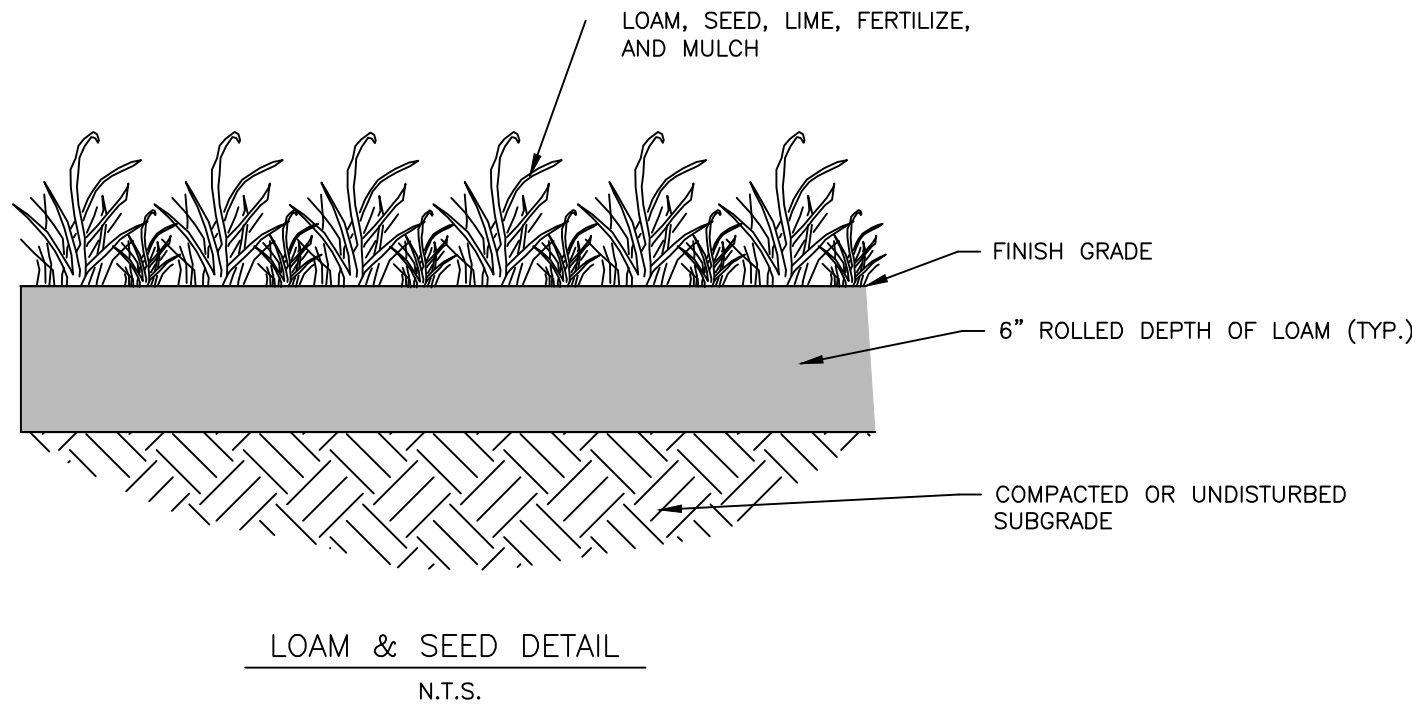
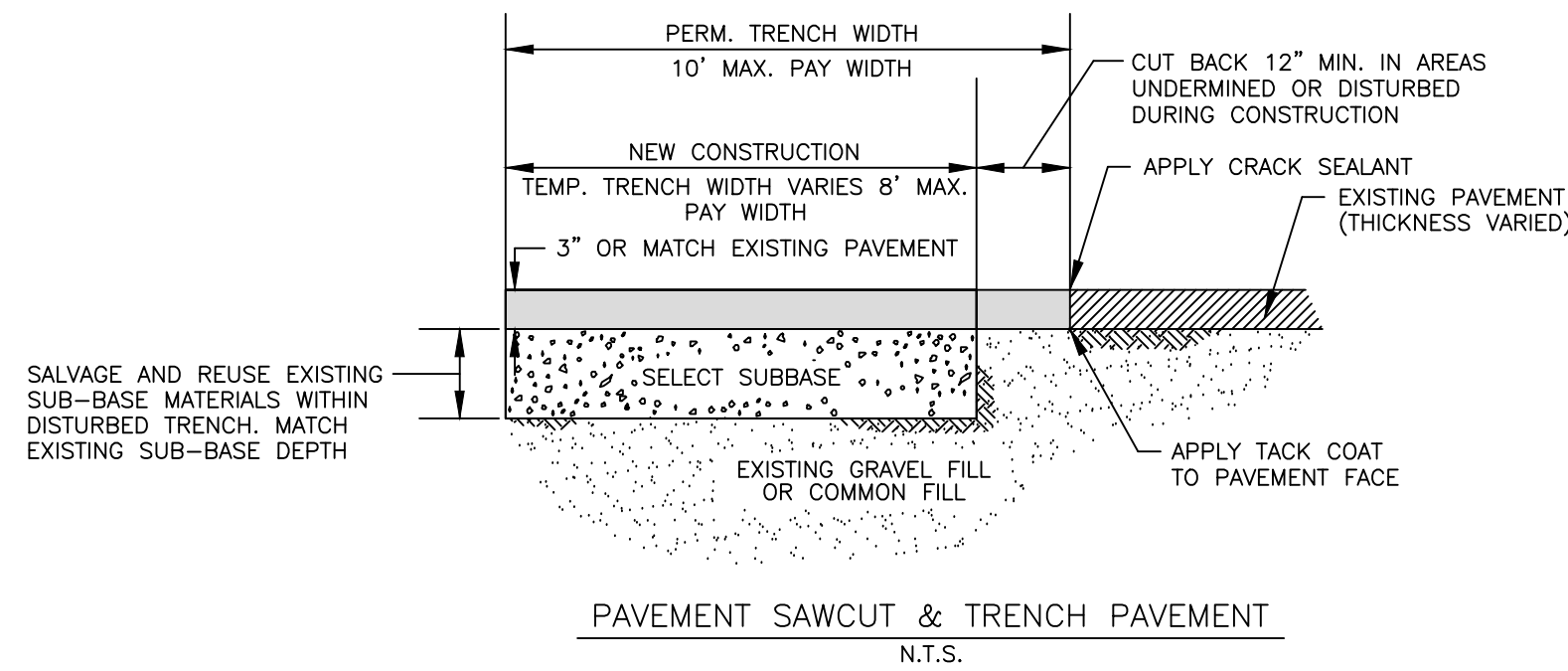
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7
SHEET 7 OF 9

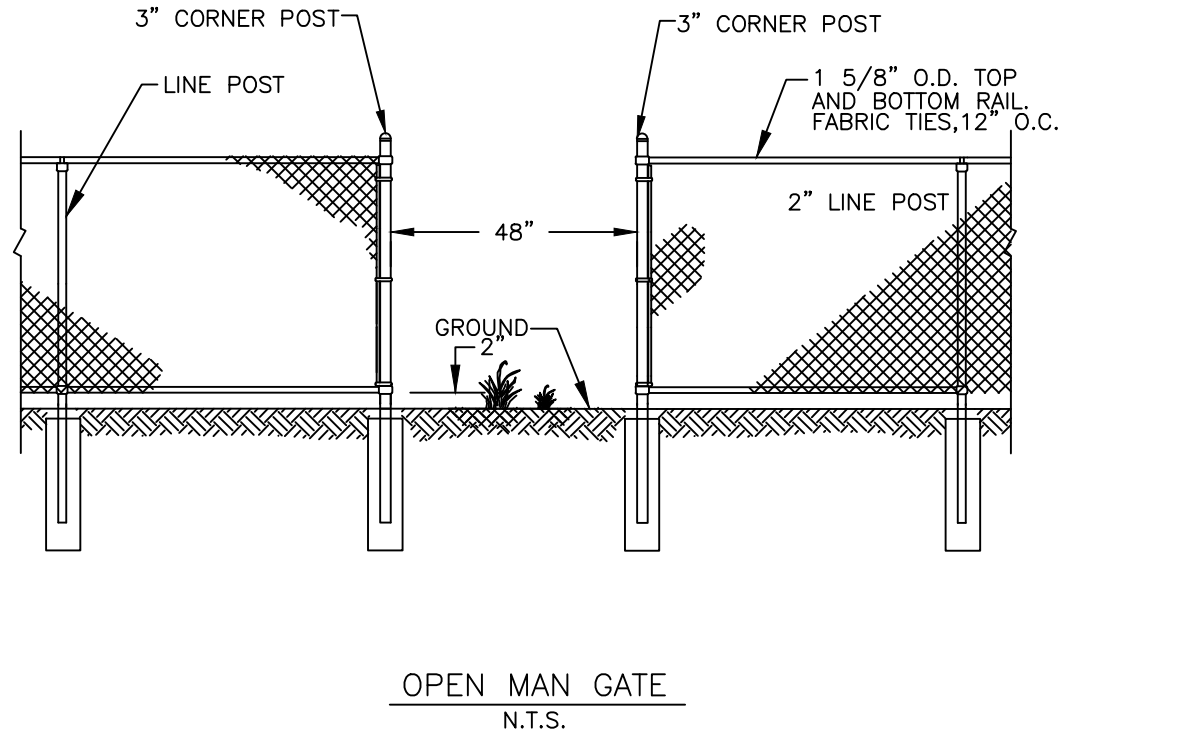
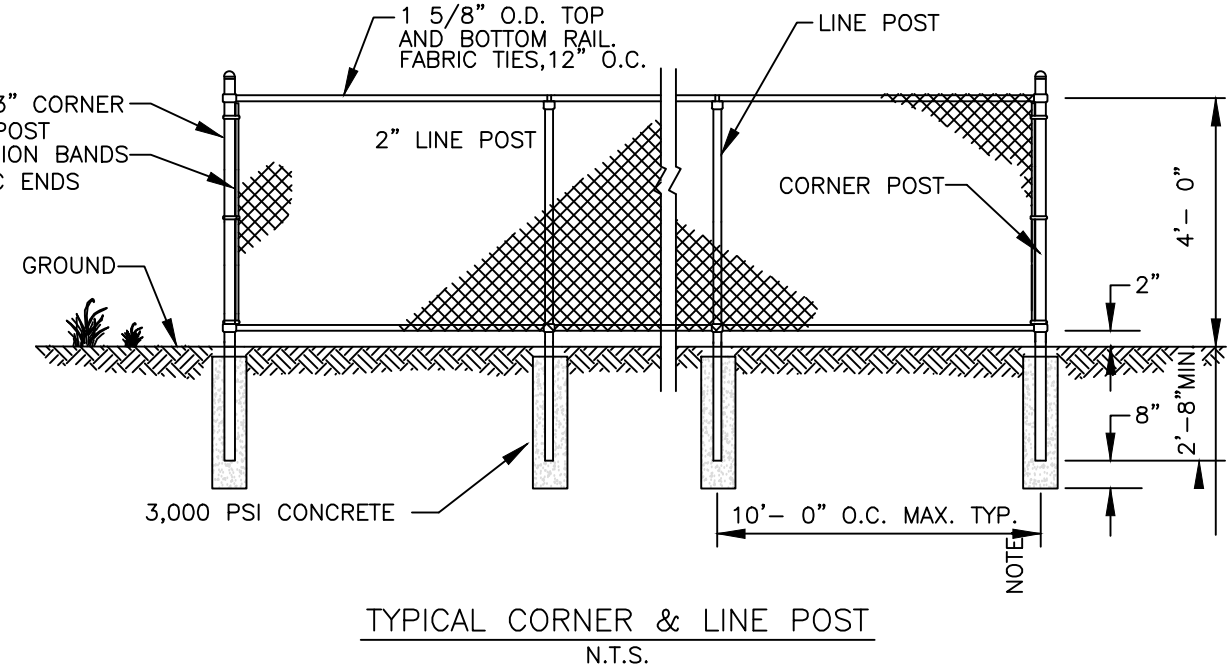
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DRAINAGE GENERAL NOTES:

- A. ALL STRUCTURES ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPROVED DRAWINGS.
- B. GRADING SHALL BE DIRECTED TOWARD CATCH BASINS UNLESS OTHERWISE DEPICTED ON THE DRAWINGS.
- C. WHERE CATCH BASINS ARE SHOWN ALONG CURB LINES ON THE DRAWINGS IT IS INTENDED THAT THE CATCH BASIN GRATES BE LOCATED DIRECTLY ADJACENT TO THE PROPOSED CURB. STATIONS AND OFF-SETS PROVIDED FOR CATCH BASIN LOCATION ARE ROUNDED TO THE NEAREST FOOT AND CONTRACTORS SHALL COORDINATE THE PLACEMENT OF PRECAST SECTIONS TO ALLOW FOR INSTALLATION OF THE GRATES AS INTENDED, AND AS SHOWN ON THE DETAILS. COORDINATE WITH THE ENGINEER AS NECESSARY. THREE FLANGE FRAMES SHALL BE PROVIDED FOR ALL CB STRUCTURES AGAINST THE CURB.
- D. STRUCTURE SUMPS SHALL BE CLEANED OUT FOLLOWING CONSTRUCTION AND PRIOR TO ACCEPTANCE BY THE OWNER. MATERIAL SHALL BE DISPOSED OF OFF-SITE. THIS IS INCIDENTAL TO THE CONTRACT. ALL PIPES SHALL BE MIRROR TESTED TO VERIFY THEY ARE CLEAN OF DEBRIS PRIOR TO ACCEPTANCE. IF DEBRIS IS PRESENT, THE CONTRACTOR SHALL FLUSH NECESSARY DRAIN LINES AS DIRECTED BY THE CITY. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A CLEAN NEW WORKING SYSTEM AT COMPLETION OF THE WORK.
- E. FLOWS FROM DE-WATERING SHALL NOT BE DIRECTED TOWARD DRAINAGE STRUCTURES AND SHALL BE DIRECTED IN ACCORDANCE WITH THE SPECIFICATIONS.
- F. THE CONTRACTOR SHALL INSULATE BETWEEN NEW DRAINAGE AND WATER CROSSINGS WHERE THERE IS LESS THAN 18" OF SEPARATION. INSULATION SHALL BE A MINIMUM OF 2" RIGID POLYSTYRENE CENTERED AT THE CROSSING.
- G. EXISTING DRAINAGE ENTERING ROADSIDE DITCHES SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION.
- H. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
- I. ALL STRUCTURES ARE TO ALLOW FOR A MINIMUM OF 2 ROWS OF BRICK FOR ADJUSTMENT OF THE FRAME AND COVER TO GRADE. 5 ROWS MAXIMUM.
- J. ALL EXISTING DRAINAGE (PIPE AND STRUCTURES) SLATED FOR REPLACEMENT SHALL BE EXCAVATED AND REMOVED FROM THE SITE.
- K. UNDERDRAIN ENVELOPE SHALL BE 3/4" WASHED CRUSHED STONE WRAPPED IN MIRAFI NON-WOVEN 140N FILTER FABRIC. UNDERDRAIN ENVELOPE SHALL BE A MINIMUM OF 1.5' WIDE X 2' HIGH. 3" OF STONE SHALL BE INSTALLED BELOW THE INVERT OF PIPE. PIPING ELEVATIONS TO BE INSTALLED PER THE DRAWINGS.
- L. UNDERDRAIN STONE: AASHTO NO. 67 STONE; COARSE WASHED FRACTURED LEDGE STONE OR GRAVEL STONE MEETING THE FOLLOWING GRADATION.
- | SIEVE SIZE | % PASSING BY WEIGHT |
|------------|---------------------|
| 1" | 100% |
| 3/4" | 90-100% |
| 3/8" | 22-55% |
| NO. 4 | 0-10% |
| NO. 8 | 0-5% |



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- NOTES:
- 6 GAUGE FABRIC, 2" DIAMOND KNUCKLED SELVAGE, TOP AND BOTTOM.
 - TOP OF CONCRETE FOOTING TO BE LOCATED 6" BELOW GRADE. CONCRETE FOOTING 18" DIA. REQUIRED AT ALL CORNER AND END POSTS. ALL LINE FOOTINGS TO BE 12" DIA.
 - MAN GATES WILL NOT BE INSTALLED, 48" OPENINGS WILL BE LEFT IN LOCATIONS IDENTIFIED ON THE DRAWINGS.

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GENERAL DETAILS FOR
HANOVER HIGH SCHOOL
TRACK IMPROVEMENTS PROJECT
LEBANON STREET - HANOVER, NEW HAMPSHIRE

PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448-2200

SCALE: AS SHOWN
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1. SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH "NEW HAMPSHIRE STORMWATER MANAGEMENT" VOLUMES 1, 2, & 3, LATEST EDITION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE LATEST EDITION OF THESE PUBLISHED STANDARDS.
2. THE CONTRACTOR SHALL DEVELOP A STORMWATER POLLUTION AND PREVENTION PLAN (SWPPP) IN ACCORDANCE WITH THE EPA CONSTRUCTION GENERAL PERMIT (CGP). THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND UNDERSTANDING THE SWPPP DEVELOPED FOR THIS PROJECT AND FOR CONSTRUCTING THE SWPPP IN ACCORDANCE WITH THE CGP. THE CONTRACTOR SHALL MAINTAIN A MINIMUM OF 14 DAYS PRIOR TO THE START OF WORK. SWPPP INSPECTIONS WILL BE COMPLETED IN ACCORDANCE WITH THE CGP BY THE OWNERS ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SWPPP RECORDS AND FOR PROVIDING SWPPP RECORDS TO THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR FULL COMPLIANCE WITH THE CGP THROUGHOUT CONSTRUCTION.
3. IMMEDIATE ATTENTION TO EROSION CONTROL PRACTICES DRAMATICALLY IMPROVES SOIL AND MOSTLY CONSERVES THE SOIL. EROSION CONTROL PRACTICES ARE REQUIRED TO BE INSTALLED. THE CONTRACTOR SHALL GIVE PRIORITY TO THE TIMELY INSTALLATION OF BOTH TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES.
4. THE MINIMUM EROSION CONTROL MEASURES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIRED FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE PRACTICES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCORD FOR CHANGING SITE CONDITIONS.
5. THE BOUNDARIES OF THE WORK LIMITS INTERNAL TO THE FIELD AS SHOWN ON THE PLANS SHALL BE FENCED WITH CHAIN LINK CONSTRUCTION FENCING. THE CONTRACTOR SHALL MAINTAIN FENCING THROUGHOUT CONSTRUCTION TO DISALLOW ENTRY BEYOND THE BOUNDARIES OF WORK SHALL BE PERMITTED.
6. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT SHALL NOT EXCEED ONE ACRES AT ANY ONE TIME BEFORE STABILIZATION, UNLESS OTHERWISE APPROVED BY OWNER AND ADDRESSED ADEQUATELY IN THE SWPPP AND EROSION CONTROL PLANS. A. CONSTRUCTION SEQUENCE SHOULD BE DEVELOPED TO MINIMIZE THE ACUTE INSTALLATION OF EROSION CONTROL MEASURES TO THE COMPLETION OF GRADING. SEEDING, MULCHING, OR ESCAPING AS SOON AS POSSIBLE WITHIN A DISTURBED AREA. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS BEEN INSTALLED:
 - B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED.
 - C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED.
 - D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
 - E. NON-VEGETATIVE COVER, SUCH AS HYDROMULCH AND EROSION CONTROL BLANKETS, HAVE BEEN PROPERLY INSTALLED.
7. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES, SUCH AS COVERED TRACKS, SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED AT ALL PAVED AREAS ARE KEPT CLEAN AND TRACK OUT TO ROAD RIGHT OF WAY DOES NOT OCCUR FOR THE DURATION OF THE PROJECT. ANY SEDIMENT TRACKED OUT PAVED AREAS SHALL BE IMMEDIATELY NOTED BY THE OWNER AND REMOVED IF IT OCCURS ON A WORK DAY, NOT LATER THAN THE END OF THE NEXT WORK DAY.
8. EARTH STABILIZERS SHALL BE SEEDED AND MULCHED AND HAVE A SILT FENCE INSTALLED ON THE DOWNHILL SIDE. THE DOWNHILL SIDE OF THE SILT FENCE SHALL BE PROTECTED WITH TAPPS AND/OR STABILIZED WITH TEMPORARY SEED AND MULCH TO PROTECT MATERIALS IN THE EVENT THAT THEY WILL REMAIN FOR LONGER THAN 1 MONTH.
9. ANY EROSION CONTROL MEASURES THAT ACCUMULATE CLEAN ACCUMULATED SEDIMENT AS NECESSARY. LEAVE IN PLACE UNTIL DISTURBED AREAS HAVE BEEN ADEQUATELY STABILIZED. DISTURBED AREAS RESULTING FROM SILT FENCE REMOVAL SHALL BE PERMANENTLY SEEDDED.
10. SLOPES 15:1 OR FLATTER SHALL BE TEMPORARILY STABILIZED WITH SEED AND MULCH WITHIN 14 DAYS. OUTSIDE THE GROWING SEASON, ALL DISTURBED AREAS SHALL BE TEMPORARILY STABILIZED WITH MULCH; MULCH AND SLOPES 15:1 OR FLATTER SHALL BE TEMPORARILY STABILIZED WITH EROSION MATTING ON SLOPES STEEPER THAN 2:1.
11. TEMPORARY STABILIZATION OF DISTURBED AREAS:

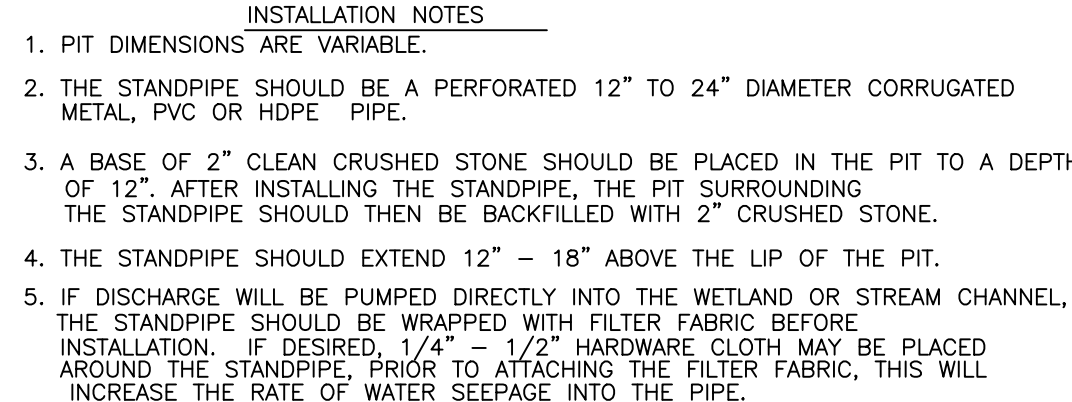
SPECIES	PER ACRE	PER 1,000 SQ.FT.	REMARKS
WINTER RYE	2 BU OR 112 LBS.	2.5 LBS.	BEST FOR FALL SEEDING. SEED AUGUST 15 TO SEPTEMBER 15 FOR BEST COVER. SEED TO DEPTH OF ONE INCH.
OATS	2 1/2 BU OR 80 LBS.	2 LBS.	BEST FOR SPRING SEEDINGS. LATER THAN MAY 15 FOR SUMMER PROTECTION. SEED TO DEPTH OF ONE INCH.
ANNUAL RYE	40 LBS.	1 LB.	GROWS QUICKLY, BUT IS OF SHORTER GRASS DURATION. USE WHERE APPEARANCES ARE IMPORTANT. COVER SEED WITH NO MORE THAN 1/4 INCH OF SOIL - WITH MULCH, SEEDING MAY BE DONE THROUGHOUT GROWING SEASON. OTHERWISE SEED EARLY SPRING OR BETWEEN AUGUST 15 & SEPTEMBER 15.

PLANT SELECTION AND SEEDING RATES			
SPECIES	PER ACRE	PER 1,000 SQ.FT.	REMARKS
WINTER RYE	2 BU OR 112 LBS.	2.5 LBS.	BEST FOR FALL SEEDING. SEED AUGUST 15 TO SEPTEMBER 15 FOR BEST COVER. SEED TO DEPTH OF ONE INCH.
OATS	2 1/2 BU OR 80 LBS.	2 LBS.	BEST FOR SPRING SEEDINGS. LATER THAN MAY 15 FOR SUMMER PROTECTION. SEED TO DEPTH OF ONE INCH.
ANNUAL RYE	40 LBS.	1 LB.	GROWS QUICKLY, BUT IS OF SHORT GRASS DURATION. USE WHERE APPEARANCES ARE IMPORTANT. COVER SEED WITH NO MORE THAN 1/4 INCH OF SOIL. WITH MULCH, SEEDING MAY BE DONE THROUGHOUT GROWING SEASON. OTHERWISE SEED EARLY SPRING OR BETWEEN AUGUST 15 & SEPTEMBER 15.

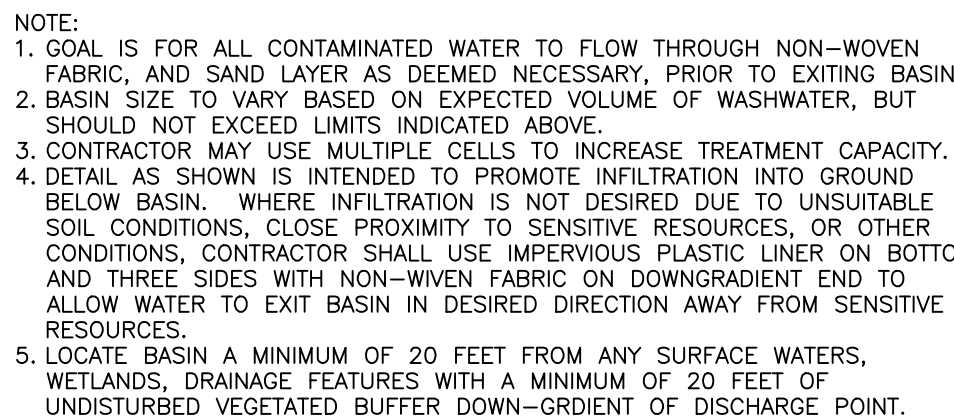


NOTES:

1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS
2. FILTER MEDIA™ FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, OR SOXX CAN BE DELIVERED ON PALLETS.

N⁺

N.T.S



N.T.S.



1. THE PRIMARY PURPOSE OF FILTER BAG IS TO RETAIN SILT, SAND, AND FINES DURING DEWATERING OPERATIONS.
2. FILTER BAGS SHALL BE INSTALLED ON A VEGETATED SLOPE GRADED TO ALLOW INCOMING WATER TO FLOW THROUGH THE BAG.
3. FILTER BAGS MAY ALSO BE PLACED ON COARSE AGGREGATE, STONE, OR BALES OF STRAW TO INCREASE FILTRATION EFFICIENCY.
4. FILTER BAGS SHALL BE LOCATED A MINIMUM OF 50' FROM WATERS OF THE STATE UNLESS OTHERWISE APPROVED BY THE ENGINEER.
5. THE NECK OF THE FILTER BAG SHALL BE STRAPPED TIGHTLY TO THE DISCHARGE HOSE.
6. A FILTER BAG IS FULL WHEN IT NO LONGER CAN EFFICIENTLY FILTER SEDIMENT OR ALLOW WATER TO PASS AT A REASONABLE RATE.
7. FILTER BAG SHALL BE DISPOSED OF AS APPROVED IN THE SWPPP PLAN OR AS DIRECTED BY THE ENGINEER.

NTS

LEBANON STREET - HANOVER, NEW HAMPSHIRE



- 1.) MAINTAIN ENTRANCE TO PREVENT TRACKING OF SEDIMENT INTO PUBLIC R.O.W..
REDUCE TRACKING OF SILTS ONTO PUBLIC R.O.W. BY CLEANING OR TOP DRESSING
STONE FILL.
- 2.) PROVIDE SEPARATE WHEEL CLEANING AREA WITH SUITABLE SEDIMENTATION BASIN.

N.T.S.

TO BE INSTALLED AT ALL LIMITS OF EXCAVATION
WHERE DISTURBANCES TRANSITION ONTO PUBLIC
ROADS LEAVING THE PROJECT LIMITS.

240 MECHANIC STREET, SUITE 100
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(603) 448-2200

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9 OF 9