



INVITATION TO BID
BID NO. 9933
TROY SCHOOL DISTRICT SITE IMPROVEMENTS – DRAINAGE PROJECT - 2022

The Troy School District will receive firm, sealed bids for all labor, material, equipment and all other services to complete Bid No. 9933 Site Improvements – Drainage Project 2022.

Specifications and proposal forms can be obtained online at <http://www.troy.k12.mi.us>. From the main page menu click the “Menu” tab then click “Departments”, then click “Purchasing” then click “Bids and Invitations” and scroll down to locate and access the bid document. Bid documents will be placed on Buildingconnect.com with the following link: <https://app.buildingconnected.com/public/5cc9d7f637c1a90018cb55dc> by December 3, 2021 at 5:00 PM local time.

Sealed bids should be submitted through Buildingconnect.com with the following link: <https://app.buildingconnected.com/public/5cc9d7f637c1a90018cb55dc>. No physical bids will be accepted in person or via delivery service. Bids are to be submitted no later than **10:00 AM Local Time Tuesday December 21, 2021**. The District will not consider or accept a bid received after the date and time specified for bid submission. Bids will be publicly opened immediately following the close of receiving bids with the following virtual meeting link meet.google.com/gqb-zvdb-gya or phone number **(413) 752-4067 PIN: 274 550 433#**. No oral, email, telephonic or telegraphic proposals shall be considered.

A non mandatory pre-bid walk through has been scheduled for 9:00 AM Local Time, Friday, December 10, 2021 starting at Baker Middle School 1359 Torpey Drive, Troy, MI 48098. All questions regarding the services specified, the bid specified, or the bid terms and conditions will be accepted in writing ONLY and subsequently answered through an addendum to all interested parties. Questions must be received no later than noon, Wednesday, December 15, 2021; at no other time prior to the bid opening will questions/concerns be addressed or accepted and may be faxed to: 248.823.4077, or emailed as a Word document to: PurchasingOffice@troy.k12.mi.us.

All bidders must provide familial disclosure in compliance with MCL 380.1267 and attach this information to the bid proposal. The bid proposal will be accompanied by a sworn and notarized statement disclosing any familial relationship that exists between the owner or any employee of the bidder and any member of the Troy School Board or the Troy School Districts Superintendent. Also, a sworn and notarized Affidavit of compliance for the Iran Economic Sanctions Act certifying the vendor does and will comply with Public Act 517 of 2012 shall accompany all proposals. Both forms will be enclosed in the specification’s booklet that shall be used for this purpose. The District will not accept a bid proposal that does not include these sworn and notarized disclosure statement.

In accordance with Michigan Compiled Laws Section 129.201, successful bidders whose proposals are \$50,000 or more, for any bid category, will be required to furnish a U.S. Treasury Listed Company Performance and Payment Bond in the amount of 100% of their bid. The cost of the Bond shall be identified within each proposal.

The Troy Board of Education reserves the right to accept or reject any or all bids, either in whole or in part; to award contract to other than the low bidder; to waive any irregularities and/or informalities; and in general to make awards in any manner deemed to be in the best interest of the owner.

Purchasing Department
Troy School District
1140 Rankin
Troy, MI 48083

INSTRUCTIONS TO BIDDERS

PROPOSAL/INTENT

1. The Troy School District will receive firm, sealed bids for all labor, material, equipment and all other services to complete Bid No. 9933 Troy School District Site Improvements – Drainage Project – 2022.
2. Sealed bids should be submitted through Buildingconnect.com with the following link: <https://app.buildingconnected.com/public/5cc9d7f637c1a90018cb55dc>. No physical bids will be accepted in person or via delivery service. Bids are to be submitted no later than **10:00 AM Local Time Tuesday December 21, 2021**. The District will not consider or accept a bid received after the date and time specified for bid submission. Bids will be publicly opened immediately following the close of receiving bids with the following virtual meeting link: meet.google.com/gqb-zvdb-gya or phone number **(413) 752-4067 PIN: 274 550 433#**. No oral, email, telephonic or telegraphic proposals shall be considered.
3. Proposals will be made in conformity with all the conditions set forth in the specifications. All products must conform to the specifications.
4. A non-mandatory pre-bid walk through has been scheduled for 9:00 AM Local Time, Friday, December 10, 2021 starting at Baker Middle School 1359 Torpey Drive, Troy, MI 48098. Questions must be received no later than 5:00 PM Local Time, Wednesday, December 15, 2020.
5. Bidder shall be reputable and a recognized organization, with at least five (5) years successful experience on work of this type and scope, of equal or better quality than this project.
6. References in the specifications to any article, product, material, fixture, form or type of construction, etc., by proprietary name, manufacturer, make or catalog number will be interpreted as establishing a standard quality of design and will not be construed as limiting proposals.
7. Bid bond or certified check, for an amount not less than five (5%) percent of the amount of the bid, must accompany each bid. Failure to submit proper bid security shall constitute rejection of bid.
8. A performance bond shall be required for the project if the cost is in excess of \$50,000 and must be listed separately on the proposal form as an individual line item.
9. A completed Familial Disclosure and an Iran Economic Sanctions form must be included with each proposal submitted or the proposal will not be accepted, please note these forms must be notarized.
10. The Troy Board of Education reserves the right to accept or reject any or all proposals either in whole or in part; to waive any irregularities and/or informalities; and in general to make awards or cancel this proposal, if deemed to be in the best interests of the owner.

SCOPE

This bid includes Troy School District Paving Program per the attached documents. Proposals will be on a line item lump sum basis, according to the schedule listed below and where specified only the qualified products listed will be considered in this proposal.

WARRANTY

All material and equipment will be guaranteed to be free from defects in both workmanship and materials for no less than two years from date of receipt/installation. If manufacturer warranty exceeds this minimum requirement, the manufacturer warranty will prevail. Any item(s) found to be defective will be replaced or repaired within seven working days at Vendor(s) expense.

WITHDRAWAL OF BIDS

Any bidder may withdraw their bid at any time prior to the scheduled time for receipt of bids. No proposal may be withdrawn until after 45 days after bid opening.

FIRM PRICING

Unit pricing will prevail when computing total quantity on bids. No price allowance or extra consideration on behalf of the bidder will subsequently be allowed by reason of error or oversight on the part of the bidder. The successful bidder(s) will hold bid prices firm for all purchase orders placed for a period of approximately one full year.

PERMITS, FEES AND REGULATIONS

The Contractor shall obtain and pay for all permits, assessments, fees, bonds, and other charges as necessary to perform and complete the work of this contract, including disconnection charges, capping and unplugging utilities.

The Contractor shall be responsible for obtaining all permits and licenses necessary for the proper completion of project. Permits and licenses are available from the appropriate agencies having jurisdiction. The Contractor shall give all notices, pay all fees and comply with all laws, ordinances, rules and regulations bearing on the work. At the completion of the project, the Contractor will provide to the District all paperwork related to the full execution of the permits(s), including all payments and inspections.

If any of the work of the Contractor is done contrary to such laws, ordinance rules and regulations without such notice, he shall bear all costs arising therefrom. The Contractor shall include all cost and taxes in its bid, and make proper provisions for payment of all other State and Federal applicable taxes, fees or other costs.

TAXES

Troy School District is not automatically exempt from State of Michigan Sales and Use Taxes. The District must pay these taxes when materials are to be incorporated into reality. Materials that are permanently attached i.e lockers, built-in, incorporated or otherwise made part of the structure all applicable taxes shall be paid by the Vendor. Troy School District shall not be responsible for any taxes that are imposed on the Vendor. Furthermore, the Vendor understands that it cannot claim exemption from taxes by virtue of any exemption that is provided to Troy School District.

DELIVERY/INSTALLATION

Time of delivery is part of the consideration. It is understood that the bidder agrees to deliver prepaid to the schools, specified from the resulting contract, all items. All cost of delivery, drayage, freight, packing, unpacking, and setup are to be included in the prices bid.

The Contractor is responsible for removing from the project all waste materials and rubbish resulting from his operations and installation including all packing cartons and debris. Removal is to occur on a daily basis. Failure to do so will result in the Owner doing so and the cost thereof shall be charged to the Contractor as a deduction in his contract price.

The Contractor shall provide an adequate number of qualified, experienced installers, in harmony with other works at the site.

BID SECURITY

Bid Bond or certified check, for an amount not less than five (5%) percent of the amount of the bid, must accompany each bid. The check or bond of each unsuccessful bidder will be returned within ten (10) days after the bid is awarded. Failure of any accepted bidder to enter into a contract to complete the specified work may forfeiture of his bid security. Failure to submit proper bid security shall constitute rejection of bid. A bid bond can be submitted with the bid through the buildingconnected.com link. Certified check must be received in person at the Troy School District Purchasing Office at 1140 Rankin Road, Troy, MI 48083 prior to the due date and time.

PERFORMANCE BOND/PAYMENT BOND

Within fourteen (14) days after date of issuance of written notice of selection for the award of a contract, which shall be considered as the notice to proceed, the successful bidder shall enter into a contract with the Owner and shall execute and file with the Owner, the following in the amount 100% equal to full contract sum.

A performance bond shall be required for the project if the cost is in excess of \$50,000 and must be listed separately on the proposal form as an individual line item. The Performance Bond must insure the faithful performance of all provisions of the contract and satisfactory completion of the specified work, within the time agreed upon.

The payment bond must insure the payment and protection of claimants supplying labor or materials to the principal contractor or his subcontractors in the prosecution of the work provided for in the contract. The successful contractor's bond company must be listed by the State of Michigan as a licensed carrier and have an excellent or superior rating from AM Best Company.

SAFETY

Under the "General Conditions of the Contract for Construction" of the contract to be awarded, the Contractor;

- a) shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures;
- b) shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the contract;
- c) shall take reasonable precautions for safety of all persons who may be affected, including employees of the Contractor and Subcontractor; and
- d) shall have an accident prevention representative at the site.

The general conditions of the contract for construction and the agreement also require that the Contractor indemnify the Owner in the event of certain claims arising out of the performance of the work.

INSURANCE REQUIREMENTS

The Contractor shall protect, defend and indemnify the Owner, its officers, agents, servants, volunteers, and employees from any and all liabilities, claims, liens, demands, and costs of whatsoever kind and nature which may result in injury or death to any persons, and for any result in injury or death to any person, and for loss or damage to any property, including property owned or in the care, custody, or control of the Owner in connection with or in any way incident to or arising out of the occupancy, use, with this Agreement resulting in whole or in part from negligent acts or omissions of the Contractor, any Subcontractor, or any employee, agent or representative of the Contractor or any Subcontractor.

The Contractor shall maintain, at its expense, during the term of this contract the following insurance:

- a) Worker's Compensation Insurance with statutory limits and Employer's Liability Insurance with a minimum limit of \$1,000,000 each occurrence.
- b) Comprehensive General Liability Insurance with a minimum combined single limit of \$1,000,000 per occurrence, \$1,000,000 aggregate, in the same amount made for bodily injury and property damage. The policy is to include products and completed operations, cross liability, broad form property damage, independent contractors, and contractual liability coverage. The policy shall be endorsed to provide sixty (60) days written notice to the District of any material change of coverage, cancellation, or non-renewal of coverage.
- c) If Subcontractors are likely to be used, the Comprehensive General Liability policy shall include coverage for independent Contractors.
- d) Owner's Contractor's Protective Policy-comprehensive in the name of the Owner, with a minimum combined single limit of \$1,000,000 per occurrence in the same amount for bodily injury or property damage.
- e) Automobile Liability insurance covering all owned, hired, and non-owned vehicles with personal protection insurance and property insurance to comply with the provisions of the Michigan no-fault Insurance Law, including residual liability insurance with a minimum combined single limit of \$1,000,000 each occurrence of bodily injury and property damage.
- f) All insurance policies shall be issued by companies licensed to do business in the State of Michigan. The companies issuing the policies must be domestic (on-shore) companies and have an A rating by AM Best.
- g) The Contractor shall be responsible for payment of all deductibles contained in any insurance policy required in this contract.

COMPLIANCE WITH SCHOOL SAFETY INITIATIVE LEGISLATION

Meeting the requirements of the School Safety Initiative Legislation, being MCL 380.1230, 80.1230a, 380.1230c, 380.1230d and 380.1230g.

The Bidder acknowledges and agrees that the Bidder will have any and all of its installation personnel (including sub-contractors) subjected to criminal history and background checks. **Personnel that fall into this group will be working on District premises for more than one continuous week.** Criminal history and background checks will be done within a year of the beginning of the project and should be completed before worked begins on this project.

The Bidder is required to provide written documentation listing all personnel who fall into the group indicated in the above paragraph. The documentation will also verify that none of the personnel have a “listed offense” as indicated below. This documentation is to be provided before the beginning of the project and updated as necessary for any additions or subtractions from the list as long as the project lasts.

The Bidder shall indemnify, defend and hold the District, its employees, Board of Education, and each member thereof, agents and consultants, harmless from and against any and all claims, counter-claims, suits, debts, demands, actions, judgments, liens, liabilities, costs, expenses, including actual attorney’s fees and actual expert witness fees, arising out of or in connection with any violation of, or the Bidder’s failure to comply with the above paragraphs.

The Bidder shall be responsible for all costs and expenses associated with the above-required criminal history and background checks.

LISTED OFFENSES

1. MCL 750.145a - Accosting, enticing or soliciting child (less than 16 years of age) for immoral purposes.
2. MCL 750.145b - Accosting, enticing or soliciting child (less than 16 years of age) immoral purposes – second or subsequent offenses.
3. MCL 750.145c - Involvement in child sexually abusive activity or material, including possession of child sexually abusive material (“child” is a person less than 18 years of age who has not been legally emancipated.)
4. MCL 750.158 - Crime against nature (i.e., sodomy and bestiality) if the victim is an individual less than 18 years of age.
5. A third of subsequent violation of any combination of the following:
 - a. MCL 750.167(1)(f) - indecent or obscene conduct in a public place;
 - b. MCL 750.335a - indecent exposure;
 - c. A local ordinance of a municipality substantially corresponding to a section described in (a) or (b), *supra*.
6. Except for juvenile disposition or adjudication, a violation of:
 - a. MCL 750.338 - gross indecency between males; fellatio or masturbation;
 - b. MCL 750.338a - gross indecency between females; oral sex;
 - c. MCL 750.338b - gross indecency between male and female persons; if the victim is an individual less than 18 years of age.
7. MCL 750.349 - Kidnapping, if victim is an individual less than 18 years of age.
8. MCL 750.350 - Kidnapping; child under 14 years of age with intent to detain or conceal from child’s parent or legal guardian.
9. MCL 750.448 - Soliciting or accosting by a person 16 years of age or older, if victim is an individual less than 18 years of age.
10. MCL 750.455 - Pandering
11. MCL 750.520b - First degree criminal sexual conduct.
12. MCL 750.520c - Second degree criminal sexual conduct.
13. MCL 750.520d - Third degree criminal sexual conduct.
14. MCL 750.520e - Fourth degree criminal sexual conduct.
15. MCL 750.520g - Assault with intent to commit criminal sexual conduct.

16. Any other violation of a law of the state or a local ordinance of municipality that by its nature constitutes a sexual offense against an individual who is less than 18 years of age.
17. MCL 750.10a - Offense by sexually delinquent person (i.e., “any person whose sexual behavior is characterized by repetitive or compulsive acts which indicate a disregard of consequences or the recognized rights of others, or by the use of force upon another person in attempting sexual relations of either a heterosexual or homosexual nature, or by the commission of sexual aggressions against children under the age of 16”).
18. An attempt or conspiracy to commit an offense described in (1) through (17).
19. An offense substantially similar to an offense described in (1) through (17) under a law of the United States, any state, or any country or any tribal or military law.

TERMINATION BY THE DISTRICT FOR CONVENIENCE

The District may, at any time, terminate the Contract for the District’s convenience and without cause.

Upon receipt of written notice from the District of such termination for the District’s convenience, the Contractor shall:

- a) Cease operations as directed by the District in the notice;
- b) Take actions necessary, or that the District may direct, for the protection and preservation of the Work; and
- c) Except for Work directed to performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further Subcontracts and purchase orders.

Owner Is An Equal Opportunity Employer

The Owner is an Equal Opportunity Employer. Pursuant to the Executive Order 11246 as amended, you are advised that under the provisions of this order, Contractors and Subcontractors are obligated to take affirmative action to provide equal opportunity without regard to race, creed, color, national origin, age or sex.

Michigan Right to Know Law

Troy School District will comply with the Michigan Right to Know Law by informing Contractors of hazardous chemicals to which they may be exposed. All Contractors will be required to provide Material Safety Data Sheets for any hazardous chemicals brought to the workplace. The Contractor shall comply with all applicable provisions of the Occupational Safety and Health Act for the duration of the specified work.

Asbestos Hazard Emergency Response Act

As required by the Environmental Protection Agency Asbestos Hazard Emergency Response Act, each school district is responsible for providing contractors with information regarding locations of known or assumed asbestos containing material prior to the Contractor entering a building under the school district’s jurisdiction. The successful bidder will be required to complete the school district’s Contractor Notification forms.

Notification of Assumed Lead-Containing Materials

The intent of this section is to formally notify all Contractors and Sub-Contractors applying for or bidding on work covered within this specification that, due to the age of the facilities within this District, there is the presumption that building components do contain lead-based paint pursuant to OSHA definition. The District has not conducted lead-based paint inspections. As a result, all Contractors and Sub-Contractors bidding must assume that building components do contain lead-based paint.

Furthermore, all awarded Contractors and Sub-Contractors shall be responsible to comply with all applicable Federal and Michigan State lead regulations including, but not limited to, 29 CFR Part 1926.62 of the OSHA Lead Construction Standard, (Part 603 of the Michigan State Standards). All costs associated with regulatory compliance shall be borne by the Contractor and/or Sub-Contractor.

General Conditions

The District reserves the right to accept or reject any or all proposals, to waive irregularities, and to accept a proposal which, in the District's opinion, is in the District's best interest.

The District reserves the right to declare as non-responsive, and reject, any bid which is incomplete or where material information requested is not furnished, or where indirect or incomplete answers or information is provided.

In the event, the Administration Building is closed due to unforeseen circumstances on the day Proposals are due, Proposals will be due at the same time on the next day that the District and/or the Administration Building is open.

Negligence in preparation, improper preparation, errors in, or omissions from, proposal shall not relieve a bidder from fulfillment of any and all obligations and requirements of the proposed Contract Documents.

The District expects that the awarded bidder will complete the work as outlined in the specifications for the amount bid by the bidder. Any additional costs above the amount bid and awarded, must be approved by the District in advance of any work.

Voluntary alternates for bids are acceptable but should NOT be put in the space for the Base Bid on the Bid Response Form but on an attached sheet, clearly labeled Voluntary Alternative. Such Alternates should be described in enough detail for the District to understand the Bidder's intent.

Owner may choose to conduct testing to verify correct products and installation. If the materials and installation are found not to be per spec, owner will require subsequent tests to be performed by Owners testing company at contractors' expense.

Any exceptions to the terms and conditions contained in this RFP or any special considerations or conditions requested or required by the Contractor MUST be specifically enumerated by the Contractor and be submitted as part of its Proposal, together with an explanation as to the reason such terms and conditions of this RFP cannot be met by, or in the Contractor's opinion should not be applicable to, the Contractor. The Contractor shall be required and expected to meet the specifications and the requirements as set forth in this RFP in their entirety, except to the extent exceptions or special considerations or conditions are expressly set forth in the Contractor's Proposal and those exceptions or special considerations or conditions are expressly accepted by the District.

No responsibility shall attach to the District, or the authorized representatives of either one, for the premature opening of any proposal, which is not properly addressed and identified.

The Contract Documents, as outlined in the executed Agreement, shall imply the inclusion of the entire agreement between the parties thereto, and the Contractor shall not claim any modification thereof resulting from any representation or promise made at any time by an officer, agent or employee of the District or by any other person.

The bidders shall include a permit allowance for the following:

- \$5,000 for Costello Elementary School.
- \$5,000 for Leonard Elementary School
- \$5,000 for Baker Middle School.
- \$5,000 for Athens High School
- \$5,000 for Troy High School
- \$5,000 for Transportation Building

Opening and Awarding of Bids

Bids will be publicly opened and read aloud immediately following the close of receiving bids with the following virtual meeting link: meet.google.com/gqb-zvdb-gya or phone number **(413) 752-4067 PIN: 274 550 433#** at 10:00 AM. Local Time, Tuesday, December 21, 2021.

The recommendation for award will be submitted to the Board of Education at the regular Board of Education Meeting to be held on Tuesday, January 4, 2022.

Scope of Work \ Specifications

Drawings and Specifications

Drawings

<u>#</u>	<u>Description</u>	<u>Date</u>
GENERAL		
C-0.0	Cover Sheet	12/2/21
TROY ATHENS HIGH SCHOOL		
C-1.0	Overall Topographic Survey	12/2/21
C-1.1	West Basin Topographic Survey and Demolition Plan	12/2/21
C-1.2	East Basin Topographic Survey and Demolition Plan	12/2/21
C-2.1	West Basin Grading and Soil Erosion Plan	12/2/21
C-2.2	East Basin Grading and Soil Erosion Plan	12/2/21
BAKER MIDDLE SCHOOL		
C-1.0	Topographic Survey and Demolition Plan	12/2/21
C-2.0	Grading and Soil Erosion Plan	12/2/21
LEONARD ELEMENTARY SCHOOL		
C-1.0	Topographic Survey and Demolition Plan	12/2/21
C-2.0	Grading Soil Erosion Plan	12/2/21
TRANSPORTATION CENTER		
C-1.0	Engineering Plan	12/2/21
TROY HIGH SCHOOL		
C-1.0	Topographic Survey and Demolition Plan	12/2/21
C-2.0	Grading and Soil Erosion Plan	12/2/21
COSTELLO ELEMENTARY SCHOOL		
C-1.0	Topographic Survey and Demolition Plan	12/2/21
C-2.0	Grading and Soil Erosion Plan	12/2/21
C-4.0	Notes and Details	12/2/21

Specifications

<u>#</u>	<u>Description</u>	<u>Pages</u>
310516	Soils and Aggregates	6
311000	Site Clearing	5
312213	Rough Grading	4
312316	Excavation	3
312317	Trenching	4
312323	Fill	3
312513	Erosion Controls	3
329113	Soil Preparation	2
329119	Landscape Grading	2
329219	Seeding	5
330513	Manholes and Structures	6
334100	Storm Utility Drainage Piping	5

Work Schedule

- Start Date: As Weather Allows
- Substantial Completion Date: August 19, 2021
- Final Completion Date: September 15, 2021
- Final Closeout: 45 Days after Substantial Completion



DUE: 10:00 AM Local Time, Tuesday, December 21, 2021

PROPOSAL: BID 9933 Troy School District
Site Improvement - Drainage Project - 2022

PROPOSAL FORM

We propose to furnish all material, labor and equipment, as per the specifications, for the Troy School District and all other services to complete BID 9933 Troy School District–Site Improvement–Drainage Project-2022

PROJECT #1 – TROY HIGH SCHOOL, TRANSPORTATION CENTER AND LEONARD ELEMENTARY SCHOOL

Base Bid Amount Troy High School: \$ _____

Bond Amount Troy High School: \$ _____

Base Bid Amount Transportation Center: \$ _____

Bond Amount Transportation Center: \$ _____

Base Bid Amount Leonard Elementary School: \$ _____

Bond Amount Leonard Elementary School: \$ _____

Allowance Amount Project #1: \$ 15,000.00

Grand Total Project #1 - \$ _____

PROJECT #2 – ATHENS HIGH, BAKER MIDDLE AND COSTELLO ELEMENTARY SCHOOLS

Base Bid Amount Athens High School: \$ _____

Bond Amount Athens High School: \$ _____

Base Bid Amount Baker Middle School: \$ _____

Bond Amount Baker Middle School: \$ _____

Base Bid Amount Costello Elementary School: \$ _____

Bond Amount Costello Elementary School: \$ _____

Allowance Amount Project #2: \$ 15,000.00

Grand Total Project #2 - \$ _____

Combined Bid Amount if Award Projects #1 and #2 \$ _____

BIDDER'S FIRM NAME _____

ADDRESS _____

CITY/STATE _____ ZIP _____

CELL NUMBER _____ FAX # _____

SIGNED BY _____ TITLE _____

TYPED NAME _____ DATE _____

E-MAIL ADDRESS _____

VENDOR: LIST FIVE RECENT REFERENCES, PREFERABLY SCHOOL DISTRICTS:

_____	_____	_____
School District	Person to Contact	Phone Number

_____	_____	_____
School District	Person to Contact	Phone Number

_____	_____	_____
School District	Person to Contact	Phone Number

_____	_____	_____
School District	Person to Contact	Phone Number

_____	_____	_____
School District	Person to Contact	Phone Number

Interested vendors will note in this space only any additional information, criteria or contingencies affecting their proposal, understanding that this additional information, criteria or contingency may be utilized in the evaluation process and subsequent award.

**SWORN AND NOTARIZED FAMILIAL DISCLOSURE STATEMENT
FAMILIAR DISCLOSURE AFFIDAVIT**

The undersigned, the owner or authorized office of the below-named contractor (the ‘Contractor’), pursuant to the familial disclosure requirement provided to Troy Schools, hereby represents and warrants that, excepts as provided below, no familial relationship exists between the owner or key employee of the Contractor, and any member of the Troy School Board or the Troy School Superintendent. A list of the School District’s Board of Education Members and its Superintendent may be found at <http://www.troy.k12.mi.us>.

List any Familial Relationships:

Contractor:

Print Name of Contractor

By: _____

Its: _____

Subscribed and sworn before me, this _____ Seal:

day of _____, 20 ____, a Notary Public

in and for _____ County, _____

(Signature)
NOTARY PUBLIC

My Commission expires _____

CERTIFICATION OF COMPLIANCE – IRAN ECONOMIC SANCTIONS ACT

Michigan Public Act No. 517 of 2012

The undersigned, the owner, or authorized officer of the below-named Company, pursuant to the compliance certification requirement provided in Troy School District’s Request For Proposal, the “RFP”, hereby certifies, represents, and warrants that the Company and its officers, directors and employees, is not an “Iran Linked Business” within the meaning of the Iran Economic Sanctions Act, Michigan Public Act No. 517 of 2012 (the “Act”), and that in the event the Company is awarded a contract by Troy School District as a result of the aforementioned RFP, the Company is not and will not become an “Iran Linked Business” at any time during the course of performing any services under the contract.

The Company further acknowledges that any person who is found to have submitted a false certification is responsible for a civil penalty of not more than \$250,000.00 or two (2) times the amount of the contract or proposed contract for which the false certification was made, whichever is greater, the cost of Troy School District’s investigation, and reasonable attorney fees, in addition to the fine. Moreover, any person who submitted a false certification shall be ineligible to bid on a request for proposal for three (3) years from the date the it is determined that the person has submitted the false certification.

NAME OF COMPANY

NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

SIGNATURE

DATE

Acceptance of Proposal

The undersigned agrees to execute a Contract for work covered by this Proposal provided that he is notified of its acceptance within thirty days after the opening of the Proposal.

It is agreed that this bid will not be withdrawn until after forty-five (45) days after receipt of bids.

The undersigned affirms that the bid was developed without any collusion, undertaking, or agreement, either directly or indirectly, with any other bidder(s) to maintain the prices of indicated work or prevent any other bidder(s) from bidding the work.

BIDDER'S FIRM NAME _____

BUSINESS ADDRESS _____

TELEPHONE NUMBER _____

CELL NUMBER _____

FAX NUMBER _____

BY (SIGNATURE) _____

PRINTED NAME _____

TITLE _____

SIGNED THIS _____ DAY OF _____, 20 _____

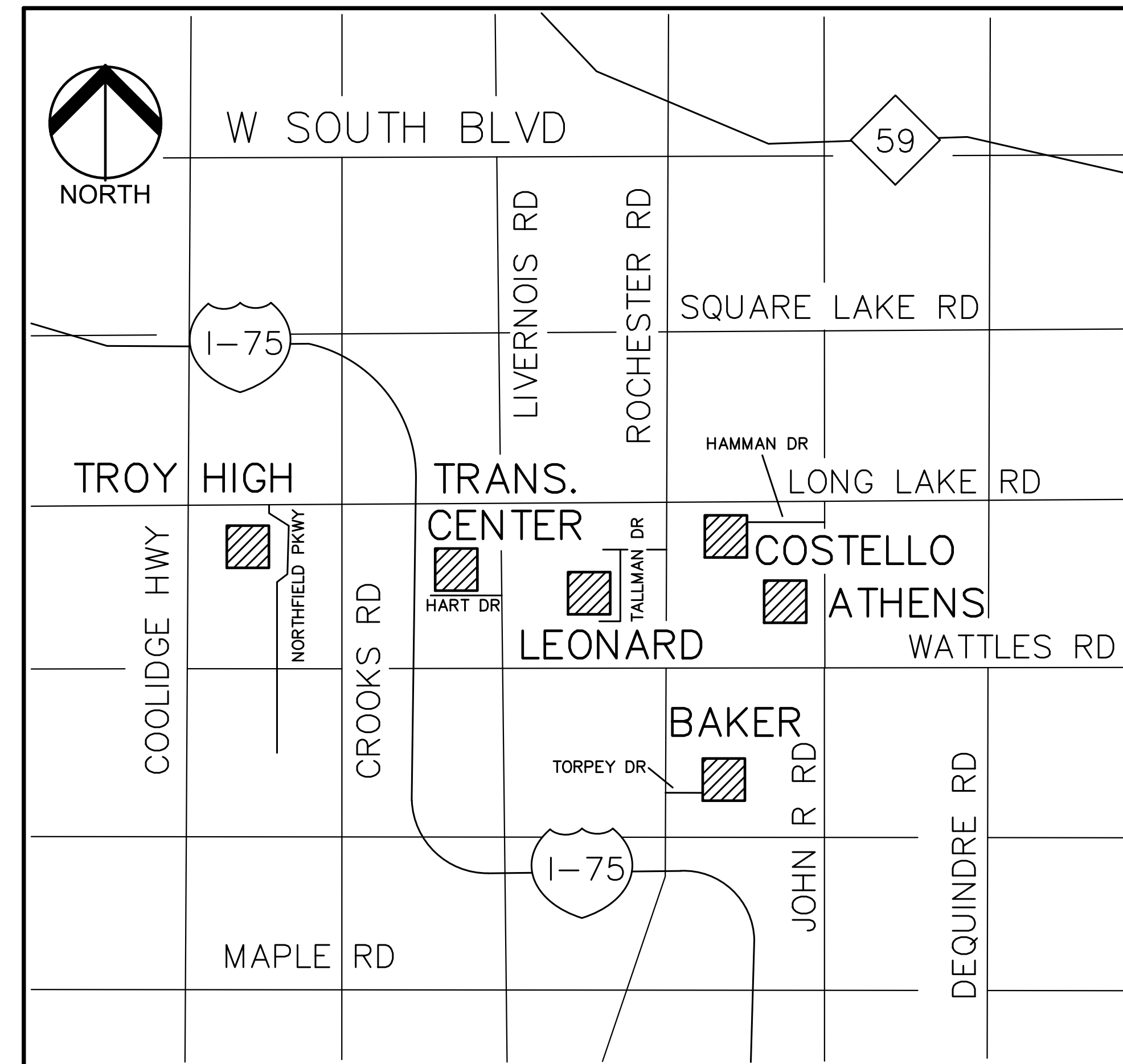
E-MAIL ADDRESS _____

CONSTRUCTION PLANS

TSD 2022 SITE IMPROVEMENTS - DRAINAGE PROJECTS

TROY, OAKLAND COUNTY, MICHIGAN

PERMIT / APPROVAL SUMMARY		
DATE SUBMITTED	DATE APPROVED	PERMIT / APPROVAL



LOCATION MAP
NO SCALE

Sheet List Table	
Sheet Number	Sheet Title
C-0.0	COVER SHEET
TROY ATHENS HIGH SCHOOL	
C-1.0	OVERALL TOPOGRAPHIC SURVEY
C-1.1	WEST BASIN TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
C-1.2	EAST BASIN TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
C-2.1	WEST BASIN GRADING AND SOIL EROSION PLAN
C-2.2	EAST BASIN GRADING AND SOIL EROSION PLAN
BAKER MIDDLE SCHOOL	
C-1.0	TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
C-2.0	GRADING AND SOIL EROSION PLAN
LEONARD ELEMENTARY SCHOOL	
C-1.0	TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
C-2.0	GRADING AND SOIL EROSION PLAN
TRANSPORTATION CENTER	
C-1.0	ENGINEERING PLAN
TROY HIGH SCHOOL	
C-1.0	TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
C-2.0	GRADING AND SOIL EROSION PLAN
COSTELLO ELEMENTARY SCHOOL	
C-1.0	TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
C-2.0	GRADING AND SOIL EROSION PLAN
C-4.0	NOTES AND DETAILS

DESIGN TEAM

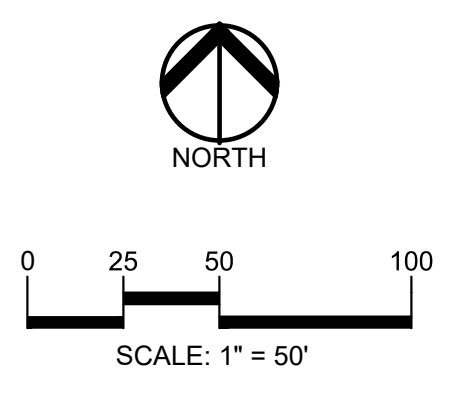
<p>OWNER</p> <p>TROY SCHOOL DISTRICT 1140 RANKIN TROY, MI 48063 CONTACT: ROB CARSON PHONE: 248.923.4067 EMAIL: RCARSON@TROY.K12.MI.US</p>	<p>CIVIL ENGINEER</p> <p>PEA GROUP 2430 ROCHESTER COURT, STE. 100 TROY, MI 48063-1872 CONTACT: ROBERT S. ROCHON, P.E. PHONE: 844.813.2949 EMAIL: RROCHON@PEAGROUP.COM</p>
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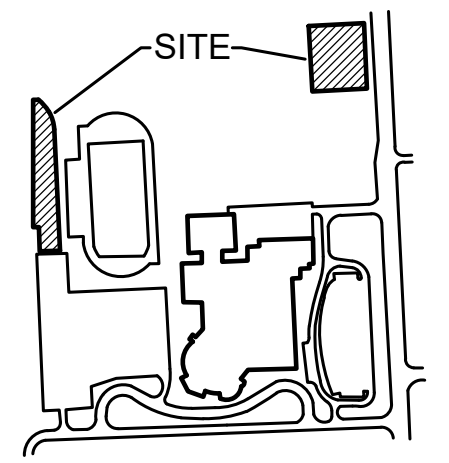
REVISIONS	
DESCRIPTION	DATE
ORIGINAL ISSUE DATE	11/24/2021
1-PER OWNER COMMENTS	12/1/2021
2-OUT TO BID	12/2/2021

LEGEND

- IRON FOUND
 - ⊗ IRON SET
 - ⊗ NAIL FOUND
 - ⊗ NAIL & CAP SET
 - ⊗ BRASS PLUG SET
 - ⊗ MONUMENT FOUND
 - ⊗ MONUMENT SET
 - ⊗ SEC. CORNER FOUND
 - R RECORDED
 - M MEASURED
 - C CALCULATED
- EXISTING**
- OH-ELEC- W-O- ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
 - UG-CATV- UG UNDERGROUND CABLE TV, CATV PEDESTAL
 - UG-PHONE- UG TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
 - UG-ELEC- UG ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
 - ⊗ GAS VALVE & GAS LINE MARKER
 - ⊗ WATERMAIN, HYD. GATE VALVE, TAPPING BLEEVE & VALVE
 - ⊗ SANITARY SEWER, CLEANOUT & MANHOLE
 - ⊗ STORM SEWER, CLEANOUT & MANHOLE
 - ⊗ COMBINED SEWER & MANHOLE
 - ⊗ SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
 - ⊗ POST INDICATOR VALVE
 - ⊗ WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
 - ⊗ MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
 - ⊗ UNIDENTIFIED STRUCTURE
 - ⊗ SPOT ELEVATION
 - CONTOUR LINE
 - FENCE
 - GUARD RAIL
 - STREET LIGHT
 - SIGN
 - CONC. CONCRETE
 - ASPH. ASPHALT
 - GRAVEL GRAVEL SHOULDER
 - WETLAND WETLAND



CAUTION!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
TROY ATHENS HIGH SCHOOL
4333 JOHN R ROAD, TROY, MI

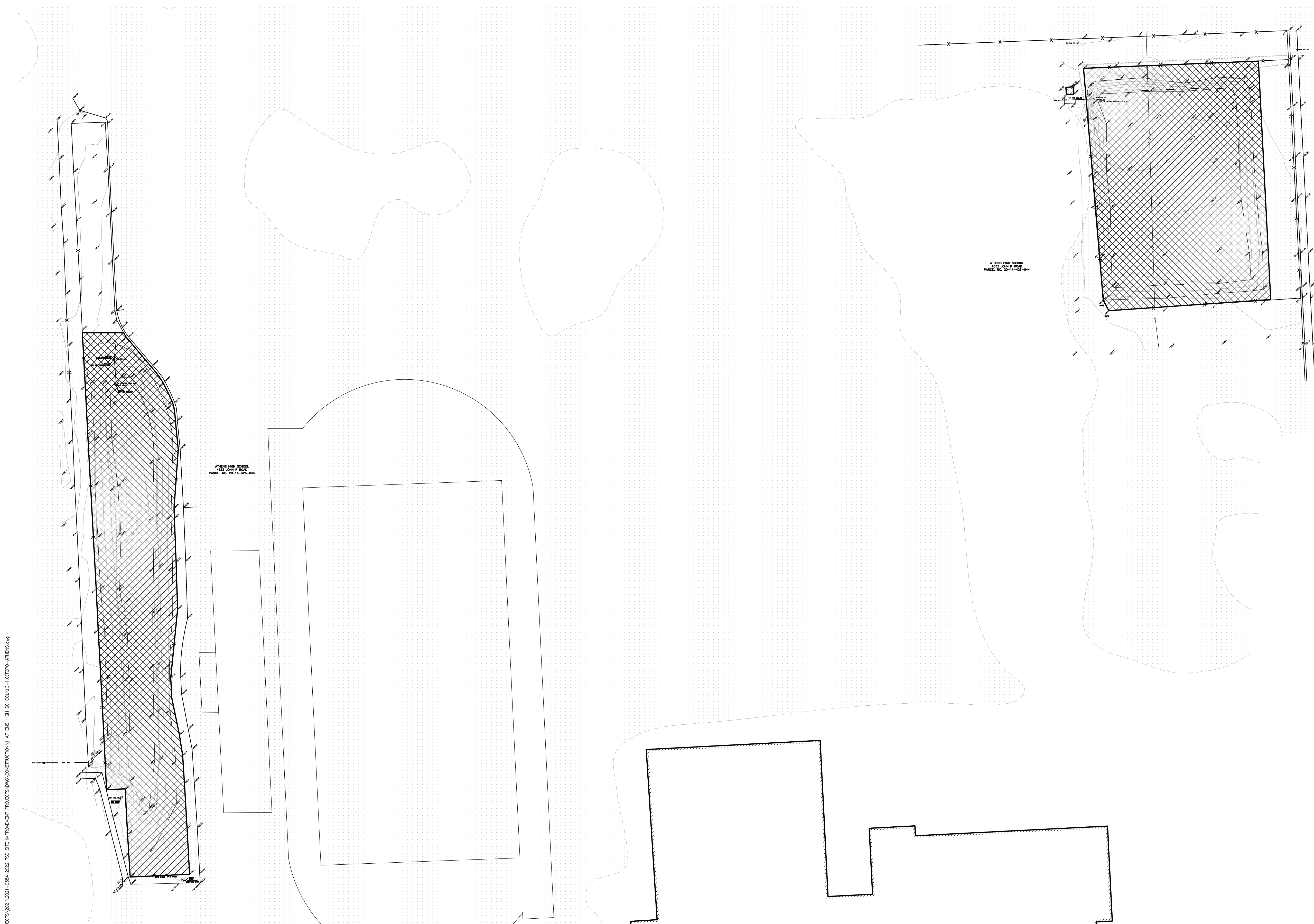
REVISIONS	
1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21

ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
OVERALL TOPOGRAPHIC SURVEY

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS

DRAWING NUMBER:
C-1.0



NOTES:
1. CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS. ANY DEVIATIONS TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.

DEMOLITION QUANTITIES:
CLEAR TREES AND BRUSH 1.93 AC

DEMOLITION LEGEND:
TREE AND BRUSH REMOVAL

GENERAL DEMOLITION NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:

1. ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
2. ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
3. STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
4. SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT WILL NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
5. REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES FOUNDATIONS, FOOTINGS, FOUNDATION WALLS, FLOOR SLABS, UNDERGROUND UTILITIES, CONCRETE, ASPHALT, TREES, ETC.
6. THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15 FEET OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
8. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
9. THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITY LEADS HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION.
10. ALL BUILDING GAS LEADS, METERS AND ASSOCIATED EQUIPMENT SHALL BE REMOVED AS SHOWN ON THE PLANS. COORDINATE ALL ASSOCIATED WORK WITH THE APPROPRIATE UTILITY COMPANY.
11. REMOVE ALL OVERHEAD AND UNDERGROUND ELECTRICAL LINES WITHIN THE AREA OF CONSTRUCTION AS SHOWN ON THE PLANS. COORDINATE SHUTDOWNS AND REMOVALS WITH ELECTRICAL SERVICE PROVIDER OR THE APPROPRIATE UTILITY COMPANY. (NOTE: PHONE AND CABLE T.V. SERVICES MAY ALSO BE LOCATED ON OVERHEAD LINES.)
12. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA, AS NECESSARY TO FACILITATE CONSTRUCTION. SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
13. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊙ SEC. CORNER FOUND
⊗ IRON SET	⊗ MONUMENT FOUND	R RECORDED
⊗ NAIL FOUND	⊗ MONUMENT SET	M MEASURED
⊗ NAIL & CAP SET		C CALCULATED

EXISTING

-OH-ELEC-	ELEC. PHONE OR CABLE TV, POLE & GUY WIRE
-UG-CATV-	UNDERGROUND CABLE TV, CATV PEDESTAL
-UG-PHONE-	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
-UG-ELEC-	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
	GAS MARK VALVE & GAS LINE MARKER
	WATERMAN, HYD., GATE VALVE, TAPPING BLEEVE & VALVE
	SANITARY SEWER, CLEANOUT & MANHOLE
	STORM SEWER, CLEANOUT & MANHOLE
	COMBINED SEWER & MANHOLE
	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
	POST INDICATOR VALVE
	WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
	MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
	UNIDENTIFIED STRUCTURE

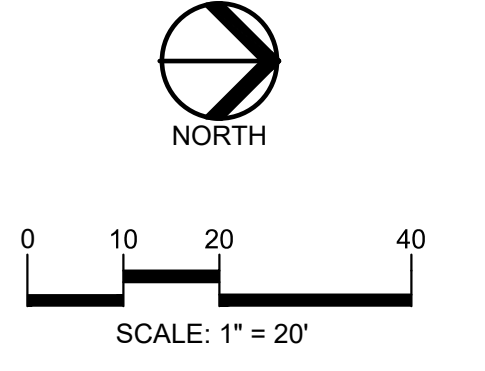
SPOT ELEVATION

6.70 CONTOUR LINE

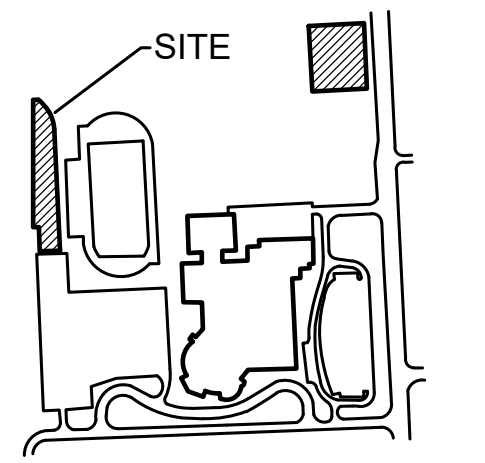
 FENCE
 GUARD RAIL
 STREET LIGHT
 SIGN
 CONC. CONCRETE
 ASPHL. ASPHALT
 GRAVEL SHOULDER
 WETLAND

DEMOLITION LEGEND:

TREE AND BRUSH REMOVAL



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CLIENT
TROY SCHOOLS
 1140 RANKIN
 TROY, MI 48063

PROJECT TITLE
TROY ATHENS HIGH SCHOOL
 4333 JOHN R ROAD, TROY, MI

REVISIONS

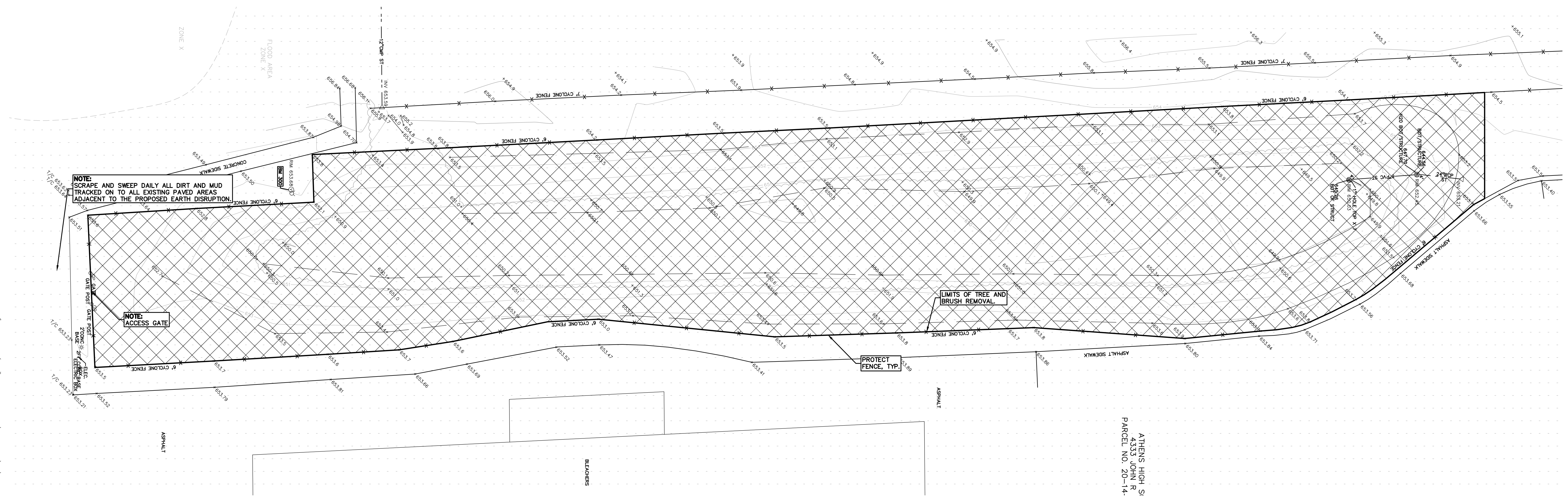
1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21

ORIGINAL ISSUE DATE:
 NOVEMBER 24, 2021

DRAWING TITLE
WEST BASIN TOPOGRAPHIC SURVEY AND DEMOLITION PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS

DRAWING NUMBER:
C-1.1



DEMOLITION LEGEND:

TREE AND BRUSH REMOVAL

LEGEND

IRON FOUND	BRASS PLUG SET	SEC. CORNER FOUND
IRON SET	MONUMENT FOUND	R. RECORDED
NAIL FOUND	NAIL & CAP SET	M. MEASURED
MONUMENT SET		C. CALCULATED

EXISTING

OH-ELEC	ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
UG-CATV	UNDERGROUND CABLE TV, CATV PEDESTAL
UG-PHONE	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
UG-ELEC	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
GAS MAIN	GAS MAIN, VALVE & GAS LINE MARKER
WATER MAIN	WATER MAIN, HYD. GATE VALVE, TAPPING BLEEVE & VALVE
SANITARY SEWER	SANITARY SEWER, CLEANOUT & MANHOLE
STORM SEWER	STORM SEWER, CLEANOUT & MANHOLE
COMBINED SEWER	COMBINED SEWER & MANHOLE
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
POST RISER VALVE	POST RISER VALVE
WATER VALVE	WATER VALVE BOOBYDRANT VALVE BOX, SERVICE SHUTOFF
MAILBOX	MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
UNIDENTIFIED STRUCTURE	UNIDENTIFIED STRUCTURE
SPOT ELEVATION	SPOT ELEVATION
CONTOUR LINE	CONTOUR LINE
FENCE	FENCE
GUARD RAIL	GUARD RAIL
STREET LIGHT	STREET LIGHT
SIGN	SIGN
CONC.	CONCRETE
ASPHL.	ASPHALT
GRAVEL	GRAVEL SHOULDER
WETLAND	WETLAND

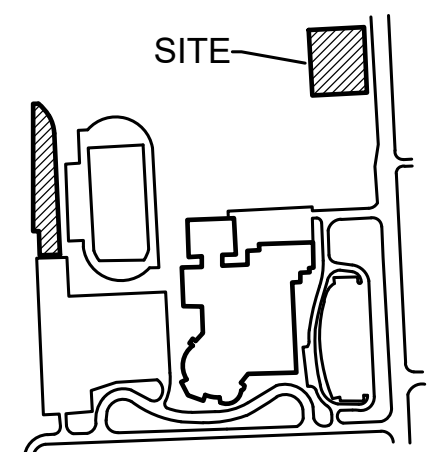
NORTH

0 10 20 40

SCALE: 1" = 20'

811 Know what's below. Call before you dig.

CAUTION!
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CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
TROY ATHENS HIGH SCHOOL
4333 JOHN R ROAD, TROY, MI

REVISIONS

1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21

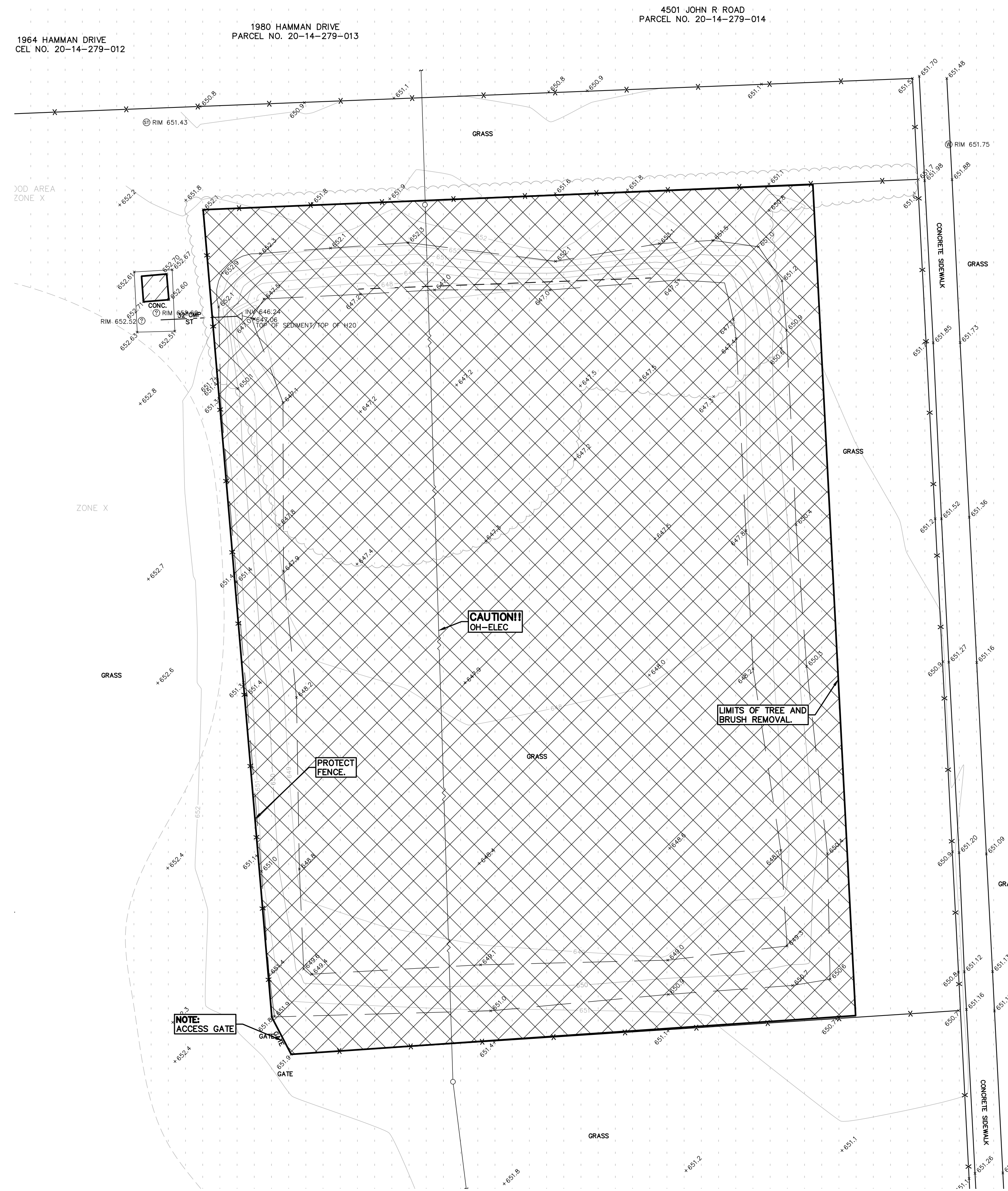
ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
EAST BASIN TOPOGRAPHIC SURVEY AND DEMOLITION PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS

DRAWING NUMBER:

C-1.2



JOHN R ROAD
(VARIABLE WIDTH)

- GENERAL DEMOLITION NOTES:**
- THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:
- ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
 - ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
 - STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
 - SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
 - REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES FOUNDATIONS, FOOTINGS, FOUNDATION WALLS, FLOOR SLABS, UNDERGROUND UTILITIES, CONCRETE, ASPHALT, TREES, ETC.
 - THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15 FEET OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
 - THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
 - THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITY LEADS HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION.
 - ALL BUILDING GAS LEADS, METERS AND ASSOCIATED EQUIPMENT SHALL BE REMOVED AS SHOWN ON THE PLANS. COORDINATE ALL ASSOCIATED WORK WITH THE APPROPRIATE UTILITY COMPANY.
 - REMOVE ALL OVERHEAD AND UNDERGROUND ELECTRICAL LINES WITHIN THE AREA OF CONSTRUCTION AS SHOWN ON THE PLANS. COORDINATE SHUTDOWNS AND REMOVALS WITH ELECTRICAL SERVICE PROVIDER OR THE APPROPRIATE UTILITY COMPANY. (NOTE: PHONE AND CABLE T.V. SERVICES MAY ALSO BE LOCATED ON OVERHEAD LINES.)
 - THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA. AS NECESSARY TO FACILITATE CONSTRUCTION, SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
 - THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

Proposed Pond Volume			
Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
646.0	2,137	0	0
647.0	4,420	3,279	3,279
648.0	7,502	5,961	9,240
649.0	1,027	4,265	13,504
650.0	13,069	7,048	20,552
651.0	18,547	15,808	36,360
652.0	24,468	21,508	57,868
653.0	30,431	27,450	85,317

EROSION CONTROL QUANTITIES:	
SILT FENCE	389 LF
EMBANKMENT RESTORATION	8,785 SY
LAWN RESTORATION AREA	4,230 SY

ENGINEERING QUANTITIES:	
RESTORE EXISTING OUTLET CONTROL STRUCTURE	1 EA.
36" OUTLET CONTROL STRUCTURE	1 EA.
32" CORRUGATED METAL PIPE	13 LF
MUCK DETENTION POND	1,667 CY

SYMBOLS: GRADING

PROPOSED SPOT ELEVATION:
 TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.

PROPOSED CONTOUR LINE — 722 —

ABBREVIATIONS:
 T/C = TOP OF CURB
 G = GUTTER GRADE
 T/P = TOP OF PAVEMENT
 T/S = TOP OF SIDEWALK
 T/W = TOP OF WALL
 B/W = BOTTOM OF WALL
 F.G. = FINISH GRADE
 RIM = RIM ELEVATION

SYMBOLS: EROSION CONTROL:

(SP-2) SILT FENCE

(E-9) EROSION CONTROL BLANKET

LAWN RESTORATION

EMBANKMENT RESTORATION

REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.

NOTE:
 REFER TO SHEET C-4.0 FOR SOIL EROSION SCHEDULE AND NOTES, AND SEQUENCE OF CONSTRUCTION.

EARTHWORK BALANCING NOTE:
 THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING OR EXPORTING ALL MATERIALS AS REQUIRED TO PROPERLY GRADE THIS PROJECT TO THE FINISHED ELEVATIONS SHOWN ON THE APPROVED PLANS. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF CUT AND FILL QUANTITIES AND ALLOW FOR REMOVAL OF EXCESS OR IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

GENERAL SITE CONDITIONS:

- ACCORDING TO THE USGS WEB SOIL SURVEY DATED NOVEMBER 23, 2021, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:
 41B - AQUENTS, SANDY, LOAMY, UNDULATING
- TOTAL DISTURBED AREA = ±2.27 ACRES
- N.P.D.E.S. NOTICE OF COVERAGE IS NOT REQUIRED

- NOTE:**
- PER THE SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE PER THE PROJECT SPECIFICATIONS, PRIOR TO THE PLACEMENT OF TOPSOIL THE SUCCESSFUL BIDDER TO SCHEDULE AN INSPECTION BY THE SCHOOL BOARD OR PEA GROUP TO CONFIRM THAT THE GRADE IS AT THE PROPER ELEVATION WHERE THE MINIMUM DEPTH OF TOPSOIL CAN BE PLACED THROUGHOUT THE AREA.
 - CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS, ANY DEVIATION TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.
 - WORK IS CURRENTLY ANTICIPATED TO BE COMPLETED IN THE WINTER WITH FROZEN GROUND. ADDITIONAL BMPs TO BE ADDED AS NEEDED IF WORK IS NOT COMPLETED BY SPRING OR PRIOR TO GROUND THAWING.
 - RE-GRADING OF THE POND AREAS SHALL BE INCLUDED IN THE COSTS OF THE PROJECT PER LIMITS SHOWN IN THE PLANS.
 - DISTRICT TO REVIEW SITE IN THE SPRING TO DETERMINE ANY GRASS AREAS AND IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION INCLUDING INGRESS/EGRESS AREAS TO THE PONDS. CONTRACTOR IS RESPONSIBLE TO RESTORE ALL DAMAGED AREAS AND IRRIGATION SYSTEM TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE DISTRICT.

LEGEND

EXISTING

- IRON FOUND
- IRON SET
- NAIL FOUND
- NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND
- MONUMENT SET

PROPOSED

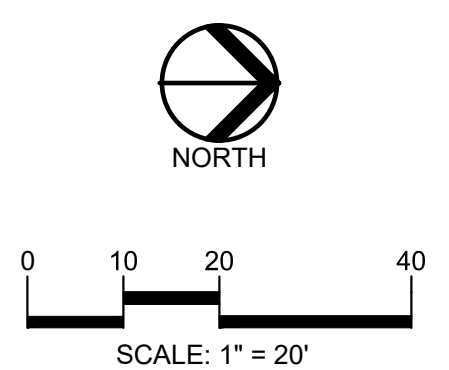
- ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
- UNDERGROUND CABLE TV, CATV PEDESTAL
- TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
- ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
- GAS MAIN, VALVE & GAS LINE MARKER
- WATERMAIN, HYD. GATE VALVE, TAPPING BLEEDIE & VALVE
- SANITARY SEWER, CLEANOUT & MANHOLE
- STORM SEWER, CLEANOUT & MANHOLE
- COMBINED SEWER & MANHOLE
- SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
- POST INDICATOR VALVE
- WATER VALVE BOOBYHOUND VALVE BOX, SERVICE SHUTOFF
- MALBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE
- SPOT ELEVATION
- CONTOUR LINE
- FENCE
- GUARD RAIL
- STREET LIGHT
- SIGN
- CONC.
- CONCRETE
- ASPH.
- ASPHALT
- GRAVEL
- GRAVEL SHOULDER
- WETLAND

SEC. CORNER FOUND

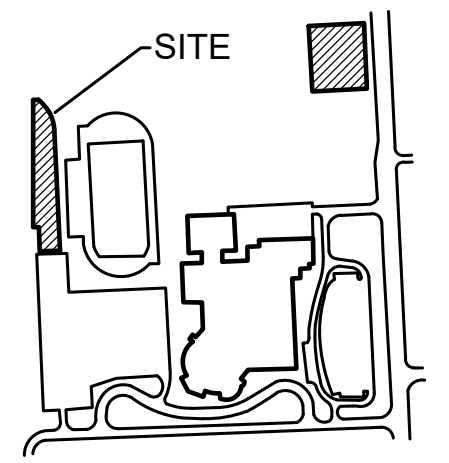
- R RECORDED
- M MEASURED
- C CALCULATED

310 HEAVY FLOW DUTY ONLY

310 HEAVY DEEP DUTY STRENGTH



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CLIENT
TROY SCHOOLS
 1140 RANKIN
 TROY, MI 48063

PROJECT TITLE
TROY ATHENS HIGH SCHOOL
 4333 JOHN R. ROAD, TROY, MI

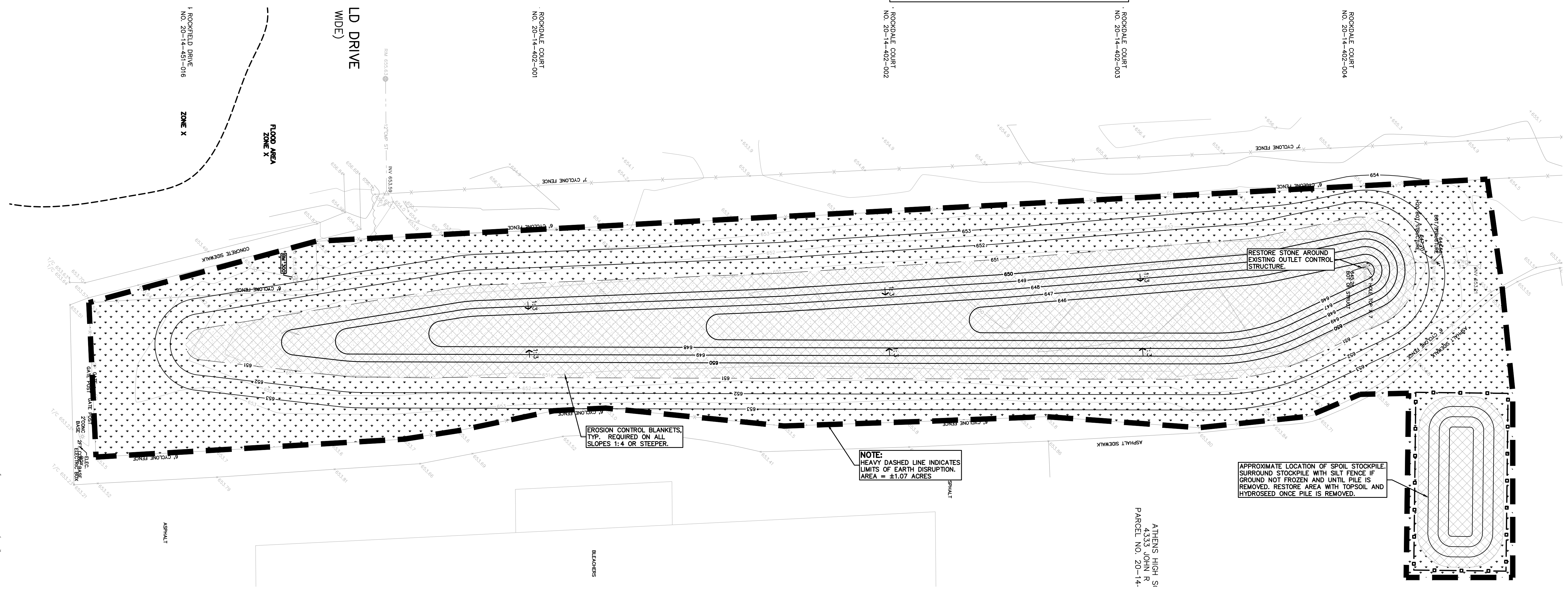
REVISIONS	
1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21

ORIGINAL ISSUE DATE:
 NOVEMBER 24, 2021

DRAWING TITLE
WEST BASIN GRADING AND SOIL EROSION PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS
DRAWING NUMBER:	

C-2.1



STORM DETENTION RE DEVELOPMENT DESIGN

Contributing Area (A): 15.090 AC.
Coefficient of Runoff (C): 0.530

STORAGE VOLUME REQUIRED:

Sedimentation Volume Required:
 $V_s = 15\% \times V_{10} \times C$
 $V_s = 4354.96$ Cu. Ft.

Original Detention Design Volume = 93475 Cu. Ft.

Proposed Pond

CONTOUR	AREA	VOLUME	CUMM	Vf	Detention
647	1,752	-	-	-	-
648	20,140	10,946	10,946	647.40	-
649	35,882	28,011	38,957	-	-
650	38,905	37,394	76,351	-	650.42
651	42,028	40,467	116,817	-	-

Outlet Control Restriction Calculations

Maximum Storage Elevation: 647.40 ft
Restriction Hole Invert: 647.00 ft
Depth of Water in Pipe: 0.40 ft
Restriction Hole Dia.: 1.75 in
Restriction Hole Area: 0.01670 sq ft
Flow thru Restriction Hole: 0.05 cfs
Time for Release of Volume: 24.19 hrs

NOTE:

REFER TO SHEET C-4.0 FOR SOIL EROSION SCHEDULE AND NOTES, AND SEQUENCE OF CONSTRUCTION.

NOTE:

- PER THE SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE FOR THE PROJECT SPECIFICATIONS; PRIOR TO THE PLACEMENT OF TOPSOIL THE SUCCESSFUL BIDDER TO SCHEDULE AN INSPECTION BY THE SCHOOL BOARD OR PEA GROUP TO CONFIRM THAT THE GRADE IS AT THE PROPER ELEVATION WHERE THE MINIMUM DEPTH OF TOPSOIL CAN BE PLACED THROUGHOUT THE AREA.
- CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS, ANY DEVIATION TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.
- WORK IS CURRENTLY ANTICIPATED TO BE COMPLETED IN THE WINTER WITH FROZEN GROUND. ADDITIONAL BMPs TO BE ADDED AS NEEDED IF WORK IS NOT COMPLETED BY SPRING OR PRIOR TO GROUND THAWING.
- RE-GRADING OF THE POND AREAS SHALL BE INCLUDED IN THE COSTS OF THE PROJECT PER LIMITS SHOWN IN THE PLANS.
- DISTRICT TO REVIEW SITE IN THE SPRING TO DETERMINE ANY GRASS AREAS AND IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION INCLUDING INGRESS/EGRESS AREAS TO THE PONDS. CONTRACTOR IS RESPONSIBLE TO RESTORE ALL DAMAGED AREAS AND IRRIGATION SYSTEM TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE DISTRICT.

JOHN R ROAD
(VARIABLE WIDTH)

LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊙ SEC. CORNER FOUND
⊗ IRON SET	⊗ MONUMENT FOUND	R RECORDED
⊗ NAIL FOUND	⊗ MONUMENT SET	M MEASURED
⊗ NAIL & CAP SET		C CALCULATED

EXISTING	PROPOSED
H-ELEC- ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE	UNDERGROUND CABLE TV, CATV PEDESTAL
UG-PHONE- TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
E-ELEC- GAS MAIN, VALVE & GAS LINE MARKER	WATERMAIN, HYD. GATE VALVE, TAPPING BLEWIE & VALVE
SANITARY SEWER, CLEANOUT & MANHOLE	STORM SEWER, CLEANOUT & MANHOLE
COMBINED SEWER & MANHOLE	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
POST INDICATOR VALVE	WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF
MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE	UNIDENTIFIED STRUCTURE
SPOT ELEVATION	CONTOUR LINE
FENCE	GUARD RAIL
STREET LIGHT	SIGN
CONC.	ASPHALT
ASPHALT	ASPHALT
GRAVEL	GRAVEL SHOULDER
WETLAND	WETLAND

SYMBOLS: GRADING

PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES. 722.50

PROPOSED CONTOUR LINE 722

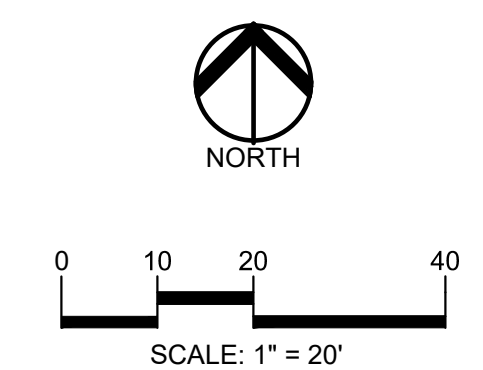
ABBREVIATIONS:

- T/C = TOP OF CURB
- G = GUTTER GRADE
- T/P = TOP OF PAVEMENT
- T/S = TOP OF SIDEWALK
- T/W = TOP OF WALL
- B/W = BOTTOM OF WALL
- F.G. = FINISH GRADE
- RIM = RIM ELEVATION

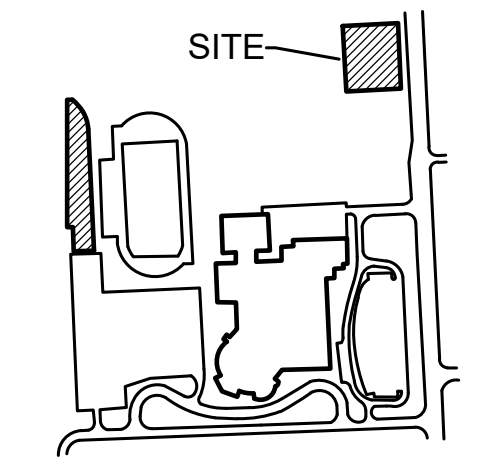
SYMBOLS: EROSION CONTROL:

- (SP-2) SILT FENCE
- (E-9) EROSION CONTROL BLANKET
- LAWN RESTORATION
- EMBANKMENT RESTORATION

REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.



CAUTION!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
TROY ATHENS HIGH SCHOOL
4333 JOHN R. ROAD, TROY, MI

REVISIONS

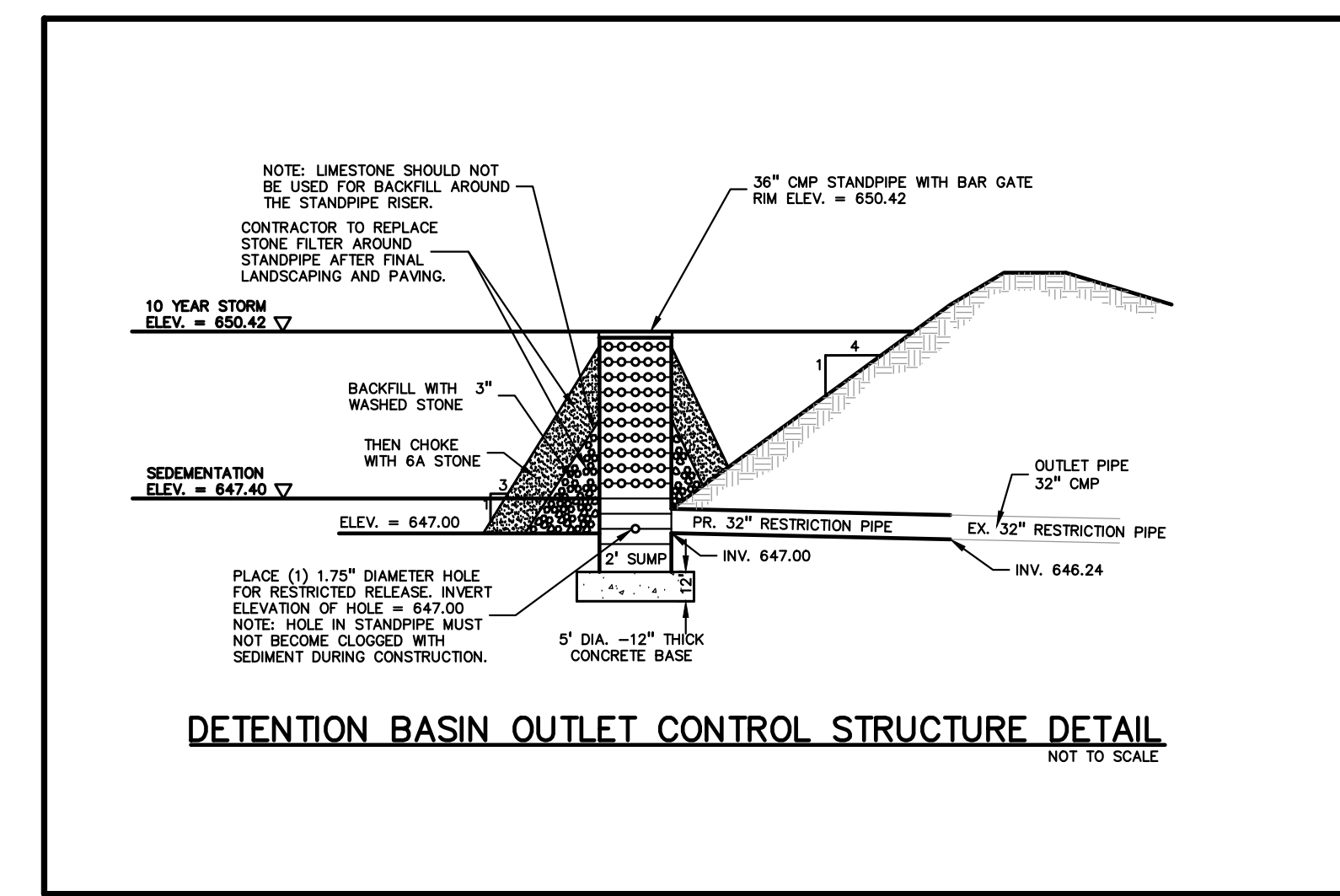
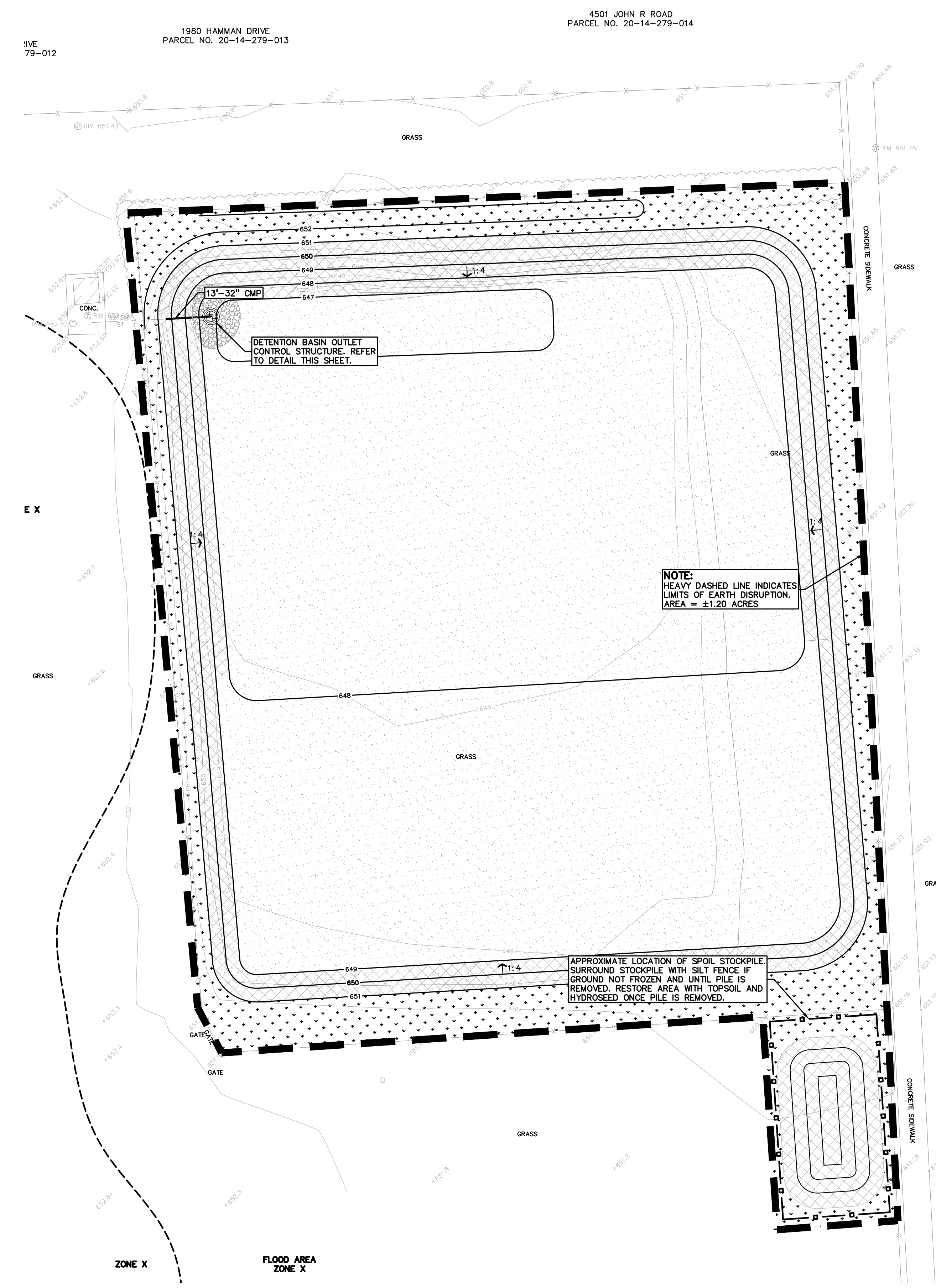
1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21

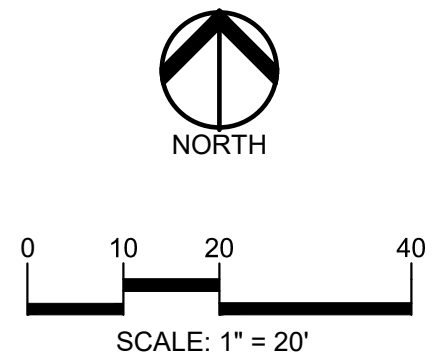
ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
EAST BASIN GRADING AND SOIL EROSION PLAN

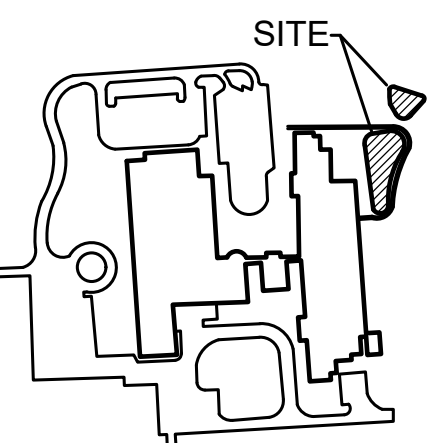
PEA JOB NO. 2021-0584
P.M. RR
DN. KMM
DES. JDS

DRAWING NUMBER:
C-2.2





CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
BAKER MIDDLE SCHOOL
1359 TORPEY DRIVE, TROY, MI

REVISIONS	
1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21

ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS

DRAWING NUMBER:

C-1.0

LEGEND

EXISTING	PROPOSED
● IRON FOUND	⊗ BRASS PLUG SET
⊗ IRON SET	⊗ MONUMENT FOUND
● NAIL FOUND	⊗ MONUMENT SET
⊗ NAIL & CAP SET	⊗ SEC. CORNER FOUND
	R RECORDED
	M MEASURED
	C CALCULATED
—OH-ELEC—	ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
—UG-CATV—	UNDERGROUND CABLE TV, CATV PEDESTAL
⊗ UG-PHONE	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
⊗ UG-ELEC	ELECTRIC U.G. CABLE, MANHOLE, METER & MANHOLE
⊗	GAS MAIN, VALVE & GAS LINE MARKER
⊗	WATERMAIN, HYD. GATE VALVE, TAPPING SLEEVE & VALVE
⊗	SANITARY SEWER, CLEANOUT & MANHOLE
⊗	STORM SEWER, CLEANOUT & MANHOLE
⊗	COMBINED SEWER & MANHOLE
⊗	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
⊗	POST INDICATOR VALVE
⊗	WATER VALVE BODY/DIAPHRAGM VALVE BOX, SERVICE SHUTOFF
⊗	MALBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
⊗	UNIDENTIFIED STRUCTURE
⊗	SPOT ELEVATION
—	CONTOUR LINE
—	FENCE
—	GUARD RAIL
—	STREET LIGHT
—	SIGN
CONC.	CONCRETE
ASPH.	ASPHALT
GRAVEL	GRAVEL SHOULDER
▲	WETLAND
	STD. HEAVY FLOW DUTY
	STD. HEAVY FLOW DUTY ONLY
	STD. HEAVY REEP DUTY
	STD. HEAVY REEP DUTY STRENGTH

NOTES:

- CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS. ANY DEVIATIONS TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.

DEMOLITION QUANTITIES:

CLEAR TREES AND BRUSH 0.60 AC

DEMOLITION LEGEND:

ITEM TO BE PROTECTED	⊗
ITEM TO BE REMOVED	⊗
TREE AND BRUSH REMOVAL	⊗

GENERAL DEMOLITION NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:

- ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE, BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
- ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
- STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
- SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT WILL NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
- REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES FOUNDATIONS, FOOTINGS, FOUNDATION WALLS, FLOOR SLABS, UNDERGROUND UTILITIES, CONCRETE, ASPHALT, TREES, ETC.
- THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15 FEET OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
- THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
- THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITY LEADS HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION.
- ALL BUILDING GAS LEADS, METERS AND ASSOCIATED EQUIPMENT SHALL BE REMOVED AS SHOWN ON THE PLANS. COORDINATE ALL ASSOCIATED WORK WITH THE APPROPRIATE UTILITY COMPANY.
- REMOVE ALL OVERHEAD AND UNDERGROUND ELECTRICAL LINES WITHIN THE AREA OF CONSTRUCTION AS SHOWN ON THE PLANS. COORDINATE SHUTDOWNS AND REMOVALS WITH ELECTRICAL SERVICE PROVIDER OR THE APPROPRIATE UTILITY COMPANY. (NOTE: PHONE AND CABLE T.V. SERVICES MAY ALSO BE LOCATED ON OVERHEAD LINES.)
- THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA, AS NECESSARY TO FACILITATE CONSTRUCTION. SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.



BAKER JUNIOR HIGH SCHOOL
1359 TORPEY DRIVE
PARCEL NO. 20-23-326-002

LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊙ SEC. CORNER FOUND
⊗ IRON SET	⊗ MONUMENT FOUND	R RECORDED
⊗ NAIL FOUND	⊗ MONUMENT SET	M MEASURED
⊗ NAIL & CAP SET		C CALCULATED

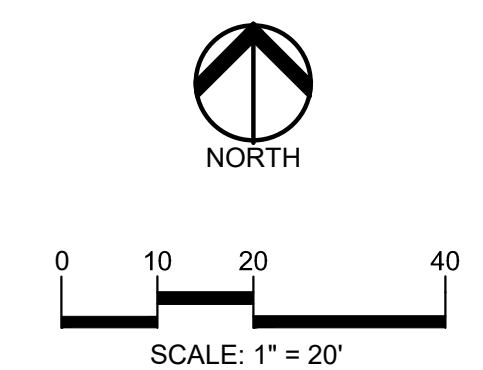
—OH—ELEC—	ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE	
—UG—CATV—	UNDERGROUND CABLE TV, CATV PEDESTAL	
—UG—PHONE—	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE	
—UG—ELEC—	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
—GAS—	GAS MAIN, VALVE & GAS LINE MARKER	
—WATER—	WATER MAIN, HYD. GATE VALVE, TAPPING SLEEVE & VALVE	
—SEWER—	SANITARY SEWER, CLEANOUT & MANHOLE	
—CS—	STORM SEWER, CLEANOUT & MANHOLE	
—C/S—	COMBINED SEWER & MANHOLE	
□	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	
○	POST INDICATOR VALVE	
○	WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF	
□	MALBOX, TRANSFORMER, IRRIGATION CONTROL VALVE	
□	UNIDENTIFIED STRUCTURE	
○	SPOT ELEVATION	
—	CONTOUR LINE	
—	FENCE	
—	GUARD RAIL	
—	STREET LIGHT	
—	SIGN	
—	CONC.	CONCRETE
—	ASPH.	ASPHALT
—	GRAVEL	GRAVEL SHOULDER
—	WETLAND	WETLAND

SYMBOLS: GRADING

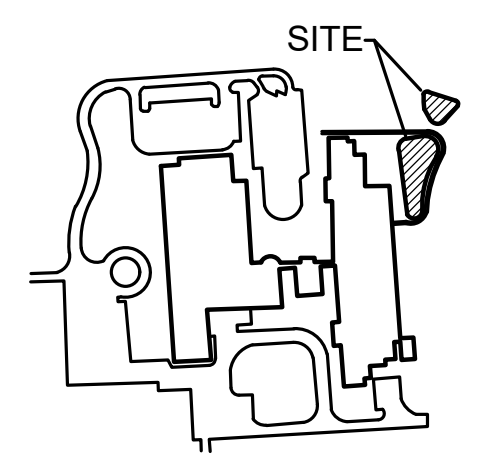
PROPOSED SPOT ELEVATION: 722.50
TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.

PROPOSED CONTOUR LINE: 722

ABBREVIATIONS:
T/C = TOP OF CURB
G = GUTTER GRADE
T/P = TOP OF PAVEMENT
T/S = TOP OF SIDEWALK
T/W = TOP OF WALL
B/W = BOTTOM OF WALL
F.G. = FINISH GRADE
RIM = RIM ELEVATION



CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
BAKER MIDDLE SCHOOL
1359 TORPEY DRIVE, TROY, MI

REVISIONS

1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21

ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
GRADING AND SOIL EROSION PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS

DRAWING NUMBER:
C-2.0

BAKER JUNIOR HIGH SCHOOL
1359 TORPEY DRIVE
PARCEL NO. 20-23-326-002

NOTE:
HEAVY DASHED LINE INDICATES LIMITS OF EARTH DISRUPTION. AREA = ±0.94 ACRES.

CONTRACTOR TO GRADE BOTTOM OF BASIN TO PROVIDE POSITIVE DRAINAGE TO OUTLET, TYP.

RESTORE STONE AROUND EXISTING OUTLET CONTROL STRUCTURE.

RIPRAP AT END SECTION, TYP. REFER TO DETAIL THIS SHEET.

APPROXIMATE LOCATION OF SPOIL STOCKPILE. SURROUND STOCKPILE WITH SILT FENCE IF GROUND NOT FROZEN AND UNTIL PILE IS REMOVED. RESTORE AREA WITH TOPSOIL AND HYDROSEED ONCE PILE IS REMOVED.

RIPRAP AT END SECTION, TYP. REFER TO DETAIL THIS SHEET.

CONTRACTOR TO GRADE BOTTOM OF BASIN TO PROVIDE POSITIVE DRAINAGE TO OUTLET, TYP.

NOTE:
REFER TO SHEET C-4.0 FOR SOIL EROSION SCHEDULE AND NOTES, AND SEQUENCE OF CONSTRUCTION.

EROSION CONTROL QUANTITIES:

SILT FENCE	211 LF
EMBANKMENT RESTORATION	2,331 SY
LAWN RESTORATION AREA	2,040 SY

ENGINEERING QUANTITIES:

RESTORE EXISTING OUTLET CONTROL STRUCTURE	1 EA.
RIPRAP	30 CY
MUCK DETENTION POND	7.5 CY

- NOTE:**
- PER THE SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE PER THE PROJECT SPECIFICATIONS. PRIOR TO THE PLACEMENT OF TOPSOIL THE SUCCESSFUL BIDDER TO SCHEDULE AN INSPECTION BY THE SCHOOL BOARD OR PEA GROUP TO CONFIRM THAT THE GRADE IS AT THE PROPER ELEVATION WHERE THE MINIMUM DEPTH OF TOPSOIL CAN BE PLACED THROUGHOUT THE AREA.
 - CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS. ANY DEVIATION TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.
 - WORK IS CURRENTLY ANTICIPATED TO BE COMPLETED IN THE WINTER WITH FROZEN GROUND. ADDITIONAL BMPs TO BE ADDED AS NEEDED IF WORK IS NOT COMPLETED BY SPRING OR PRIOR TO GROUND THAWING.
 - RE-GRADING OF THE POND AREAS SHALL BE INCLUDED IN THE COSTS OF THE PROJECT PER LIMITS SHOWN IN THE PLANS.
 - DISTRICT TO REVIEW SITE IN THE SPRING TO DETERMINE ANY GRASS AREAS AND IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION INCLUDING INGRESS/EGRESS AREAS TO THE PONDS. CONTRACTOR IS RESPONSIBLE TO RESTORE ALL DAMAGED AREAS AND IRRIGATION SYSTEM TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE DISTRICT.

EARTHWORK BALANCING NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING OR EXPORTING ALL MATERIALS AS REQUIRED TO PROPERLY GRADE THIS PROJECT TO THE FINISHED ELEVATIONS SHOWN ON THE APPROVED PLANS. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF CUT AND FILL QUANTITIES AND ALLOW FOR REMOVAL OF EXCESS OR IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

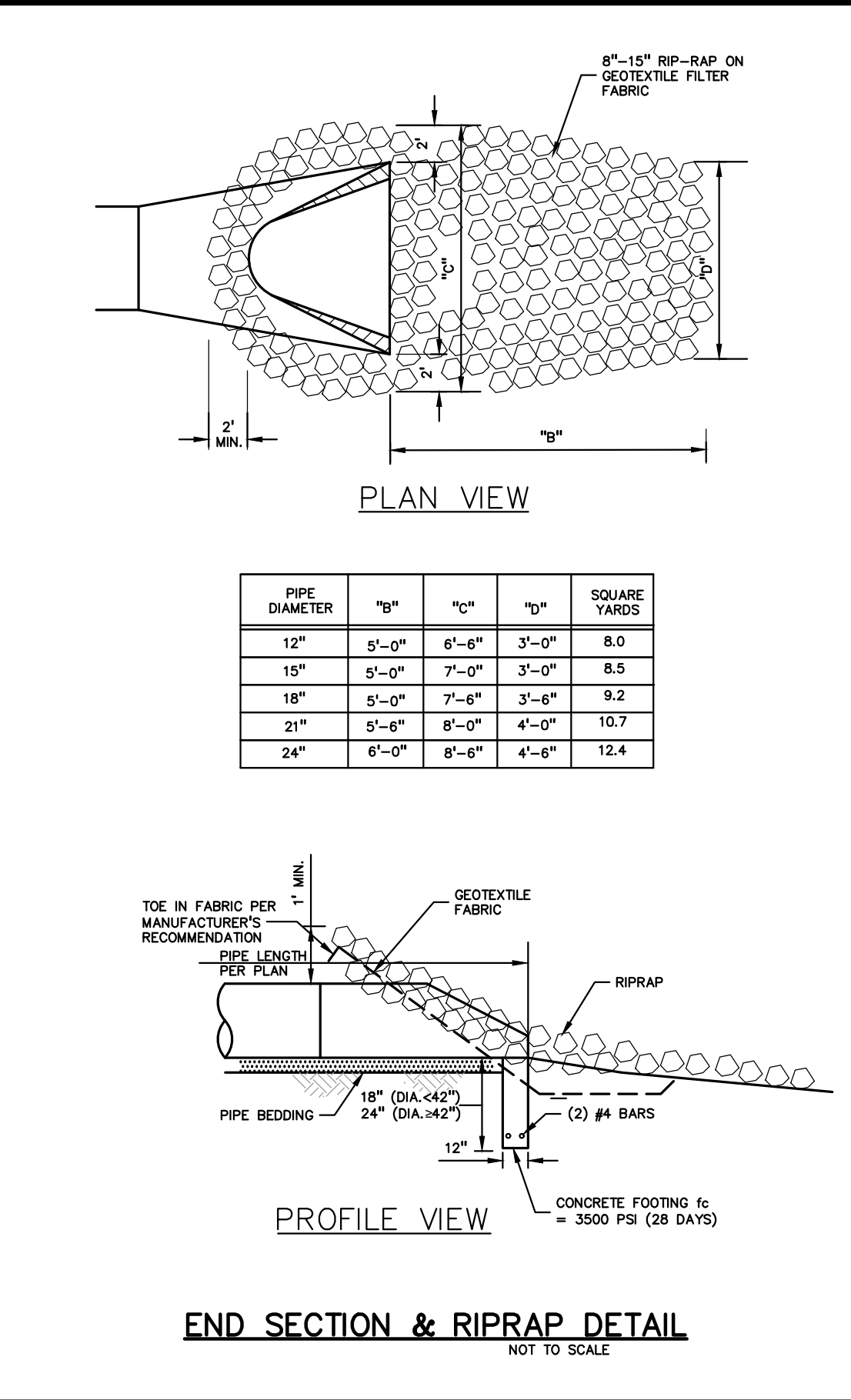
- GENERAL SITE CONDITIONS:**
- ACCORDING TO THE USGS WEB SOIL SURVEY DATED NOVEMBER 23, 2021, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:
12 - BROOKSTON AND COALWOOD LOAMS
52A - SELFRIDGE LOAMY SAND, 0 TO 3 PERCENT LOAMS
 - TOTAL DISTURBED AREA = ±0.94 ACRES
 - N.P.D.E.S. NOTICE OF COVERAGE IS NOT REQUIRED

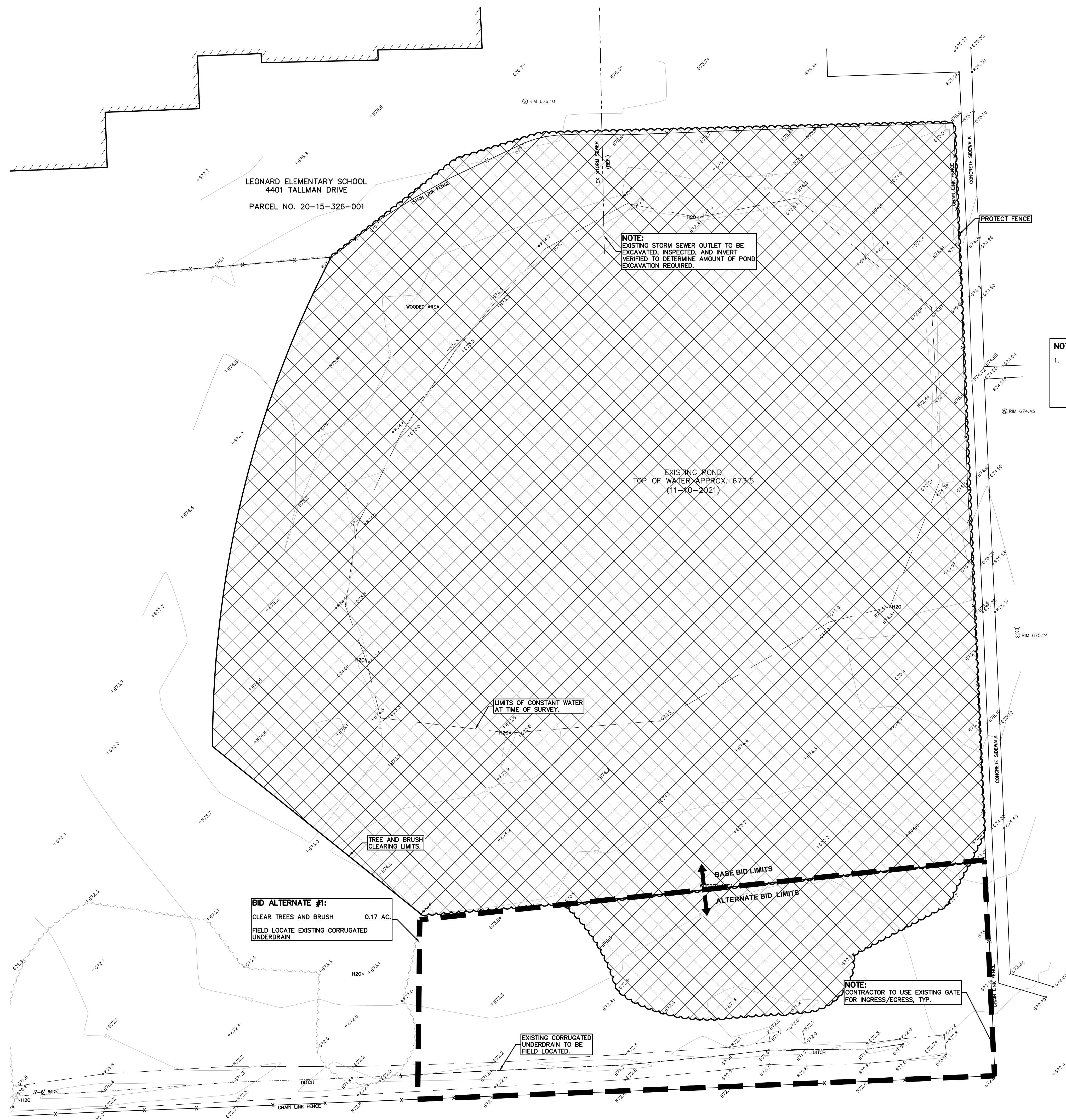
Proposed Northeast Pond Volume

Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
650.0	133	0	0
651.0	2,205	1,169	1,169
652.0	3,469	2,837	4,006
653.0	5,005	4,237	8,243
654.0	6,819	5,912	14,155
655.0	0	0	14,155
656.0	0	0	14,155

Proposed East Pond Volume

Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
650.0	3,681	0	0
651.0	5,764	4,723	4,723
652.0	8,447	7,106	11,828
653.0	1,192	4,820	16,648
654.0	14,163	7,678	24,325
655.0	0	0	24,325





LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊙ SEC. CORNER FOUND
⊙ IRON SET	⊗ MONUMENT FOUND	⊙ R. RECORDED
⊙ NAIL FOUND	⊗ MONUMENT SET	⊙ M. MEASURED
⊙ NAIL & CAP SET		⊙ C. CALCULATED

EXISTING

- OH-ELEC—ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
- UG-CATV—UNDERGROUND CABLE TV, CATV PEDESTAL
- UG-PHONE—TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
- UG-ELEC—ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
- GAS—GAS MAIN, VALVE & GAS LINE MARKER
- WATER—WATER MAIN, HYD. GATE VALVE, TAPPING BLEEVE & VALVE
- SEWER—SANITARY SEWER, CLEANOUT & MANHOLE
- COMBINED—COMBINED SEWER, CLEANOUT & MANHOLE
- SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
- POST INDICATOR VALVE
- WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF
- MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE

PROPOSED

- CONC.—CONCRETE
- ASPH.—ASPHALT
- GRAVEL—GRAVEL SHOULDER
- WETLAND
- POND

DEMOLITION QUANTITIES:
CLEAR TREES AND BRUSH 1.90 AC

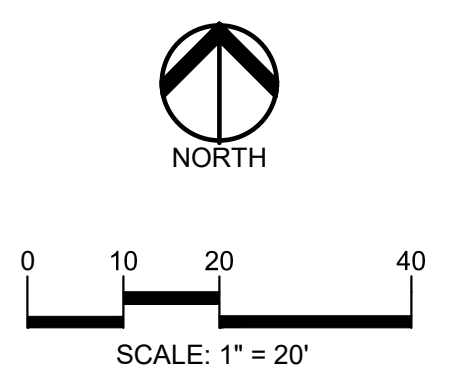
DEMOLITION LEGEND:
TREE AND BRUSH CLEARING

NOTES:

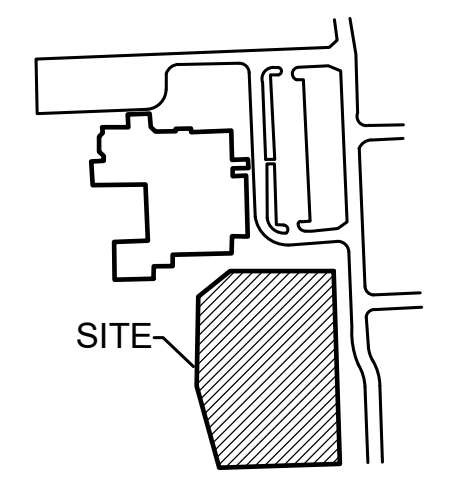
- CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS. ANY DEVIATIONS TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.

- GENERAL DEMOLITION NOTES:**
THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:
- ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
 - ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
 - STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
 - SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT WILL NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
 - REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES FOUNDATIONS, FOOTINGS, FOUNDATION WALLS, FLOOR SLABS, UNDERGROUND UTILITIES, CONCRETE, ASPHALT, TREES, ETC.
 - THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15 FEET OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
 - THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
 - THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITY LEADS HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION.
 - ALL BUILDING GAS LEADS, METERS AND ASSOCIATED EQUIPMENT SHALL BE REMOVED AS SHOWN ON THE PLANS. COORDINATE ALL ASSOCIATED WORK WITH THE APPROPRIATE UTILITY COMPANY.
 - REMOVE ALL OVERHEAD AND UNDERGROUND ELECTRICAL LINES WITHIN THE AREA OF CONSTRUCTION AS SHOWN ON THE PLANS. COORDINATE SHUTDOWNS AND REMOVALS WITH ELECTRICAL SERVICE PROVIDER OR THE APPROPRIATE UTILITY COMPANY. (NOTE: PHONE AND CABLE T.V. SERVICES MAY ALSO BE LOCATED ON OVERHEAD LINES.)
 - THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA, AS NECESSARY TO FACILITATE CONSTRUCTION. SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
 - THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

- BID ALTERNATE #1:**
- PROVIDE, INSTALL AND MAINTAIN ANY SOIL EROSION AND SEDIMENTATION CONTROL BMP'S FOR THE AREA AS INDICATED ON SHEET C-2.0 AND PER THE PROJECT SPECIFICATIONS.
 - CLEAR ALL TREES, BRUSH AND VEGETATION WITHIN THE AREA AS INDICATED ON SHEET C-1.0 AND PER THE PROJECT SPECIFICATIONS.
 - STOCKPILE THE EXISTING TOPSOIL AND SOIL FOR RE-USE AS INDICATED ON SHEET C-2.0 AND PER THE PROJECT SPECIFICATIONS.
 - RE-GRADE THE AREA BETWEEN THE SOUTHERN END OF THE POND AND SOUTHERN PROPERTY LINE TO CREATE A 2-FOOT HIGH BERM AS INDICATED THIS SHEET AND PER THE PROJECT SPECIFICATIONS. RE-USING SUITABLE SOIL FROM THE POND GRADING OPERATIONS AT ANY OF THE SITES WILL BE ALLOWED FOR THE CREATION OF THIS BERM.
 - LOCATE THE EXISTING UNDERDRAIN ALONG THE SOUTHERN PROPERTY LINE, INCLUDING DEPTH AS INDICATED ON SHEET C-1.0.
 - RE-GRADE THE DITCH ALONG THE SOUTH PROPERTY AS INDICATED ON SHEET C-2.0, INCLUDING RE-SETTING OF THE UNDERDRAIN AS NEEDED TO PROVIDE PROPER DEPTH AND PLACEMENT OF THE FILTER FABRIC ALONG THE BOTTOM OF THE DITCH PER THE DETAIL IN THE CONSTRUCTION PLAN AND PROJECT SPECIFICATIONS.
 - RESTORE THE DISTURBED AREAS AND BERM WITH A MINIMUM OF 3-INCHES OF COMPACTED TOPSOIL AND HYDROSEED PER SHEET C-2.0 AND PROJECT SPECIFICATIONS.
 - REMOVE ANY SOIL EROSION AND SEDIMENTATION BMP'S ONCE PERMANENT VEGETATION HAS BEEN ESTABLISHED AS INDICATED ON SHEET C-4.0 AND PER THE PROJECT SPECIFICATIONS.



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CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
LEONARD ELEMENTARY SCHOOL
4401 TALLMAN DRIVE, TROY, MI

REVISIONS

1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21

ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS
DRAWING NUMBER:	

C-1.0

LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊙ SEC. CORNER FOUND
⊗ IRON SET	⊗ MONUMENT SET	⊗ R. RECORDED
⊗ NAIL FOUND	⊗ NAIL & CAP SET	⊗ M. MEASURED
		⊗ C. CALCULATED

EXISTING

- OH-ELEC—W—W— ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
- UG-CATV— UG. CABLE TV, CATV PEDESTAL
- UG-PHONE— UG. PHONE U.G. CABLE, PEDESTAL & MANHOLE
- UG-ELEC—ELEC. U.G. CABLE, MANHOLE, METER & HANDHOLE
- GAS—VALVE & GAS LINE MARKER
- WATERMAN, HYD., GATE VALVE, TAPPING BLEEDIE & VALVE
- SANITARY SEWER, CLEANOUT & MANHOLE
- STORM SEWER, CLEANOUT & MANHOLE
- COMBINED SEWER & MANHOLE
- SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
- POST INDICATOR VALVE
- WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF
- MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE
- SPOT ELEVATION
- CONTOUR LINE
- FENCE
- GUARDRAIL
- STREET LIGHT
- SIGN

PROPOSED

- 722— PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.
- 722— PROPOSED CONTOUR LINE
- T/C— TOP OF CURB
- G— GUTTER GRADE
- T/P— TOP OF PAVEMENT
- T/W— TOP OF WALL
- B/W— BOTTOM OF WALL
- F.G.— FINISH GRADE
- RIM— RIM ELEVATION

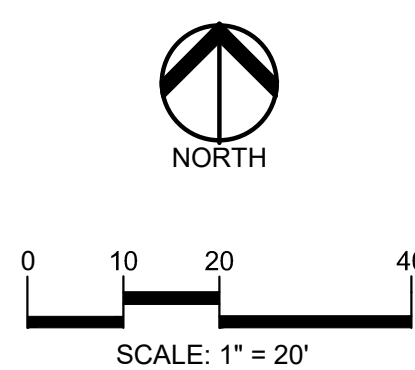
SYMBOLS: GRADING

- CONC. CONCRETE
- ASPH. ASPHALT
- GRAVEL SHOULDER
- WETLAND
- POND

SYMBOLS: EROSION CONTROL:

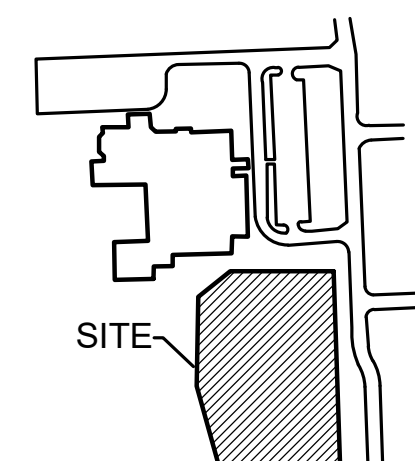
- (SP-2) SILT FENCE
- (E-9) EROSION CONTROL BLANKET
- LAWN RESTORATION
- EMBANKMENT RESTORATION

REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.



811 Know what's below. Call before you dig.

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CLIENT
TROY SCHOOLS
 1140 RANKIN
 TROY, MI 48063

PROJECT TITLE
LEONARD ELEMENTARY SCHOOL
 4401 TALLMAN DRIVE, TROY, MI

REVISIONS

1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21

ORIGINAL ISSUE DATE:
 NOVEMBER 24, 2021

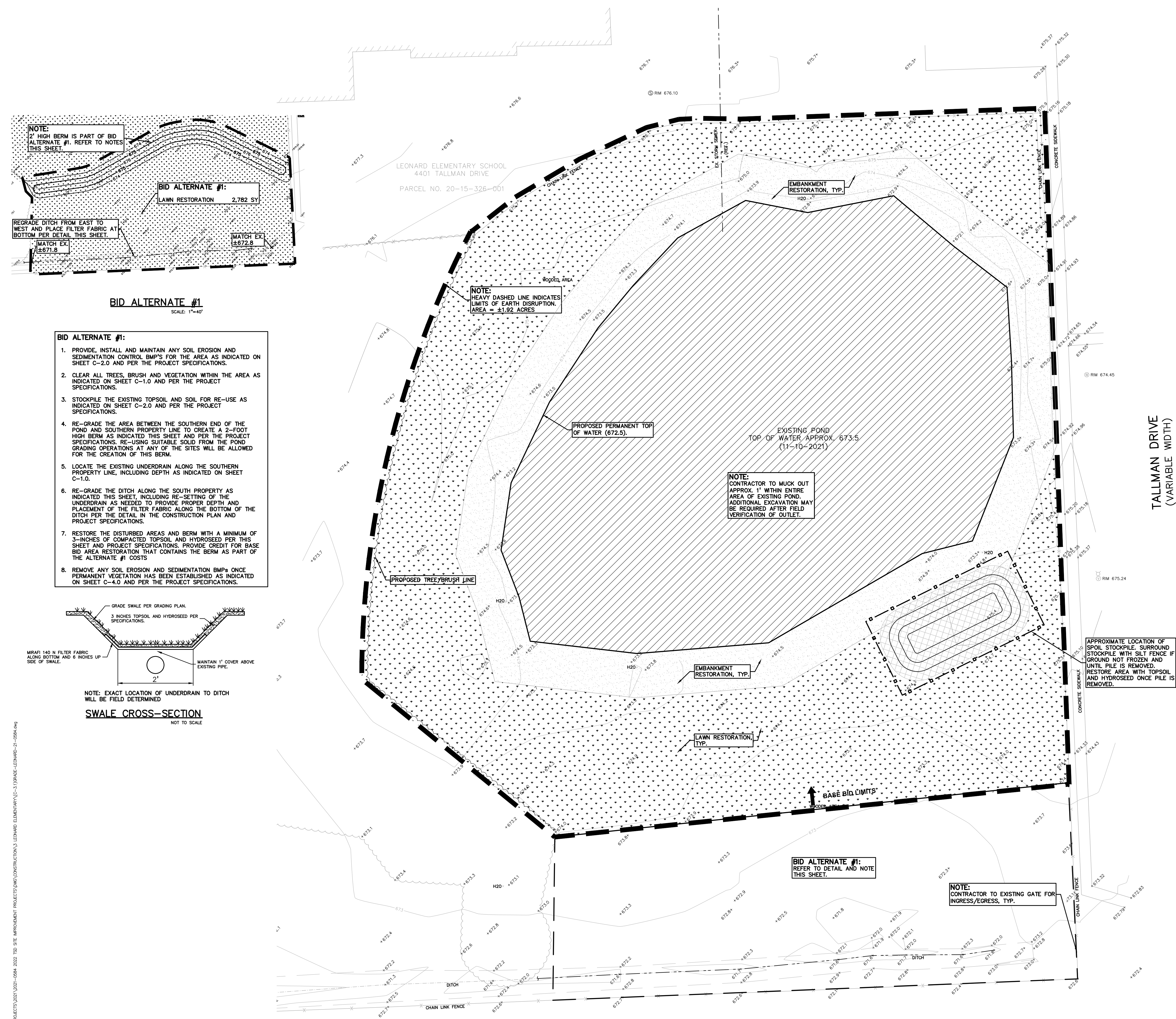
DRAWING TITLE
GRADING AND SOIL EROSION PLAN

PEA JOB NO. 2021-0584

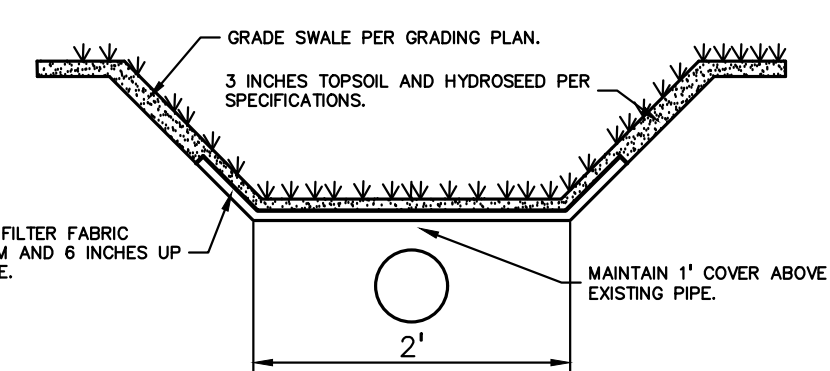
P.M.	RR
DN.	KMM
DES.	JDS

DRAWING NUMBER:

C-2.0



- BID ALTERNATE #1:**
 SCALE: 1"=40'
1. PROVIDE, INSTALL AND MAINTAIN ANY SOIL EROSION AND SEDIMENTATION CONTROL BMP'S FOR THE AREA AS INDICATED ON SHEET C-2.0 AND PER THE PROJECT SPECIFICATIONS.
 2. CLEAR ALL TREES, BRUSH AND VEGETATION WITHIN THE AREA AS INDICATED ON SHEET C-1.0 AND PER THE PROJECT SPECIFICATIONS.
 3. STOCKPILE THE EXISTING TOPSOIL AND SOIL FOR RE-USE AS INDICATED ON SHEET C-2.0 AND PER THE PROJECT SPECIFICATIONS.
 4. RE-GRADE THE AREA BETWEEN THE SOUTHERN END OF THE POND AND SOUTHERN PROPERTY LINE TO CREATE A 2-FOOT HIGH BERM AS INDICATED THIS SHEET AND PER THE PROJECT SPECIFICATIONS. RE-USING SUITABLE SOIL FROM THE POND GRADING OPERATIONS AT ANY OF THE SITES WILL BE ALLOWED FOR THE CREATION OF THIS BERM.
 5. LOCATE THE EXISTING UNDERDRAIN ALONG THE SOUTHERN PROPERTY LINE, INCLUDING DEPTH AS INDICATED ON SHEET C-1.0.
 6. RE-GRADE THE DITCH ALONG THE SOUTH PROPERTY AS INDICATED THIS SHEET, INCLUDING RE-SETTING OF THE UNDERDRAIN AS NEEDED TO PROVIDE PROPER DEPTH AND PLACEMENT OF THE FILTER FABRIC ALONG THE BOTTOM OF THE DITCH PER THE DETAIL IN THE CONSTRUCTION PLAN AND PROJECT SPECIFICATIONS.
 7. RESTORE THE DISTURBED AREAS AND BERM WITH A MINIMUM OF 3-INCHES OF COMPACTED TOPSOIL AND HYDROSEED PER THIS SHEET AND PROJECT SPECIFICATIONS. PROVIDE CREDIT FOR BASE BID AREA RESTORATION THAT CONTAINS THE BERM AS PART OF THE ALTERNATE #1 COSTS.
 8. REMOVE ANY SOIL EROSION AND SEDIMENTATION BMP'S ONCE PERMANENT VEGETATION HAS BEEN ESTABLISHED AS INDICATED ON SHEET C-4.0 AND PER THE PROJECT SPECIFICATIONS.



SYMBOLS: GRADING

PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.

PROPOSED CONTOUR LINE

ABBREVIATIONS:
 T/C = TOP OF CURB
 G = GUTTER GRADE
 T/P = TOP OF PAVEMENT
 T/W = TOP OF WALL
 B/W = BOTTOM OF WALL
 F.G. = FINISH GRADE
 RIM = RIM ELEVATION

SYMBOLS: EROSION CONTROL:

- (SP-2) SILT FENCE
- (E-9) EROSION CONTROL BLANKET
- LAWN RESTORATION
- EMBANKMENT RESTORATION

REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.

EROSION CONTROL QUANTITIES:

SILT FENCE	211 LF
EMBANKMENT RESTORATION	1,607 SY
LAWN RESTORATION	3,975 SY

ENGINEERING QUANTITIES:

MUCK DETENTION POND	1,313 CY
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EARTHWORK BALANCING NOTE:
 THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING OR EXPORTING ALL MATERIALS AS REQUIRED TO PROPERLY GRADE THIS PROJECT TO THE FINISHED ELEVATIONS SHOWN ON THE APPROVED PLANS. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF CUT AND FILL QUANTITIES AND ALLOW FOR REMOVAL OF EXCESS OR IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

- GENERAL SITE CONDITIONS:**
1. ACCORDING TO THE USGS WEB SOIL SURVEY DATED NOVEMBER 23, 2021, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:
 41B - AQUENTS, SANDY, LOAMY, UNDULATING
 2. TOTAL DISTURBED AREA = ±1.92 ACRES
 3. N.P.D.E.S. NOTICE OF COVERAGE IS NOT REQUIRED

- NOTE:**
1. PER THE 'SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE PER THE PROJECT SPECIFICATIONS; PRIOR TO THE PLACEMENT OF TOPSOIL THE SUCCESSFUL BIDDER TO SCHEDULE AN INSPECTION BY THE SCHOOL BOARD OR PEA GROUP TO CONFIRM THAT THE GRADE IS AT THE PROPER ELEVATION WHERE THE MINIMUM DEPTH OF TOPSOIL CAN BE PLACED THROUGHOUT THE AREA.
 2. CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS, ANY DEVIATION TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.
 3. CONTRACTOR TO REMOVE TREES AND STUMPS AND REGRADE TO PROVIDE UNIFORM SLOPE THROUGHOUT AREA, EXCEPT AS INDICATED IN BID ALTERNATE #1.
 4. WORK IS CURRENTLY ANTICIPATED TO BE COMPLETED IN THE WINTER WITH FROZEN GROUND. ADDITIONAL BMP'S TO BE ADDED AS NEEDED IF WORK IS NOT COMPLETED BY SPRING OR PRIOR TO GROUND THAWING.
 5. DISTRICT TO REVIEW SITE IN THE SPRING TO DETERMINE ANY GRASS AREAS AND IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION INCLUDING INGRESS/EGRESS AREAS TO THE PONDS. CONTRACTOR IS RESPONSIBLE TO RESTORE ALL DAMAGED AREAS AND IRRIGATION SYSTEM TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE DISTRICT.

NOTE:
 REFER TO SHEET C-4.0 FOR SOIL EROSION SCHEDULE AND NOTES, AND SEQUENCE OF CONSTRUCTION.

NOT FOR CONSTRUCTION

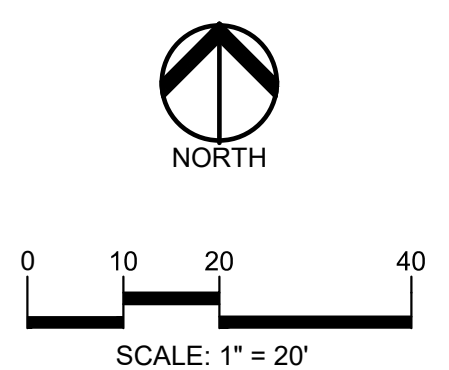
S:\PROJECTS\2021\0584-2021-0584-2022-130 SITE IMPROVEMENT PROJECTS\CONSTRUCTION\3 LEONARD ELEMENTARY\C-3\TOPRADE-LEONARD-21-0584.dwg

LEGEND

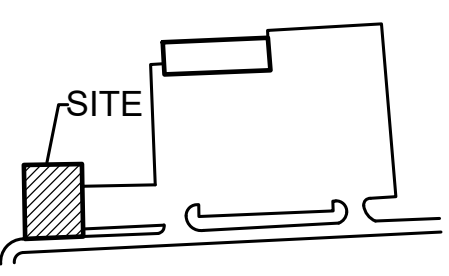
● IRON FOUND	⊗ BRASS PLUG SET	⊙ SEC. CORNER FOUND
⊗ IRON SET	⊗ MONUMENT FOUND	R RECORDED
⊗ NAIL FOUND	⊗ MONUMENT SET	M MEASURED
⊗ NAIL & CAP SET		C CALCULATED

EXISTING

—OH-ELEC—	ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
—UG-CATV—	UNDERGROUND CABLE TV, CATV PEDESTAL
—UG-PHONE—	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
—UG-ELEC—	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
—GAS VALVE & GAS LINE MARKER—	GAS VALVE & GAS LINE MARKER
—WATERMAN, HYD., GATE VALVE, TAPPING BLEED & VALVE—	WATERMAN, HYD., GATE VALVE, TAPPING BLEED & VALVE
—SANITARY SEWER, CLEANOUT & MANHOLE—	SANITARY SEWER, CLEANOUT & MANHOLE
—STORM SEWER, CLEANOUT & MANHOLE—	STORM SEWER, CLEANOUT & MANHOLE
—COMBINED SEWER & MANHOLE—	COMBINED SEWER & MANHOLE
□ SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
○ POST INDICATOR VALVE	POST INDICATOR VALVE
○ WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF	WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF
□ MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE	MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
○ UNIDENTIFIED STRUCTURE	UNIDENTIFIED STRUCTURE
○ SPOT ELEVATION	SPOT ELEVATION
—CONTOUR LINE—	CONTOUR LINE
—FENCE—	FENCE
—GUARD RAIL—	GUARD RAIL
—STREET LIGHT—	STREET LIGHT
—SIGN—	SIGN
—CONC.—	CONCRETE
—ASPH.—	ASPHALT
—GRAVEL—	GRAVEL SHOULDER
—WETLAND—	WETLAND



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CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
TROY SCHOOL DISTRICT TRANSPORTATION CENTER
120 HART DRIVE, TROY, MI

REVISIONS

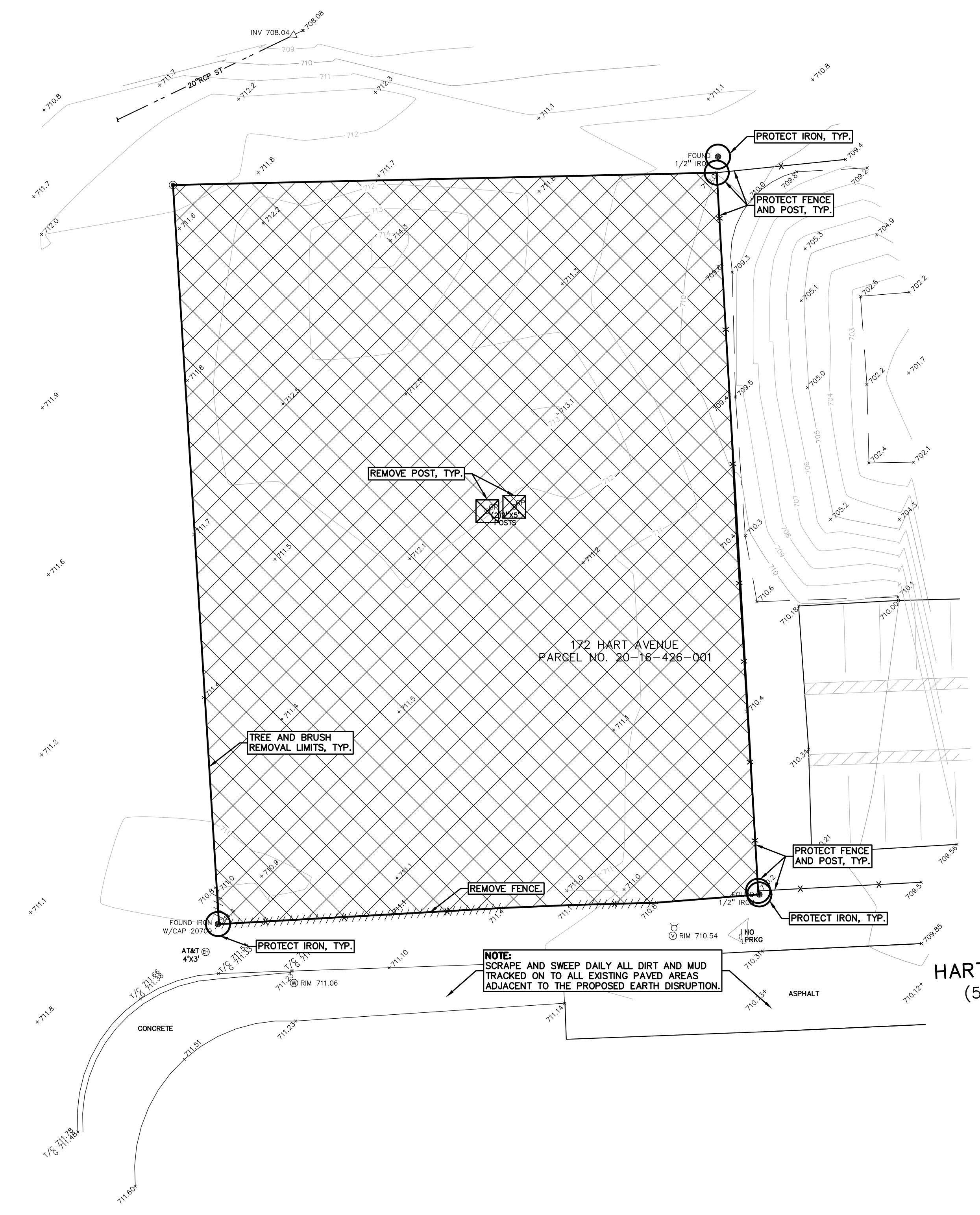
1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21

ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
ENGINEERING PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS

DRAWING NUMBER:
C-1.0



NOTE:
REFER TO SHEET C-4.0 FOR SOIL EROSION SCHEDULE AND NOTES, AND SEQUENCE OF CONSTRUCTION.

- NOTES:**
- CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS. ANY DEVIATIONS TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.
 - DISTRICT TO REVIEW SITE IN THE SPRING TO DETERMINE ANY GRASS AREAS AND IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION INCLUDING INGRESS/EGRESS AREAS TO THE PONDS. CONTRACTOR IS RESPONSIBLE TO RESTORE ALL DAMAGED AREAS AND IRRIGATION SYSTEM TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE DISTRICT.

DEMOLITION QUANTITIES:

CLEAR TREES AND BRUSH	0.64 AC
REMOVE FENCE	107 LF

DEMOLITION LEGEND:

ITEM TO BE PROTECTED	○
TREE AND BRUSH REMOVAL	⊗

EARTHWORK BALANCING NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING OR EXPORTING ALL MATERIALS AS REQUIRED TO PROPERLY GRADE THIS PROJECT TO THE FINISHED ELEVATIONS SHOWN ON THE APPROVED PLANS. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF CUT AND FILL QUANTITIES AND ALLOW FOR REMOVAL OF EXCESS OR IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

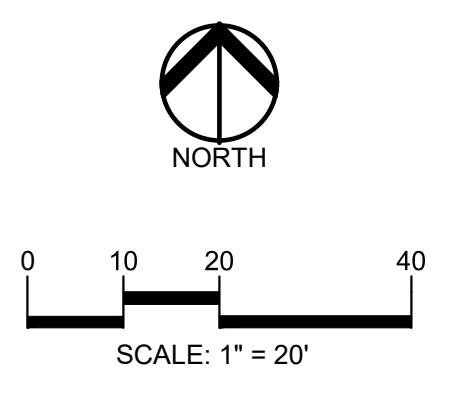
- GENERAL SITE CONDITIONS:**
- ACCORDING TO THE USGS WEB SOIL SURVEY DATED NOVEMBER 23, 2021, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:
12 - BROOKSTON AND COALWOOD LOAMS
SHBUAB - SHEBEON-URBAN LAND COMPLEX, 0 TO 4 PERCENT SLOPES
 - TOTAL DISTURBED AREA = ±0.64 ACRES
 - N.P.D.E.S. NOTICE OF COVERAGE IS NOT REQUIRED

- NOTE:**
- CONTRACTOR TO REMOVE TREES AND STUMPS AND REGRADE TO PROVIDE UNIFORM SLOPE THROUGHOUT AREA. RESTORATION IS NOT REQUIRED FOR THIS SITE.
 - CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS. ANY DEVIATION TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.
 - WORK IS CURRENTLY ANTICIPATED TO BE COMPLETED IN THE WINTER WITH FROZEN GROUND. ADDITIONAL BMPs TO BE ADDED AS NEEDED IF WORK IS NOT COMPLETED BY SPRING OR PRIOR TO GROUND THAWING.

- GENERAL DEMOLITION NOTES:**
THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:
- ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
 - ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
 - STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
 - SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT WILL NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
 - REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES FOUNDATIONS, FOOTINGS, FOUNDATION WALLS, FLOOR SLABS, UNDERGROUND UTILITIES, CONCRETE, ASPHALT, TREES, ETC.
 - THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15 FEET OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
 - THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
 - THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITY LEADS HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION.
 - ALL BUILDING GAS LEADS, METERS AND ASSOCIATED EQUIPMENT SHALL BE REMOVED AS SHOWN ON THE PLANS. COORDINATE ALL ASSOCIATED WORK WITH THE APPROPRIATE UTILITY COMPANY.
 - REMOVE ALL OVERHEAD AND UNDERGROUND ELECTRICAL LINES WITHIN THE AREA OF CONSTRUCTION AS SHOWN ON THE PLANS. COORDINATE SHUTDOWNS AND REMOVALS WITH ELECTRICAL SERVICE PROVIDER OR THE APPROPRIATE UTILITY COMPANY. (NOTE: PHONE AND CABLE T.V. SERVICES MAY ALSO BE LOCATED ON OVERHEAD LINES.)
 - THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA, AS NECESSARY TO FACILITATE CONSTRUCTION. SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
 - THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

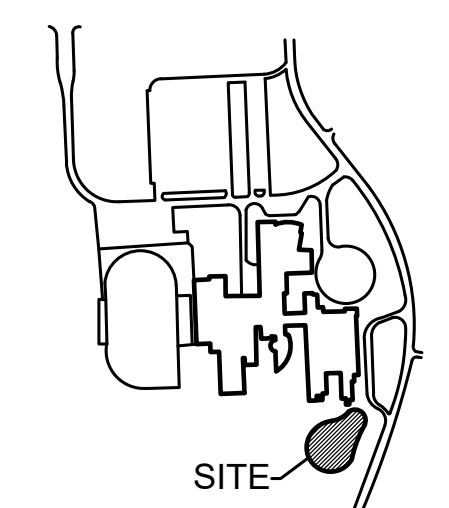
LEGEND

- | | | |
|------------------|------------------|--------------------|
| ● IRON FOUND | ⊗ BRASS PLUG SET | ⊙ SEC CORNER FOUND |
| ⊗ IRON SET | ⊗ MONUMENT FOUND | ⊙ R RECORDED |
| ⊗ NAIL FOUND | ⊗ MONUMENT SET | ⊙ M MEASURED |
| ⊗ NAIL & CAP SET | | ⊙ C CALCULATED |
- | | |
|------------|---|
| EXISTING | PROPOSED |
| -OH-ELEC- | ELEC, PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE |
| -UG-CATV- | UNDERGROUND CABLE TV, CATV PEDESTAL |
| -UG-PHONE- | TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE |
| -UG-ELEC- | ELECTRIC U.G. CABLE, MANHOLE, METER & MANHOLE |
| -GAS- | GAS MAIN, VALVE & GAS LINE MARKER |
| -WATER- | WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE |
| -S-S- | SANITARY SEWER, CLEANOUT & MANHOLE |
| -SS- | STORM SEWER, CLEANOUT & MANHOLE |
| -C- | COMBINED SEWER & MANHOLE |
| -S- | SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN |
| -R- | RISE INDICATOR VALVE |
| -W- | WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF |
| -M- | MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE |
| -U- | UNIDENTIFIED STRUCTURE |
| -S- | SPOT ELEVATION |
| -C- | CONTOUR LINE |
| -F- | FENCE |
| -G- | GUARD RAIL |
| -S- | STREET LIGHT |
| -S- | SIGN |
| -C- | CONCRETE |
| -A- | ASPHALT |
| -G- | GRAVEL SHOULDER |
| -W- | WETLAND |



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CLIENT
TROY SCHOOLS
 1140 RANKIN
 TROY, MI 48063

PROJECT TITLE
TROY HIGH SCHOOL
 4777 NORTHFIELD PKWY, TROY, MI

REVISIONS

1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21

ORIGINAL ISSUE DATE:
 NOVEMBER 24, 2021

DRAWING TITLE
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS
DRAWING NUMBER:	

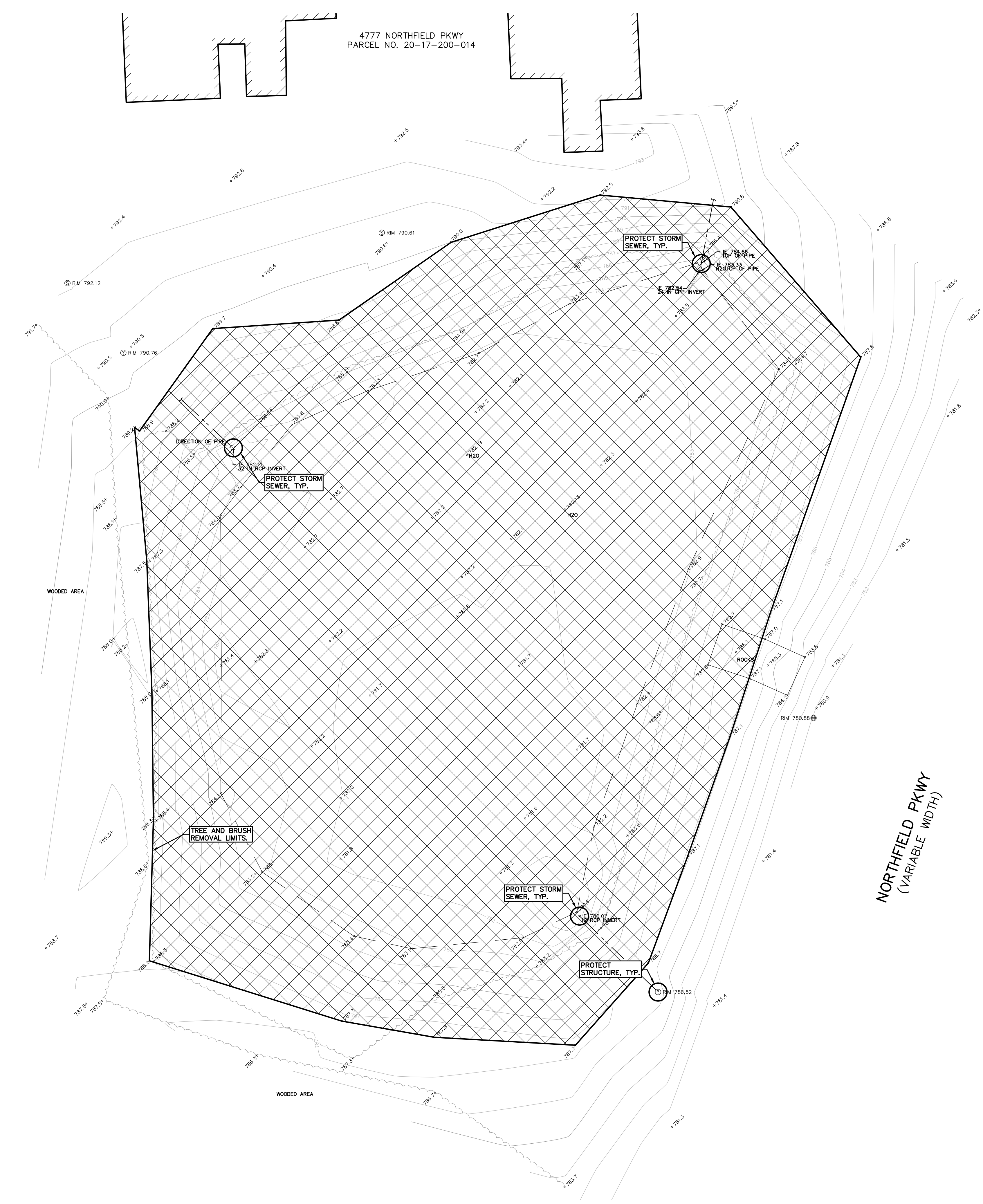
NOTES:
 1. CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS. ANY DEVIATIONS TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.

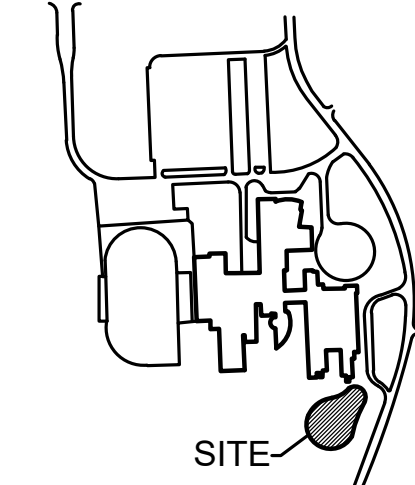
DEMOLITION QUANTITIES:
 CLEAR TREES AND BRUSH 1.35 AC

DEMOLITION LEGEND:

ITEM TO BE PROTECTED	⊙
TREE AND BRUSH REMOVAL	

- GENERAL DEMOLITION NOTES:**
 THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:
- ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
 - ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
 - STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
 - SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT WILL NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
 - REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES FOUNDATIONS, FOOTINGS, FOUNDATION WALLS, FLOOR SLABS, UNDERGROUND UTILITIES, CONCRETE, ASPHALT, TREES, ETC.
 - THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15 FEET OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
 - THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
 - THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITY LEADS HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION.
 - ALL BUILDING GAS LEADS, METERS AND ASSOCIATED EQUIPMENT SHALL BE REMOVED AS SHOWN ON THE PLANS. COORDINATE ALL ASSOCIATED WORK WITH THE APPROPRIATE UTILITY COMPANY.
 - REMOVE ALL OVERHEAD AND UNDERGROUND ELECTRICAL LINES WITHIN THE AREA OF CONSTRUCTION AS SHOWN ON THE PLANS. COORDINATE SHUTDOWNS AND REMOVALS WITH ELECTRICAL SERVICE PROVIDER OR THE APPROPRIATE UTILITY COMPANY. (NOTE: PHONE AND CABLE T.V. SERVICES MAY ALSO BE LOCATED ON OVERHEAD LINES.)
 - THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA, AS NECESSARY TO FACILITATE CONSTRUCTION. SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
 - THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.





CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
TROY HIGH SCHOOL
4777 NORTHFIELD PKWY, TROY, MI

REVISIONS

1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21

ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
GRADING AND SOIL EROSION PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS

DRAWING NUMBER:
C-2.0

LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊗ SEC. CORNER FOUND
⊗ IRON SET	⊗ MONUMENT FOUND	⊗ RECORDED
⊗ NAIL FOUND	⊗ NAIL & CAP SET	⊗ MEASURED
		⊗ CALCULATED

EXISTING

—OH-ELEC—	ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
—UG-CATV—	UNDERGROUND CABLE TV, CATV PEDESTAL
⊗-UG-PHONE	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
⊗-UG-ELEC	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
⊗	GAS MAIN, VALVE & GAS LINE MARKER
—	WATERMAIN, HYD. GATE VALVE, TAPPING SLEEVE & VALVE
⊗	SANITARY SEWER, CLEANOUT & MANHOLE
⊗	STORM SEWER, CLEANOUT & MANHOLE
⊗	COMBINED SEWER & MANHOLE
⊗	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
⊗	POST INDICATOR VALVE
⊗	WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF
⊗	MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
⊗	UNIDENTIFIED STRUCTURE

SPOT ELEVATION
CONTOUR LINE
FENCE
GUARD RAIL
STREET LIGHT
SIGN
CONC.
CONCRETE
ASPH.
ASPHALT
GRAVEL
GRAVEL SHOULDER
WETLAND

SYMBOLS: GRADING

PROPOSED SPOT ELEVATION:
TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.

PROPOSED CONTOUR LINE — 722 —

ABBREVIATIONS:
T/C = TOP OF CURB
G = GUTTER GRADE
T/S = TOP OF SIDEWALK
T/W = TOP OF WALL
B/W = BOTTOM OF WALL
F.G. = FINISH GRADE
RIM = RIM ELEVATION

SYMBOLS: EROSION CONTROL:

□	(SP-2) SILT FENCE
▨	(E-9) EROSION CONTROL BLANKET
⊕	LAWN RESTORATION
⊖	EMBANKMENT RESTORATION

REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.

EARTHWORK BALANCING NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING OR EXPORTING ALL MATERIALS AS REQUIRED TO PROPERLY GRADE THIS PROJECT TO THE FINISHED ELEVATIONS SHOWN ON THE APPROVED PLANS. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF CUT AND FILL QUANTITIES AND ALLOW FOR REMOVAL OF EXCESS OR IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

GENERAL SITE CONDITIONS:

- ACCORDING TO THE USGS WEB SOIL SURVEY DATED NOVEMBER 23, 2021, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:
12 - BROOKSTON AND COALWOOD LOAMS
52A - SELFDRIDGE LOAMY SAND, 0 TO 3 PERCENT LOAMS
- TOTAL DISTURBED AREA = ±0.91 ACRES
- N.P.D.E.S. NOTICE OF COVERAGE IS NOT REQUIRED

Outlet Control Restriction Calculations

Maximum Storage Elevation:	781.57 ft
Restriction Hole Invert:	780.00 ft
Depth of Water in Pipe:	1.57 ft
Restriction Hole Dia.:	2.25 in
Restriction Hole Area:	0.02761 sq ft
Flow thru Restriction Hole:	0.17 cfs
Time for Release of Volume:	27.38 hrs

STORM DETENTION RE DEVELOPMENT DESIGN

Contributing Area (A): 49.860 AC.
Coefficient of Runoff (C): 0.617

STORAGE VOLUME REQUIRED:

Sedimentation Volume Required:
 $V_s = 15 \times x \times w \times q = 545 \times C \times A$
 $V_s = 16756.80$ Cu. Ft.
Original Detention Design Volume = 161194 Cu. Ft.

Proposed Pond

CONTOUR	AREA	VOLUME	CUMM	Vf	Detention
780	3.892			-	-
781	10.328	7,110	7,110	-	-
782	22.043	16,186	23,296	781.60	-
783	38.812	30,428	53,723	-	-
784	41.842	40,327	94,050	-	-
785	44.973	43,408	137,458	-	-
786	48.204	46,589	184,046	-	785.51
787	51.536	49,870	233,916	-	-

NOTE:
REFER TO SHEET C-4.0 FOR SOIL EROSION SCHEDULE AND NOTES, AND SEQUENCE OF CONSTRUCTION.

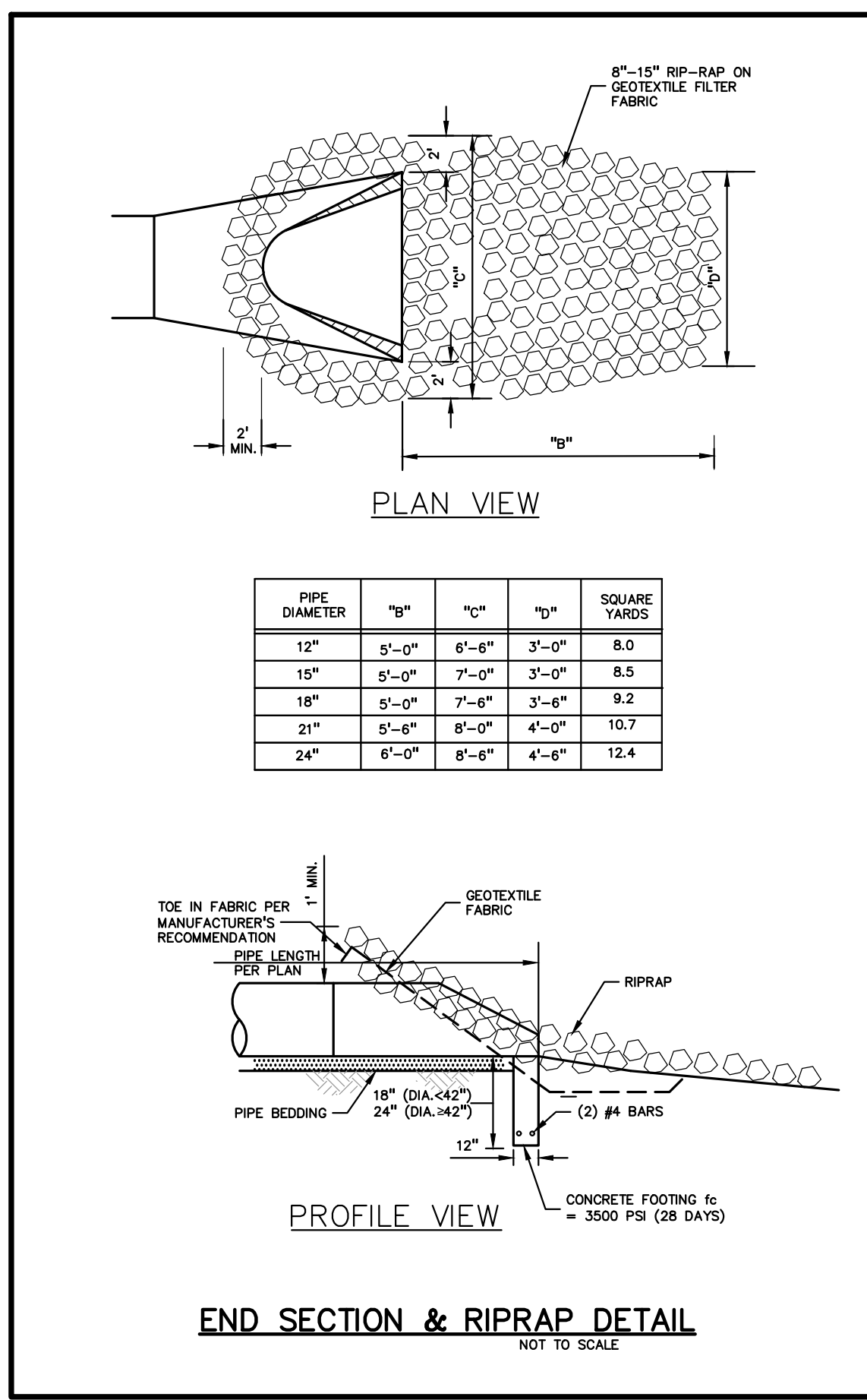
EROSION CONTROL QUANTITIES:

SILT FENCE	211 LF
EMBANKMENT RESTORATION	5,726 SY
LAWN RESTORATION AREA	1,222 SY

ENGINEERING QUANTITIES:

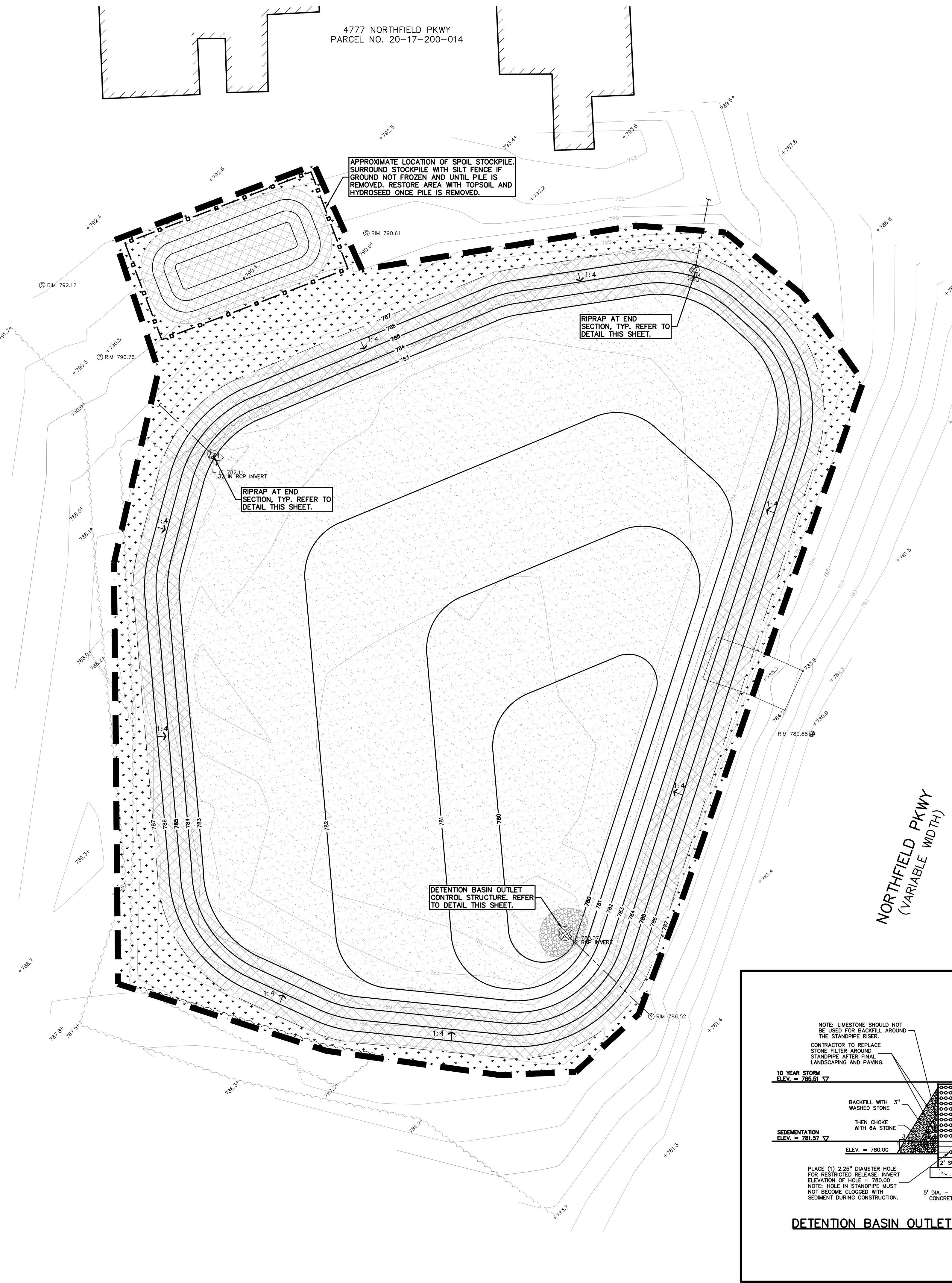
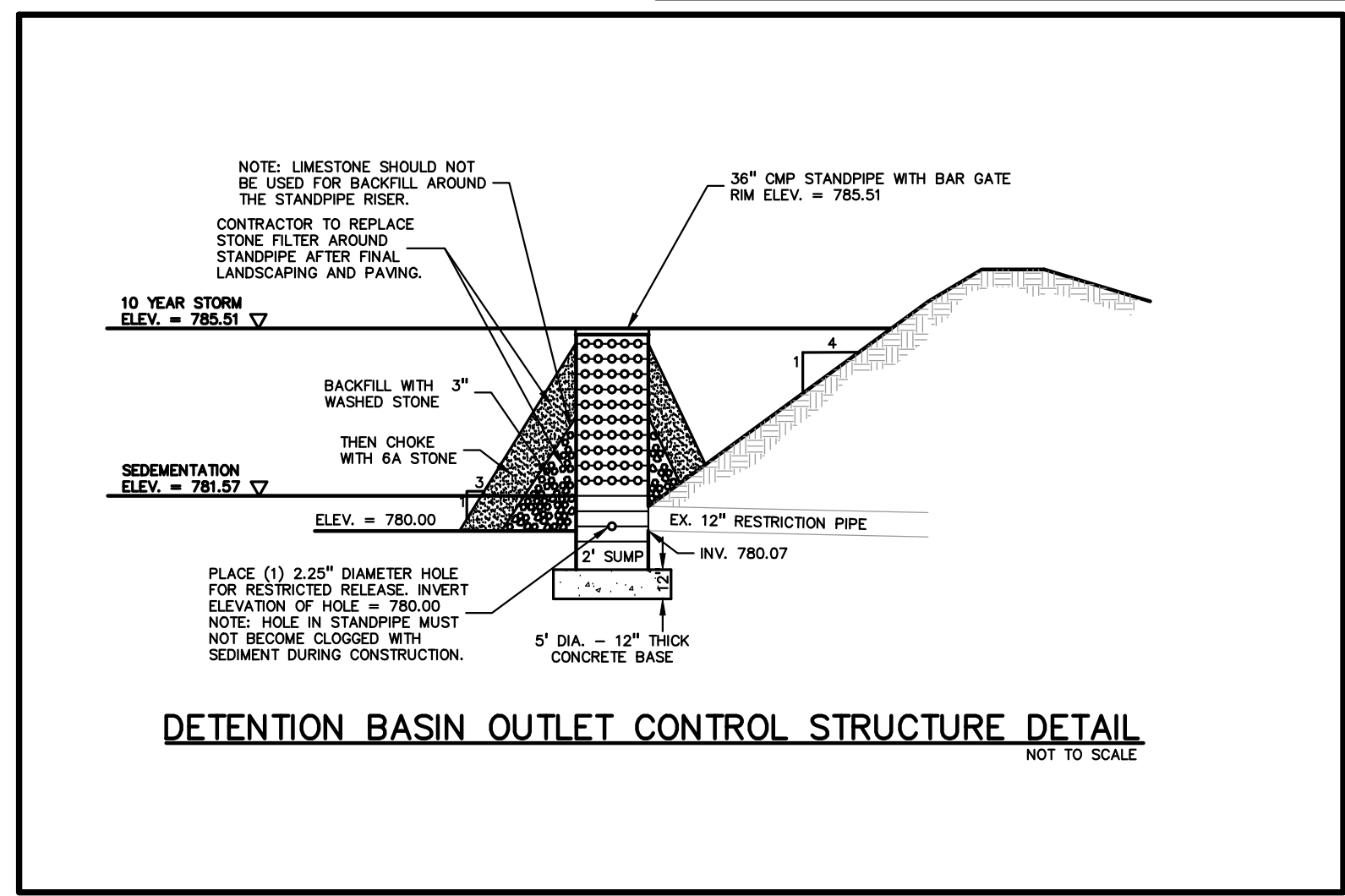
36" OUTLET CONTROL STRUCTURE	1 EA.
RIPRAP	20 CY
MUCK DETENTION POND	1,667 CY

- NOTE:**
- PER THE 'SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE PER THE PROJECT SPECIFICATIONS, PRIOR TO THE PLACEMENT OF TOPSOIL THE SUCCESSFUL BIDDER TO SCHEDULE AN INSPECTION BY THE SCHOOL BOARD OR PEA GROUP TO CONFIRM THAT THE GRADE IS AT THE PROPER ELEVATION WHERE THE MINIMUM DEPTH OF TOPSOIL CAN BE PLACED THROUGHOUT THE AREA.
 - CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS, ANY DEVIATION TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.
 - WORK IS CURRENTLY ANTICIPATED TO BE COMPLETED IN THE WINTER WITH FROZEN GROUND, ADDITIONAL BMPs TO BE ADDED AS NEEDED IF WORK IS NOT COMPLETED BY SPRING OR PRIOR TO GROUND THAWING.
 - RE-GRADING OF THE POND AREAS SHALL BE INCLUDED IN THE COSTS OF THE PROJECT PER LIMITS SHOWN IN THE PLANS.
 - DISTRICT TO REVIEW SITE IN THE SPRING TO DETERMINE ANY GRASS AREAS AND IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION INCLUDING INGRESS/EGRESS AREAS TO THE PONDS. CONTRACTOR IS RESPONSIBLE TO RESTORE ALL DAMAGED AREAS AND IRRIGATION SYSTEM TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE DISTRICT.



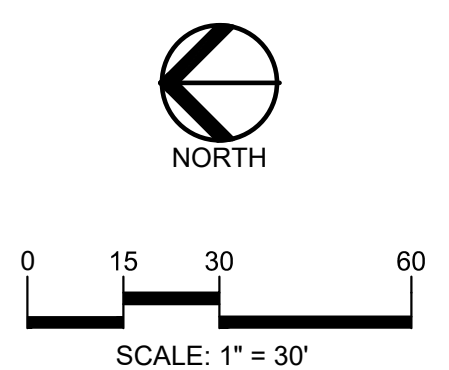
PIPE DIAMETER	"b"	"c"	"d"	SQUARE YARDS
12"	5'-0"	6'-6"	3'-0"	8.0
15"	5'-0"	7'-0"	3'-0"	8.5
18"	5'-0"	7'-6"	3'-6"	9.2
21"	5'-0"	8'-0"	4'-0"	10.7
24"	6'-0"	8'-6"	4'-6"	12.4

NORTHFIELD PKWY
(VARIABLE WIDTH)

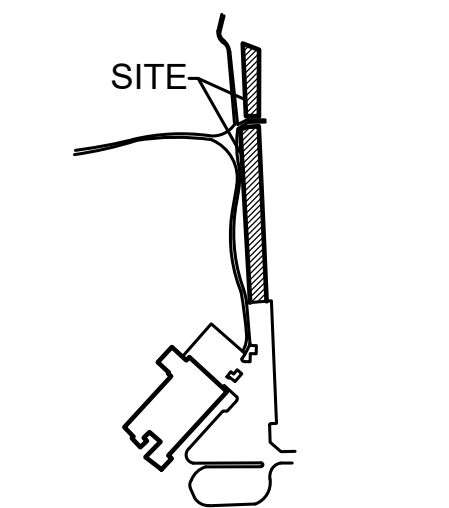


LEGEND

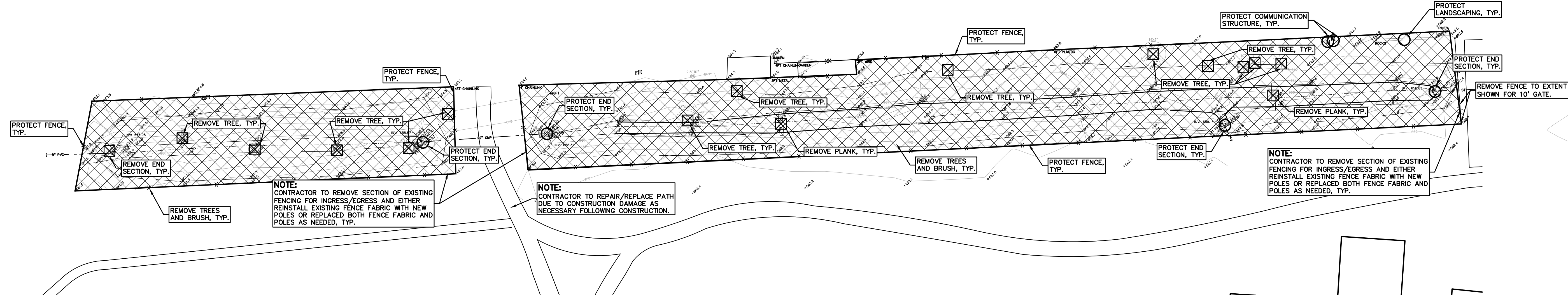
- IRON FOUND
 - ⊗ IRON SET
 - NAIL FOUND
 - ⊗ NAIL & CAP SET
 - ⊗ BRASS PLUG SET
 - ⊗ MONUMENT FOUND
 - ⊗ MONUMENT SET
 - ⊗ SEC. CORNER FOUND
 - R RECORDED
 - M MEASURED
 - C CALCULATED
- EXISTING**
- OH-ELEC— ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
 - UG-CATV— UNDERGROUND CABLE TV, CATV PEDESTAL
 - UG-PHONE— TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
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 - GAS— GAS MAIN, VALVE & GAS LINE MARKER
 - WATER— WATERMAIN, HYD. GATE VALVE, TAPPING SLEEVE & VALVE
 - SEWER— SANITARY SEWER, CLEANOUT & MANHOLE
 - CS— STORM SEWER, CLEANOUT & MANHOLE
 - COMB— COMBINED SEWER & MANHOLE
 - SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
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 - SPOT ELEVATION
 - CONTOUR LINE
 - FENCE
 - GUARD RAIL
 - STREET LIGHT
 - SIGN
 - CONC. — CONCRETE
 - ASPHL — ASPHALT
 - GRAVEL — GRAVEL SHOULDER
 - WETLAND — WETLAND



CAUTION!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063



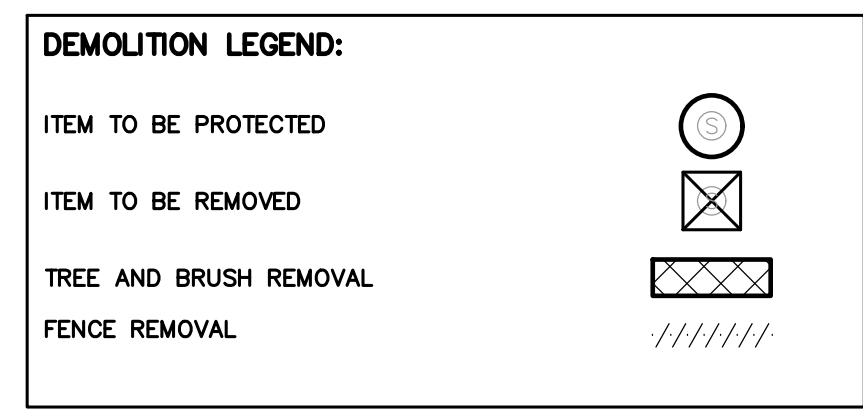
NOTE:
CONTRACTOR TO REMOVE SECTION OF EXISTING FENCING FOR INGRESS/EGRESS AND EITHER REINSTALL EXISTING FENCE FABRIC WITH NEW POLES OR REPLACED BOTH FENCE FABRIC AND POLES AS NEEDED, TYP.

NOTE:
CONTRACTOR TO REPAIR/REPLACE PATH DUE TO CONSTRUCTION DAMAGE AS NECESSARY FOLLOWING CONSTRUCTION.

NOTE:
CONTRACTOR TO REMOVE SECTION OF EXISTING FENCING FOR INGRESS/EGRESS AND EITHER REINSTALL EXISTING FENCE FABRIC WITH NEW POLES OR REPLACED BOTH FENCE FABRIC AND POLES AS NEEDED, TYP.

NOTES:
1. CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS. ANY DEVIATIONS TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.

DEMOLITION QUANTITIES:
CLEAR TREES AND BRUSH 0.83 AC



- GENERAL DEMOLITION NOTES:**
- THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:
- ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
 - ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
 - STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
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 - THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15 FEET OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
 - THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
 - THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITY LEADS HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION.
 - ALL BUILDING GAS LEADS, METERS AND ASSOCIATED EQUIPMENT SHALL BE REMOVED AS SHOWN ON THE PLANS. COORDINATE ALL ASSOCIATED WORK WITH THE APPROPRIATE UTILITY COMPANY.
 - REMOVE ALL OVERHEAD AND UNDERGROUND ELECTRICAL LINES WITHIN THE AREA OF CONSTRUCTION AS SHOWN ON THE PLANS. COORDINATE SHUTDOWNS AND REMOVALS WITH ELECTRICAL SERVICE PROVIDER OR THE APPROPRIATE UTILITY COMPANY. (NOTE: PHONE AND CABLE T.V. SERVICES MAY ALSO BE LOCATED ON OVERHEAD LINES.)
 - THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA, AS NECESSARY TO FACILITATE CONSTRUCTION. SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
 - THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

PROJECT TITLE
COSTELLO ELEMENTARY SCHOOL
11325 HANAMAN DRIVE, TROY, MI 48065

REVISIONS

NO.	DESCRIPTION	DATE
1	PER OWNER COMMENTS	12/1/21
2	OUT TO BID	12/2/21

ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS

DRAWING NUMBER:
C-1.0

NOTE:
REFER TO SHEET C-4.0 FOR SOIL EROSION SCHEDULE AND NOTES, AND SEQUENCE OF CONSTRUCTION.

EROSION CONTROL QUANTITIES:
SILT FENCE 211 LF
EMBANKMENT RESTORATION 1,987 SY
LAWN RESTORATION AREA 2,466 SY

ENGINEERING QUANTITIES:
36" OUTLET CONTROL STRUCTURE 1 EA.
RIPRAP 30 CY
MUCK DETENTION POND 439 CY

EARTHWORK BALANCING NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING OR EXPORTING ALL MATERIALS AS REQUIRED TO PROPERLY GRADE THIS PROJECT TO THE FINISHED ELEVATIONS SHOWN ON THE APPROVED PLANS. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF CUT AND FILL QUANTITIES AND ALLOW FOR REMOVAL OF EXCESS OR IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

GENERAL SITE CONDITIONS:
1. ACCORDING TO THE USGS WEB SOIL SURVEY DATED NOVEMBER 23, 2021, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:
52A - SELFREDGE LOAMY SAND, 0 TO 3 PERCENT SLOPES
2. TOTAL DISTURBED AREA = ±0.92 ACRES
3. N.P.D.E.S. NOTICE OF COVERAGE IS NOT REQUIRED

NOTE:
1. PER THE 'SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE PER THE PROJECT SPECIFICATIONS, PRIOR TO THE PLACEMENT OF TOPSOIL, THE SUCCESSFUL BIDDER TO SCHEDULE AN INSPECTION BY THE SCHOOL BOARD OR PEA GROUP TO CONFIRM THAT THE GRADE IS AT THE PROPER ELEVATION WHERE THE MINIMUM DEPTH OF TOPSOIL CAN BE PLACED THROUGHOUT THE AREA.
2. CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS. ANY DEVIATION TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.
3. WORK IS CURRENTLY ANTICIPATED TO BE COMPLETED IN THE WINTER WITH FROZEN GROUND. ADDITIONAL BMPs TO BE ADDED AS NEEDED IF WORK IS NOT COMPLETED BY SPRING OR PRIOR TO GROUND THAWING.
4. RE-GRADING OF THE POND AREAS SHALL BE INCLUDED IN THE COSTS OF THE PROJECT PER LIMITS SHOWN IN THE PLANS.
5. DISTRICT TO REVIEW SITE IN THE SPRING TO DETERMINE ANY GRASS AREAS AND IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION INCLUDING INGRESS/EGRESS AREAS TO THE PONDS. CONTRACTOR IS RESPONSIBLE TO RESTORE ALL DAMAGED AREAS AND IRRIGATION SYSTEM TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE DISTRICT.

SYMBOLS: GRADING
PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES. 722.50
PROPOSED CONTOUR LINE: 722
ABBREVIATIONS:
T/C = TOP OF CURB
G = GUTTER GRADE
T/P = TOP OF PAVEMENT
T/S = TOP OF SIDEWALK
T/W = TOP OF WALL
B/W = BOTTOM OF WALL
F.G. = FINISH GRADE
RIM = RIM ELEVATION

SYMBOLS: EROSION CONTROL:
SP-2 SILT FENCE
E-9 EROSION CONTROL BLANKET
LAWN RESTORATION
EMBANKMENT RESTORATION
REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.

LEGEND

EXISTING

- IRON FOUND
- IRON SET
- NAIL FOUND
- NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND
- MONUMENT SET

PROPOSED

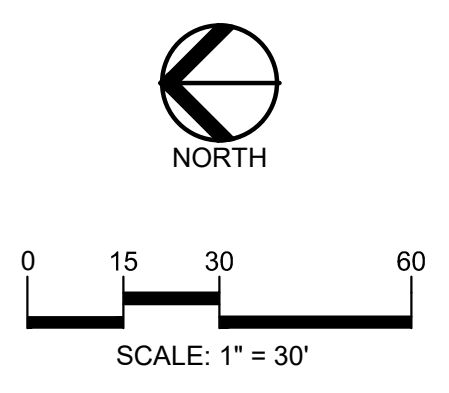
- ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
- UNDERGROUND CABLE TV, CATV PEDESTAL
- TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
- ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
- GAS MAIN, VALVE & GAS LINE MARKER
- WATERMAIN, HYD. GATE VALVE, TAPPING BLEWIE & VALVE
- SANITARY SEWER, CLEANOUT & MANHOLE
- STORM SEWER, CLEANOUT & MANHOLE
- COMBINED SEWER & MANHOLE
- SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
- POST INDICATOR VALVE
- WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
- MALBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE
- SPOT ELEVATION
- CONTOUR LINE
- FENCE
- GUARDRAIL
- STREET LIGHT
- SIGN
- CONC. CONCRETE
- ASPH. ASPHALT
- GRAVEL SHOULDER
- WETLAND

SEC. CORNER FOUND

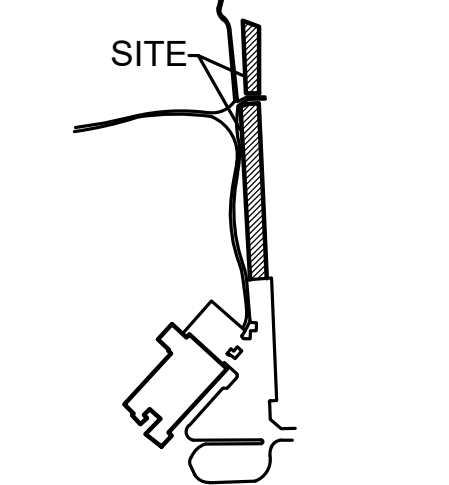
- R RECORDED
- M MEASURED
- C CALCULATED

310 HEAVY FLOW DUTY ONLY

310 HEAVY BEEP DUTY DUTY STRENGTH



CAUTION!!
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CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
COSTELLO ELEMENTARY SCHOOL
11333 HANAMAN DRIVE, TROY, MI 48065

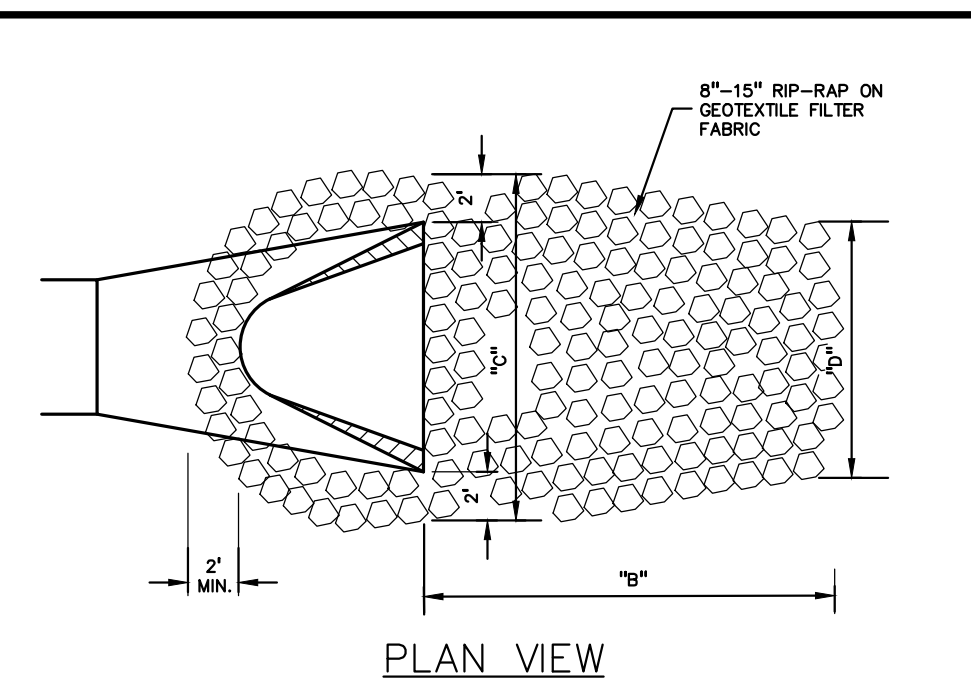
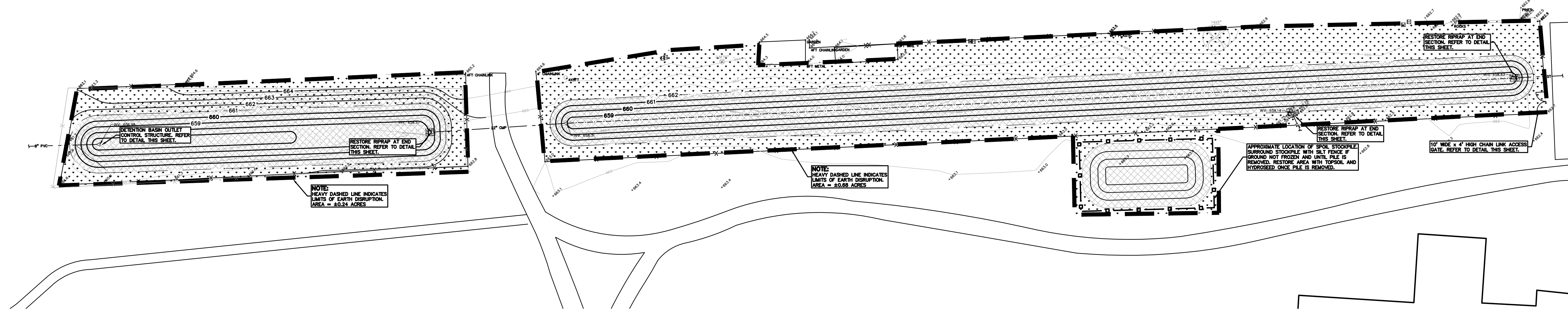
REVISIONS

1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21

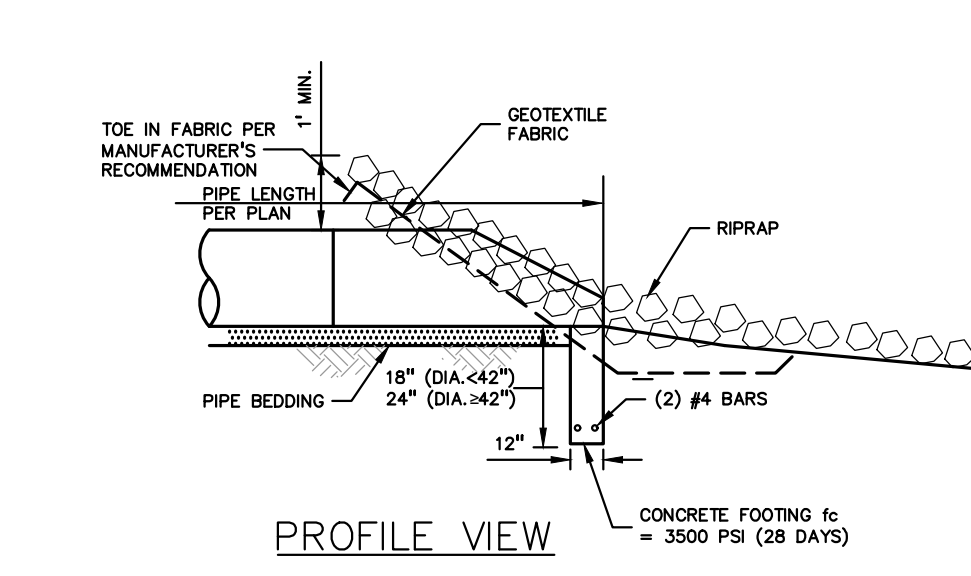
ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
GRADING AND SOIL EROSION PLAN

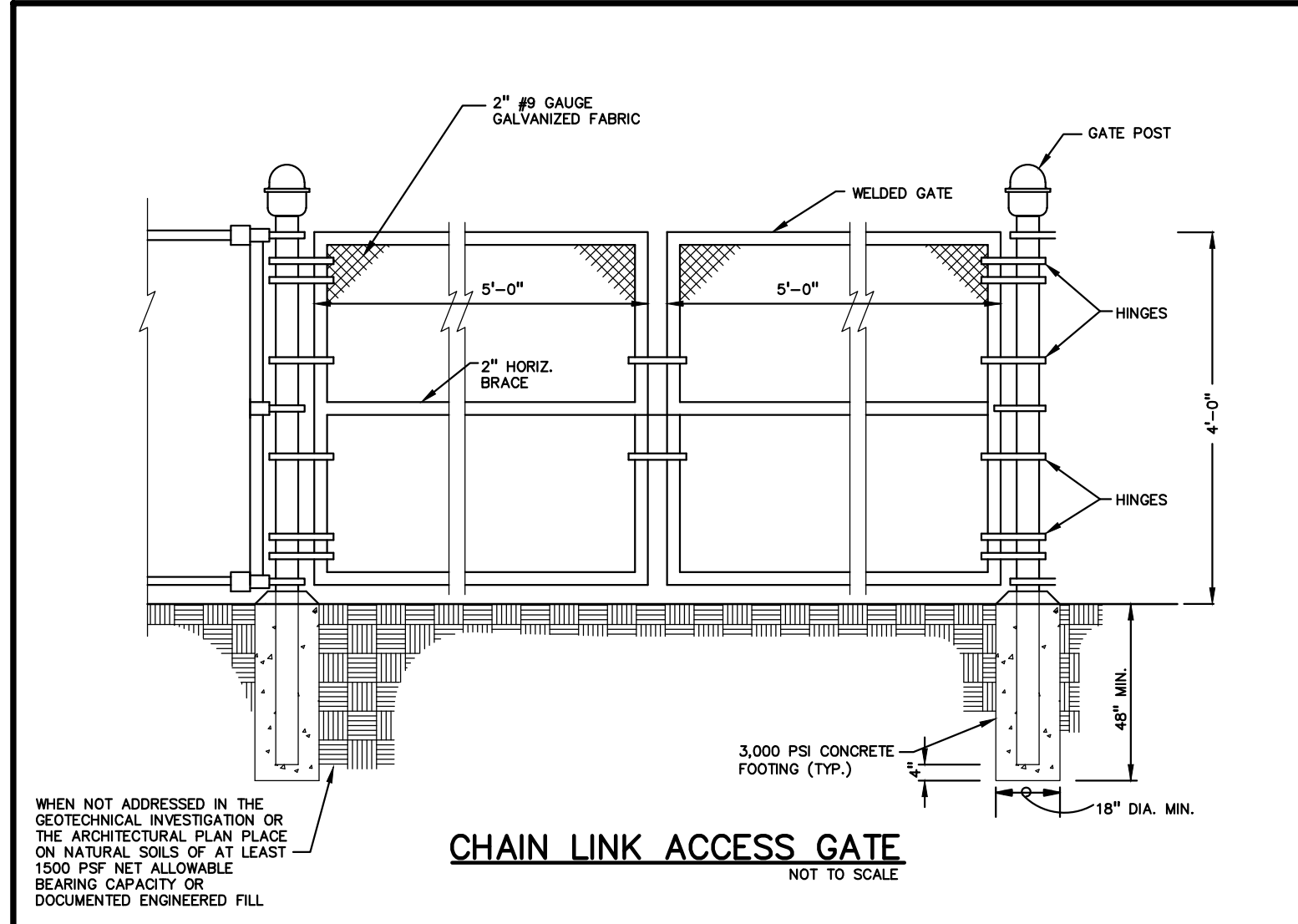
PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS
DRAWING NUMBER:	



PIPE DIAMETER	"b"	"c"	"d"	SQUARE YARDS
12"	5'-0"	8'-6"	3'-0"	8.0
15"	5'-0"	7'-0"	3'-0"	8.5
18"	5'-0"	7'-6"	3'-6"	9.2
21"	5'-6"	8'-0"	4'-0"	10.7
24"	8'-0"	8'-6"	4'-6"	12.4



END SECTION & RIPRAP DETAIL
NOT TO SCALE



CHAIN LINK ACCESS GATE
NOT TO SCALE

STORM DETENTION RE DEVELOPMENT DESIGN

Contributing Area (A): 15.940 AC.
Coefficient of Runoff (C): 0.492

STORAGE VOLUME REQUIRED:
Sedimentation Volume Required:
V_s = 15% x V_w = 545 x C x A
V_s = 4273.83 Cu. Ft.

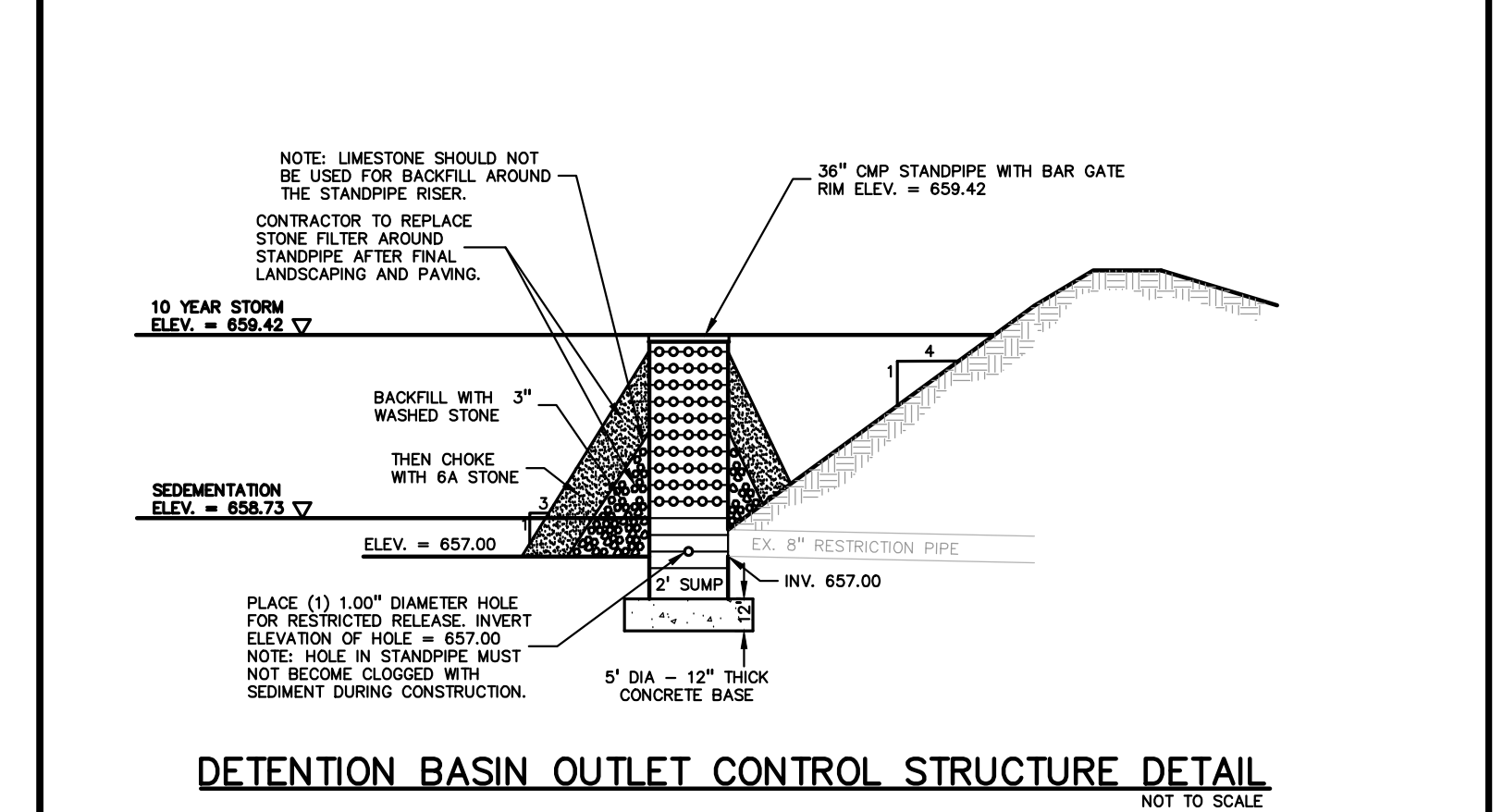
Combined Surveyed Detention Volume = 8891 Cu.Ft.

Outlet Control Restriction Calculations

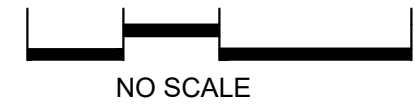
Maximum Storage Elevation:	658.73 ft
Restriction Hole Invert:	657.00 ft
Depth of Water in Pipe:	1.73 ft
Restriction Hole Dia.:	1.00 in
Restriction Hole Area:	0.00545 sq ft
Flow thru Restriction Hole:	0.04 cfs
Time for Release of Volume:	29.68 hrs

Proposed Combined ponds

CONTOUR	AREA	VOLUME	CUMM	V _f	Detention
657	405			-	-
658	2,103	1,254	1,254	-	-
659	6,216	4,160	5,414	658.73	
660	10,430	8,323	13,737	-	659.42
661	14,757	12,594	26,330	-	-
662	12,167	13,462	39,792	-	-



DETENTION BASIN OUTLET CONTROL STRUCTURE DETAIL
NOT TO SCALE



CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
2022 TSD SITE IMPROVEMENT PROJECTS
TROY, MI

REVISIONS	
1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21

ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
NOTES AND DETAILS

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS

DRAWING NUMBER:

C-4.0

GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

- ALL CONSTRUCTION, WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT OSHA, MDOT AND MUNICIPALITY STANDARDS AND REGULATIONS.
- THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- THE CONTRACTOR SHALL CONTACT THE ENGINEER SHOULD THEY ENCOUNTER ANY DESIGN ISSUES DURING CONSTRUCTION. IF THE CONTRACTOR MAKES DESIGN MODIFICATIONS WITHOUT THE WRITTEN DIRECTION OF THE DESIGN ENGINEER, THE CONTRACTOR DOES SO AT HIS OWN RISK.
- ALL NECESSARY PERMITS, TESTING, BONDS AND INSURANCES ETC., SHALL BE PAID FOR BY THE CONTRACTOR. THE OWNER SHALL PAY FOR ALL CITY INSPECTION FEES.
- THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. IF NO NOTIFICATION IS GIVEN AND DAMAGE RESULTS, SAID DAMAGE WILL BE REPAIRED AT SOLE EXPENSE OF THE CONTRACTOR. IF EXISTING UTILITY LINES ARE ENCOUNTERED THAT CONFLICT IN LOCATION WITH NEW CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER SO THAT THE CONFLICT MAY BE RESOLVED.
- CONTRACTOR SHALL VERIFY THAT THE PLANS AND SPECIFICATIONS ARE THE VERY LATEST PLANS AND SPECIFICATIONS AND FURTHERMORE, VERIFY THAT THESE PLANS AND SPECIFICATIONS HAVE BEEN APPROVED. ALL ITEMS CONSTRUCTED BY THE CONTRACTOR PRIOR TO RECEIVING FINAL APPROVAL, HAVING TO BE ADJUSTED OR RE-DONE, SHALL BE AT THE CONTRACTORS EXPENSE. SHOULD THE CONTRACTOR ENCOUNTER A CONFLICT BETWEEN THESE PLANS AND/OR SPECIFICATIONS, THEY SHALL SEEK CLARIFICATION IN WRITING FROM THE ENGINEER BEFORE COMMENCEMENT OF CONSTRUCTION. FAILURE TO DO SO SHALL BE AT SOLE EXPENSE TO THE CONTRACTOR.
- ANY WORK WITHIN THE STREET OR HIGHWAY RIGHTS-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AGENCIES HAVING JURISDICTION AND SHALL NOT BEGIN UNTIL ALL NECESSARY PERMITS HAVE BEEN ISSUED FOR THE WORK.
- ALL PROPERTIES OR FACILITIES IN THE SURROUNDING AREAS, PUBLIC OR PRIVATE, DESTROYED OR OTHERWISE DISTURBED DUE TO CONSTRUCTION, SHALL BE REPLACED AND/OR RESTORED TO THE ORIGINAL CONDITION BY THE CONTRACTOR.
- THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADING, SIGNAGE, LIGHTS AND TRAFFIC CONTROL DEVICES TO PROTECT THE WORK AND SAFELY MAINTAIN TRAFFIC IN ACCORDANCE WITH LOCAL REQUIREMENTS AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION). THE DESIGN ENGINEER, OWNER, CITY AND STATE SHALL NOT BE HELD LIABLE FOR ANY CLAIMS RESULTING FROM ACCIDENTS OR DAMAGES CAUSED BY THE CONTRACTOR'S FAILURE TO COMPLY WITH TRAFFIC AND PUBLIC SAFETY REGULATIONS DURING THE CONSTRUCTION PERIOD.
- THE USE OF CRUSHED CONCRETE IS PROHIBITED ON THE PROJECT WITHIN 100 FEET OF ANY WATER COURSE (STREAM, RIVER, COUNTY DRAIN, ETC.) AND LAKE, REGARDLESS OF THE APPLICATION OR LOCATION OF THE WATER COURSE OR LAKE RELATIVE TO THE PROJECT LIMITS.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADJUST THE TOP OF ALL EXISTING AND PROPOSED STRUCTURES (MANHOLES, CATCH BASINS, INLETS, GATE WELLS ETC.) WITHIN GRADED AND /OR PAVED AREAS TO FINAL GRADE SHOWN ON THE PLANS. ALL SUCH ADJUSTMENTS SHALL BE INCIDENTAL TO THE JOB AND WILL NOT BE PAID FOR SEPARATELY.

GENERAL GRADING AND EARTHWORK NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT

- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING TREES AND BRUSH AND REMOVE ALL THAT ARE NECESSARY TO GRADE SITE.
- ALL GRADES ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
- THE STAGING OF CONSTRUCTION ACTIVITIES SHALL OCCUR ONLY WITHIN THE SITE BOUNDARIES. ANY CONSTRUCTION ACTIVITIES OUTSIDE OF THE SITE BOUNDARIES SHALL BE AT THE SOLE RESPONSIBILITY AND RISK OF THE CONTRACTOR.
- ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL MEET THE REQUIREMENTS OF THE AUTHORIZED PUBLIC AGENCY OF JURISDICTION.
- ALL EARTHWORK AND GRADING OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE SOILS INVESTIGATION AND REPORT.
- REFER TO SOIL EROSION CONTROL PLAN FOR ADDITIONAL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AND NOTES.
- THE DETENTION BASIN SIDE SLOPES AND ALL SLOPE EXCEEDING 1:6 MUST BE STABILIZED BY SODDING OR BY PLACING A MULCH BLANKET PEGGED IN PLACE OVER SEED.
- ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SODDED IN ACCORDANCE WITH THE LANDSCAPE PLANS. PROVIDE A MINIMUM OF 3" OF TOPSOIL IN THESE AREAS UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL NOTE EXISTING UNDERGROUND UTILITIES WITHIN AND ADJACENT TO THE SITE. BACKFILL FOR EXISTING UTILITY TRENCHES SHALL BE EXAMINED CRITICALLY. ANY TRENCHES FOUND TO HAVE SOFT, UNSTABLE OR UNSUITABLE BACKFILL MATERIAL, IN THE OPINION OF THE THIRD PARTY TESTING COMPANY, THAT ARE TO BE WITHIN THE ZONE OF INFLUENCE OF PROPOSED BUILDINGS OR PAVEMENT SHALL BE COMPLETELY EXCAVATED AND BACKFILLED WITH SUITABLE MATERIAL.
- ON-SITE FILL CAN BE USED IF THE SPECIFIED COMPACTION REQUIREMENTS CAN BE ACHIEVED. IF ON-SITE SOIL IS USED, IT SHOULD BE CLEAN AND FREE OF FROZEN SOIL, ORGANICS, OR OTHER DELETERIOUS MATERIALS.
- THE FINAL SUBGRADE/EXISTING AGGREGATE BASE SHOULD BE THOROUGHLY PROOFROLLED USING A FULLY LOADED TANDEM AXLE TRUCK OR FRONT END LOADER UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS THAT CANNOT BE MECHANICALLY STABILIZED SHOULD BE REINFORCED USING GEORIDS OR REMOVED AND REPLACED WITH ENGINEERED FILL OR AS DICTATED BY FIELD CONDITIONS.
- SUBGRADE UNDERCUTTING, INCLUDING BACKFILLING SHALL BE PERFORMED TO REPLACE MATERIALS SUSCEPTIBLE TO FROST HEAVING AND UNSTABLE SOIL CONDITIONS. ANY EXCAVATIONS THAT MAY BE REQUIRED BELOW THE TOPSOIL IN FILL AREAS OR BELOW SUBGRADE IN CUT AREAS WILL BE CLASSIFIED AS SUBGRADE UNDERCUTTING.
- SUBGRADE UNDERCUTTING SHALL BE PERFORMED WHERE NECESSARY AND THE EXCAVATED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR. ANY SUBGRADE UNDERCUTTING SHALL BE BACKFILLED AS RECOMMENDED IN THE GEOTECHNICAL ENGINEERING REPORT FOR THE PROJECT.
- ANY SUB-GRADE WATERING REQUIRED TO ACHIEVE REQUIRED DENSITY SHALL BE CONSIDERED INCIDENTAL TO THE JOB.

GENERAL UTILITY NOTES:

- ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY.
- ALL TRENCHES UNDER OR WITHIN THREE (3) FEET OR THE FORTY-FIVE (45) DEGREE ZONE OF INFLUENCE LINE OF EXISTING AND/OR PROPOSED PAVEMENT, BUILDING PAD OR DRIVE APPROACH SHALL BE BACKFILLED WITH SAND COMPACTED TO AT LEAST NINETY-FIVE (95) PERCENT OF MAXIMUM UNIT WEIGHT (ASTM D-1557). ALL OTHER TRENCHES TO BE COMPACTED TO 90% OR BETTER.
- WHERE EXISTING MANHOLES OR SEWER PIPE ARE TO BE TAPPED, DRILL HOLES 4" CENTER TO CENTER, AROUND PERIPHERY OF OPENING TO CREATE A PLANE OF WEAKNESS JOINT BEFORE BREAKING SECTION OUT.
- THE LOCATIONS AND DIMENSIONS SHOWN ON THE PLANS FOR EXISTING UTILITIES ARE IN ACCORDANCE WITH AVAILABLE INFORMATION WITHOUT UNCOVERING AND MEASURING. THE DESIGN ENGINEER DOES NOT GUARANTEE THE ACCURACY OF THIS INFORMATION OR THAT ALL EXISTING UNDERGROUND FACILITIES ARE SHOWN. CONTRACTOR SHALL FIELD VERIFY UTILITIES.
- THE CONTRACTOR SHALL COORDINATE TO ENSURE ALL REQUIRED PIPES, CONDUITS, CABLES AND SLEEVES ARE PROPERLY PLACED FOR THE INSTALLATION OF GAS, ELECTRIC, PHONE, CABLE, IRRIGATION, ETC. IN SUCH A MANNER THAT WILL FACILITATE THEIR PROPER INSTALLATION PRIOR TO THE PLACEMENT OF THE PROPOSED PAVEMENT AND LANDSCAPING.
- PIPE LENGTHS INDICATED ARE FROM CENTER OF STRUCTURE AND TO END OF FLARED END SECTION UNLESS NOTED OTHERWISE.
- CONTRACTOR SHALL INSPECT ALL EXISTING PUBLIC STORM SEWER, SANITARY SEWER AND WATER MAIN STRUCTURES WITHIN THE LIMITS OF CONSTRUCTION AND WITH THE GOVERNING AGENCY INSPECTOR PRIOR TO ESTABLISHING FINAL GRADE. NOTIFY THE ENGINEER, OWNER/DEVELOPER, AND GOVERNING AGENCY IF STRUCTURE IS DEEMED TO BE STRUCTURALLY UNSOUND AND/OR IN NEED OF REPAIR.

STORM SEWER NOTES:

- ALL STORM SEWER 12" DIAMETER OR LARGER SHALL BE REINFORCED CONCRETE PIPE (RCP C-76) CLASS IV WITH MODIFIED TONGUE AND GROOVE JOINT WITH RUBBER GASKETS UNLESS SPECIFIED OTHERWISE (ASTM C-443).
- ALL STORM SEWER LEADS SHALL BE CONSTRUCTED AT 1.00% MINIMUM SLOPE.
- ALL STORM SEWER 10" OR LESS AND/OR LEADS SHALL BE SDR 26.
- JOINTS FOR P.V.C. PIPE SHALL BE ELASTOMERIC (RUBBER GASKET) AS SPECIFIED IN A.S.T.M. DESIGNATION D-3212.

SEQUENCE OF CONSTRUCTION:

START DAY	END DAY	DESCRIPTION
1	5	INSTALL TEMPORARY SOIL EROSION CONTROL MEASURES, SILT FENCES, INLET PROTECTION, ETC. AS NECESSARY.
1	30	MAINTAIN A 25' BUFFER OF VEGETATION AROUND PERIMETER OF SITE WHERE POSSIBLE.
1	5	REMOVE ALL VEGETATION, TREES AND BRUSH FROM THE PROPOSED CONSTRUCTION AREA UNLESS MARKED TO REMAIN. STRIP AND STOCKPILE TOPSOIL AS REQUIRED RESTORATION. ALL STOCKPILES MUST BE GRADED AND SEEDED.
5	10	DISPOSE OF ALL EXCESS/UNSUITABLE MATERIALS OFF SITE IN A LEGAL MANNER. NO ON-SITE BURN OR BURY PITS ALLOWED.
10	15	ROUGH GRADE SITE. SEED AND MULCH BLANKETS MUST BE INSTALLED AS SHOWN WITHIN 5 DAYS OF FINAL GRADE. REPAIR AND/OR RE-INSTALL ANY TEMPORARY SOIL EROSION CONTROL MEASURES THAT WERE DAMAGED DURING GRADING OPERATIONS.
15	20	TEMPORARY SEEDING MUST BE PROVIDED IN AREAS NOT TO BE WORKED ON FOR 15 DAYS OR LONGER.
20	30	FINAL GRADE, REDISTRIBUTE STOCKPILED TOPSOIL, ESTABLISH VEGETATION AND INSTALL ALL PERMANENT LANDSCAPING IN ALL DISTURBED AREAS NOT BUILT.

SOIL EROSION MAINTENANCE SCHEDULE AND NOTES:

- THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT BY:
TBD
- IF ANY DAMAGE HAS OCCURRED AS A RESULT OF STORM WATER DISCHARGE FROM THE SITE, THE FOLLOWING STEPS SHALL BE IMPLEMENTED.
- ANY DEBRIS OR DIRT ON ANY PAVED AREA RESULTING FROM CONSTRUCTION TRAFFIC SHALL BE CLEANED IN A PROMPT MANNER BY THE CONTRACTOR. THE CONSTRUCTION DRIVE SHALL BE CLEANED AT THE END OF EACH DAY.
- ALL DIRT AND MUD TRACKED ONTO PAVED AREAS SHALL BE REMOVED BY THE CONTRACTOR DAILY BY SCRAPING. STREET SWEEPING IS REQUIRED WEEKLY.
- SILT FENCE MAINTENANCE SHALL INCLUDE THE REMOVAL OF ANY BUILT UP SEDIMENT WHEN THE SEDIMENT HEIGHT ACCUMULATES TO 1/3 TO 1/2 OF THE HEIGHT OF THE FENCE. THE CONTRACTOR IS RESPONSIBLE TO REMOVE, REPLACE, RETRENCH OR REBACKFILL THE SILTATION FENCE SHOULD IT FALL OR BE DAMAGED DURING CONSTRUCTION.
- INLET FILTER MAINTENANCE SHALL INCLUDE THE REMOVAL OF ANY ACCUMULATED SILT OR OTHER DEBRIS. THE REMOVAL OF SILT SHOULD BE WITH THE USE OF A STIFF BRISTLE BROOM OR SQUARE POINT SHOVEL. IF INLET FILTERS CAN NOT BE CLEANED OR ARE DAMAGED, THEN THE FABRIC MUST BE REPLACED.
- CONTRACTOR TO PROVIDE WATER TRUCK TO WATER DOWN THE SITE ON A DAILY BASIS AS REQUIRED TO MAINTAIN DUST CONTROL.
- IF HIGH GROUNDWATER IS ANTICIPATED OR ENCOUNTERED DURING CONSTRUCTION A DEWATERING PLAN MUST BE SUBMITTED TO THE CITY ENGINEERING DIVISION FOR REVIEW.

SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE OF CONSTRUCTION

- SEE OAKLAND COUNTY W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL SOIL EROSION CONTROL RELATED DETAILS.
- PLACE SILT FENCE & INSTALL INLET FILTERS ON EXISTING STORM SEWER STRUCTURES, ACCORDING TO PLANS.
- REMOVE TREES, ETC. AS DIRECTED ON THE DEMOLITION PLAN.
- STRIP AND STOCKPILE TOPSOIL FOR RESTORATION REQUIREMENTS.
- DISPOSE OF ALL EXCESS, UNSUITABLE MATERIALS OFF SITE IN A LEGAL MANNER. NO BURN OR BURY PITS ALLOWED.
- UNSUITABLE MATERIALS CONSIST OF, BUT ARE NOT NECESSARILY LIMITED TO THE FOLLOWING: CONCRETE, ASPHALT, TREES, BRUSH, STUMPS, ROOTS, OR OTHER MISCELLANEOUS DEBRIS OR TRASH.
- MASS GRADE THE SITE IN ACCORDANCE WITH THE PLANS.
- RESTORE AREAS WITH HYDROSEED AND MULCH BLANKETS, AS NEEDED AND AS SHOWN ON THE PLAN WITHIN 5 DAYS OF COMPLETION OF MASS GRADING OR WHENEVER DISTURBED AREAS WILL REMAIN UNCHANGED FOR 30 DAYS OR GREATER. 3-4" TOPSOIL WILL BE USED WHERE VEGETATION IS REQUIRED.
- COMPLETE ROUGH GRADING OF SITE, AS SHOWN.
- APPLY TOPSOIL, HYDROSEED AND MULCH BLANKETS TO ALL DISTURBED AREAS UPON COMPLETION OF GRADING. THE CONTRACTOR SHALL STAGE CONSTRUCTION ACTIVITIES IN ORDER TO MINIMIZE THE EXPOSURE OF UNSTABILIZED AREAS.
- CLEAN PAVEMENT AND STORM SEWERS. REMOVE SILT FENCE, ONCE VEGETATION HAS BEEN ESTABLISHED.
- CLEAN DETENTION BASIN AND OVERFLOW SPILLWAYS AND REPAIR RIPRAP AS NECESSARY.
- ALL DIRT AND MUD TRACKED ONTO PUBLIC ROADS SHALL BE REMOVED DAILY.

SOILS AND AGGREGATES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Subsoil materials.
2. Topsoil materials.
3. Coarse aggregate materials.
4. Fine aggregate materials.

B. Related Sections:

1. Section 31 22 13 - Rough Grading.
2. Section 31 23 17 - Trenching.
3. Section 31 23 23 - Fill.
4. Section 32 91 19 - Landscape Grading.
5. Section 33 41 00 - Storm Utility Drainage Piping.

1.2 REFERENCES

A. ASTM International:

1. ASTM D136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
3. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
4. ASTM D2974 - Standard Test Method for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.
5. ASTM D7928 - Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis.
6. ASTM C4972 - Test Method for PH of Soils.
7. MTM 109 - Michigan Test Method for Sieve Analysis of Fine, Dense Graded, Open Graded and Coarse Aggregates in the Field.

1.3 SUBMITTALS

- A. Samples: Submit 2, 20lb samples of each type of material to be tested, to the testing agency.
- B. Materials Source: Submit name of imported materials supplier(s).
- C. Manufacturer's Certificate: The Contractor shall submit to the Owner, two copies of material certificates signed by the Material Producer and Contractor. Certificates shall state that each material item meets specified requirements.
- D. Gradation Reports: The Contractor shall submit to the Owner, two copies of the gradations for each of the required aggregate mixtures. Mix designs shall be within allowable tolerances as specified for the particular section.

1.4 QUALITY ASSURANCE

- A. Furnish each aggregate material from single source throughout the Work.
- B. Perform Work in accordance with local governing agency standards.
- C. Testing and Inspection: The Owner may engage a testing agency to sample and test materials proposed for use in the Work.

PART 2 PRODUCTS

2.1 SUBSOIL MATERIALS

- A. Subsoil Type S1:
 - 1. Excavated and re-used material, imported borrow and select or local borrow.
 - 2. Graded.
 - 3. Free of lumps larger than 3 inches, rocks larger than 2 inches, organic material, and debris.

2.2 TOPSOIL MATERIALS

- A. Topsoil Type S2:
 - 1. Fertile, friable, natural topsoil of loamy character, obtained from well drained arable site.
 - 2. Reasonably free of clay, lumps, coarse sands, plants, roots, rocks larger than 1/2 inch, subsoil, debris, large weeds, and foreign matter.
 - 3. Acidity range pH of 5.0 to 7.5.
 - 4. Containing minimum of 10 percent organic matter.

2.3 SOIL MATERIALS

- A. General: Provide approved borrow soil materials from off-site when sufficient approved soil materials are not available from excavations.
- B. Satisfactory Soil Materials: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter.
- C. Unsatisfactory Soil Materials: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT.
- D. Backfill and Fill Materials: Satisfactory soil materials as recommended by a geotechnical engineer.

2.4 AGGREGATE MATERIALS

- A. Crushed Stone Fill, Type A1: Dense-graded crushed concrete or crushed aggregate shall meet the requirements of Section 902 of the Michigan Department of Transportation Standard Specification for Construction, and shall consist of 21AA Crushed Aggregate.
- B. Granular Fill, Type A2: Granular material shall consist of natural sand, stone screenings, gravel or a blend of natural sand, gravel and stone screenings. It shall be composed of rough surfaced and angular grains of quartz or other hard durable rock and meet the requirements of Section 902 of the Michigan Department of Transportation Standard Specification for Construction, and shall consist of Class II granular material.
- C. Open-Graded Drainage Course Aggregate Materials (OGDC), Type A3: for use in Temporary Construction Access Drives, Drainage Course under Pavement Aggregate Base Courses and other miscellaneous uses shall consist of crushed stone, crushed gravel or crushed concrete free from organic matter or other deleterious substances with material sized between 1" and 3" in diameter, with less than 6% fine material (#200 sieve). Such materials are usually referred to as "1x3" or "OGDC".
- D. Crushed Aggregate Surface Course (CASC), Type A4: shall meet the requirements of Section 306 of the Michigan Department of Transportation Standard Specification for Construction, and shall consist of 23A Crushed Aggregate.

2.5 SOURCE QUALITY CONTROL

- A. Testing and Analysis of Subsoil Material: Perform in accordance with ASTM D1557.
- B. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D2974 and ASTM D4972.
- C. When tests indicate materials do not meet specified requirements, change material and retest.
- D. Provide materials from same source throughout the Work.

PART 3 EXECUTION

3.1 EXCAVATION

- A. Excavate subsoil and aggregates from areas designated. Strip topsoil to full depth of topsoil in designated areas.
- B. Stockpile excavated material meeting requirements for subsoil materials, topsoil materials and aggregates.
- C. Remove excess excavated subsoil and topsoil not intended for reuse, from site.
- D. Remove excavated materials not meeting requirements for subsoil materials, topsoil materials and aggregates from site.

3.2 EXAMINATION

- A. Verify compacted substrate is dry and ready to support paving and imposed loads.
- B. Subgrade preparations shall consist of the final machining of the subgrade immediately prior to placing the aggregate subbase or base materials. The surface shall be true to line and grade. Proof roll in areas to receive aggregate materials with a 25-ton rubber-tired roller, a loaded front-end loader or loaded dump truck to locate all soft surface areas. Replace soil that deflects and will not compact with acceptable fill material and compact such fill in accordance with these Specifications.
- C. Verify substrate has been inspected, gradients and elevations are correct.

3.3 PREPARATION

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place fill on soft, muddy, or frozen surfaces.

3.4 AGGREGATE TRANSPORTING AND PLACEMENT

- A. The aggregate shall be transported from the crushing plant to the point of use in hauling vehicles which are covered. Deliveries shall be scheduled so that spreading and compaction of all aggregate delivered that day can be completed during daylight hours, unless adequate artificial lighting is provided, or stockpile locations are provided. Hauling over freshly placed material shall not be permitted until the material has been compacted as specified.
- B. Upon arrival, the aggregate shall be spread to a thickness not to exceed 6 inches by an approved grading method. It shall be struck off in a uniform layer of such depth that, when the Work is completed, it shall have the required thickness and conform to the grade and contour indicated.
- C. On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the aggregate may be spread, raked, leveled and compacted by using hand tools.

- D. After spreading, the aggregate shall be thoroughly and uniformly compacted by approved compaction equipment. The speed of the compaction equipment shall at all times be sufficiently slow enough to avoid displacement of the aggregate. Any displacement occurring as a result of reversing direction of the compaction equipment or from any other cause shall be corrected at once. Rolling shall continue until all roller marks are eliminated, the surface is of uniform texture and true to grade and cross-section and the required field-density is obtained.
- E. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.5 MINIMUM QUALITY REQUIREMENTS

- A. The Contractor shall at no expense to the Owner test in-place aggregate surface, base course and subbase materials for compliance with the requirements for density and thickness.
- B. Maximum dry density shall be determined per ASTM D1557 modified proctor.
- C. In-place compacted minimum thickness is as shown in the cross-sectional details on the Plans. Any thickness less than shown on the plans is not acceptable.

3.6 TOLERANCES

- A. Maximum Variation from Flat Surface: 1/2 inch measured with 10-foot straight edge.
- B. Maximum Variation from Thickness: No less than shown on the Plans.
- C. Maximum Variation from Elevation: 1/2 inch.

3.7 FIELD QUALITY CONTROL

- A. Quality Control During Aggregate Placement: Perform the following sampling and testing of aggregate mixtures for quality control during operations. Record the locations where samples are taken to correlate with subsequent testing.
- B. Test uncompacted aggregate for gradation distribution per ASTM D136 or MTM 109. Test for compaction per ASTM D1557 modified proctor.
- C. Perform three tests for each day's aggregate placement, unless otherwise specified or directed.
- D. Test in-place, compacted aggregate for density and thickness. Perform five tests for each day's aggregate placement unless otherwise specified or directed.
- E. Additional testing may be required if any of the previous tests indicate insufficient values. If two successive tests indicate insufficient values, contact the Owner for a course of action.
- F. Aggregate materials not complying with specified requirements shall be removed and replaced with new compliant aggregate.
- G. Upon completion of the construction Work and after spoils and debris have been removed, re-grade any areas disturbed by the operations.

3.8 STOCKPILING

- A. Stockpile materials on site at locations designated by Owner.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate different materials with dividers or stockpile individually to prevent mixing.
- D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- E. Surround stockpile with silt fence or erosion eels.
- F. Stockpile unsuitable materials on impervious material and cover to prevent erosion and leaching, until disposed of.

3.9 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION

SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Protecting existing vegetation to remain.
 - 2. Removing existing vegetation.
 - 3. Clearing and grubbing.
 - 4. Stripping and stockpiling topsoil.
 - 5. Removing above- and below-grade site improvements.
 - 6. Temporary erosion and sedimentation control.

1.3 DEFINITIONS

- A. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow.
- D. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects larger than 2 inches (50 mm) in diameter; and free of weeds, roots, toxic materials, or other non-soil materials.
- E. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.
- F. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings.
- G. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 PRE-INSTALLATION MEETINGS

- A. Pre-installation Conference: Conduct conference at Project site.

1.5 MATERIAL OWNERSHIP

- A. Except for materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.6 INFORMATIONAL SUBMITTALS

- A. Existing Conditions: The Contractor shall have the option to submit documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.

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

- B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.7 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

- 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
- 2. Provide alternate routes around closed or obstructed trafficways if required by Owner or authorities having jurisdiction.

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

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

- C. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises at location directed by the Owner.

- D. Utility Locator Service: Three full working days before construction begins, call the Miss Dig system at 1-800-482-7171 or 811.

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

- F. Tree and Plant Protection Zones: Protect according to requirements in Section 015639 "Temporary Tree and Plant Protection."

- G. Soil Stripping, Handling, and Stockpiling: Perform only when the soil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 310516 "Soils and Aggregates".

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

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction unless otherwise indicated to be removed.
- B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protection zones have been identified and enclosed according to plan requirements.
- C. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil bearing water runoff or airborne dust to adjacent properties and walkways, according to Soil Erosion and Sedimentation Control Drawings and requirements of authorities having jurisdiction.
- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- C. Inspect, maintain, and repair erosion and sedimentation control measures during construction until permanent vegetation has been established.
- D. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

- A. Protect trees and plants remaining on-site according to according to plan requirements.
- B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations according to plan requirements.

3.4 EXISTING UTILITIES

- A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed.
 - 1. Owner will arrange to shut off indicated utilities when requested by Contractor.
- B. Locate, identify, and disconnect utilities indicated to be abandoned in place.
- C. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others, unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than 3 days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Owner's written permission.
- D. Excavate for and remove underground utilities indicated to be removed.

3.5 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 2. Grind down stumps and remove roots larger than 3 inches (75 mm) in diameter, obstructions, and debris to a depth of 24 inches (450 mm) below exposed subgrade.
 3. Use only hand methods or air spade for grubbing within protection zones.
 4. Chip removed tree branches and dispose of off-site.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm), and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to required depth in a manner to prevent intermingling with underlying subsoil or other waste materials.
- C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.
1. Limit height of topsoil stockpiles to 72 inches (1800 mm).
 2. Do not stockpile topsoil within protection zones.
 3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
 4. Stockpile surplus topsoil to allow for re-spreading deeper topsoil.

3.7 SITE IMPROVEMENTS

- A. Remove existing above and below grade improvements as indicated and necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically. If possible, adjust line of demolition to the nearest joint.
 2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
- B. Separate recyclable materials produced during site clearing from other non-recyclable materials. Store or stockpile without intermixing with other materials, and transport them to recycling facilities. Do not interfere with other Project work.

C. Burning of waste materials is not permitted on Owner's property.

****END OF SECTION****

ROUGH GRADING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating subsoil.
2. Cutting, grading, filling, rough contouring, and compacting site for site structures, building pads, and pavements.

B. Related Sections:

1. Section 31 05 16 – Soils and Aggregates.
2. Section 31 10 00 - Site Clearing: Excavating topsoil.
3. Section 31 23 16 - Excavation: General area excavation
4. Section 31 23 17 - Trenching: Trenching and backfilling for utilities.
5. Section 31 23 23 - Fill: General area backfilling.

1.2 REFERENCES

A. ASTM International:

1. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
2. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

- A. Materials Source: Submit name of imported materials suppliers.
- B. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with the Geotechnical Report by Soil & Materials Engineers (SME).

- B. The services of a full-time Soils Engineer and Soils Laboratory may be retained by the Owner to observe earthwork operations, analyze soil materials and perform applicable laboratory and field tests.
- C. The Contractor shall arrange and pay for any other test or required inspections necessary to meet the requirements set forth in these Construction Documents.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Topsoil: Type S2 as specified in Section 31 05 16.
- B. Subsoil Fill: Type S1 as specified in Section 31 05 16.
- C. Crushed Stone Fill: Type A1 as specified in Section 31 05 16.
- D. Granular Fill: Type A2 as specified in Section 31 05 16.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify survey bench mark and intended elevations for the Work are as indicated on Drawings.
- C. Locate and protect survey control and reference points. Promptly notify Engineer of discrepancies discovered.
- D. Control datum for survey is that shown on Drawings.
- E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- F. Promptly report to Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.
- G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.

3.2 PREPARATION

- A. Call Local Utility Line Information service, MISS DIG at 1-800-482-7171 or 811, not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Notify utility company prior to removing or relocating utilities.

- D. Protect utilities indicated to remain from damage.
- E. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- F. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.3 SUBSOIL EXCAVATION

- A. Excavate subsoil from areas to be further excavated, re-landscaped, or regraded.
- B. Do not excavate wet subsoil or excavate and process wet material to obtain optimum moisture content.
- C. Remove excess subsoil not intended for reuse, from site.
- D. Benching Slopes: Horizontally bench existing slopes greater than 1: 4 to key placed fill material to slope to provide firm bearing.
- E. Stability: Replace damaged or displaced subsoil as specified for fill.

3.4 FILLING

- A. Fill areas to contours and elevations with unfrozen materials.
- B. Place material in continuous layers as follows:

<u>Compaction Method</u>	<u>Maximum Loose Lift Thickness</u>
Hand-operated vibratory plate or light roller in confined areas	4 inches
Hand-operated vibratory roller weighing at least 1,000 pounds	6 inches
Vibratory roller drum roller, minimum dynamic force, 2,000 pounds	9 inches
Vibratory drum roller, minimum dynamic force, 30,000 pounds	12 inches
Sheeps-foot roller	8 inches

- C. Maintain optimum moisture content of fill materials to attain required compaction density.
- D. Make grade changes gradual. Blend slope into level areas.
- E. Repair or replace items indicated to remain damaged by excavation or filling.

3.5 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.

3.6 FIELD QUALITY CONTROL

- A. Perform laboratory material tests in accordance with ASTM D1557.
- B. Perform in place compaction tests in accordance with the following:
 - 1. Density and Moisture Tests: ASTM D-6938.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- D. Frequency of Tests: Provide one density test for every lift.

3.7 SCHEDULES

- A. Fill in the upper 12 inches under pavement and sidewalks:
 - 1. Compact uniformly to minimum 95 percent of maximum density per ASTM D-1557.
- B. Fill below 12 inches under pavement and sidewalks:
 - 1. Compact uniformly to minimum 92 percent of maximum density per ASTM D-1557.
- C. Fill in landscape areas:
 - 1. Compact uniformly to minimum 88 percent of maximum density per ASTM D-1557.

END OF SECTION

EXCAVATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Soil densification.
2. Excavating for paving, roads, and parking areas.
3. Excavating for slabs-on-grade.
4. Excavating for site structures.
5. Excavating for landscaping.

B. Related Sections:

1. Section 31 05 16 – Soils and Aggregates.
2. Section 31 22 13 - Rough Grading: Topsoil and subsoil removal from site surface.
3. Section 31 23 17 - Trenching: Excavating for utility trenches.
4. Section 31 23 23 - Fill.
5. Section 33 41 00 – Storm Utility Drainage Piping.

1.2 REFERENCES

- A. Local utility standards when working within 24 inches of utility lines.

1.3 SUBMITTALS

- A. Shop Drawings: None required.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with local governing agency standards.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 PREPARATION

- A. Call Local Utility Line Information service, Miss Dig at 1-800-482-7171 or 811, not less than three working days before performing Work.

1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Notify utility company prior to the removal and relocation of utilities.
- D. Protect utilities indicated to remain from damage.
- E. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- F. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs indicated to remain from excavating equipment and vehicular traffic.

3.2 SOIL DENSIFICATION - VIBRO-COMPACTION

- A. Densify existing subsoils with relative density rating of compact to dense to attain relative density rating of very dense.
- B. Densification Equipment:
 1. Depth Vibrator: Poker type with follower tubes with visible marking every 12 inches to enable insertion depth measurement.
 2. Motion: radial in horizontal plane.
 3. Data Acquisition System: Record amps or pressure of the vibrator motor over time and depth.
- C. Insert vibrator to maximum specified depth. Densify soils for 30 seconds or other time as directed by Geotechnical Engineer. Withdraw vibrator every 12 inches increments and repeat densification at each increment.
 1. When subsurface obstruction prevents vibrator insertion to specified depth, request instructions from Geotechnical Engineer to compensate for obstruction.
- D. Tolerances:
 1. Maximum Deviation from Center of Completed Compaction: 8 inches from indicated position.
 2. Maximum Deviation from Vertical: 4 degrees during vibrator insertion.

3.3 EXCAVATION

- A. Underpin adjacent structures which may be damaged by excavation work.
- B. Excavate subsoil to accommodate slabs-on-grade, paving and site structures.
- C. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with Section 31 23 23 and Section 31 23 17.
- D. Slope banks with machine to angle of repose or less until shored.
- E. Grade top perimeter of excavation to prevent surface water from draining into excavation.

- F. Trim excavation. Remove loose matter.
- G. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume. Remove larger material as specified in Section 31 23 23.
- H. Notify Owner of unexpected subsurface conditions.
- I. Correct areas over excavated with crushed stone fill Type A1 specified in Section 31 05 16 or as directed by the Geotechnical Engineer.
- J. Remove excess and unsuitable material from site.
- K. Stockpile subsoil to be re-used on-site in area designated by Owner on site to depth not exceeding 8 feet and protect from erosion.
- L. Repair or replace items indicated to remain damaged by excavation.

3.4 FIELD QUALITY CONTROL

- A. Request inspection of excavation and controlled fill operations in accordance with applicable code and local governing agency requirements.
- B. Request visual inspection of bearing surfaces by inspection agency before installing subsequent work.

3.5 PROTECTION

- A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

****END OF SECTION****

TRENCHING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating trenches for utilities from 5 feet outside building to utility service.
2. Compacted fill from top of utility bedding to subgrade elevations.
3. Backfilling and compaction.

B. Related Sections:

1. Section 31 05 16 – Soils and Aggregates.
2. Section 31 22 13 - Rough Grading: Topsoil and subsoil removal from site surface.
3. Section 31 23 16 - Excavation: General building excavation.
4. Section 31 23 23 - Fill: General backfilling.
5. Section 32 91 19 - Landscape Grading: Filling of topsoil over backfilled trenches to finish grade elevation.
6. Section 33 41 00 - Storm Utility Drainage Piping

1.2 REFERENCES

A. ASTM International:

1. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
2. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, or cable.

1.4 SUBMITTALS

- A. Product Data: Submit data for geotextile fabric indicating fabric and construction.
- B. Materials Source: Submit name of imported fill materials suppliers.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with local governing agency standards.

1.6 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.7 COORDINATION

- A. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. Subsoil Fill: Type S1 as specified in Section 31 05 16.
- B. Crushed Stone Fill: Type A1 as specified in Section 31 05 16.
- C. Granular Fill: Type A2 as specified in Section 31 05 16.

2.2 ACCESSORIES

- A. Geotextile Fabric: Non-biodegradable, non-woven.
 - 1. Tencate Mirafi; Model 140N Filter Fabric or approved equal.

PART 3 EXECUTION

3.1 LINES AND GRADES

- A. Lay pipes to lines and grades indicated on Drawings.
 - 1. Engineer reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.
- B. Use laser-beam instrument with qualified operator to establish lines and grades.

3.2 PREPARATION

- A. Call Local Utility Line Information service, Miss Dig, at 1-800-482-7171 or 811, not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum locations.
- C. Protect plant life, lawns, and other features remaining as portion of final landscaping.

- D. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs indicated to remain from excavating equipment and vehicular traffic.
- E. Maintain and protect above and below grade utilities indicated to remain.

3.3 TRENCHING

- A. Excavate subsoil required for utilities to utility service.
- B. Remove lumped subsoil, boulders, and rock up of 1/6 cubic yard, measured by volume.
- C. Perform excavation within 24 inches of existing utility service or in accordance with utility's requirements.
- D. Do not advance open trench more than 200 feet ahead of installed pipe.
- E. Cut trenches to width indicated on Drawings. Remove water or materials that interfere with Work.
- F. Excavate bottom of trenches maximum 12 inches wider than outside diameter of pipe.
- G. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.
- H. Do not interfere with 45 degree bearing splay of foundations.
- I. When Project conditions permit, slope side walls of excavation starting 2 feet above top of pipe. When side walls cannot be sloped, provide a trench box or sheeting and shoring to protect excavation as specified in this section.
- J. Cut out soft areas of subgrade not capable of compaction in place. Backfill with bedding material and compact to density equal to or greater than requirements for subsequent backfill material.
- K. Trim excavation. Remove loose matter.
- L. Correct over-excavated areas with compacted backfill as specified for authorized excavation.
- M. Remove excess subsoil not intended for reuse, from site.
- N. Stockpile subsoil for reuse in area designated by the Owner on site to depth not exceeding 8 feet and protect from erosion.

3.4 SHEETING AND SHORING

- A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.
- B. Support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.
- C. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.

- D. Repair damage to new Work and existing improvements from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.5 BACKFILLING

- A. Backfill trenches to contours and elevations with unfrozen fill materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- C. Place material in continuous layers as follows:
 - 1. Common Fill: Maximum 4 inches compacted depth.
 - 2. Granular Fill: Maximum 4 inches compacted depth.
- D. Employ placement method that does not disturb or damage foundation perimeter drainage and utilities in trench.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Do not leave more than 50 feet of trench open at end of working day.
- G. Protect open trench to prevent danger to Owner and the public.

3.6 TOLERANCES

- A. Top Surface of Backfilling: Plus or minus 1 inch from required elevations.

3.7 FIELD QUALITY CONTROL

- A. Perform laboratory material tests in accordance with ASTM D1557.
- B. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D6938.
 - 2. Moisture Tests: ASTM D6938.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.

3.8 PROTECTION OF FINISHED WORK

- A. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION

FILL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Backfilling site structures to subgrade elevations.
2. Fill under slabs-on-grade.
3. Fill under paving.
4. Fill for over-excavation.

B. Related Sections:

1. Section 31 05 16 – Soils and Aggregates.
2. Section 31 22 13 - Rough Grading: Site filling.
3. Section 31 23 16 - Excavation.
4. Section 31 23 17 - Trenching: Backfilling of utility trenches.
5. Section 32 91 19 - Landscape Grading.
6. Section 33 41 00 - Storm Utility Drainage Piping.

1.2 REFERENCES

A. ASTM International:

1. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
2. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: None required.
- C. Materials Source: Submit name of imported fill materials suppliers.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with local governing agency standards.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. Common Fill: Type S1 as specified in Section 31 05 16.
- B. Crushed Stone Fill: Type A1 as specified in Section 31 05 16.
- C. Granular Fill: Type A2 as specified in Section 31 05 16

PART 3 EXECUTION

3.1 EXAMINATION

- A. Administrative Requirements: Coordination and project conditions.

3.2 PREPARATION

- A. Compact subgrade to density requirements for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with structural or granular fill as directed by testing agency and compact to density equal to or greater than requirements for subsequent fill material.
- C. Scarify subgrade surface to a minimum depth of 8 inches.
- D. Proof roll to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

3.3 BACKFILLING

- A. Backfill areas to contours and elevations with unfrozen materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- C. Place material in continuous layers as follows:

<u>Compaction Method</u>	<u>Maximum Loose Lift Thickness</u>
Hand-operated vibratory plate or light roller in confined areas	4 inches
Hand-operated vibratory roller weighing at least 1,000 pounds	6 inches
Vibratory roller drum roller, minimum dynamic force, 2,000 pounds	9 inches
Vibratory drum roller, minimum dynamic force, 30,000 pounds	12 inches
Sheeps-foot roller	8 inches

- D. Employ placement method that does not disturb or damage other new work or existing improvements.
- E. Maintain optimum moisture content of backfill materials to attain required compaction density.
- F. Make gradual grade changes. Blend slope into level areas.
- G. Remove surplus backfill materials from site.
- H. Leave fill material stockpile areas free of excess fill materials.

3.4 TOLERANCES

- A. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.
- B. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.5 FIELD QUALITY CONTROL

- A. Perform laboratory material tests in accordance with ASTM D1557.
- B. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D6938.
 - 2. Moisture Tests: ASTM D6938.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- D. Proof roll compacted fill surfaces under slabs-on-grade and paving.

3.6 PROTECTION OF FINISHED WORK

- A. Reshape and re-compact fills subjected to vehicular traffic

****END OF SECTION****

EROSION CONTROLS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Check Dams.
2. Inlet Filters.
3. Silt Fencing.
4. Rip-Rap.

B. Related Sections:

1. Section 31 05 16 – Soils and Aggregates.
2. Section 31 10 00 - Site Clearing.
3. Section 31 23 16 - Excavation.
4. Section 31 23 23 - Fill.
5. Section 32 91 19 - Landscape Grading.
6. Section 32 92 19 - Seeding.

1.2 REFERENCES

A. Troy School District Stormwater Management – Illicit Discharge Regulatory Policy

1. A copy of this policy will be part of the bid package or is available upon request.

B. Troy School District Stormwater Management – Post -Construction Policy & Procedure

1. A copy of this policy will be part of the bid package or is available upon request.

C. ASTM International:

1. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).

1.3 SUBMITTALS

- A. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with local governing agency standards.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Do not place grout when air temperature is below freezing.

PART 2 PRODUCTS

2.1 ROCK MATERIALS

- A. Rock: Sound, tough, durable fractured rock, free from decompressed stones or other defects impairing its durability. Broken concrete or rounded stones are not acceptable.

2.2 PLANTING MATERIALS

- A. Seeding and Soil Supplements: as specified in Section 32 92 19.
- B. Mulch: as specified in Section 32 92 19.

2.3 ACCESSORIES

- A. Inlet Filter Fabric: Geotextile fabric with minimum flow rate of 100 gal/min./sft meeting local governing agency requirements.
- B. Inlet Filter Bag: Silt Sack by ACF Environmental or approved equal.
- C. Silt Fencing: Geotextile filter fabric with minimum flow rate of 10 gal/min./sft, Amoco ProPex 2130 or approved equal.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify compacted subgrade is acceptable and ready to support devices and imposed loads.

3.2 SITE STABILIZATION

- A. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.
- B. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.
- C. Stockpile and waste pile heights shall not exceed 8 feet. Slope stockpile sides at 2: 1 or flatter.
- D. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 20 days.
 - 1. During non-germinating periods, apply mulch at recommended rates.

2. Stabilize disturbed areas which are not at finished grade and which will be disturbed within one year in accordance with Section 32 92 19 at 50 percent of permanent application rate with no topsoil.
3. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with Section 32 92 19 permanent seeding specifications.

E. Stabilize stockpiles immediately.

3.3 FIELD QUALITY CONTROL

- A. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.
- B. Compaction Testing: In accordance with ASTM D1557.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

3.4 CLEANING

- A. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove and dispose of sediment.
- B. Do not damage structure or device during cleaning operations.
- C. Do not permit sediment to erode into construction or site areas or natural waterways.
- D. Clean channels when depth of sediment reaches approximately one-half channel depth.

****END OF SECTION****

SOIL PREPARATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Preparation of subsoil.
2. Soil testing.
3. Placing topsoil.

B. Related Sections:

4. Section 31 22 13 - Rough Grading: Rough grading of site.
5. Section 31 23 17 - Trenching: Rough grading over cut.
6. Section 32 91 19 - Landscape Grading: Preparation of subsoil and placement of topsoil in preparation for the Work of this section.
7. Section 32 92 19 - Seeding

1.2 REFERENCES

A. ASTM International:

1. ASTM C33 – Standard Specification for Concrete Aggregates
2. ASTM D2607 – Classification of Peats, Mosses, Humus, and Related Products

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with local governing agency standards regarding materials, methods of work, and disposal of excess and waste materials.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Topsoil: As specified in Section 310516 Type S2. Frozen or muddy topsoil is not acceptable.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.

- B. Verify prepared soil base is ready to receive the Work of this section.
- C. Locate and identify existing underground and overhead services and utilities within contract limit work areas. (Call Miss Dig: 1-800-482-7171 or 811).
- D. Provide adequate means to protect utilities and services designated to remain.
- E. Repair utilities damaged during site work operations at Subcontractor's expense.
- F. When uncharted or incorrectly charted underground piping or other utilities and services are encountered during site work operations, notify the applicable utility company immediately to obtain procedure directions. Cooperate with applicable utility company in maintaining active services in operation.
- G. Locate, protect and maintain bench marks, monuments, control points and project engineering reference points. Re-establish disturbed or destroyed items at Subcontractor's expense.
- H. Perform landscape work operations and the removal of debris and materials to ensure minimum interference with streets, walks, and other adjacent facilities.
- I. The General Contractor will occupy the premises and adjacent facilities during the entire period of construction. Perform landscape work operations to minimize conflicts and to facilitate General Contractor's use of the premises and conduct of his normal operations.
- J. Protect existing trees scheduled to remain against injury or damage including cutting, breaking or skinning of roots, trunks or branches, smothering by stockpiled construction materials, excavated materials or vehicular traffic within branch spread.

3.2 DISPOSAL OF WASTE MATERIALS

- A. Stockpile, haul from site and legally dispose of waste materials and debris. Accumulation is not permitted.
- B. Maintain disposal routes, clear, clean and free of debris.
- C. On site burning of combustible cleared materials is not permitted.
- D. Upon completion of landscape preparation work, clean areas within contract limits, remove tools and equipment. Site to be clear, clean, and free of materials and debris and suitable for site work operations
- E. Materials, items and equipment not scheduled for reinstallation or salvaged for the General Contractor are the property of the Landscape Contractor. Remove cleared materials from the site as the work progresses. Storage and sale of Landscape contractors salvage items on site is not permitted.

END OF SECTION

LANDSCAPE GRADING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Final grade topsoil for finish landscaping.

B. Related Sections:

2. Section 31 22 13 - Rough Grading: Site contouring.
3. Section 31 23 17 - Trenching: Backfilling trenches.
4. Section 31 23 23 - Fill: Backfilling at building areas.
5. Section 32 05 16 - Soils and Aggregates.
6. Section 32 92 19 - Seeding.

1.2 SUBMITTALS

A. Materials Source: Submit name of imported materials source.

B. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.3 QUALITY ASSURANCE

A. Furnish each topsoil material from single source throughout the Work.

B. Perform Work in accordance with local governing agency standards.

PART 2 PRODUCTS

2.1 MATERIAL

A. Topsoil: Fill Type S2 as specified in Section 32 05 16.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify substrate base has been contoured and compacted.

3.2 PREPARATION

- A. Protect landscaping and other features remaining as final Work.
- B. Protect existing structures, fences, sidewalks, utilities, paving, and curbs.

3.3 SUBSTRATE PREPARATION

- A. Eliminate uneven areas and low spots.
- B. Remove debris, roots, branches, stones, in excess of 1 inch in size. Remove contaminated subsoil.
- C. Scarify surface to depth of 4 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

3.4 PLACING TOPSOIL

- A. Prior to placing topsoil Contractor must call for an inspection by the Owner/Engineer to verify that the grading is within tolerance for installing the proper depth of topsoil.
- B. Place topsoil in areas where seeding is required to compacted depth of 3 inches. Place topsoil during dry weather.
- C. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.
- D. Remove roots, weeds, rocks, and foreign material while spreading.
- E. Lightly compact placed topsoil.
- F. Remove surplus subsoil and topsoil from site.

3.5 TOLERANCES

- A. Top of Topsoil: Plus or minus 1/2 inch.

3.6 PROTECTION OF INSTALLED WORK

- A. Prohibit construction traffic over topsoil.

****END OF SECTION****

SEEDING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Seeding.
2. Hydroseeding.
3. Mulching.

B. Related Sections:

1. Section 31 22 13 - Rough Grading: Rough grading of site.
2. Section 31 23 17 - Trenching: Rough grading over cut.
3. Section 32 05 16 - Soils and Aggregates.
4. Section 32 91 13 - Soil Preparation
5. Section 32 91 19 - Landscape Grading: Preparation of subsoil and placement of topsoil in preparation for the Work of this section.

1.2 DEFINITIONS

- A. Weeds: Vegetative species other than specified species to be established in given area.

1.3 SUBMITTALS

- A. Product Data: Submit data for seed mix, fertilizer, mulch, and other accessories.
- B. Submit seed vendor's certification for required grass seed mixture, indicating percentage by weight, and percentage of purity, germination, and weed seed for each grass species.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Include maintenance instructions, cutting method and maximum grass height and types, application frequency, and recommended coverage of fertilizer.

1.5 QUALITY ASSURANCE

- A. Provide seed mixture in original unopened containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging. Store in manner to prevent wetting and deterioration.

- B. Perform Work in accordance with local governing agency standards.

1.6 QUALIFICATIONS

- A. Seed Supplier: Company specializing in manufacturing Products specified in this section with minimum three years' experience.
- B. Installer: Company specializing in performing work of this section with minimum 3 years' experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

PART 2 PRODUCTS

2.1 SEED MIXTURE

- A. Lawn seeded areas: Fresh, clean and new crop seed mixture. Mixed by approved methods.
- B. Seed mixture composed of the following varieties, mixed to the specified proportions by weight and tested to minimum percentages of purity and germination.
- C. Detention Basin Embankment Seed Mixture as indicated below:

SEED TYPE	OUNCES/ACRE
Permanent Grasses/Sedges/Rushes:	
River Bulrush	1.00
Crested Oval Sedge	0.50
Bottlebrush Sedge	3.00
Brown Fox Sedge	2.00
Virginia Wild Rye	24.00
Fowl Manna Grass	1.00
Common Rush	1.00
Rice Cut Grass	1.00
Switch Grass	2.00
Great Bulrush	3.00
Dark Green Rush	2.00
Wool Grass	1.00
Temporary Cover:	
Common Oat	512.00
Forbs/Shrubs	
Common Water Plantain	2.50
Swamp Milkweed	2.00
Bidens Species	2.00
Common Boneset	1.00
Sneezeweed	2.00
Blue Flag	4.00

Common Water Horehound	0.50
Monkey Flower	1.00
Ditch Stonecrop	0.50
Pinkweed Species	2.00
Sweet Black-Eyed Susan	1.00
Brown-Eyed Susan	1.50
Common Arrowhead	1.00
Wild Senna	2.00
Panicled Aster	0.50
New England Aster	0.50
Purple Meadow Rue	2.00

No noxious weed seeds permitted

Basis of design is Cardno Stormwater Mix. Install per manufacturer's recommended application rates.

D. Irrigated Seed Mixture for grass areas proportioned by volume as indicated below:

SEED TYPE	PROPORTION	PURITY	GERMINATION
Penn Lawn Fescue	30%	95%	80%
Kentucky Bluegrass	50%	90%	75%
Annual Ryegrass	20%	95%	80%

No noxious weed seeds permitted.

(Fertilizer for irrigated lawn 12-12-12)

E. Non-irrigated Seed Mixture for grass areas proportioned by volume as indicated below:

SEED TYPE	PROPORTION	PURITY	GERMINATION
Penn Lawn Fescue	60%	90%	85%
Kentucky 28# common Bluegrass	20%	90%	90%
Pennfine Perennial Rye	20%	90%	90%

No noxious weed seeds permitted.

(Fertilizer for non-irrigated lawn 10-10-10)

2.2 ACCESSORIES

- A. Water: Free of substance harmful to seed growth. Hoses or other methods to transpiration furnished by Sub Contractor.

2.3 SOURCE QUALITY CONTROL

- A. Testing is not required when recent tests and certificates are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.

- B. Verify prepared soil base is ready to receive the Work of this section.
- C. Work notification: Notify Owner or General Contractor's representative at least seven (7) working days prior to start of seeding operation.
- D. Protect existing utilities, paving, and other facilities from damage caused by seeding operations.
- E. Perform seeding work only after planting and other work affecting ground surface has been completed.
- F. Provide hose and lawn watering equipment as required.

3.2 SURFACE PREPARATION

- A. After lawn areas have been prepared, take no heavy objects over them except lawn rollers.
- B. After preparation of lawn areas and with topsoil in semi-dry condition, roll lawn planting areas in two directions at approximately right angles with water ballast roller weighing 100 to 300 lbs according to soil type.
- C. Rake or scarify and cut or fill irregularities that develop as required until area is true and uniform, free from lumps, depressions, and irregularities.
- D. Restore prepared areas to specified condition if eroded, settled or otherwise disturbed after fine grading and prior to seeding.

3.3 HYDROSEEDING

- A. Hydro-seeding: The application of grass seed and a wood cellulose fiber mulch tinted green shall be accomplished in one operation by use of an approved spraying machine.
- B. Mix seed, fertilizer, and wood cellulose fiber in required amount of water to produce homogenous slurry. Add wood cellulose fiber after seed, water, and fertilizer have been thoroughly mixed and apply at the rate of 200 pounds per acre dry weight.
- C. For hydro-seeding, wood cellulose fiber shall be used. Silva-Fiber Mulch by Weyerhaeuer Company, Tacoma WA (800-443-9179).
- D. Hydraulically spray material on ground to form a uniform cover impregnated with grass seed.
- E. Immediately following application of slurry mix, make separate application of wood cellulose mulch at the rate of 1,000 pounds, dry weight, per acre.
- F. Apply cover so that rainfall or applied water will percolate to underlying soil.

3.4 ESTABLISH LAWN

- A. Establish dense lawn of permanent grasses, free from lumps and depressions. Any area failing to show uniform germination to be reseeded; continue until dense lawn established.
- B. Damage to seeded area resulting from erosion to be repaired by Subcontractor.

- C. In event Subcontractor does not establish dense lawn during first germination period, return to project to re-fertilize and reseed to establish dense lawn.
- D. Should the seeded lawn become largely weeds after germination, Subcontractor is responsible to kill the weeds and reseed the proposed lawn areas to produce a dense turf, as specified.

3.5 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work to the approval of the Owner. Remove from site all excess materials, debris, and equipment. Repair damage resulting from seeding operations.

****END OF SECTION****

MANHOLES AND STRUCTURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Monolithic concrete manhole section with masonry transition to cover frame, covers, anchorage, and accessories.
2. Modular precast concrete manhole section with tongue-and-groove joints [with masonry transition to cover frame,] covers, anchorage, and accessories.
3. Monolithic FRP manhole section with transition to cover frame, covers, anchorage, and accessories.
4. Masonry manhole section with masonry transition to cover frame, covers, anchorage, and accessories.
5. Bedding and cover materials.

B. Related Sections:

1. Section 31 05 16 - Aggregates for Earthwork: Aggregate for backfill in trenches.
2. Section 31 23 16 - Excavation: Excavating for manholes.
3. Section 31 23 23 - Fill: Backfilling after manhole installation.

1.2 REFERENCES

A. American Concrete Institute:

1. ACI 318 - Building Code Requirements for Structural Concrete.
2. ACI 530/530.1 - Building Code Requirements for Masonry Structures and Specifications for Masonry Structures.

B. ASTM International:

1. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
3. ASTM C55 - Standard Specification for Concrete Brick.
4. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made from Clay or Shale).
5. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.

6. ASTM C497 - Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile.
7. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures.
8. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.
9. ASTM D3753 - Standard Specification for Glass-Fiber-Reinforced Polyester Manholes and Wet wells.

1.3 DESIGN REQUIREMENTS

- A. Equivalent strength: Based on structural design of reinforced concrete as outlined in ACI 318.
- B. Design of Lifting Devices for Precast Components: In accordance with ASTM C913.
- C. Design of Joints for Precast Components: In accordance with ASTM C913; maximum leakage of 0.025 gallons per hour per foot of joint at 3 feet of head.

1.4 SUBMITTALS

- A. Shop Drawings: Indicate manhole locations, elevations, piping with sizes and elevations of penetrations.
- B. Product Data: Submit manhole cover and frame construction, features, configuration, dimensions.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with local governing agency standards.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum of three years experience.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Comply with precast concrete manufacturer's instructions for unloading, storing and moving precast manholes.
- B. Store precast concrete manholes to prevent damage to Owner's property or other public or private property. Repair property damaged from materials storage.
- C. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers shown on Drawings to indicate its intended use.

PART 2 PRODUCTS

2.1 MANHOLES

- A. Manhole Sections: Reinforced precast concrete in accordance with ASTM C478 with gaskets in accordance with ASTM C923.
- B. Mortar and Grout: Mortar for finishing and sealing shall be Class "C". Honeycombing less than 2 inches deep shall be repaired using Class "D" mortar.
- C. Brick Transition Reinforcement: Formed steel 8 gage wire with galvanized finish.

2.2 FRAMES AND COVERS

- A. Manufacturers:
 - 1. EJ or approved equal.
- B. Product Description: ASTM A48, Class 30B Heavy-Duty Cast-iron construction, machined flat bearing surface, removable lid, closed or open as indicated on Drawings; sealing gasket; cover molded with identifying name and logo as required by local governing agency.

2.3 COMPONENTS

- A. Manhole Steps: M.A. Industries P.S.I. Polypropylene or approved equal.
- B. Base Pad: Cast-in-place concrete 3,000 psi at 28 days, leveled top surface.

2.4 CONFIGURATION

- A. Manhole Section Construction: Concentric with eccentric cone top section.
- B. Shape: Cylindrical.
- C. Clear Inside Dimensions: 48-inch diameter or as indicated on Drawings.
- D. Design Depth: As indicated on Drawings.
- E. Clear Lid Opening: 24-inch minimum diameter.
- F. Pipe Entry: Provide openings as indicated on Drawings.
- G. Steps: 16 inches on center vertically, set into manhole wall. As indicated on Drawings.

2.5 BEDDING AND COVER MATERIALS

- A. Bedding: Fill Type A1 as specified in Section 31 05 16.
- B. Cover: Fill Type A2, as specified in Section 31 05 16.

2.6 FINISHING - STEEL

- A. Galvanizing: ASTM A123, hot dip galvanized after fabrication.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify items provided by other sections of Work are properly sized and located.
- C. Verify built-in items are in proper location, and ready for roughing into Work.
- D. Verify correct size of manhole excavation.

3.2 PREPARATION

- A. Coordinate placement of inlet and outlet pipe required by other sections.
- B. Do not install structures where site conditions induce loads exceeding structural capacity of structures.
- C. Inspect precast concrete structures immediately prior to placement in excavation to verify structures are internally clean and free from damage. Remove and replace damaged units.

3.3 INSTALLATION

- A. Excavation and Backfill:
 - 1. Excavate for manholes in accordance with Section 31 23 16 in location and to depth shown. Provide clearance around sidewalls of structure for construction operations.
 - 2. When groundwater is encountered, prevent accumulation of water in excavations. Place manholes in dry trench.
 - 3. Where possibility exists of watertight structure becoming buoyant in flooded excavation, anchor structure to avoid flotation.
- B. Place base pad, trowel top surface level.
- C. Place manhole sections plumb and level, trim to correct elevations, anchor to base pad.
- D. Backfill excavations for manholes in accordance with Section 31 23 16 and 31 23 23.
- E. Form and place manhole cylinder plumb and level, to correct dimensions and elevations.
- F. Cut and fit for pipe.
- G. Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour to form continuous drainage channel as indicated on Drawings.
- H. Set cover frames and covers level without tipping, to correct elevations.
- I. Coordinate with other sections of Work to provide correct size, shape, and location.

3.4 PRECAST CONCRETE MANHOLE INSTALLATION

- A. Lift precast components at lifting points designated by manufacturer.
- B. When lowering manholes into excavations and joining pipe to units, take precautions to ensure interior of pipeline and structure remains clean.
- C. Set precast structures bearing firmly and fully on crushed stone bedding, compacted in accordance with provisions of Section 31 23 16, Section 31 23 23 or on other support system shown on Drawings.
- D. Assemble multi-section structures by lowering each section into excavation. Lower, set level, and firmly position base section before placing additional sections.
- E. Remove foreign materials from joint surfaces and verify sealing materials are placed properly. Maintain alignment between sections by using guide devices affixed to lower section.
- F. Joint sealing materials may be installed on site or at manufacturer's plant.
- G. Verify manholes installed satisfy required alignment and grade.
- H. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe. Fill annular space with mortar.
- I. Cut pipe to finish flush with interior of structure.
- J. Shape inverts through manhole as shown on Drawings.

3.5 CAST-IN-PLACE CONCRETE MANHOLE INSTALLATION

- A. Prepare crushed stone bedding or other support system shown on Drawings, to receive base slab as specified for precast structures.
- B. Erect and brace forms against movement.
- C. Install reinforcing steel as indicated on Drawings.
- D. Place and cure concrete.

3.6 FRAME AND COVER INSTALLATION

- A. Set frames using mortar and masonry. Install radially laid concrete brick with 1/4-inch-thick vertical joints at inside perimeter. Lay concrete brick in full bed of mortar and completely fill joints. Where more than one course of concrete brick is required, stagger vertical joints.
- B. Set frame and cover 2 inches above finished grade for manholes with covers located within unpaved areas to allow area to be graded away from cover beginning 1 inch below top surface of frame.

3.7 FIELD QUALITY CONTROL

- A. Test concrete manhole and structure sections in accordance with ASTM C497.
- B. Vertical Adjustment of Existing Manholes:

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1. Where required, adjust top elevation of existing manholes to finished grades shown on Drawings.
2. Reset existing frames, grates and covers, carefully removed, cleaned of mortar fragments, to required elevation in accordance with requirements specified for installation of castings.
3. Remove concrete without damaging existing vertical reinforcing bars when removal of existing concrete wall is required. Clean vertical bars of concrete and bend into new concrete top slab or splice to required vertical reinforcement, as indicated Drawings.
4. Clean and apply sand-cement bonding compound on existing concrete surfaces to receive cast-in-place concrete.

****END OF SECTION****

STORM UTILITY DRAINAGE PIPING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Storm drainage piping.
2. Accessories.
3. Catch basins.
4. Bedding and cover materials.

B. Related Sections:

1. Section 31 05 16 – Soils and Aggregates: Aggregate for backfill in trenches.
2. Section 31 23 16 - Excavation: Product and execution requirements for excavation and backfill required by this section.
3. Section 31 23 17 - Trenching: Execution requirements for trenching required by this section.
4. Section 31 23 23 - Fill: Requirements for backfill to be placed by this section.
5. Section 33 05 13 - Manholes and Structures.
6. Section 33 46 00 - Subdrainage: Termination of catch basin subdrain system for connection to Work of this Section.

1.2 REFERENCES

A. ASTM International:

1. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
2. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m<sup>3- 4. ASTM D1785 Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe
- 5. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.</sup>

6. ASTM D2564 - Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.
7. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
8. ASTM D3212 Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
9. ASTM D3350 Standard Specification for Polyethylene Plastics Pipe and Fittings Materials

1.3 SUBMITTALS

- A. Product Data: Submit data indicating pipe and pipe accessories.
- B. Manufacturer's Installation Instructions: Submit special procedures required to install Products specified.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents:
 1. Accurately record actual as-built locations of pipe runs, connections, catch basins, cleanouts, and invert elevations.
 2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with local governing agency standards.

1.6 COORDINATION

- A. Coordinate the Work with termination of storm sewer connection outside building, trenching, and connection to private or municipal sewer utility service.

PART 2 PRODUCTS

2.1 STORM DRAINAGE PIPING

- A. Reinforced Concrete Pipe: ASTM C76, Class IV unless indicated otherwise on Drawings.
 1. Fittings: Reinforced concrete.
 2. Joints: ASTM C443, rubber compression gasket.
- B. Plastic Pipe: ASTM D1785, SCH 26, Poly (Vinyl Chloride) (PVC) material; bell and spigot style rubber ring sealed gasket joint.
 1. Fittings: PVC.

2. Joints: ASTM D3212, elastomeric gaskets.

2.2 CATCH BASINS

A. Catch Basin Lid and Frame Manufacturers:

1. EJ or approved equal.

B. Catch Basin Lid and Frame:

1. Construction: Cast iron or ductile iron construction as indicated on Drawings.

C. Shaft Construction and Cone Top Section: Reinforced precast concrete pipe sections, lipped male/female joints, nominal shaft diameter as indicated on Drawings, conforming to City of Troy Standard Details and Specifications.

D. Base Pad: Pre-cast or cast-in-place concrete of type specified on Drawings.

2.3 CLEANOUTS

A. Cleanout Lid and Frame Manufacturers:

1. EJ or approved equal.

2.4 BEDDING AND COVER MATERIALS

A. Bedding: Fill Type A1 as specified in Section 31 05 16.

B. Cover: Fill Type A2, as specified in Section 31 05 16.

C. Soil Backfill from Above Pipe to Finish Grade: Soil Type A2, as specified in Section 31 05 16.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify trench cut and excavation is ready to receive work and excavations, dimensions, and elevations are as indicated on drawings.

3.2 PREPARATION

- A. Hand trim excavations to required elevations. Correct over excavation with fine aggregate.
- B. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

3.3 BEDDING

- A. Excavate pipe trench in accordance with Section 31 23 17 for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.

- B. Place bedding material at trench bottom, level materials in continuous layers not exceeding 6 inches compacted depth, each layer. Place compacted bedding material to elevation of paving subgrade as indicated on Drawings.
- C. Maintain optimum moisture content of bedding material to attain required compaction density.

3.4 INSTALLATION - PIPE

- A. Install pipe, fittings, and accessories in accordance with ASTM D2321, ASTM C12 or manufacturer's published instructions, and state or local requirements. Seal joints watertight.
- B. Install pipe on minimum 6-inch bedding, 1/2" to 1 1/2" crushed angular graded stone compacted to 95% maximum dry unit weight per ASTM D1557.
- C. Lay pipe to slope gradients indicated on Drawings.
- D. Install aggregate at sides and over top of pipe. Provide top cover to minimum compacted thickness equal to paving subgrade indicated on Drawings.
- E. Refer to Section 31 23 23 for backfilling and compacting requirements. Do not displace or damage pipe when compacting.
- F. Refer to Section 33 05 13 for manhole requirements.
- G. Connect to private or municipal storm sewer system, manholes, catch basins, and inlets as indicated on Drawings.
- H. Install site storm drainage system piping to 5 feet of building.
- I. Install Work in accordance with local government standards.

3.5 INSTALLATION - CATCH BASINS

- A. Form bottom of excavation clean and smooth to elevation indicated on Drawings.
- B. Form and place cast-in-place concrete base pad, with provision for storm sewer to be placed at required elevations.
- C. Level top surface of base pad; sleeve concrete shaft sections to receive storm sewer pipe sections.
- D. Establish elevations and pipe inverts for inlets and outlets as indicated on Drawings.
- E. Mount grate and frame level, in grout, secured to top section to elevation indicated.
- F. Connect to catch basin subdrainage system piping. Refer to Section 33 46 00.
- G. Install Work in accordance with local government standards.

3.6 FIELD QUALITY CONTROL

- A. Request inspection prior to and immediately after placing aggregate cover over pipe.

- B. Compaction Testing: In accordance with ASTM D1557.
- C. When tests indicate work does not meet specified requirements, remove work, replace and retest.
- D. Frequency of Compaction Tests: One test for each 50 lineal feet of trench.
- E. Infiltration Test: Test in accordance with applicable local Public Works Department Standard Specifications and requirements.
- F. Deflection Test: Test in accordance with applicable local Public Works Department Standard Specifications and requirements.
- G. Pressure Test: Test in accordance with applicable local Public Works Department Standard Specifications and requirements.

3.7 PROTECTION OF FINISHED WORK

- A. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.
 - 1. Take care not to damage or displace installed pipe and joints during construction of pipe supports, backfilling, testing, and other operations.
 - 2. Repair or replace pipe that is damaged or displaced from construction operations.

****END OF SECTION****



Addendum 1

Project: **BID NO. 9933 TSD DISTRICT SITE IMPROVEMENTS – DRAINAGE PROJECT - 2022**

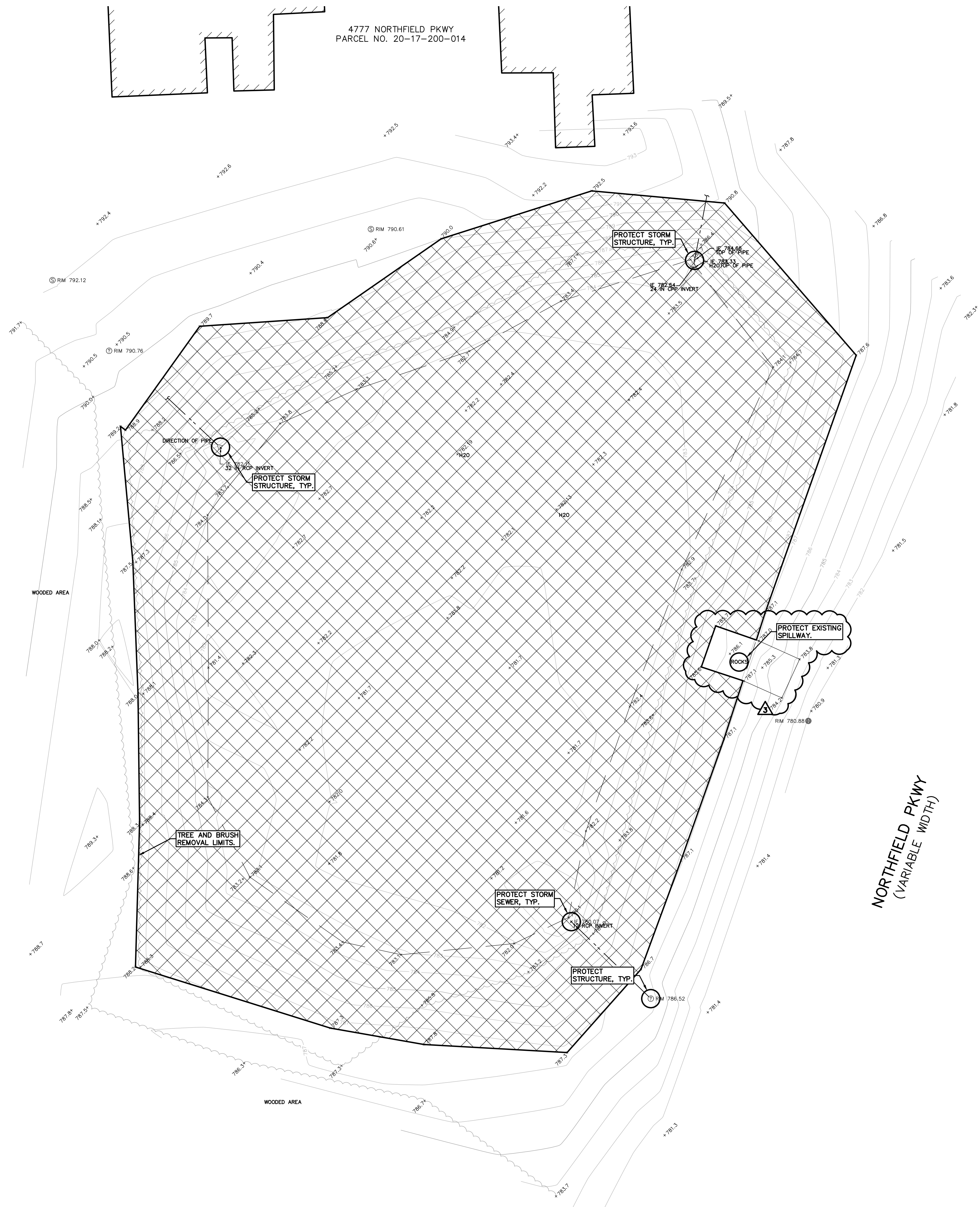
Bid Due date: 10:00 AM Tuesday, December 21, 2020 (UNCHANGED)

This Addendum is issued as modifications to the RFP previously issued to provide clarifications to the scope of work. This Addendum supersedes the original RFP. This along with the RFP becomes the bid documents.

I. General Information

1. For questions e-mail purchasingoffice@troy.k12.mi.us or through Buildingconnected.com.
2. Addendum #1 dated December 10, 2021 as prepared by PEA Group. (Attached)
3. Revise Bid Package, page 9, bid form. Add for Project #1, Leonard Elementary School – Alternate #1. (Attached)

END



4777 NORTHFIELD PKWY
PARCEL NO. 20-17-200-014

LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊙ SEC CORNER FOUND
⊗ IRON SET	⊗ MONUMENT FOUND	⊙ R RECORDED
⊗ NAIL FOUND	⊗ MONUMENT SET	⊙ M MEASURED
⊗ NAIL & CAP SET		⊙ C CALCULATED

EXISTING	PROPOSED
—OH-ELEC—	—ELEC, PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
—UG-CATV—	—UNDERGROUND CABLE TV, CATV PEDESTAL
—UG-PHONE—	—TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
—UG-ELEC—	—ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
—GAS VALVE & GAS LINE MARKER	—GAS MAN. VALVE & GAS LINE MARKER
—WATERMAN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE	—WATERMAN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE
—SANITARY SEWER, CLEANOUT & MANHOLE	—SANITARY SEWER, CLEANOUT & MANHOLE
—STORM SEWER, CLEANOUT & MANHOLE	—STORM SEWER, CLEANOUT & MANHOLE
—COMBINED SEWER & MANHOLE	—COMBINED SEWER & MANHOLE
—SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	—SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
—POST INDICATOR VALVE	—POST INDICATOR VALVE
—WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF	—WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF
—MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE	—MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
—UNIDENTIFIED STRUCTURE	—UNIDENTIFIED STRUCTURE
—SPOT ELEVATION	—SPOT ELEVATION
—CONTOUR LINE	—CONTOUR LINE
—FENCE	—FENCE
—GUARD RAIL	—GUARD RAIL
—STREET LIGHT	—STREET LIGHT
—SIGN	—SIGN
—CONC.	—CONCRETE
—ASPH.	—ASPHALT
—GRAVEL	—GRAVEL SHOULDER
—WETLAND	—WETLAND

NOTES:

- CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS. ANY DEVIATIONS TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.

DEMOLITION QUANTITIES:

CLEAR TREES AND BRUSH 1.35 AC

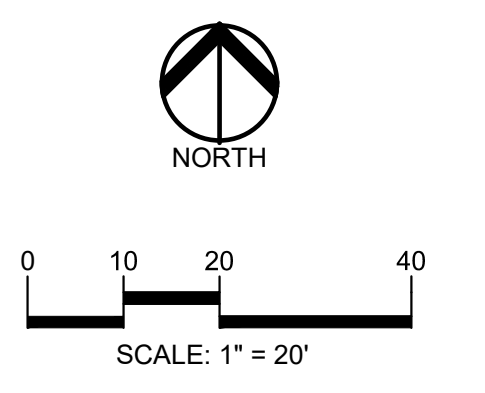
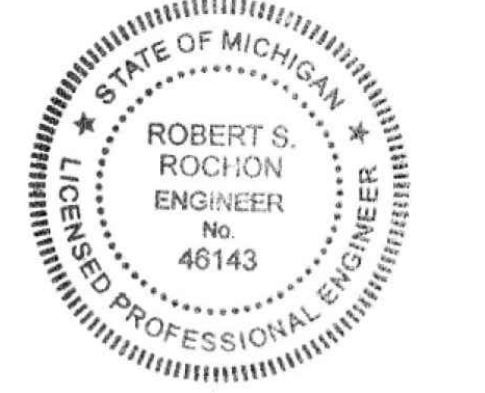
DEMOLITION LEGEND:

ITEM TO BE PROTECTED (Symbol: Circle with dot)

TREE AND BRUSH REMOVAL (Symbol: Cross-hatched box)

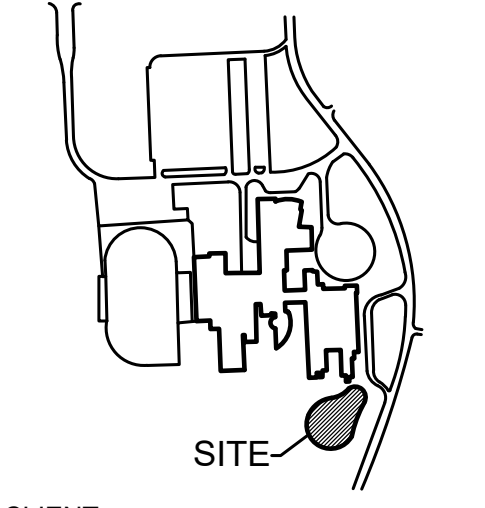
- GENERAL DEMOLITION NOTES:**
- THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:
- ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
 - ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
 - STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
 - SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT WILL NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
 - REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES FOUNDATIONS, FOOTINGS, FOUNDATION WALLS, FLOOR SLABS, UNDERGROUND UTILITIES, CONCRETE, ASPHALT, TREES, ETC.
 - THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15 FEET OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
 - THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
 - THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITY LEADS HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION.
 - ALL BUILDING GAS LEADS, METERS AND ASSOCIATED EQUIPMENT SHALL BE REMOVED AS SHOWN ON THE PLANS. COORDINATE ALL ASSOCIATED WORK WITH THE APPROPRIATE UTILITY COMPANY.
 - REMOVE ALL OVERHEAD AND UNDERGROUND ELECTRICAL LINES WITHIN THE AREA OF CONSTRUCTION AS SHOWN ON THE PLANS. COORDINATE SHUTDOWNS AND REMOVALS WITH ELECTRICAL SERVICE PROVIDER OR THE APPROPRIATE UTILITY COMPANY. (NOTE: PHONE AND CABLE T.V. SERVICES MAY ALSO BE LOCATED ON OVERHEAD LINES.)
 - THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA, AS NECESSARY TO FACILITATE CONSTRUCTION. SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
 - THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

PEA GROUP
t: 844.813.2949
www.peagroup.com



811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY AS APPLIED AS TO THE COMPLETENESS ON ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
TROY HIGH SCHOOL
4777 NORTHFIELD PKWY, TROY, MI

REVISIONS

1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21
3 - ADDENDUM #1	12/10/21

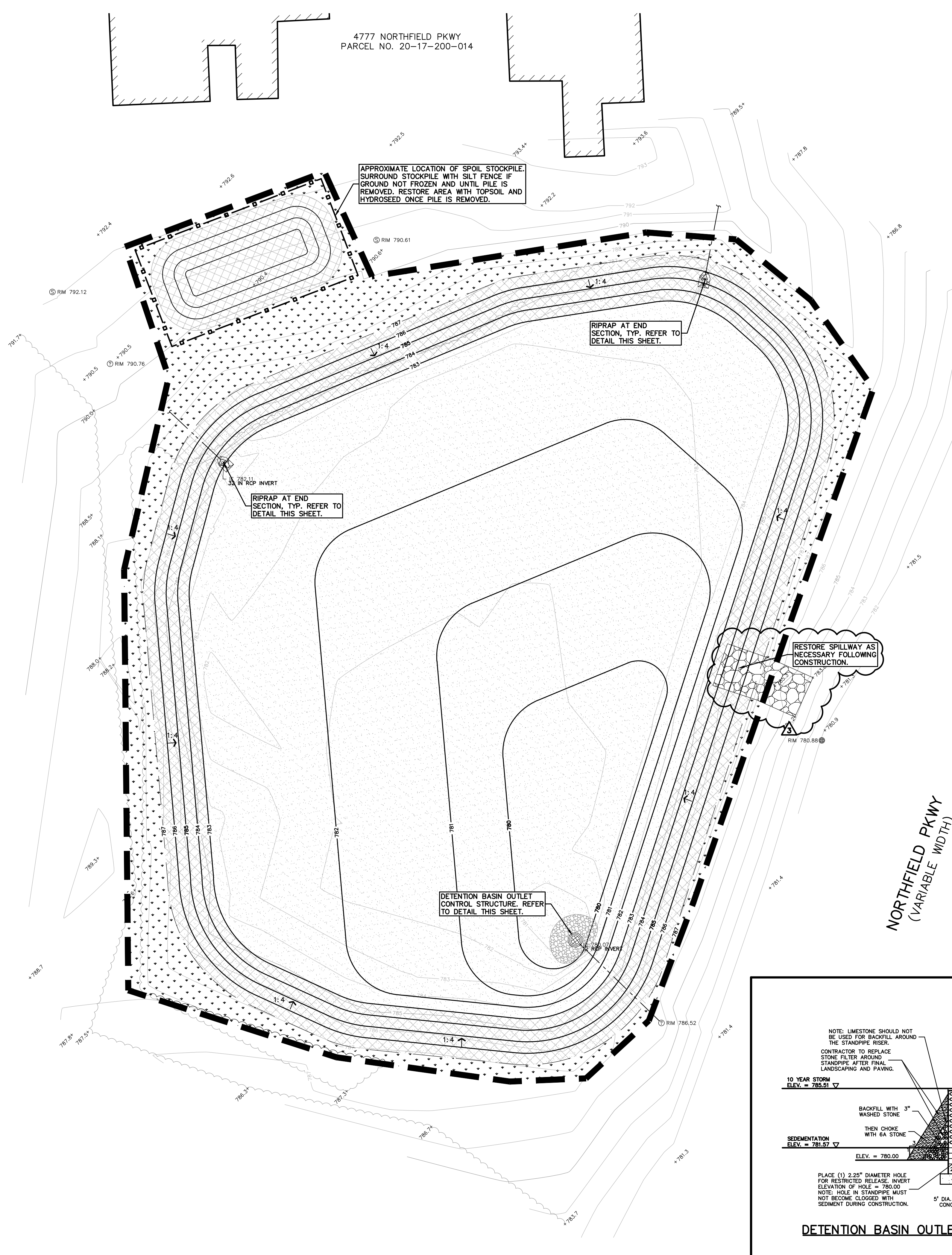
ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
TOPOGRAPHIC SURVEY AND DEMOLITION PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS
DRAWING NUMBER:	

NOT FOR CONSTRUCTION C-1.0

S:\PROJECTS\2021\0201-0584_2022_120 SITE IMPROVEMENT PROJECTS\CONSTRUCTION\3 TROY HIGH SCHOOL\01 TOPO-TROY HIGH.dwg



NOTE:
REFER TO SHEET C-4.0 FOR SOIL EROSION SCHEDULE AND NOTES, AND SEQUENCE OF CONSTRUCTION.

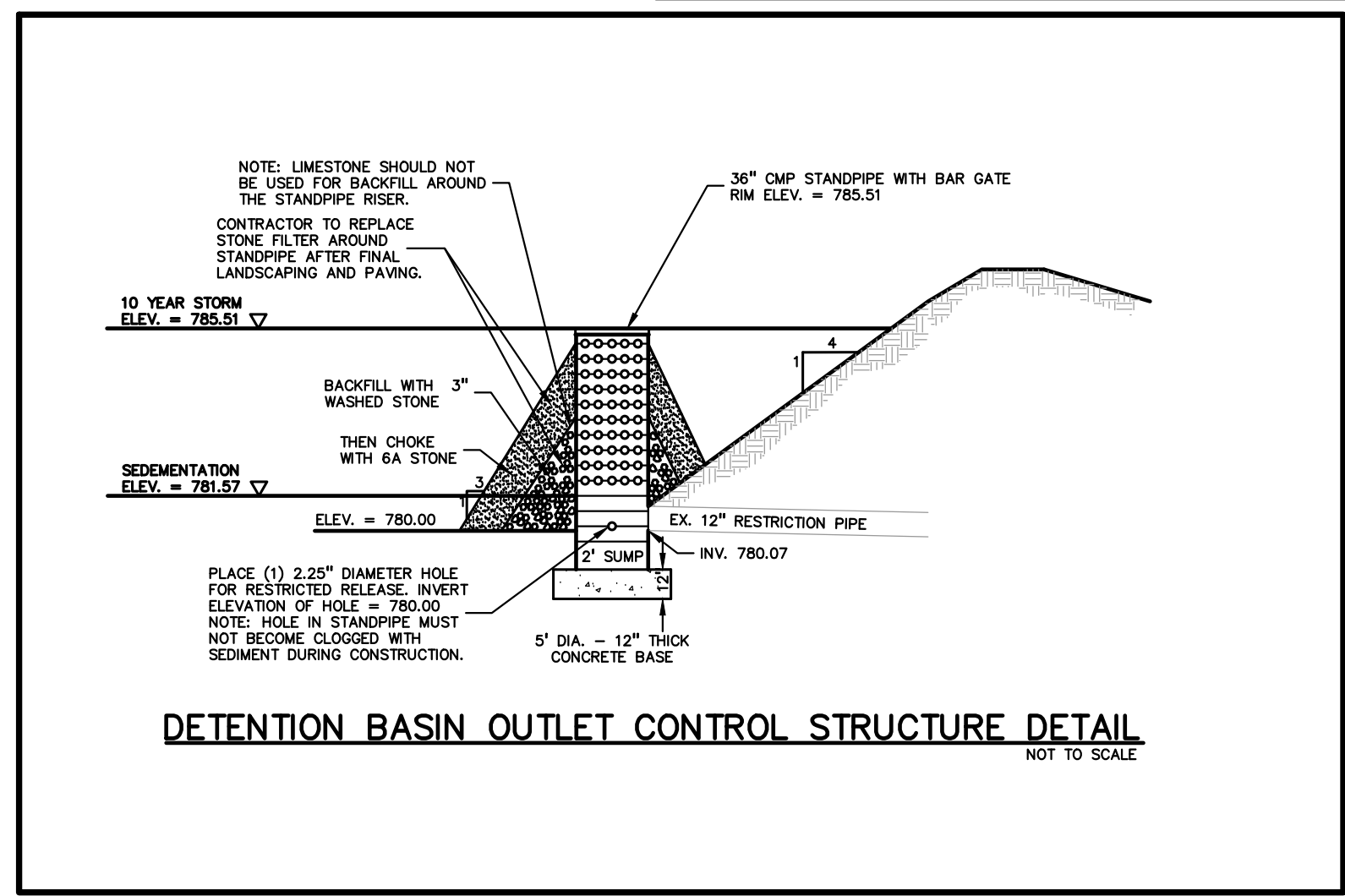
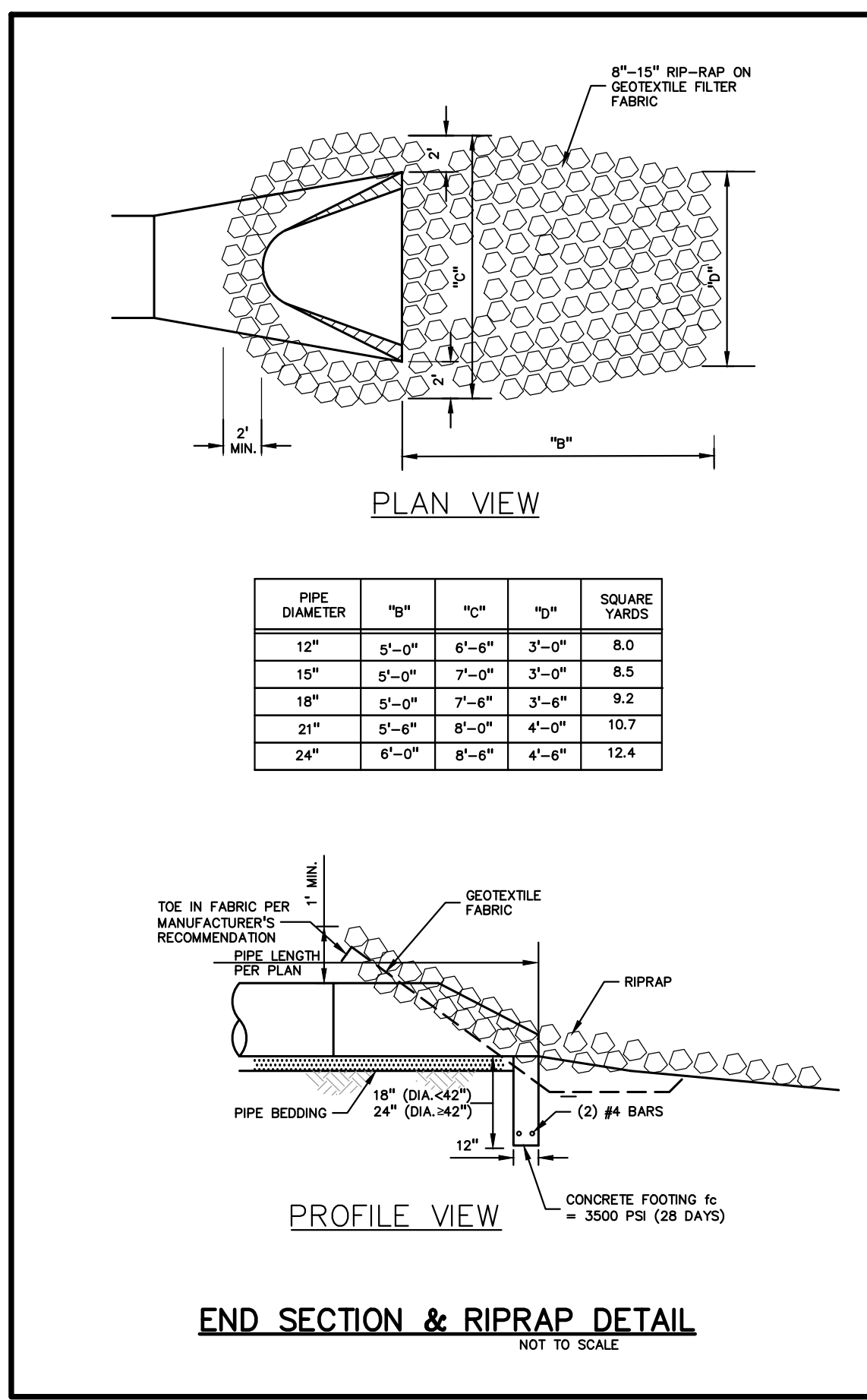
EROSION CONTROL QUANTITIES:

SILT FENCE	211 LF
EMBANKMENT RESTORATION	5,726 SY
LAWN RESTORATION AREA	1,222 SY

ENGINEERING QUANTITIES:

36" OUTLET CONTROL STRUCTURE	1 EA.
RIPRAP	20 CY
MUCK DETENTION POND	1,667 CY

- NOTE:**
- PER THE 'SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE FOR THE PROJECT SPECIFICATIONS', PRIOR TO THE PLACEMENT OF TOPSOIL THE SUCCESSFUL BIDDER TO SCHEDULE AN INSPECTION BY THE SCHOOL BOARD OR PEA GROUP TO CONFIRM THAT THE GRADE IS AT THE PROPER ELEVATION WHERE THE MINIMUM DEPTH OF TOPSOIL CAN BE PLACED THROUGHOUT THE AREA.
 - CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS, ANY DEVIATION TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.
 - WORK IS CURRENTLY ANTICIPATED TO BE COMPLETED IN THE WINTER WITH FROZEN GROUND. ADDITIONAL BMPs TO BE ADDED AS NEEDED IF WORK IS NOT COMPLETED BY SPRING OR PRIOR TO GROUND THAWING.
 - RE-GRADING OF THE POND AREAS SHALL BE INCLUDED IN THE COSTS OF THE PROJECT PER LIMITS SHOWN IN THE PLANS.
 - DISTRICT TO REVIEW SITE IN THE SPRING TO DETERMINE ANY GRASS AREAS AND IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION INCLUDING INGRESS/EGRESS AREAS TO THE PONDS. CONTRACTOR IS RESPONSIBLE TO RESTORE ALL DAMAGED AREAS AND IRRIGATION SYSTEM TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE DISTRICT.



LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊙ SEC. CORNER FOUND
⊗ IRON SET	⊗ MONUMENT FOUND	⊙ RECORDED
⊗ NAIL FOUND	⊗ NAIL & CAP SET	M MEASURED
		C CALCULATED

EXISTING

- OH-ELEC- Δ ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
- UG-CATV UNDERGROUND CABLE TV, CATV PEDESTAL
- UG-PHONE TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
- UG-ELEC-ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
- GAS VALVE & GAS LINE MARKER
- WATERMAN, HYD. GATE VALVE, TAPPING SLEEVE & VALVE
- SANITARY SEWER, CLEANOUT & MANHOLE
- STORM SEWER, CLEANOUT & MANHOLE
- COMBINED SEWER & MANHOLE
- SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
- POST INDICATOR VALVE
- WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF
- MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE
- SPOT ELEVATION
- CONTOUR LINE
- FENCE
- GUARD RAIL
- STREET LIGHT
- SIGN
- CONC. CONCRETE
- ASPH. ASPHALT
- GRAVEL GRAVEL SHOULDER
- WETLAND

SYMBOLS: SPOT ELEVATION:

PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.

PROPOSED CONTOUR LINE: 722

ABBREVIATIONS:

- T/C = TOP OF CURB
- G = GUTTER GRADE
- T/S = TOP OF SIDEWALK
- T/W = TOP OF WALL
- B/W = BOTTOM OF WALL
- F.G. = FINISH GRADE
- RIM = RIM ELEVATION

SYMBOLS: EROSION CONTROL:

- (SP-2) SILT FENCE
- (E-9) EROSION CONTROL BLANKET
- LAWN RESTORATION
- EMBANKMENT RESTORATION

REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.

EARTHWORK BALANCING NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING OR EXPORTING ALL MATERIALS AS REQUIRED TO PROPERLY GRADE THIS PROJECT TO THE FINISHED ELEVATIONS SHOWN ON THE APPROVED PLANS. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF CUT AND FILL QUANTITIES AND ALLOW FOR REMOVAL OF EXCESS OR IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

GENERAL SITE CONDITIONS:

- ACCORDING TO THE USGS WEB SOIL SURVEY DATED NOVEMBER 23, 2021, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:
 - 12 - BROOKSTON AND COALWOOD LOAMS
 - 52A - SELFRIDGE LOAMY SAND, 0 TO 3 PERCENT LOAMS
- TOTAL DISTURBED AREA = ±0.91 ACRES
- N.P.D.E.S. NOTICE OF COVERAGE IS NOT REQUIRED

Outlet Control Restriction Calculations

Maximum Storage Elevation:	781.57 ft
Restriction Hole Invert:	780.00 ft
Depth of Water in Pipe:	1.57 ft
Restriction Hole Dia.:	2.25 in
Flow thru Restriction Hole:	0.17 cfs
Time for Release of Volume:	27.38 hrs

STORM DETENTION RE DEVELOPMENT DESIGN

Contributing Area (A): 49.860 AC.
Coefficient of Runoff (C): 0.617

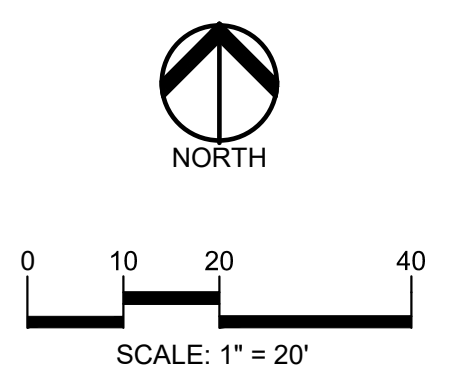
STORAGE VOLUME REQUIRED:

Sedimentation Volume Required:
 $V_s = 15\% \times V_{wq} = 545 \times C \times A$
 $V_s = 16756.80$ Cu. Ft.

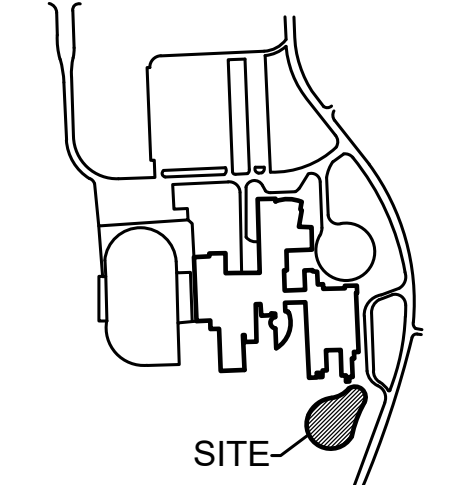
Original Detention Design Volume = 161194 Cu. Ft.

Proposed Pond

CONTOUR	AREA	VOLUME	CUMM	Vf	Detention
780	3.892			-	-
781	10.328	7,110	7,110	-	-
782	22.043	16,186	23,296	781.60	-
783	38.812	30,428	53,723	-	-
784	41.842	40,327	94,050	-	-
785	44.973	43,408	137,458	-	-
786	48.204	46,589	184,046	-	785.51
787	51.536	49,870	233,916	-	-



CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
TROY HIGH SCHOOL
4777 NORTHFIELD PKWY, TROY, MI

REVISIONS

1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21
3 - ADDENDUM #1	12/10/21

ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
GRADING AND SOIL EROSION PLAN

PEA JOB NO. 2021-0584

P.M. RR
DN. KMM
DES. JDS

DRAWING NUMBER:
C-2.0



DUE: 10:00 AM Local Time, Tuesday, December 21, 2021

PROPOSAL: BID 9933 Troy School District
Site Improvement - Drainage Project - 2022

We propose to furnish all material, labor and equipment, as per the specifications, for the Troy School District and all other services to complete BID 9933 Troy School District–Site Improvement–Drainage Project-2022

PROJECT #1 – TROY HIGH SCHOOL, TRANSPORTATION CENTER AND LEONARD ELEMENTARY SCHOOL

Base Bid Amount Troy High School:	\$ _____
Bond Amount Troy High School:	\$ _____
Base Bid Amount Transportation Center:	\$ _____
Bond Amount Transportation Center:	\$ _____
Base Bid Amount Leonard Elementary School:	\$ _____
Bond Amount Leonard Elementary School:	\$ _____
Allowance Amount Project #1:	\$ 15,000.00

Grand Total Project #1 - \$ _____

Alternate #1 – Leonard Elementary School. \$ _____

PROJECT #2 – ATHENS HIGH, BAKER MIDDLE AND COSTELLO ELEMENTARY SCHOOLS

Base Bid Amount Athens High School:	\$ _____
Bond Amount Athens High School:	\$ _____
Base Bid Amount Baker Middle School:	\$ _____
Bond Amount Baker Middle School:	\$ _____
Base Bid Amount Costello Elementary School:	\$ _____
Bond Amount Costello Elementary School:	\$ _____
Allowance Amount Project #2:	\$ 15,000.00

Grand Total Project #2 - \$ _____

Combined Bid Amount if Award Projects #1 and #2 \$ _____



Addendum 2

Project: **BID NO. 9933 TSD DISTRICT SITE IMPROVEMENTS – DRAINAGE PROJECT - 2022**

Bid Due date: 11:00 AM Wednesday, January 5, 2021 (REVISED)

This Addendum is issued as modifications to the RFP previously issued to provide clarifications to the scope of work. This Addendum supersedes the original RFP. This along with the RFP becomes the bid documents.

I. General Information

1. For questions e-mail purchasingoffice@troyschools.org or through Buildingconnected.com.
2. Revise Bid Package, page 1, 3rd paragraph Sealed bids should be submitted through Buildingconnected.com with the following link: <https://app.buildingconnected.com/public/5cc9d7f637c1a90018cb55dc>. No physical bids will be accepted in person or via delivery service. Bids are to be submitted no later than **11:00 AM Local Time Wednesday, January 5, 2022**. The District will not consider or accept a bid received after the date and time specified for bid submission. Bids will be publicly opened immediately following the close of receiving bids with the following virtual meeting link meet.google.com/gqb-zvdb-gya or phone number **(413) 752-4067 PIN: 274 550 433#**. No oral, email, telephonic or telegraphic proposals shall be considered.
3. Revise Bid Package, page 2, article 2. Sealed bids should be submitted through Buildingconnected.com with the following link: <https://app.buildingconnected.com/public/5cc9d7f637c1a90018cb55dc>. No physical bids will be accepted in person or via delivery service. Bids are to be submitted no later than **11:00 AM Local Time Wednesday, January 5, 2022**. The District will not consider or accept a bid received after the date and time specified for bid submission. Bids will be publicly opened immediately following the close of receiving bids with the following virtual meeting link: meet.google.com/gqb-zvdb-gya or phone number **(413) 752-4067 PIN: 274 550 433#**. No oral, email, telephonic or telegraphic proposals shall be considered.

4. Revise Bid Package page 7, under section labeled "Opening and Awarding of Bids". Bids will be publicly opened and read aloud immediately following the close of receiving bids with the following virtual meeting link: meet.google.com/gqb-zvdb-gya or phone number (413) 752-4067 PIN: 274 550 433# at 11:00 AM. Local Time, Wednesday, January 5, 2022.
The recommendation for award will be submitted to the Board of Education at the regular Board of Education Meeting to be held on Tuesday, January 18, 2022.
5. Revise Bid Package page 9, Header. Due: 10:00 AM Local Time, Wednesday, January 5, 2022

END



Addendum 3

Project: **BID NO. 9933 TSD DISTRICT SITE IMPROVEMENTS – DRAINAGE PROJECT - 2022**

Bid Due date: 11:00 AM Wednesday, January 5, 2021 (REVISED IN ADDENDUM #2)

This Addendum is issued as modifications to the RFP previously issued to provide clarifications to the scope of work. This Addendum supersedes the original RFP. This along with the RFP becomes the bid documents.

I. General Information

1. For questions e-mail purchasingoffice@troy.k12.mi.us or through Buildingconnected.com.
2. Addendum #3 as prepared by PEA Group dated December 20, 2021.

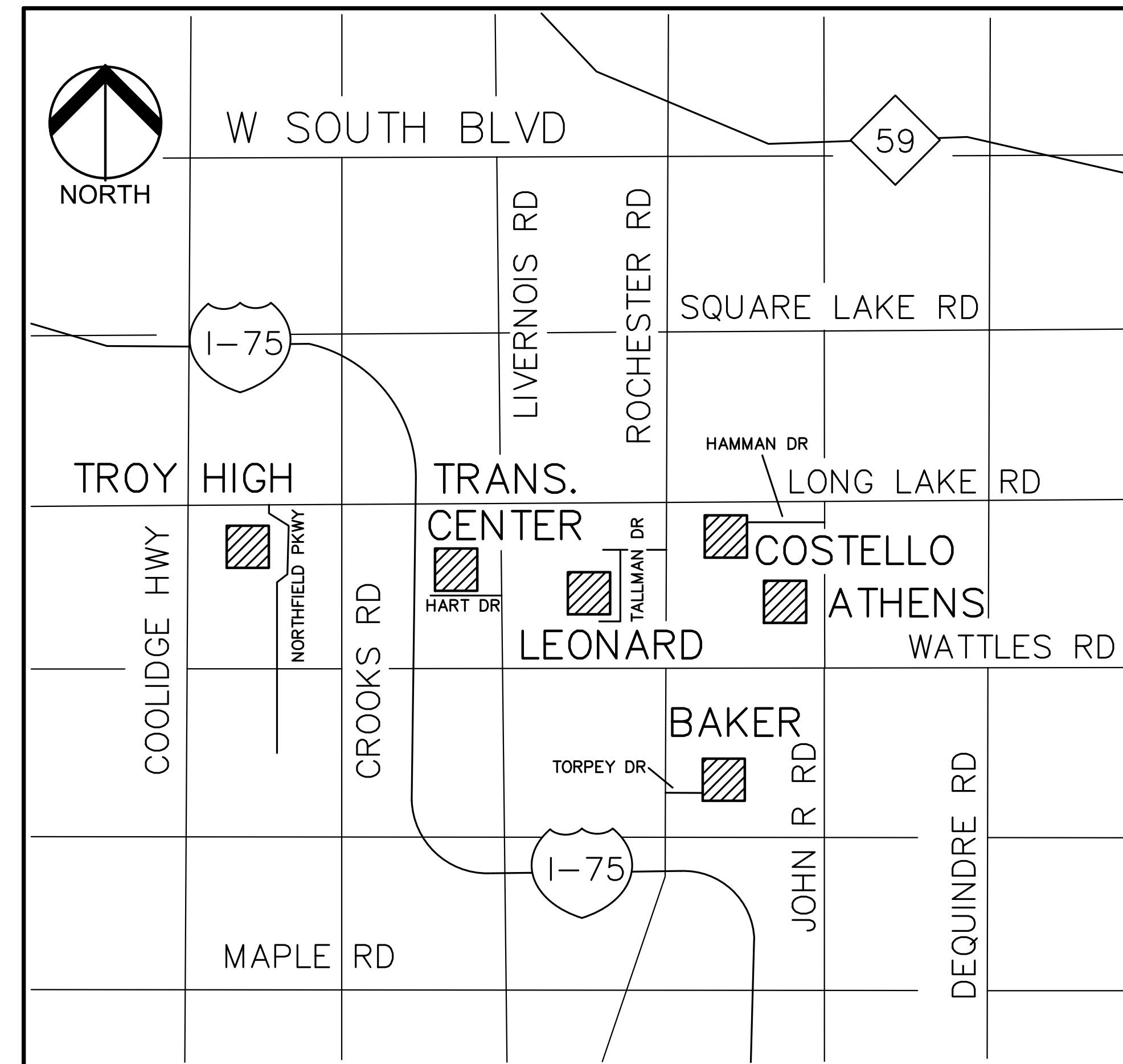
END

CONSTRUCTION PLANS

TSD 2022 SITE IMPROVEMENTS - DRAINAGE PROJECTS

TROY, OAKLAND COUNTY, MICHIGAN

PERMIT / APPROVAL SUMMARY		
DATE SUBMITTED	DATE APPROVED	PERMIT / APPROVAL



LOCATION MAP
NO SCALE

Sheet List Table	
Sheet Number	Sheet Title
C-0.0	COVER SHEET
TROY ATHENS HIGH SCHOOL	
C-1.0	OVERALL TOPOGRAPHIC SURVEY
C-1.1	WEST BASIN TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
C-1.2	EAST BASIN TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
C-2.1	WEST BASIN GRADING AND SOIL EROSION PLAN
C-2.2	EAST BASIN GRADING AND SOIL EROSION PLAN
BAKER MIDDLE SCHOOL	
C-1.0	TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
C-2.0	GRADING AND SOIL EROSION PLAN
LEONARD ELEMENTARY SCHOOL	
C-1.0	TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
C-2.0	GRADING AND SOIL EROSION PLAN
TRANSPORTATION CENTER	
C-1.0	ENGINEERING PLAN
TROY HIGH SCHOOL	
C-1.0	TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
C-2.0	GRADING AND SOIL EROSION PLAN
COSTELLO ELEMENTARY SCHOOL	
C-1.0	TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
C-2.0	GRADING AND SOIL EROSION PLAN
C-4.0	NOTES AND DETAILS

DESIGN TEAM

<p>OWNER</p> <p>TROY SCHOOL DISTRICT 1140 RANKIN TROY, MI 48063 CONTACT: ROB CARSON PHONE: 248.923.4067 EMAIL: RCARSON@TROY.K12.MI.US</p>	<p>CIVIL ENGINEER</p> <p>PEA GROUP 2430 ROCHESTER COURT, STE. 100 TROY, MI 48063-1872 CONTACT: ROBERT S. ROCHON, P.E. PHONE: 844.813.2949 EMAIL: RROCHON@PEAGROUP.COM</p>
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REVISIONS	
DESCRIPTION	DATE
ORIGINAL ISSUE DATE	11/24/2021
1 - PER OWNER COMMENTS	12/1/2021
2 - OUT TO BID	12/2/2021
3 - ADDENDUM 1	12/2/2021
4 - ADDENDUM 3	12/20/2021

LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊙ SEC. CORNER FOUND
⊗ IRON SET	⊙ MONUMENT FOUND	R RECORDED
⊗ NAIL FOUND	⊗ MONUMENT SET	M MEASURED
⊗ NAIL & CAP SET		C CALCULATED

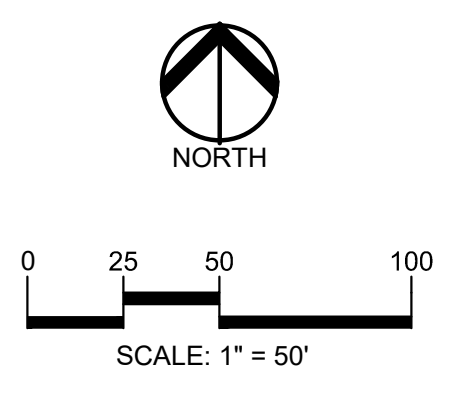
—OH-ELEC—	ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
—UG-CATV—	UNDERGROUND CABLE TV, CATV PEDESTAL
—UG-PHONE—	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
—UG-ELEC—	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
—GAS—	GAS MAIN, VALVE & GAS LINE MARKER
—WATER—	WATERMAIN, HYD. GATE VALVE, TAPPING BLEEDIE & VALVE
—SEWER—	SANITARY SEWER, CLEANOUT & MANHOLE
—COMBINED—	STORM SEWER, CLEANOUT & MANHOLE
—SQUARE, ROUND & BEEHIVE—	CATCH BASIN, YARD DRAIN
—POST—	POST INDICATOR VALVE
—WATER VALVE BOX—	WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF
—MAILBOX—	MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
—UNIDENTIFIED—	UNIDENTIFIED STRUCTURE
—SPOT—	SPOT ELEVATION
—CONTOUR—	CONTOUR LINE
—FENCE—	FENCE
—GUARD RAIL—	GUARD RAIL
—STREET LIGHT—	STREET LIGHT
—SIGN—	SIGN
—CONC.—	CONCRETE
—ASPH.—	ASPHALT
—GRAVEL—	GRAVEL SHOULDER
—WETLAND—	WETLAND

310	HEAVY FLOW DUTY ONLY
310	HEAVY FLOW DUTY ONLY
310	HEAVY FLOW DUTY ONLY

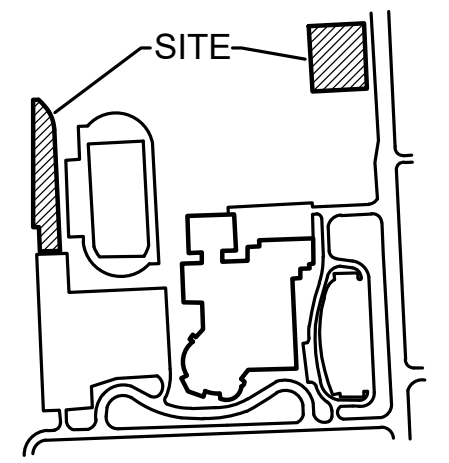
NOTES:
1. CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS. ANY DEVIATIONS TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.

DEMOLITION QUANTITIES:
CLEAR TREES AND BRUSH 1.93 AC

DEMOLITION LEGEND:
TREE AND BRUSH REMOVAL



CAUTION!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
TROY ATHENS HIGH SCHOOL
4333 JOHN R ROAD, TROY, MI

REVISIONS	
1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21
3 - ADDENDUM 1	12/10/21
4 - ADDENDUM 3	12/20/21

ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
OVERALL TOPOGRAPHIC SURVEY

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS

DRAWING NUMBER:

NOT FOR CONSTRUCTION

C-1.0



S:\PROJECTS\2021\0584_2022 BID IMPROVEMENT PROJECTS\IMP\CONSTRUCTION\ATHENS HIGH SCHOOL\C-1.0\TOPIC-ATHENS.dwg

- GENERAL DEMOLITION NOTES:**
THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:
- ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
 - ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
 - STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
 - SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT WILL NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
 - REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES FOUNDATIONS, FOOTINGS, FOUNDATION WALLS, FLOOR SLABS, UNDERGROUND UTILITIES, CONCRETE, ASPHALT, TREES, ETC.
 - THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15 FEET OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
 - THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
 - THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITY LEADS HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION.
 - ALL BUILDING GAS LEADS, METERS AND ASSOCIATED EQUIPMENT SHALL BE REMOVED AS SHOWN ON THE PLANS. COORDINATE ALL ASSOCIATED WORK WITH THE APPROPRIATE UTILITY COMPANY.
 - REMOVE ALL OVERHEAD AND UNDERGROUND ELECTRICAL LINES WITHIN THE AREA OF CONSTRUCTION AS SHOWN ON THE PLANS. COORDINATE SHUTDOWNS AND REMOVALS WITH ELECTRICAL SERVICE PROVIDER OR THE APPROPRIATE UTILITY COMPANY. (NOTE: PHONE AND CABLE T.V. SERVICES MAY ALSO BE LOCATED ON OVERHEAD LINES.)
 - THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA, AS NECESSARY TO FACILITATE CONSTRUCTION. SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
 - THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊙ SEC. CORNER FOUND
⊗ IRON SET	⊗ MONUMENT FOUND	R RECORDED
⊗ NAIL FOUND	⊗ MONUMENT SET	M MEASURED
⊗ NAIL & CAP SET		C CALCULATED

EXISTING

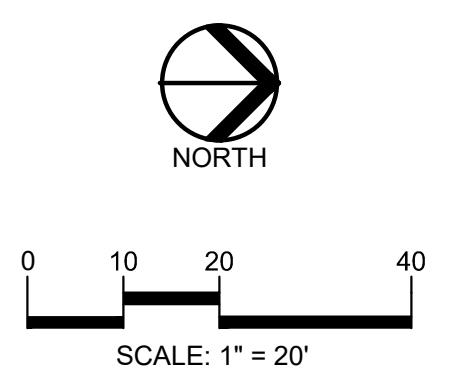
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- UG-CATV- UNDERGROUND CABLE TV, CATV PEDESTAL
- UG-PHONE- TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
- UG-ELEC- ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
- GAS VALVE & GAS LINE MARKER
- WATERMAN, HYD., GATE VALVE, TAPPING BLEED & VALVE
- SANITARY SEWER, CLEANOUT & MANHOLE
- STORM SEWER, CLEANOUT & MANHOLE
- COMBINED SEWER & MANHOLE
- SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
- POST INDICATOR VALVE
- WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF
- MALBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE

PROPOSED

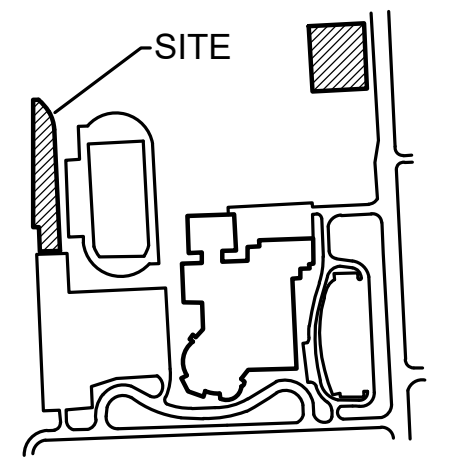
- SPOT ELEVATION
- CONTOUR LINE
- FENCE
- GUARD RAIL
- STREET LIGHT
- SIEN
- CONC. CONCRETE
- ASPH. ASPHALT
- GRAVEL SHOULDER
- WETLAND
- STD. HEAVY FLOW DUTY ONLY
- STD. HEAVY BEEP DUTY STRENGTH

DEMOLITION LEGEND:

- TREE AND BRUSH REMOVAL



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CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
TROY ATHENS HIGH SCHOOL
4333 JOHN R ROAD, TROY, MI

REVISIONS

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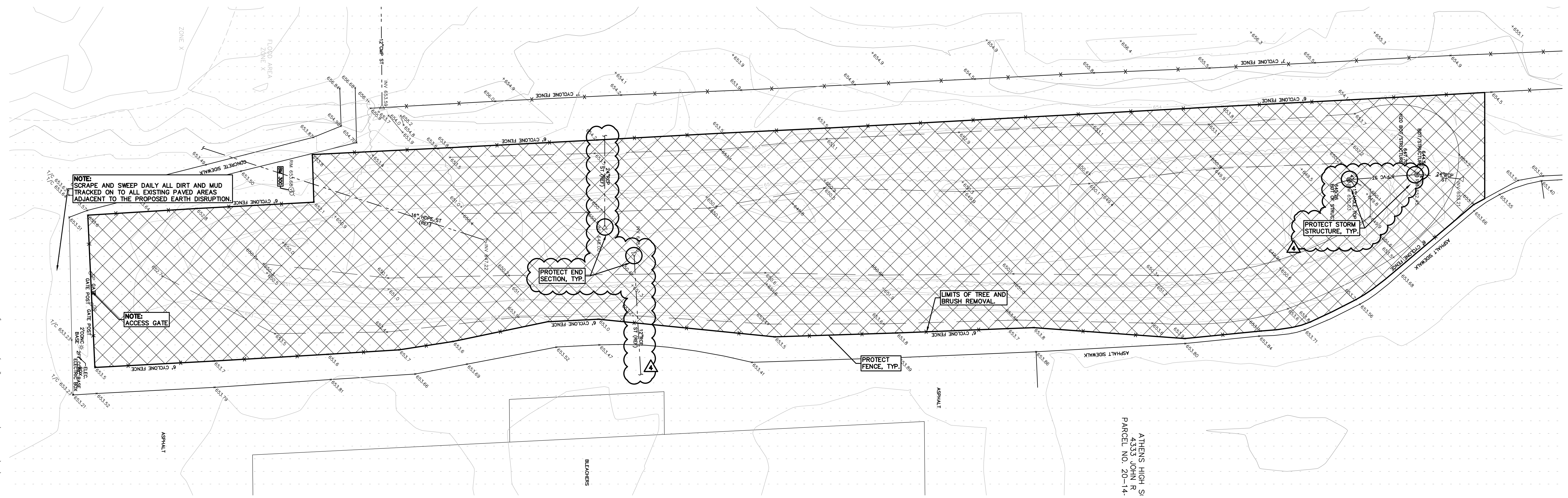
ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
WEST BASIN TOPOGRAPHIC SURVEY AND DEMOLITION PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS

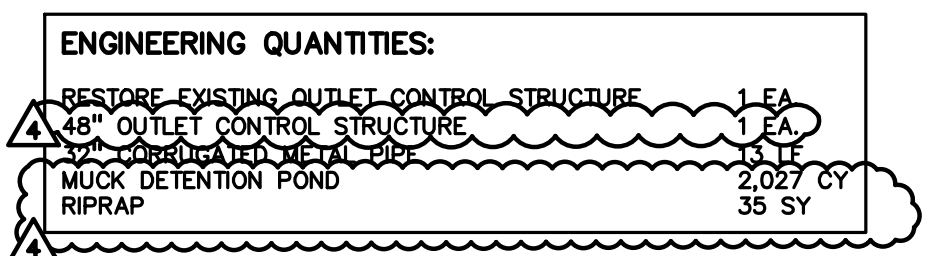
DRAWING NUMBER:

NOT FOR CONSTRUCTION C-1.1



Proposed Pond Volume			
Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
646.0	2,137	0	0
647.0	4,857	3,497	3,497
648.0	7,295	6,076	9,573
649.0	10,254	8,775	18,348
650.0	13,061	11,658	30,005
651.0	19,039	16,050	46,055
652.0	24,468	21,754	67,809
653.0	30,431	27,450	95,258

EROSION CONTROL QUANTITIES:	
SILT FENCE	389 LF
EMBANKMENT RESTORATION	6,785 SY
LAWN RESTORATION AREA	4,230 SY



SYMBOLS: GRADING

PROPOSED SPOT ELEVATION:
TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.

PROPOSED CONTOUR LINE — 722 —

ABBREVIATIONS:
T/C = TOP OF CURB
G = GUTTER GRADE
T/P = TOP OF PAVEMENT
T/S = TOP OF SIDEWALK
T/W = TOP OF WALL
B/W = BOTTOM OF WALL
F.G. = FINISH GRADE
RIM = RIM ELEVATION

SYMBOLS: EROSION CONTROL:

(SP-2) SILT FENCE
(E-9) EROSION CONTROL BLANKET
LAWN RESTORATION
EMBANKMENT RESTORATION

REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.

NOTE:
REFER TO SHEET C-4.0 FOR SOIL EROSION SCHEDULE AND NOTES, AND SEQUENCE OF CONSTRUCTION.

EARTHWORK BALANCING NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING OR EXPORTING ALL MATERIALS AS REQUIRED TO PROPERLY GRADE THIS PROJECT TO THE FINISHED ELEVATIONS SHOWN ON THE APPROVED PLANS. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF CUT AND FILL QUANTITIES AND ALLOW FOR REMOVAL OF EXCESS OR IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

- GENERAL SITE CONDITIONS:**
- ACCORDING TO THE USGS WEB SOIL SURVEY DATED NOVEMBER 23, 2021, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:
41B - AQUENTS, SANDY, LOAMY, UNDULATING
 - TOTAL DISTURBED AREA = ±2.27 ACRES
 - N.P.D.E.S. NOTICE OF COVERAGE IS NOT REQUIRED

- NOTE:**
- PER THE SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE PER THE PROJECT SPECIFICATIONS, PRIOR TO THE PLACEMENT OF TOPSOIL THE SUCCESSFUL BIDDER TO SCHEDULE AN INSPECTION BY THE SCHOOL BOARD OR PEA GROUP TO CONFIRM THAT THE GRADE IS AT THE PROPER ELEVATION WHERE THE MINIMUM DEPTH OF TOPSOIL CAN BE PLACED THROUGHOUT THE AREA.
 - CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS, ANY DEVIATION TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.
 - WORK IS CURRENTLY ANTICIPATED TO BE COMPLETED IN THE WINTER WITH FROZEN GROUND. ADDITIONAL BMPs TO BE ADDED AS NEEDED IF WORK IS NOT COMPLETED BY SPRING OR PRIOR TO GROUND THAWING.
 - RE-GRADING OF THE POND AREAS SHALL BE INCLUDED IN THE COSTS OF THE PROJECT PER LIMITS SHOWN IN THE PLANS.
 - DISTRICT TO REVIEW SITE IN THE SPRING TO DETERMINE ANY GRASS AREAS AND IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION INCLUDING INGRESS/EGRESS AREAS TO THE PONDS. CONTRACTOR IS RESPONSIBLE TO RESTORE ALL DAMAGED AREAS AND IRRIGATION SYSTEM TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE DISTRICT.

LEGEND

EXISTING

- IRON FOUND
- IRON SET
- NAIL FOUND
- NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND
- MONUMENT SET

PROPOSED

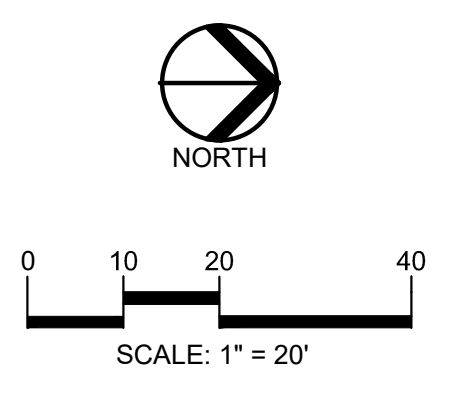
- ELEC. PHONE OR CABLE TV O.U. LINE, POLE & GUY WIRE
- UNDERGROUND CABLE TV, CATV PEDESTAL
- TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
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- SANITARY SEWER, CLEANOUT & MANHOLE
- STORM SEWER, CLEANOUT & MANHOLE
- COMBINED SEWER & MANHOLE
- SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
- POST INDICATOR VALVE
- WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF
- MALBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE
- SPOT ELEVATION
- CONTOUR LINE
- FENCE
- GUARD RAIL
- STREET LIGHT
- CONC.
- CONCRETE
- ASPH.
- ASPHALT
- GRAVEL
- GRAVEL SHOULDER
- WETLAND

SEC. CORNER FOUND

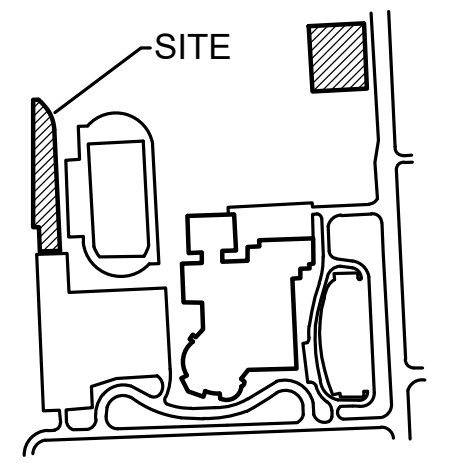
- R. RECORDED
- M. MEASURED
- C. CALCULATED

310 HEAVY FLOW DUTY ONLY

310 HEAVY BEEP DUTY STRENGTH



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CLIENT
TROY SCHOOLS
1140 RANKIN
TROY, MI 48063

PROJECT TITLE
TROY ATHENS HIGH SCHOOL
4333 JOHN R. ROAD, TROY, MI

REVISIONS

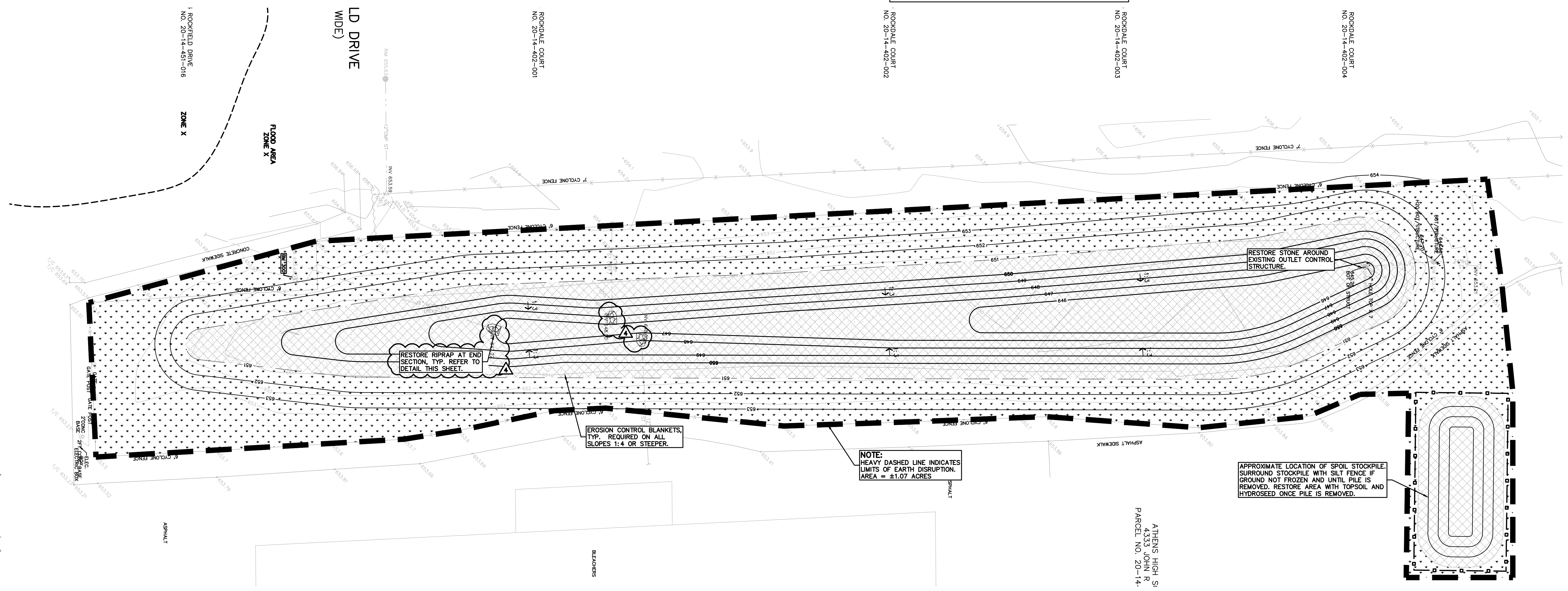
1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21
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ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

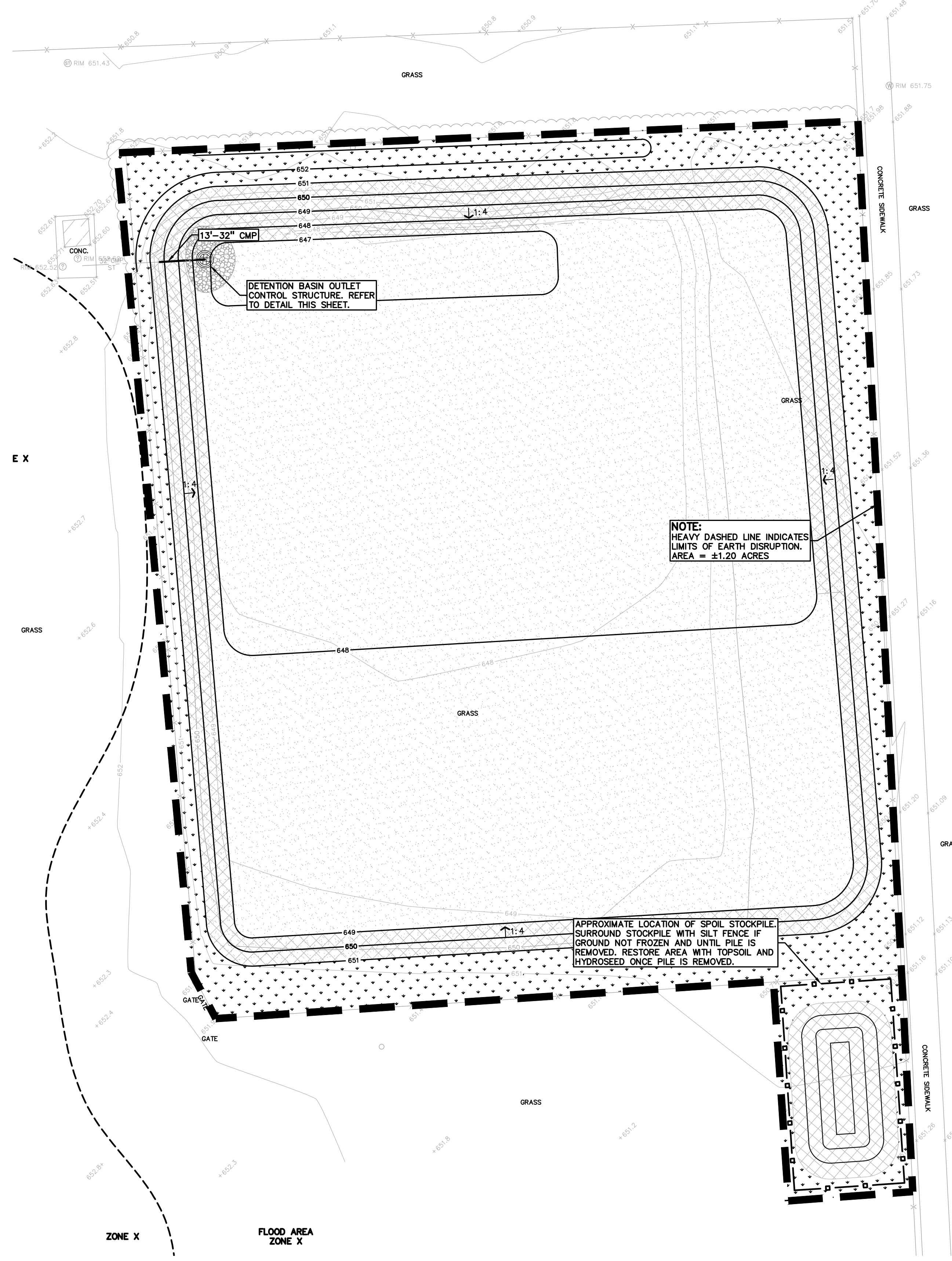
DRAWING TITLE
WEST BASIN GRADING AND SOIL EROSION PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS
DRAWING NUMBER:	

C-2.1



4501 JOHN R ROAD
PARCEL NO. 20-14-279-014
1980 HAMMAN DRIVE
PARCEL NO. 20-14-279-013
IVE
79-012



STORM DETENTION RE DEVELOPMENT DESIGN

Contributing Area (A): 15.090 AC.
Coefficient of Runoff (C): 0.530

STORAGE VOLUME REQUIRED:

Sedimentation Volume Required:
 $V_s = 15\% \times V_{10} \times C$
 $V_s = 4354.96$ Cu. Ft.
Original Detention Design Volume = 93475 Cu. Ft.

Proposed Pond CONTOUR

ELEVATION	AREA	VOLUME	CUMM	Vf	Detention
647	1,752			-	-
648	20,140	10,946	10,946	647.40	-
649	35,882	28,011	38,957	-	-
650	39,905	37,394	76,351	-	650.42
651	42,028	40,467	116,817	-	-

Outlet Control Restriction Calculations
Maximum Storage Elevation: 647.40 ft
Restriction Hole Invert: 647.00 ft
Depth of Water in Pipe: 0.40 ft
Restriction Hole Dia.: 1.75 in
Restriction Hole Area: 0.01670 sq ft
Flow thru Restriction Hole: 0.05 cfs
Time for Release of Volume: 24.19 hrs

NOTE:
REFER TO SHEET C-4.0 FOR SOIL EROSION SCHEDULE AND NOTES, AND SEQUENCE OF CONSTRUCTION.

- NOTE:**
- FOR THE SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE PER THE PROJECT SPECIFICATIONS; PRIOR TO THE PLACEMENT OF TOPSOIL, THE SUCCESSFUL BIDDER TO SCHEDULE AN INSPECTION BY THE SCHOOL BOARD OR PEA GROUP TO CONFIRM THAT THE GRADE IS AT THE PROPER ELEVATION WHERE THE MINIMUM DEPTH OF TOPSOIL CAN BE PLACED THROUGHOUT THE AREA.
 - CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS, ANY DEVIATION TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.
 - WORK IS CURRENTLY ANTICIPATED TO BE COMPLETED IN THE WINTER WITH FROZEN GROUND, ADDITIONAL BMPs TO BE ADDED AS NEEDED IF WORK IS NOT COMPLETED BY SPRING OR PRIOR TO GROUND THAWING.
 - RE-GRADING OF THE POND AREAS SHALL BE INCLUDED IN THE COSTS OF THE PROJECT PER LIMITS SHOWN IN THE PLANS.
 - DISTRICT TO REVIEW SITE IN THE SPRING TO DETERMINE ANY GRASS AREAS AND IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION INCLUDING INGRESS/EGRESS AREAS TO THE POND. CONTRACTOR IS RESPONSIBLE TO RESTORE ALL DAMAGED AREAS AND IRRIGATION SYSTEM TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE DISTRICT.

JOHN R ROAD
(VARIABLE WIDTH)

LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊙ SEC. CORNER FOUND
⊗ IRON SET	⊗ MONUMENT FOUND	⊙ RECORDED
⊗ NAIL FOUND	⊗ NAIL & CAP SET	⊙ MEASURED
⊗ NAIL & CAP SET		⊙ CALCULATED

EXISTING

- H-ELEC: WIRE
- U-CATV: UNDERGROUND CABLE TV, CATV PEDESTAL
- UG-PHONE: TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
- E-ELEC: U.G. CABLE, MANHOLE, METER & MANHOLE
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- UNIDENTIFIED: UNIDENTIFIED STRUCTURE
- SPOT: SPOT ELEVATION
- CONTOUR: CONTOUR LINE
- FENCE: FENCE
- GUARD: GUARD RAIL
- STREET: STREET LIGHT
- SIEN: SIGN
- CONC.: CONCRETE

PROPOSED

- ASPH: ASPHALT
- GRAVEL: GRAVEL SHOULDER
- WETLAND: WETLAND

SYMBOLS: GRADING

PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES. (722.50)

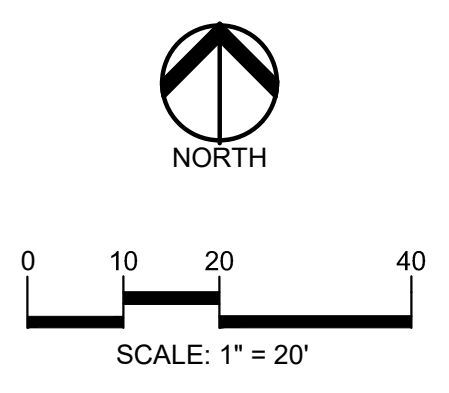
PROPOSED CONTOUR LINE: 722

ABBREVIATIONS:
T/C = TOP OF CURB
G = GUTTER GRADE
T/P = TOP OF PAVEMENT
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T/W = TOP OF WALL
B/W = BOTTOM OF WALL
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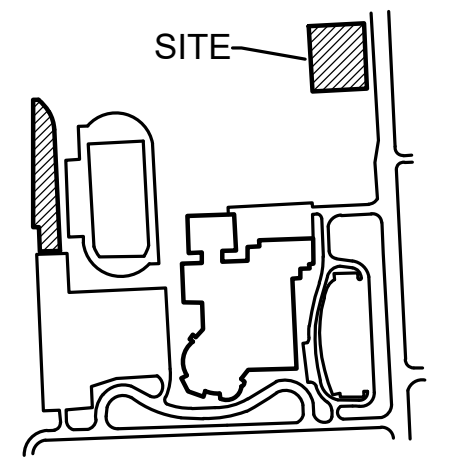
SYMBOLS: EROSION CONTROL:

- (SP-2) SILT FENCE
- (E-9) EROSION CONTROL BLANKET
- LAWN RESTORATION
- EMBANKMENT RESTORATION

REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.



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1140 RANKIN
TROY, MI 48063

PROJECT TITLE
TROY ATHENS HIGH SCHOOL
4501 JOHN R. ROAD, TROY, MI

REVISIONS

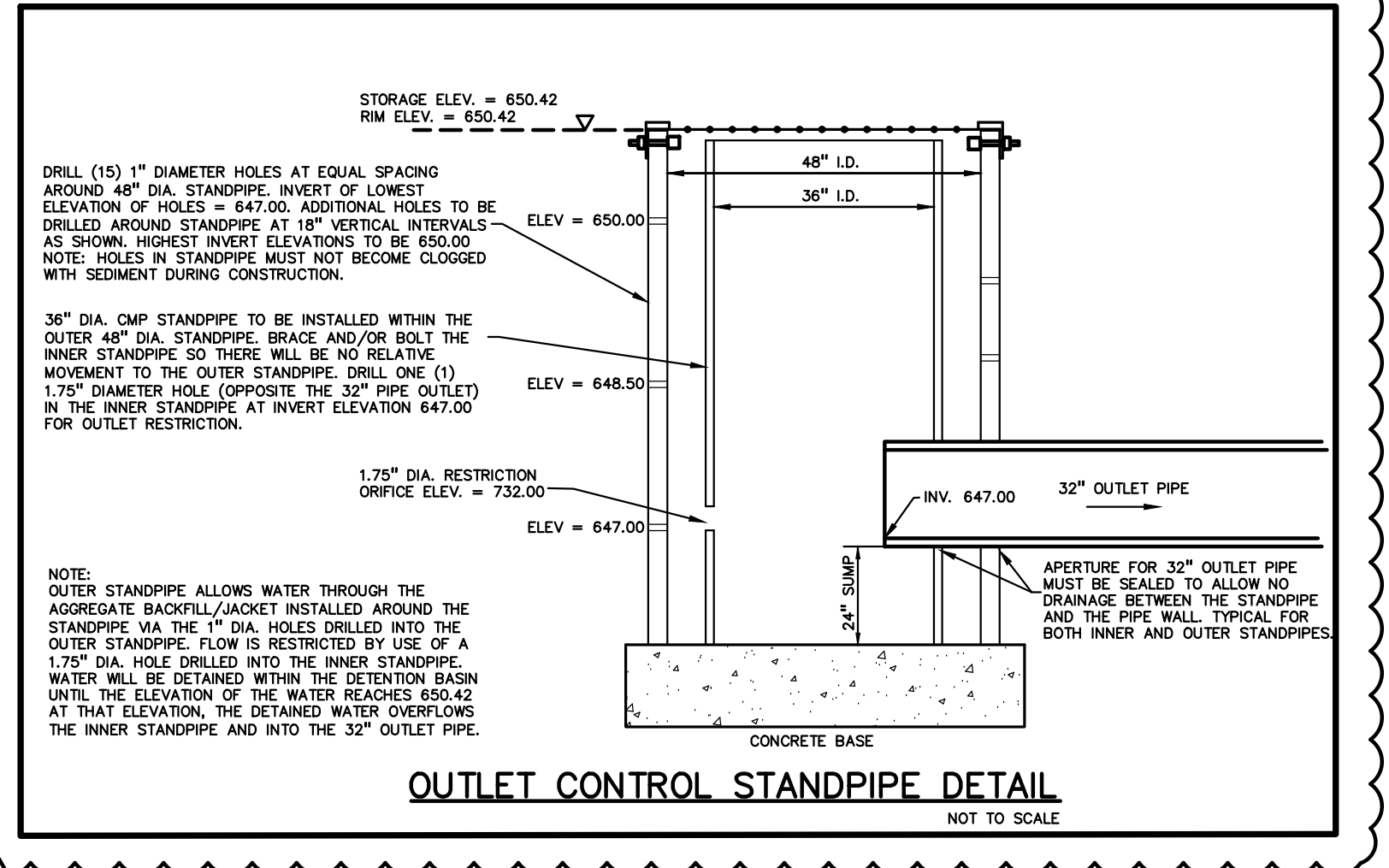
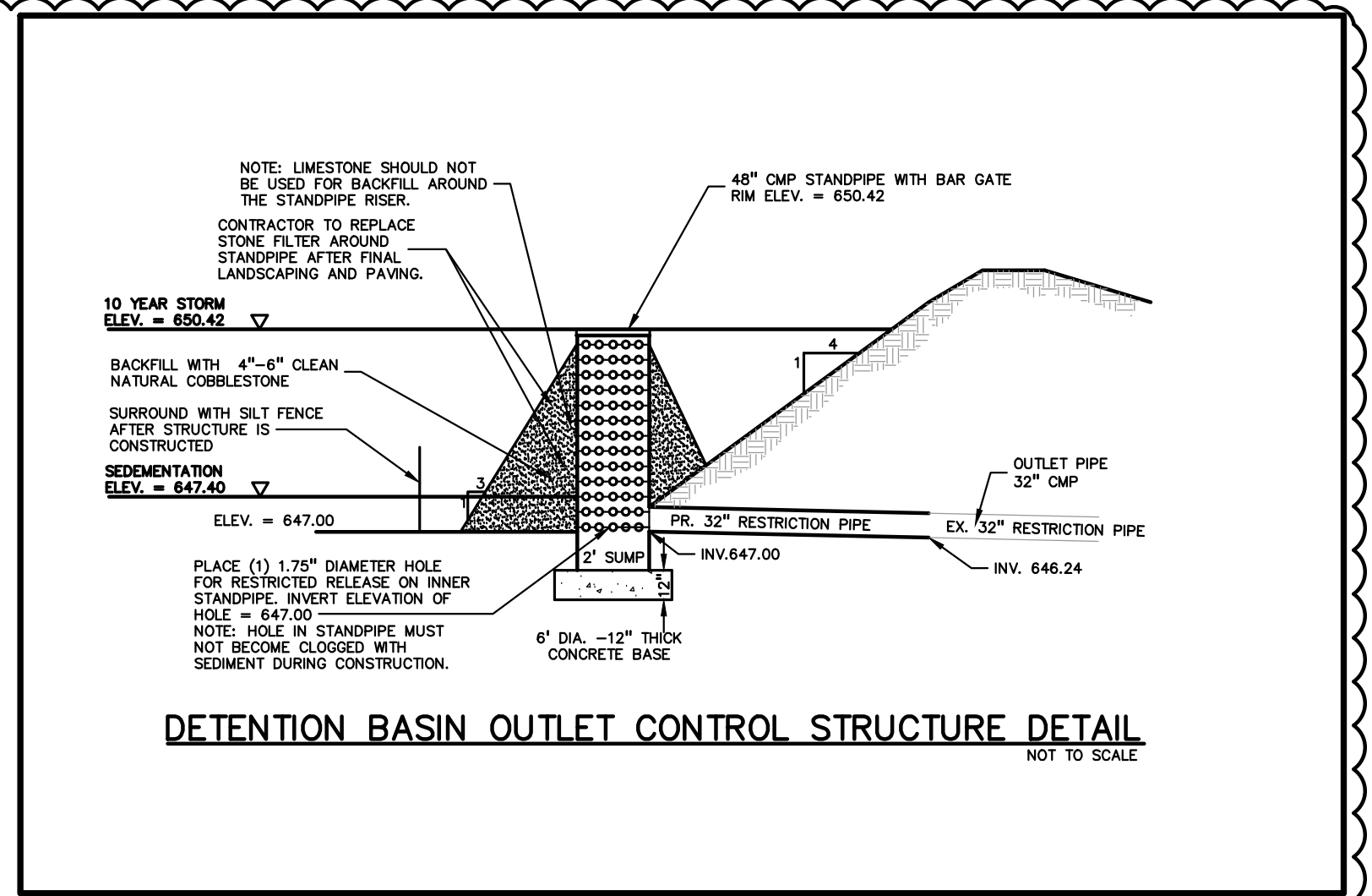
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ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
EAST BASIN GRADING AND SOIL EROSION PLAN

PEA JOB NO. 2021-0584
P.M. RR
DN. KMM
DES. JDS
DRAWING NUMBER:

C-2.2



LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊙ SEC. CORNER FOUND
⊗ IRON SET	⊗ MONUMENT FOUND	R RECORDED
⊗ NAIL FOUND	⊗ MONUMENT SET	M MEASURED
⊗ NAIL & CAP SET		C CALCULATED

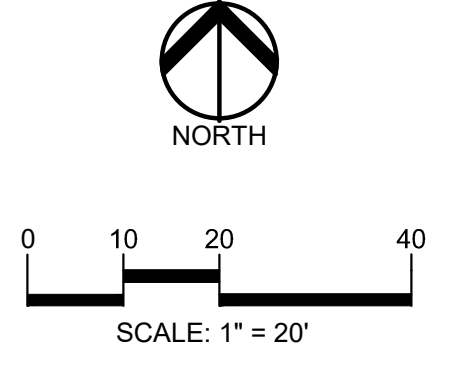
—OH—ELEC—	ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE	
—UG—CATV—	UNDERGROUND CABLE TV, CATV PEDESTAL	
—UG—PHONE—	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE	
—UG—ELEC—	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE	
—GAS—	GAS MAIN, VALVE & GAS LINE MARKER	
—WATER—	WATERMAIN, HYD. GATE VALVE, TAPPING SLEEVE & VALVE	
—SEWER—	SANITARY SEWER, CLEANOUT & MANHOLE	
—CS—	STORM SEWER, CLEANOUT & MANHOLE	
—C/S—	COMBINED SEWER & MANHOLE	
□	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN	
○	POST INDICATOR VALVE	
□	WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF	
□	MALBOX, TRANSFORMER, IRRIGATION CONTROL VALVE	
□	UNIDENTIFIED STRUCTURE	
○	SPOT ELEVATION	
—	CONTOUR LINE	
—	FENCE	
—	GUARD RAIL	
—	STREET LIGHT	
—	SIGN	
—	CONC.	CONCRETE
—	ASPH.	ASPHALT
—	GRAVEL	GRAVEL SHOULDER
—	WETLAND	WETLAND

SYMBOLS: GRADING

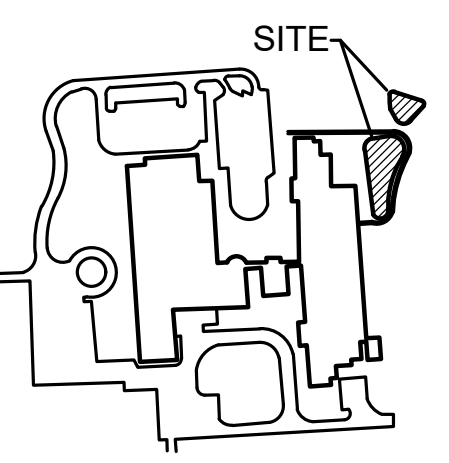
PROPOSED SPOT ELEVATION: 722.50
TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.

PROPOSED CONTOUR LINE: 722

ABBREVIATIONS:
T/C = TOP OF CURB
G = GUTTER GRADE
T/P = TOP OF PAVEMENT
T/S = TOP OF SIDEWALK
T/W = TOP OF WALL
B/W = BOTTOM OF WALL
F.G. = FINISH GRADE
RIM = RIM ELEVATION



CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
TROY SCHOOLS
11440 RANKIN
TROY, MI 48063

PROJECT TITLE
BAKER MIDDLE SCHOOL
1359 TORPEY DRIVE, TROY, MI

REVISIONS

1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21
3 - ADDENDUM 1	12/10/21
4 - ADDENDUM 3	12/20/21

ORIGINAL ISSUE DATE:
NOVEMBER 24, 2021

DRAWING TITLE
GRADING AND SOIL EROSION PLAN

PEA JOB NO. 2021-0584
P.M. RR
DN. KMM
DES. JDS

DRAWING NUMBER:
C-2.0

BAKER JUNIOR HIGH SCHOOL
1359 TORPEY DRIVE
PARCEL NO. 20-23-326-002

NOTE:
HEAVY DASHED LINE INDICATES LIMITS OF EARTH DISRUPTION. AREA = ±0.94 ACRES.

CONTRACTOR TO GRADE BOTTOM OF BASIN TO PROVIDE POSITIVE DRAINAGE TO OUTLET, TYP.

RESTORE STONE AROUND EXISTING SUPER-CANAL STRUCTURE WITH 4"-6" CLEAN NATURAL COBBLESTONE.

RIPRAP AT END SECTION, TYP. REFER TO DETAIL THIS SHEET.

APPROXIMATE LOCATION OF SPOIL STOCKPILE. SURROUND STOCKPILE WITH SILT FENCE IF GROUND NOT FROZEN AND UNTIL PILE IS REMOVED. RESTORE AREA WITH TOPSOIL AND HYDROSEED ONCE PILE IS REMOVED.

RIPRAP AT END SECTION, TYP. REFER TO DETAIL THIS SHEET.

CONTRACTOR TO GRADE BOTTOM OF BASIN TO PROVIDE POSITIVE DRAINAGE TO OUTLET, TYP.

NOTE:
REFER TO SHEET C-4.0 FOR SOIL EROSION SCHEDULE AND NOTES, AND SEQUENCE OF CONSTRUCTION.

EROSION CONTROL QUANTITIES:

SILT FENCE	211 LF
EMBANKMENT RESTORATION	2,331 SY
LAWN RESTORATION AREA	2,040 SY

ENGINEERING QUANTITIES:

RESTORE EXISTING OUTLET CONTROL STRUCTURE	1 EA.
RIPRAP	30 CY
MUCK DETENTION POND	7.5 CY

- NOTE:**
- PER THE SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE PER THE PROJECT SPECIFICATIONS. PRIOR TO THE PLACEMENT OF TOPSOIL THE SUCCESSFUL BIDDER TO SCHEDULE AN INSPECTION BY THE SCHOOL BOARD OR PEA GROUP TO CONFIRM THAT THE GRADE IS AT THE PROPER ELEVATION WHERE THE MINIMUM DEPTH OF TOPSOIL CAN BE PLACED THROUGHOUT THE AREA.
 - CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS. ANY DEVIATION TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.
 - WORK IS CURRENTLY ANTICIPATED TO BE COMPLETED IN THE WINTER WITH FROZEN GROUND. ADDITIONAL BMPs TO BE ADDED AS NEEDED IF WORK IS NOT COMPLETED BY SPRING OR PRIOR TO GROUND THAWING.
 - RE-GRADING OF THE POND AREAS SHALL BE INCLUDED IN THE COSTS OF THE PROJECT PER LIMITS SHOWN IN THE PLANS.
 - DISTRICT TO REVIEW SITE IN THE SPRING TO DETERMINE ANY GRASS AREAS AND IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION INCLUDING INGRESS/EGRESS AREAS TO THE PONDS. CONTRACTOR IS RESPONSIBLE TO RESTORE ALL DAMAGED AREAS AND IRRIGATION SYSTEM TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE DISTRICT.

EARTHWORK BALANCING NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING OR EXPORTING ALL MATERIALS AS REQUIRED TO PROPERLY GRADE THIS PROJECT TO THE FINISHED ELEVATIONS SHOWN ON THE APPROVED PLANS. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF CUT AND FILL QUANTITIES AND ALLOW FOR REMOVAL OF EXCESS OR IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

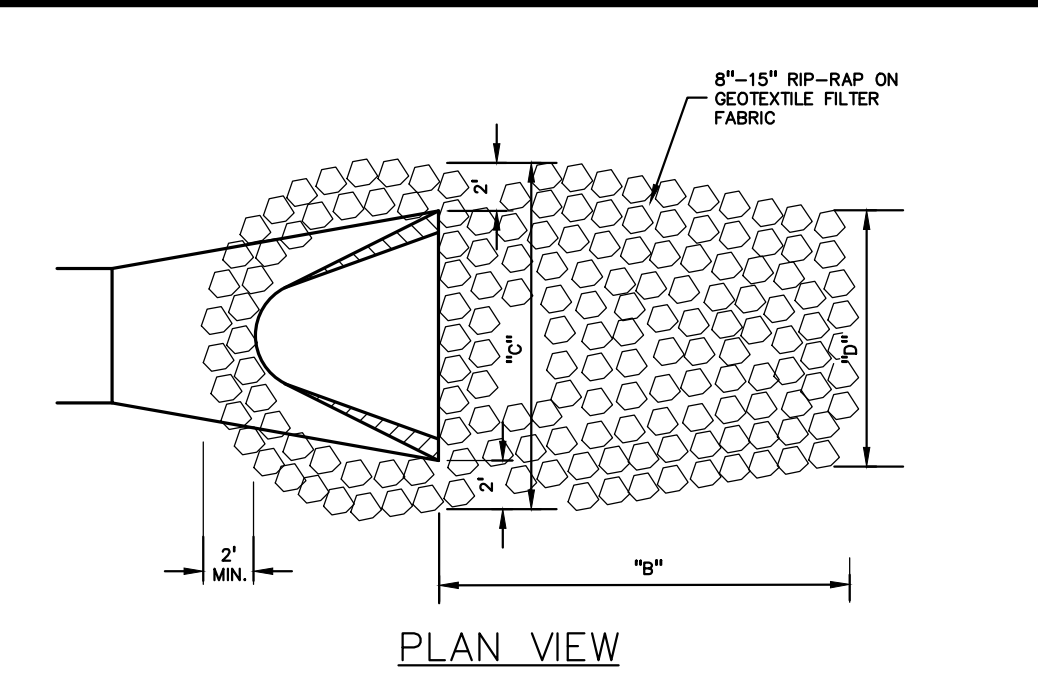
- GENERAL SITE CONDITIONS:**
- ACCORDING TO THE USGS WEB SOIL SURVEY DATED NOVEMBER 23, 2021, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:
12 - BROOKSTON AND COALWOOD LOAMS
52A - SELFRIDGE LOAMY SAND, 0 TO 3 PERCENT LOAMS
 - TOTAL DISTURBED AREA = ±0.94 ACRES
 - N.P.D.E.S. NOTICE OF COVERAGE IS NOT REQUIRED

Proposed Northeast Pond Volume

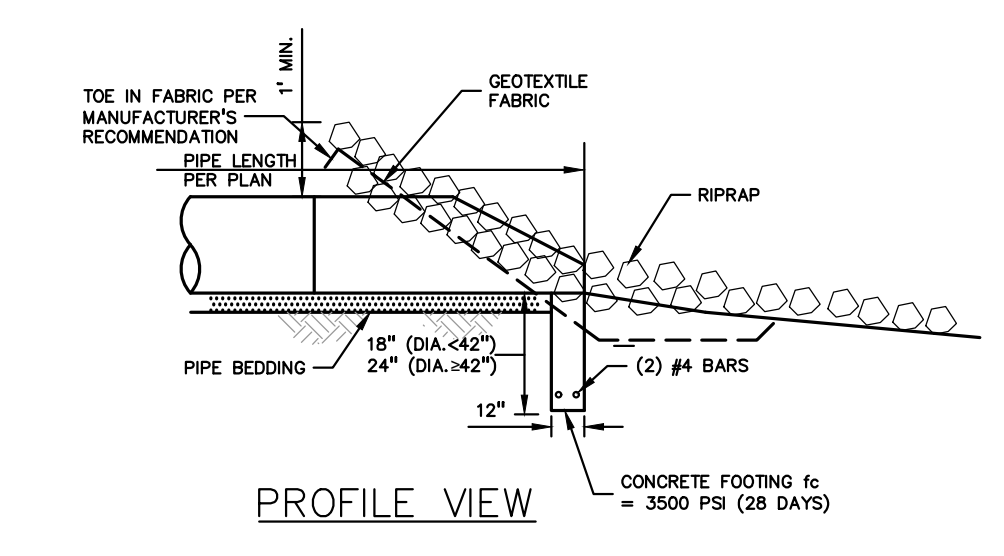
Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
650.0	133	0	0
651.0	2,205	1,169	1,169
652.0	3,469	2,837	4,006
653.0	5,005	4,237	8,243
654.0	6,819	5,912	14,155
655.0	0	0	14,155
656.0	0	0	14,155

Proposed East Pond Volume

Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
650.0	3,681	0	0
651.0	5,764	4,723	4,723
652.0	8,447	7,106	11,828
653.0	1,192	4,820	16,648
654.0	14,163	7,678	24,325
655.0	0	0	24,325



PIPE DIAMETER	"b"	"c"	"d"	SQUARE YARDS
12"	5'-0"	6'-6"	3'-0"	8.0
15"	5'-0"	7'-0"	3'-0"	8.5
18"	5'-0"	7'-6"	3'-6"	9.2
21"	5'-6"	8'-0"	4'-0"	10.7
24"	6'-0"	8'-6"	4'-6"	12.4



END SECTION & RIPRAP DETAIL
NOT TO SCALE

LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊙ SEC. CORNER FOUND
⊗ IRON SET	⊗ MONUMENT FOUND	⊗ R. RECORDED
⊗ NAIL FOUND	⊗ MONUMENT SET	⊗ M. MEASURED
⊗ NAIL & CAP SET		⊗ C. CALCULATED

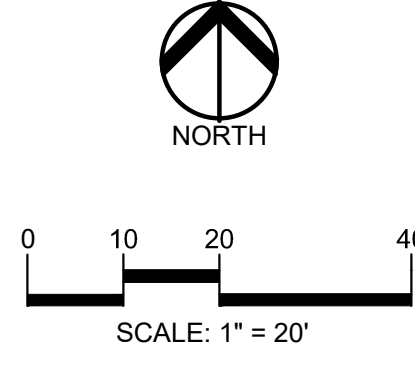
— OH-ELEC—	ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
— UG-CATV—	UNDERGROUND CABLE TV, CATV PEDESTAL
⊗ UG-PHONE	TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
⊗ UG-ELEC	ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
⊗ GAS	GAS MAIN, VALVE & GAS LINE MARKER
⊗ WAT	WATER MAIN, HYD. GATE VALVE, TAPPING BREEVIE & VALVE
⊗ SAN	SANITARY SEWER, CLEANOUT & MANHOLE
⊗ STW	STORM SEWER, CLEANOUT & MANHOLE
⊗ COMB	COMBINED SEWER & MANHOLE
⊗ SQ	SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
⊗ RIV	POST INDICATOR VALVE
⊗ WVB	WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF
⊗ TR	MALBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
⊗ UNID	UNIDENTIFIED STRUCTURE
⊗ SP	SPOT ELEVATION
— 670	CONTOUR LINE
— X—X—	FENCE
— X—X—	GUARDRAIL
— X—X—	STREET LIGHT
— X—X—	SIGN
— CONC.	CONCRETE
— ASPH.	ASPHALT
— GRAVEL	GRAVEL SHOULDER
— WETLAND	WETLAND
— POND	POND

⊗ 671	PROPOSED SPOT ELEVATION
— 722	PROPOSED CONTOUR LINE

⊗ 722.50	PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.
— 722	PROPOSED CONTOUR LINE

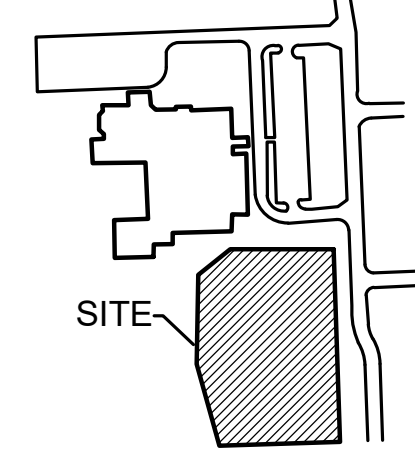
⊗ 722.50	PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.
— 722	PROPOSED CONTOUR LINE

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— 722	PROPOSED CONTOUR LINE



811 Know what's below. Call before you dig.

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CLIENT
TROY SCHOOLS
 1140 RANKIN
 TROY, MI 48063

PROJECT TITLE
LEONARD ELEMENTARY SCHOOL
 4401 TALLMAN DRIVE, TROY, MI

REVISIONS	
1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21
3 - ADDENDUM 1	12/10/21
4 - ADDENDUM 3	12/20/21

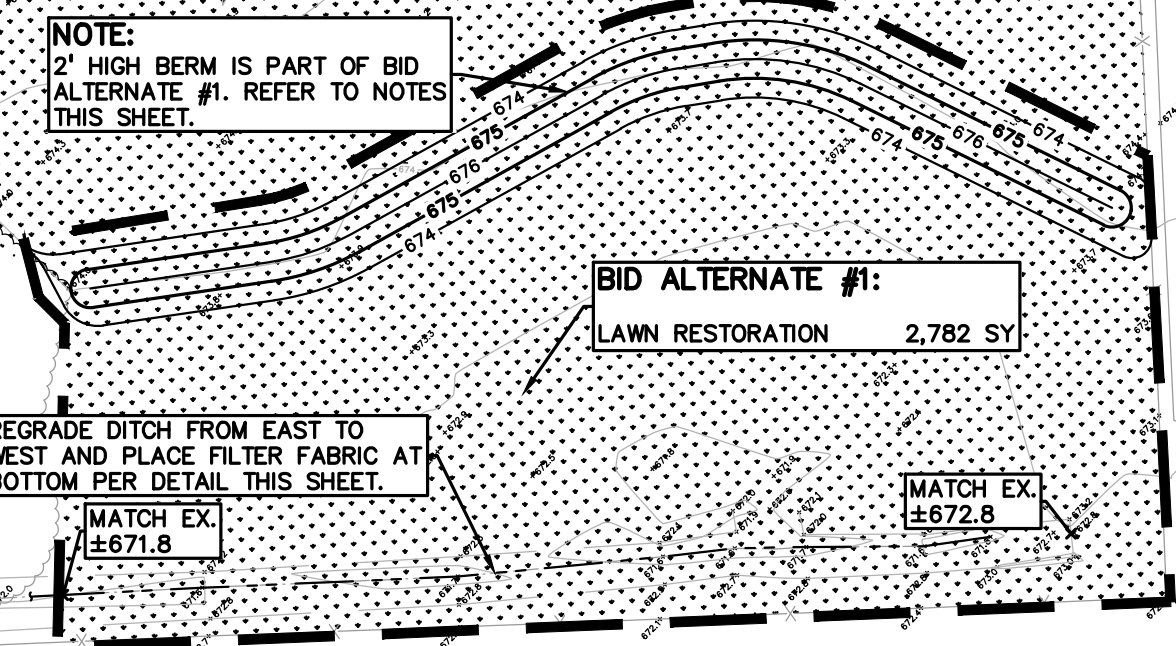
ORIGINAL ISSUE DATE:
 NOVEMBER 24, 2021

DRAWING TITLE
GRADING AND SOIL EROSION PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS
DRAWING NUMBER:	

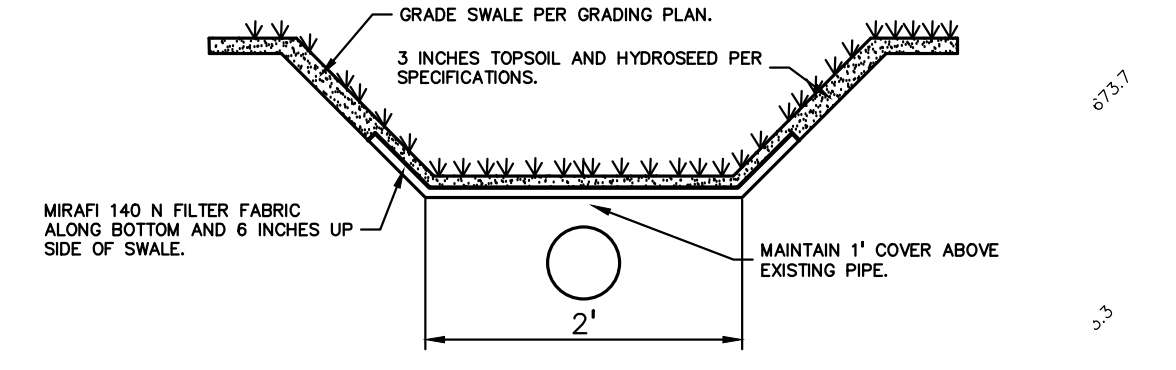
C-2.0

NOTE:
 BASED ON REFERENCED SURVEY DATA FROM 1992, APPROXIMATELY 1,300 CY OF FREEBOARD VOLUME WILL BE RESTORED TO THE LEONARD ELEMENTARY SCHOOL POND.

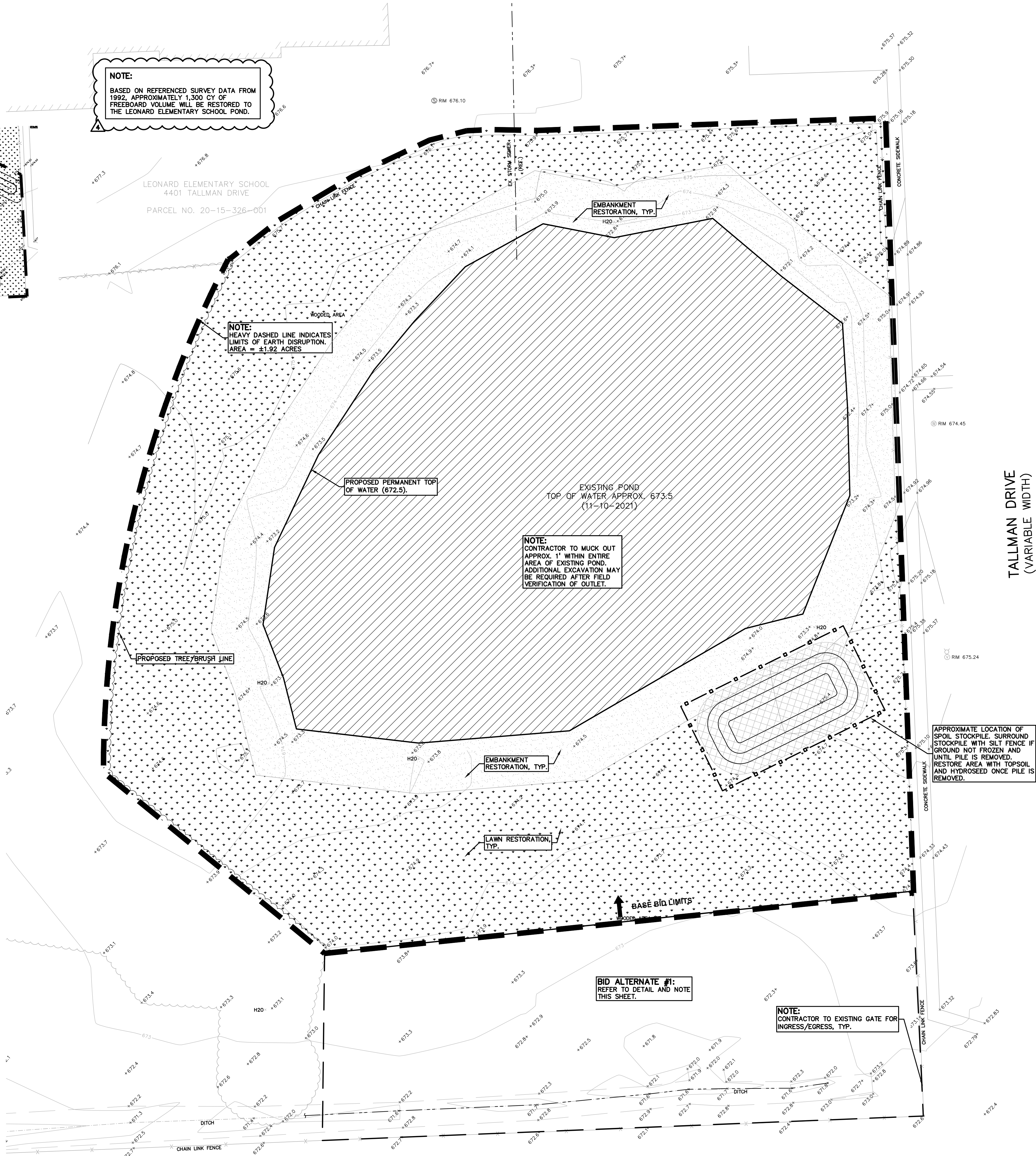


BID ALTERNATE #1
 SCALE: 1"=40'

- BID ALTERNATE #1:**
1. PROVIDE, INSTALL AND MAINTAIN ANY SOIL EROSION AND SEDIMENTATION CONTROL BMP'S FOR THE AREA AS INDICATED ON SHEET C-2.0 AND PER THE PROJECT SPECIFICATIONS.
 2. CLEAR ALL TREES, BRUSH AND VEGETATION WITHIN THE AREA AS INDICATED ON SHEET C-1.0 AND PER THE PROJECT SPECIFICATIONS.
 3. STOCKPILE THE EXISTING TOPSOIL AND SOIL FOR RE-USE AS INDICATED ON SHEET C-2.0 AND PER THE PROJECT SPECIFICATIONS.
 4. RE-GRADE THE AREA BETWEEN THE SOUTHERN END OF THE POND AND SOUTHERN PROPERTY LINE TO CREATE A 2-FOOT HIGH BERM AS INDICATED THIS SHEET AND PER THE PROJECT SPECIFICATIONS. RE-USING SUITABLE SOLID FROM THE POND GRADING OPERATIONS AT ANY OF THE SITES WILL BE ALLOWED FOR THE CREATION OF THIS BERM.
 5. LOCATE THE EXISTING UNDERDRAIN ALONG THE SOUTHERN PROPERTY LINE, INCLUDING DEPTH AS INDICATED ON SHEET C-1.0.
 6. RE-GRADE THE DITCH ALONG THE SOUTH PROPERTY AS INDICATED THIS SHEET, INCLUDING RE-SETTING OF THE UNDERDRAIN AS NEEDED TO PROVIDE PROPER DEPTH AND PLACEMENT OF THE FILTER FABRIC ALONG THE BOTTOM OF THE DITCH PER THE DETAIL IN THE CONSTRUCTION PLAN AND PROJECT SPECIFICATIONS.
 7. RESTORE THE DISTURBED AREAS AND BERM WITH A MINIMUM OF 3-INCHES OF COMPACTED TOPSOIL AND HYDROSEED PER THIS SHEET AND PROJECT SPECIFICATIONS. PROVIDE CREDIT FOR BASE BID AREA RESTORATION THAT CONTAINS THE BERM AS PART OF THE ALTERNATE #1 COSTS.
 8. REMOVE ANY SOIL EROSION AND SEDIMENTATION BMP'S ONCE PERMANENT VEGETATION HAS BEEN ESTABLISHED AS INDICATED ON SHEET C-4.0 AND PER THE PROJECT SPECIFICATIONS.



SWALE CROSS-SECTION
 NOTE: EXACT LOCATION OF UNDERDRAIN TO DITCH WILL BE FIELD DETERMINED
 NOT TO SCALE



EARTHWORK BALANCING NOTE:
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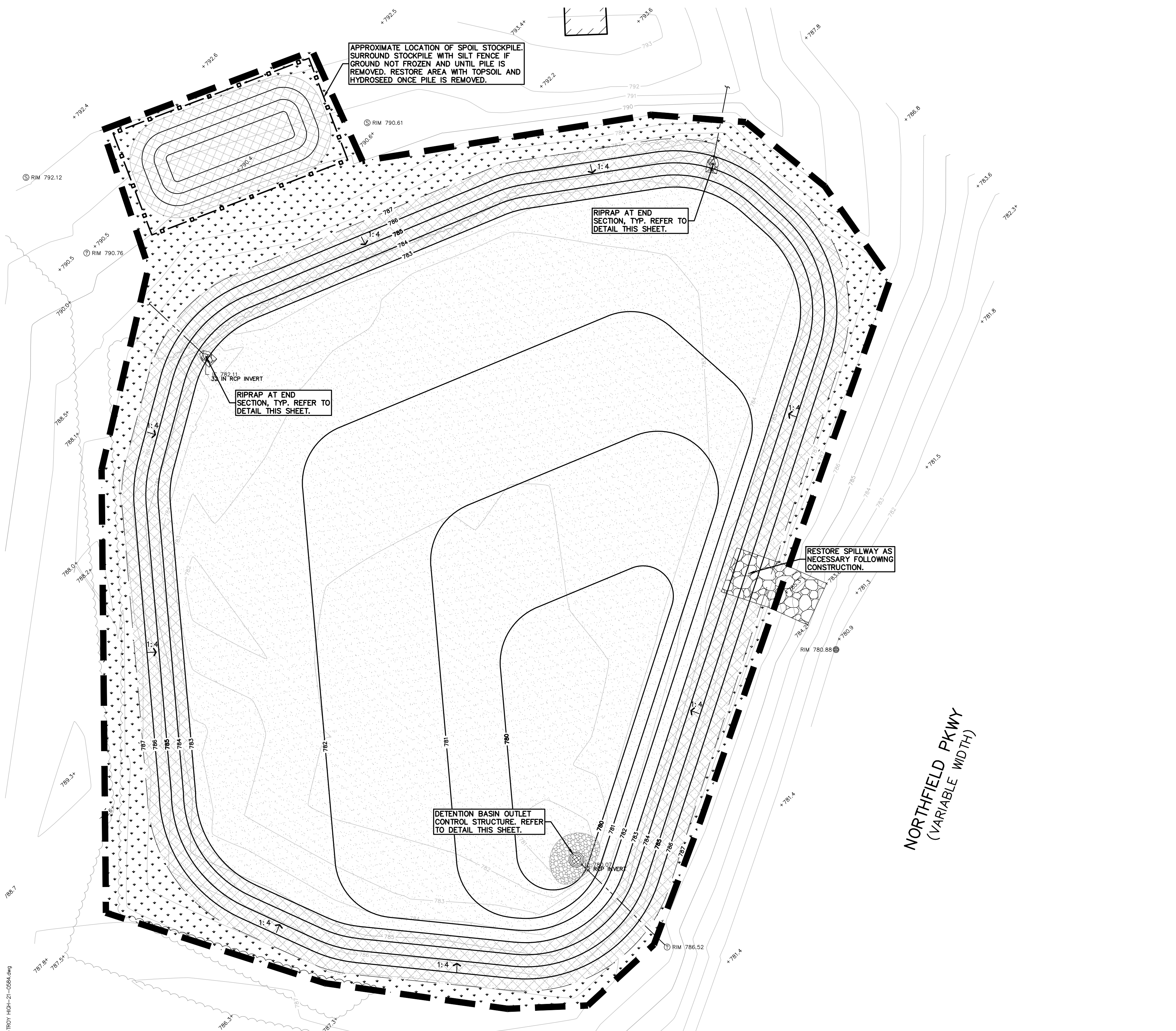
- GENERAL SITE CONDITIONS:**
1. ACCORDING TO THE USGS WEB SOIL SURVEY DATED NOVEMBER 23, 2021, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:
 41B - AQUENTS, SANDY, LOAMY, UNULATING
 2. TOTAL DISTURBED AREA = ±1.92 ACRES
 3. N.P.D.E.S. NOTICE OF COVERAGE IS NOT REQUIRED

- NOTE:**
1. PER THE 'SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE PER THE PROJECT SPECIFICATIONS; PRIOR TO THE PLACEMENT OF TOPSOIL THE SUCCESSFUL BIDDER TO SCHEDULE AN INSPECTION BY THE SCHOOL BOARD OR PEA GROUP TO CONFIRM THAT THE GRADE IS AT THE PROPER ELEVATION WHERE THE MINIMUM DEPTH OF TOPSOIL CAN BE PLACED THROUGHOUT THE AREA.
 2. CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS, ANY DEVIATION TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.
 3. CONTRACTOR TO REMOVE TREES AND STUMPS AND REGRADE TO PROVIDE UNIFORM SLOPE THROUGHOUT AREA, EXCEPT AS INDICATED IN BID ALTERNATE #1.
 4. WORK IS CURRENTLY ANTICIPATED TO BE COMPLETED IN THE WINTER WITH FROZEN GROUND, ADDITIONAL BMP'S TO BE ADDED AS NEEDED IF WORK IS NOT COMPLETED BY SPRING OR PRIOR TO GROUND THAWING.
 5. DISTRICT TO REVIEW SITE IN THE SPRING TO DETERMINE ANY GRASS AREAS AND IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION INCLUDING INGRESS/EGRESS AREAS TO THE PONDS. CONTRACTOR IS RESPONSIBLE TO RESTORE ALL DAMAGED AREAS AND IRRIGATION SYSTEM TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE DISTRICT.

NOTE:
 REFER TO SHEET C-4.0 FOR SOIL EROSION SCHEDULE AND NOTES, AND SEQUENCE OF CONSTRUCTION.

NOT FOR CONSTRUCTION

S:\PROJECTS\2021-0584-2022-170 SITE IMPROVEMENT PROJECTS\CONSTRUCTION\3 LEONARD ELEMENTARY\C-3\TOPRADE-LEONARD-21-0584.dwg



NOTE:
 REFER TO SHEET C-4.0 FOR SOIL EROSION SCHEDULE AND NOTES, AND SEQUENCE OF CONSTRUCTION.

EROSION CONTROL QUANTITIES:

SILT FENCE	211 LF
EMBANKMENT RESTORATION	5,726 SY
LAWN RESTORATION AREA	1,222 SY

ENGINEERING QUANTITIES:

36" OUTLET CONTROL STRUCTURE	1 EA.
RIPRAP	20 CY
MUCK DETENTION POND	1,667 CY

NOTE:

- PER THE 'SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE FOR THE PROJECT SPECIFICATIONS', PRIOR TO THE PLACEMENT OF TOPSOIL THE SUCCESSFUL BIDDER TO SCHEDULE AN INSPECTION BY THE SCHOOL BOARD OR PEA GROUP TO CONFIRM THAT THE GRADE IS AT THE PROPER ELEVATION WHERE THE MINIMUM DEPTH OF TOPSOIL CAN BE PLACED THROUGHOUT THE AREA.
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- WORK IS CURRENTLY ANTICIPATED TO BE COMPLETED IN THE WINTER WITH FROZEN GROUND. ADDITIONAL BMPs TO BE ADDED AS NEEDED IF WORK IS NOT COMPLETED BY SPRING OR PRIOR TO GROUND THAWING.
- RE-GRADING OF THE POND AREAS SHALL BE INCLUDED IN THE COSTS OF THE PROJECT PER LIMITS SHOWN IN THE PLANS.
- DISTRICT TO REVIEW SITE IN THE SPRING TO DETERMINE ANY GRASS AREAS AND IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION INCLUDING INGRESS/EGRESS AREAS TO THE PONDS. CONTRACTOR IS RESPONSIBLE TO RESTORE ALL DAMAGED AREAS AND IRRIGATION SYSTEM TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE DISTRICT.

LEGEND

● IRON FOUND	⊗ BRASS PLUG SET	⊗ SEC. CORNER FOUND
⊗ IRON SET	⊗ MONUMENT FOUND	⊗ RECORDED
⊗ NAIL FOUND	⊗ MONUMENT SET	⊗ MEASURED
⊗ NAIL & CAP SET		⊗ CALCULATED

EXISTING

- OH-ELEC—W—O— ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
- UG-CATV— UNDERGROUND CABLE TV, CATV PEDESTAL
- UG-PHONE— TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE
- UG-ELEC—ELEC. U.G. CABLE, MANHOLE, METER & HANDHOLE
- GAS— GAS MAIN, VALVE & GAS LINE MARKER
- WATER— WATER MAIN, HYD. GATE VALVE, TAPPING BLEWIE & VALVE
- SANITARY— SANITARY SEWER, CLEANOUT & MANHOLE
- STORM— STORM SEWER, CLEANOUT & MANHOLE
- COMBINED— COMBINED SEWER & MANHOLE
- SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
- POST— POST REGULATOR VALVE
- WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE BRK/OFF
- MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE
- SPOT ELEVATION
- CONTOUR LINE
- FENCE
- GUARD RAIL
- STREET LIGHT
- SIGN
- CONC.— CONCRETE
- ASPH.— ASPHALT
- GRAVEL— GRAVEL SHOULDER
- WETLAND

SYMBOLS: GRADING

PROPOSED SPOT ELEVATION: 722.50
 TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.

PROPOSED CONTOUR LINE: 722

ABBREVIATIONS:

- T/C = TOP OF CURB
- G = GUTTER GRADE
- T/P = TOP OF PAVEMENT
- T/S = TOP OF SIDEWALK
- T/W = TOP OF WALL
- B/W = BOTTOM OF WALL
- F.G. = FINISH GRADE
- RIM = RIM ELEVATION

SYMBOLS: EROSION CONTROL:

- (SP-2) SILT FENCE
- ▨ (E-9) EROSION CONTROL BLANKET
- ▨ LAWN RESTORATION
- ▨ EMBANKMENT RESTORATION

REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.

EARTHWORK BALANCING NOTE:

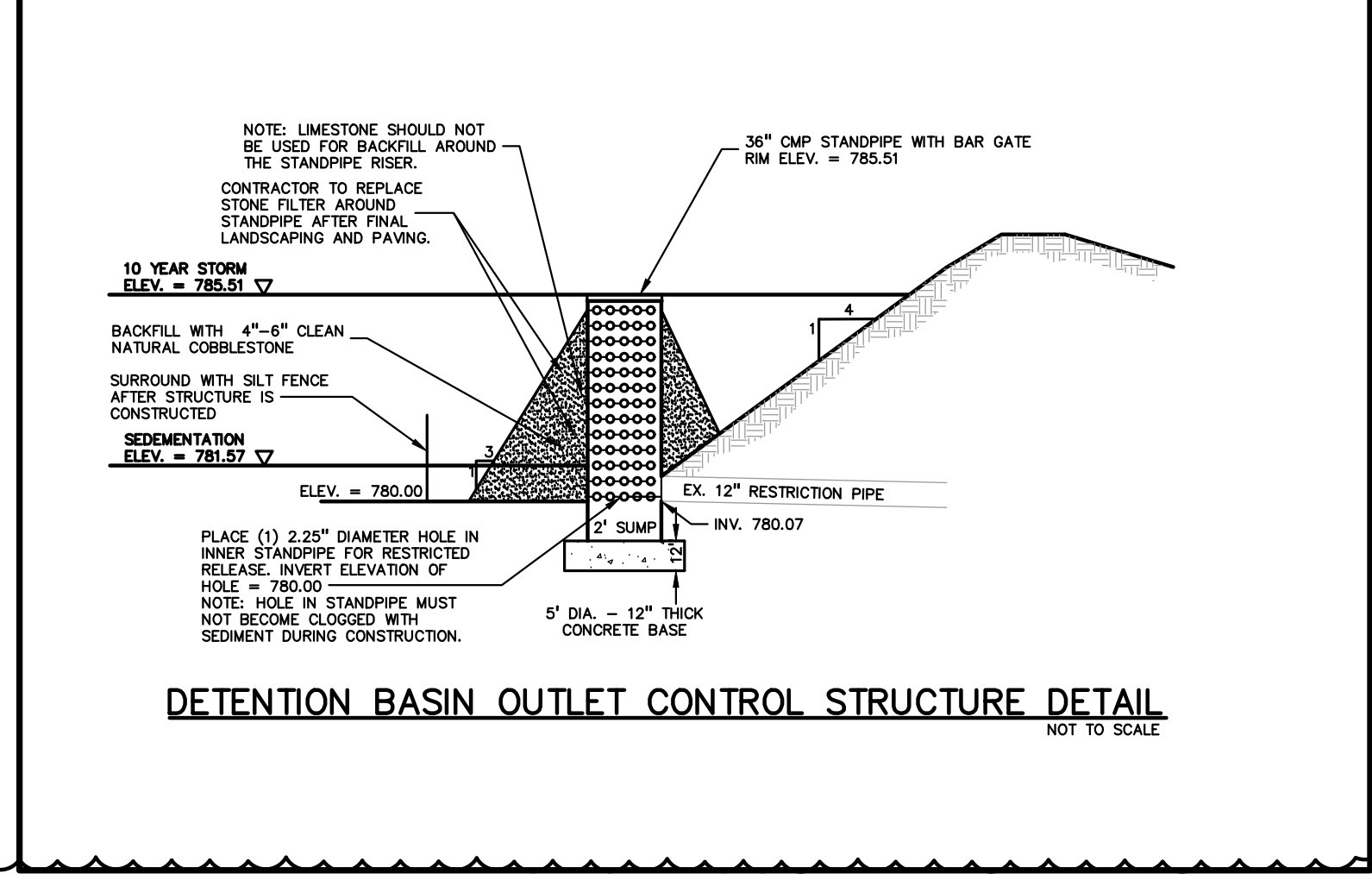
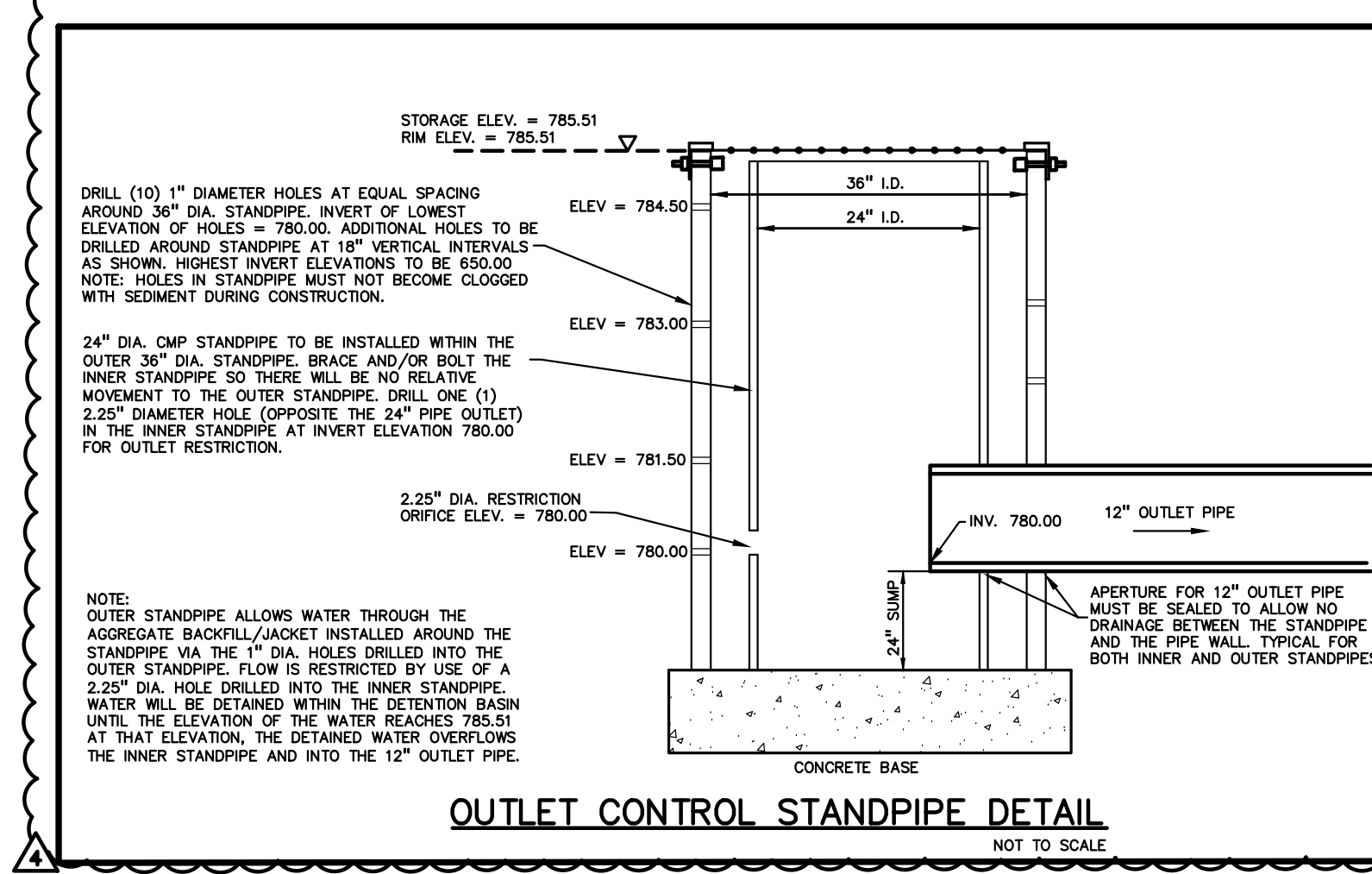
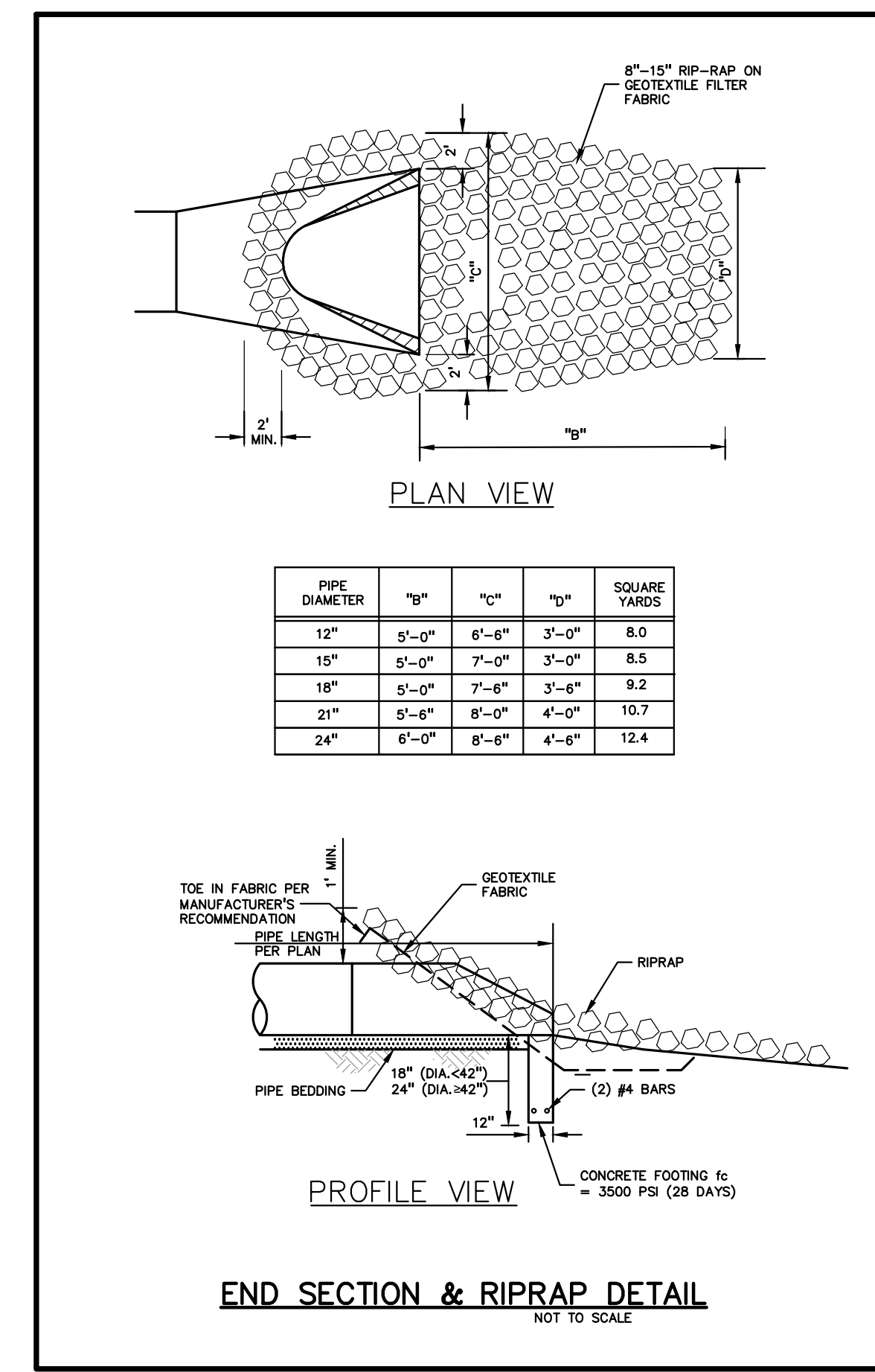
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GENERAL SITE CONDITIONS:

- ACCORDING TO THE USGS WEB SOIL SURVEY DATED NOVEMBER 23, 2021, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:
 - 12 - BROOKSTON AND COALWOOD LOAMS
 - 52A - SELFDRIDGE LOAMY SAND, 0 TO 3 PERCENT LOAMS
- TOTAL DISTURBED AREA = ±0.91 ACRES
- N.P.D.E.S. NOTICE OF COVERAGE IS NOT REQUIRED

Outlet Control Restriction Calculations

Maximum Storage Elevation:	781.57 ft
Restriction Hole Invert:	780.00 ft
Depth of Water in Pipe:	1.57 ft
Restriction Hole Dia.:	2.25 in
Restriction Area:	0.02761 sq ft
Flow thru Restriction Hole:	0.17 cfs
Time for Release of Volume:	27.38 hrs



STORM DETENTION RE DEVELOPMENT DESIGN

Contributing Area (A): 49.860 AC.
 Coefficient of Runoff (C_r): 0.617

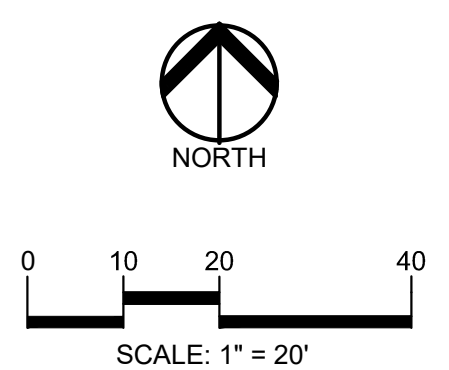
STORAGE VOLUME REQUIRED:

Sedimentation Volume Required:
 $V_s = 15 \times A \times W_q = 545 \times C \times A$
 $V_s = 16756.80$ Cu. Ft.

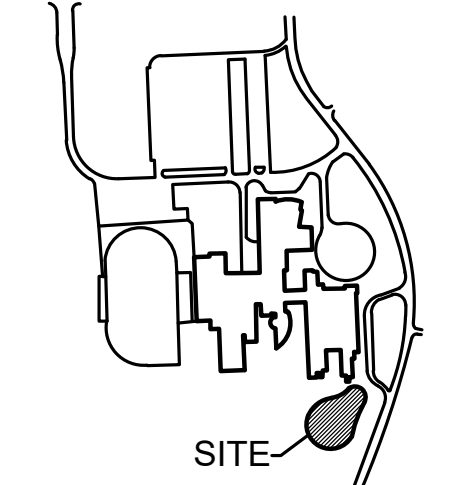
Original Detention Design Volume = 161194 Cu.Ft.

Proposed Pond

CONTOUR	AREA	VOLUME	CUMM	Vf	Detention
780	3.892			-	-
781	10.328	7,110	7,110	-	-
782	22.043	16,186	23,296	781.60	-
783	38.012	30,428	53,723	-	-
784	41.842	40,327	94,050	-	-
785	44.973	43,408	137,458	-	-
786	48.204	46,589	184,046	785.51	-
787	51.536	49,870	233,916	-	-



CAUTION!!
 THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
TROY SCHOOLS
 1140 RANKIN
 TROY, MI 48063

PROJECT TITLE
TROY HIGH SCHOOL
 4777 NORTHFIELD PKWY, TROY, MI

REVISIONS

1 - PER OWNER COMMENTS	12/1/21
2 - OUT TO BID	12/2/21
3 - ADDENDUM 1	12/10/21
4 - ADDENDUM 3	12/20/21

ORIGINAL ISSUE DATE:
 NOVEMBER 24, 2021

DRAWING TITLE
GRADING AND SOIL EROSION PLAN

PEA JOB NO.	2021-0584
P.M.	RR
DN.	KMM
DES.	JDS

DRAWING NUMBER:
C-2.0

S:\PROJECTS\2021\0584-0584-2022-TSD SITE IMPROVEMENT PROJECTS\DWG\CONSTRUCTION\3-TROY HIGH SCHOOL\CC-5\DRAWING-TROY HIGH-21-0584.dwg

NOTE:
 REFER TO SHEET C-4.0 FOR SOIL EROSION SCHEDULE AND NOTES, AND SEQUENCE OF CONSTRUCTION.

EROSION CONTROL QUANTITIES:
 SILT FENCE 211 LF
 EMBANKMENT RESTORATION 1,987 SY
 LAWN RESTORATION AREA 2,466 SY

ENGINEERING QUANTITIES:
 36" OUTLET CONTROL STRUCTURE 1 EA.
 RIPRAP 30 CY
 MUCK DETENTION POND 439 CY

EARTHWORK BALANCING NOTE:
 THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING OR EXPORTING ALL MATERIALS AS REQUIRED TO PROPERLY GRADE THIS PROJECT TO THE FINISHED ELEVATIONS SHOWN ON THE APPROVED PLANS. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF CUT AND FILL QUANTITIES AND ALLOW FOR REMOVAL OF EXCESS OR IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

GENERAL SITE CONDITIONS:
 1. ACCORDING TO THE USGS WEB SOIL SURVEY DATED NOVEMBER 23, 2021, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:
 52A - SELFREDGE LOAMY SAND, 0 TO 3 PERCENT SLOPES
 2. TOTAL DISTURBED AREA = ±0.92 ACRES
 3. N.P.D.E.S. NOTICE OF COVERAGE IS NOT REQUIRED

NOTE:
 1. PER THE SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE PER THE PROJECT SPECIFICATIONS, PRIOR TO THE PLACEMENT OF TOPSOIL, THE SUCCESSFUL BIDDER TO SCHEDULE AN INSPECTION BY THE SCHOOL BOARD OR PEA GROUP TO CONFIRM THAT THE GRADE IS AT THE PROPER ELEVATION WHERE THE MINIMUM DEPTH OF TOPSOIL CAN BE PLACED THROUGHOUT THE AREA.
 2. CONTRACTOR TO VERIFY ALL QUANTITIES SHOWN ON THE PLANS, ANY DEVIATION TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE SCHOOL DISTRICT AND PEA GROUP, IN WRITING PER THE BID PACKAGE, FOR VERIFICATION PRIOR TO BIDDING.
 3. WORK IS CURRENTLY ANTICIPATED TO BE COMPLETED IN THE WINTER WITH FROZEN GROUND. ADDITIONAL BMPs TO BE ADDED AS NEEDED IF WORK IS NOT COMPLETED BY SPRING OR PRIOR TO GROUND THAWING.
 4. RE-GRADING OF THE POND AREAS SHALL BE INCLUDED IN THE COSTS OF THE PROJECT PER LIMITS SHOWN IN THE PLANS.
 5. DISTRICT TO REVIEW SITE IN THE SPRING TO DETERMINE ANY GRASS AREAS AND IRRIGATION SYSTEMS DAMAGED DURING CONSTRUCTION INCLUDING INGRESS/EGRESS AREAS TO THE PONDS. CONTRACTOR IS RESPONSIBLE TO RESTORE ALL DAMAGED AREAS AND IRRIGATION SYSTEM TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE DISTRICT.

SYMBOLS: GRADING
PROPOSED SPOT ELEVATION:
 TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES. 722.50
PROPOSED CONTOUR LINE: 722
ABBREVIATIONS:
 T/C = TOP OF CURB
 G = GUTTER GRADE
 T/P = TOP OF PAVEMENT
 T/S = TOP OF SIDEWALK
 B/W = BOTTOM OF WALL
 F.G. = FINISH GRADE
 RIM = RIM ELEVATION

SYMBOLS: EROSION CONTROL:
 (SP-2) SILT FENCE
 (E-9) EROSION CONTROL BLANKET
 LAWN RESTORATION
 EMBANKMENT RESTORATION
 REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.

LEGEND

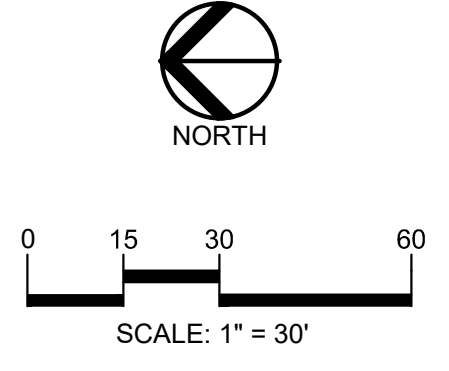
● IRON FOUND	⊗ BRASS PLUG SET	⊗ SEC. CORNER FOUND
⊗ IRON SET	⊗ MONUMENT FOUND	R RECORDED
⊗ NAIL FOUND	⊗ MONUMENT SET	M MEASURED
⊗ NAIL & CAP SET		C CALCULATED

EXISTING

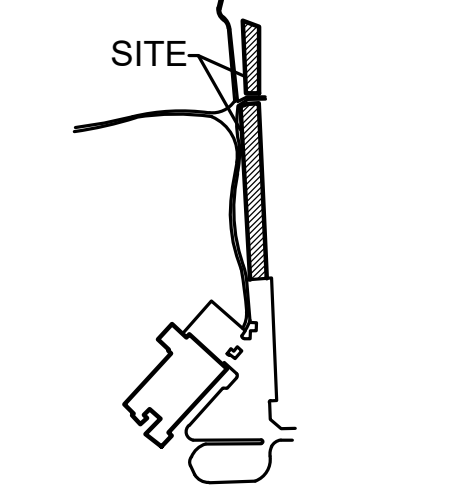
- OH-ELEC-4" W/O - ELEC. PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE
- UG-CATV - UNDERGROUND CABLE TV, CATV PEDESTAL
- UG-PHONE - TELEPHONE U.G. CABLE, MANHOLE, METER & HANDHOLE
- UG-ELEC-4" - ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE
- GAS-MAN, VALVE & GAS LINE MARKER
- WATERMAN, HYD. GATE VALVE, TAPPING BLEWIE & VALVE
- SANITARY SEWER, CLEANOUT & MANHOLE
- STORM SEWER, CLEANOUT & MANHOLE
- COMBINED SEWER & MANHOLE
- SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN
- POST INDICATOR VALVE
- WATER VALVE BODY/HYDRANT VALVE BOX, SERVICE SHUTOFF
- MALBOX, TRANSFORMER, IRRIGATION CONTROL VALVE
- UNIDENTIFIED STRUCTURE

PROPOSED

- 670 - SPOT ELEVATION
- CONC. - CONCRETE
- ASPH. - ASPHALT
- GRAVEL - GRAVEL SHOULDER
- WETLAND
- 310 - HEAVY FLOW DUTY ONLY
- 310 - HEAVY BEEP DUTY ONLY
- 310 - HEAVY BEEP DUTY STRENGTH



CAUTION!
 THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
TROY SCHOOLS
 1140 RANKIN
 TROY, MI 48063

PROJECT TITLE
COSTELLO ELEMENTARY SCHOOL
 11335 HANNAH DRIVE, TROY, MI 48065

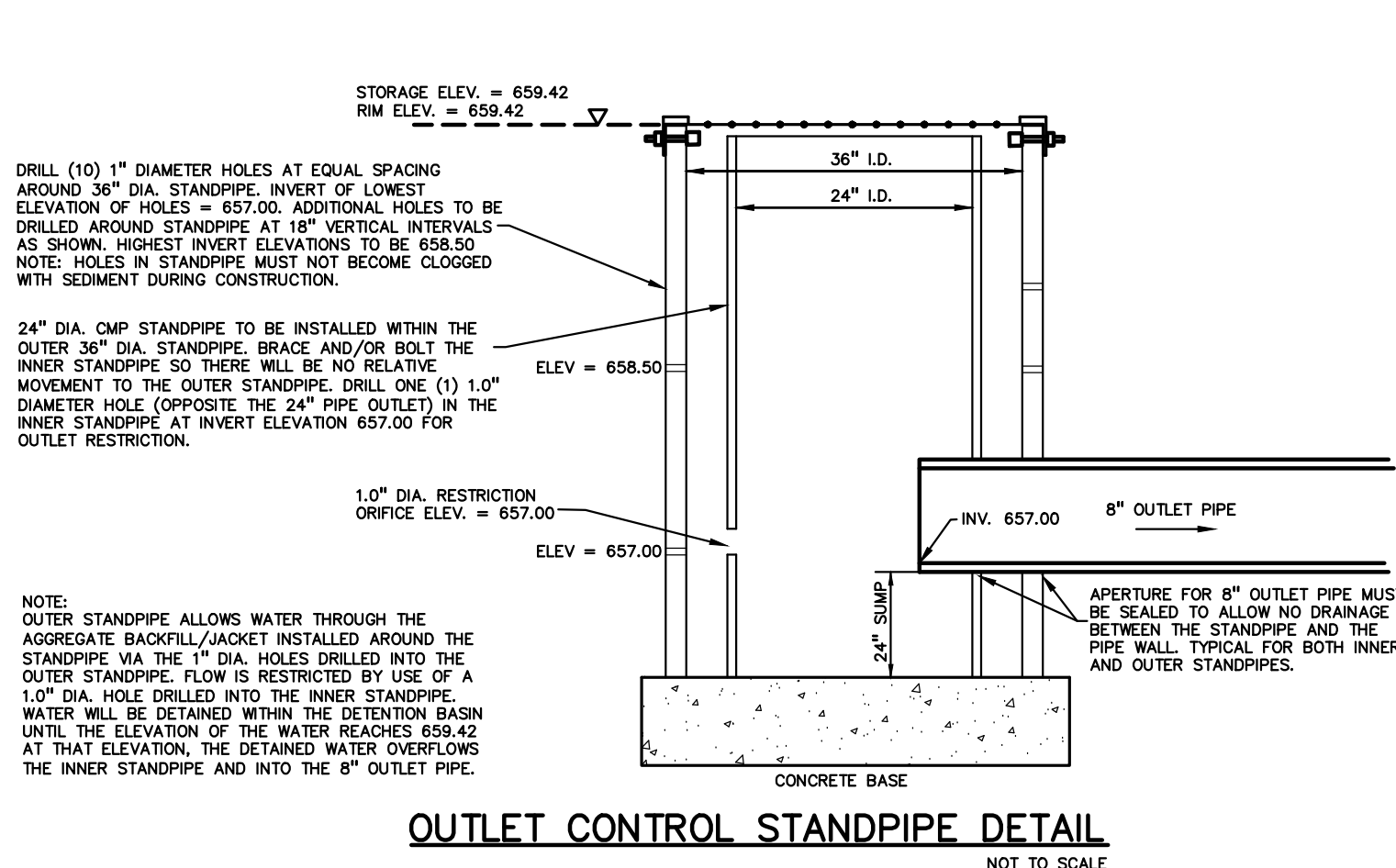
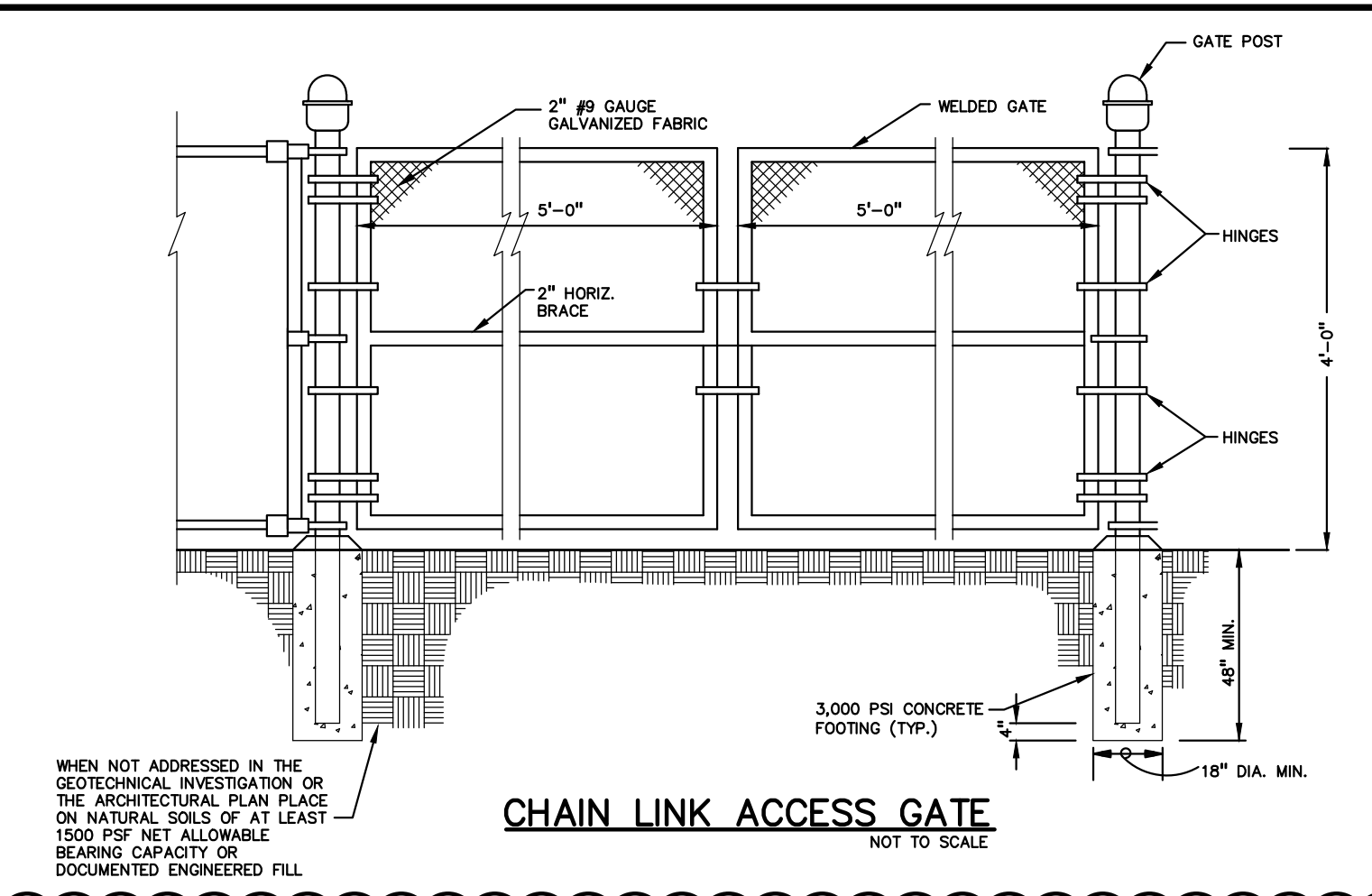
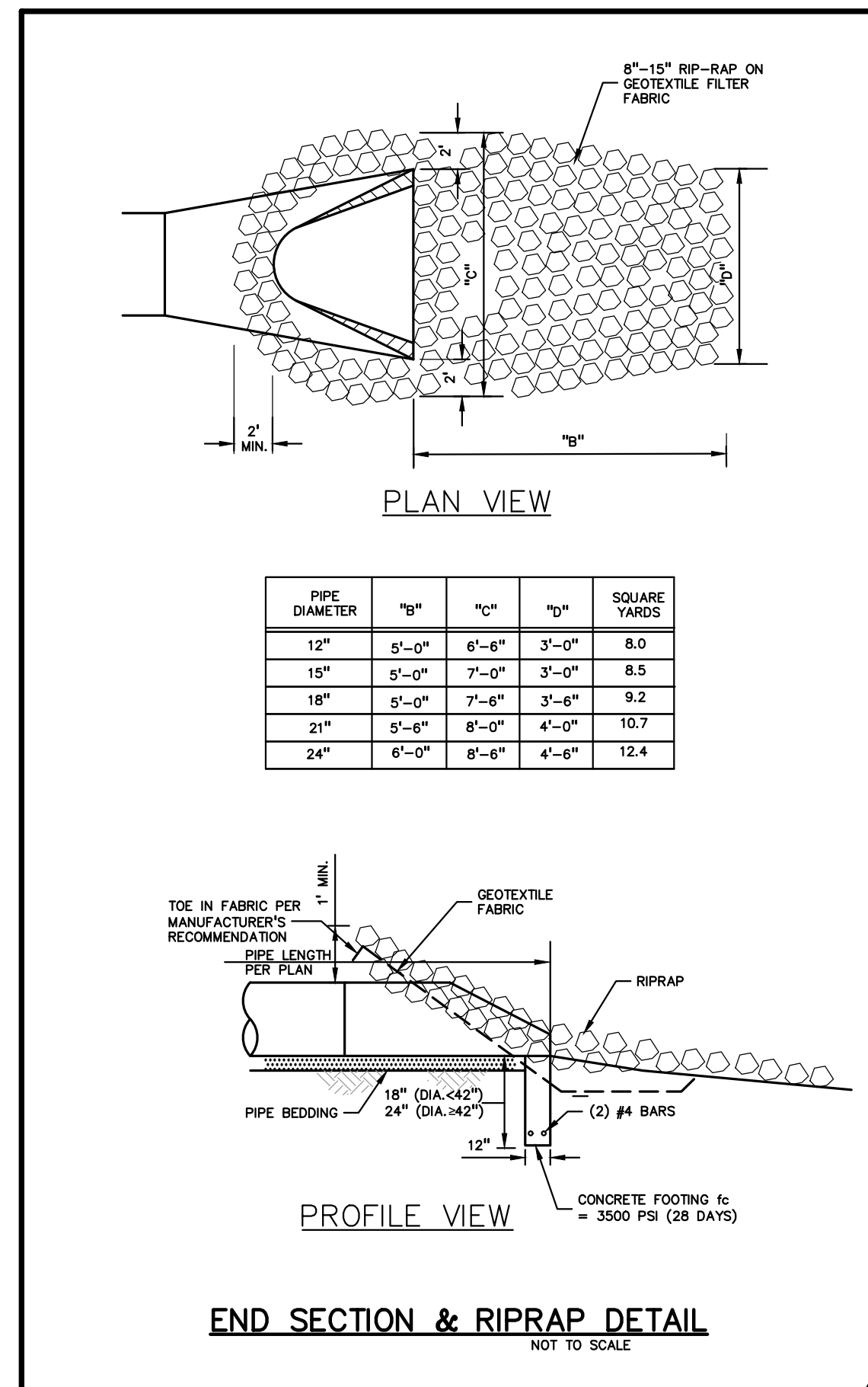
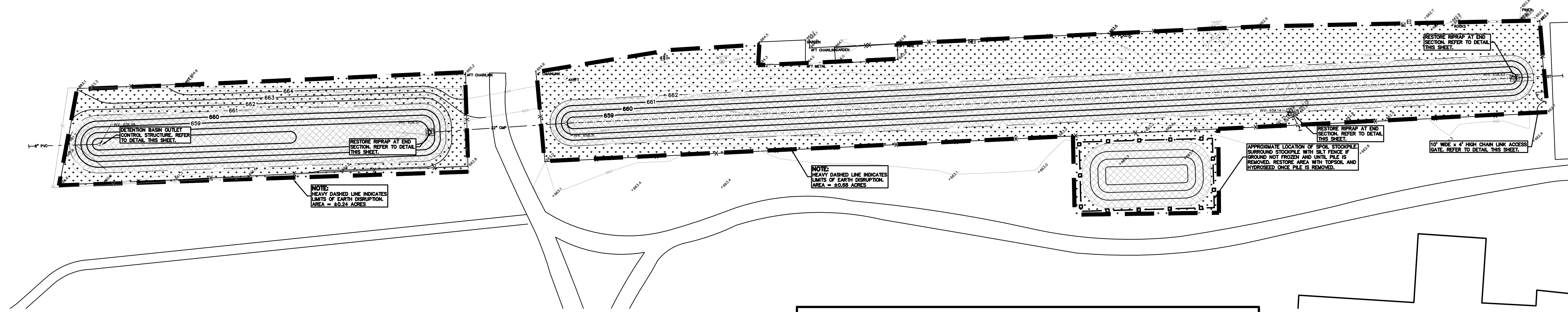
REVISIONS

1 - PER OWNER COMMENTS	12/1/21
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3 - ADDENDUM 1	12/10/21
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ORIGINAL ISSUE DATE:
 NOVEMBER 24, 2021

DRAWING TITLE
GRADING AND SOIL EROSION PLAN

PEA JOB NO. 2021-0584
 P.M. RR
 DN. KMM
 DES. JDS
 DRAWING NUMBER:



STORM DETENTION RE DEVELOPMENT DESIGN

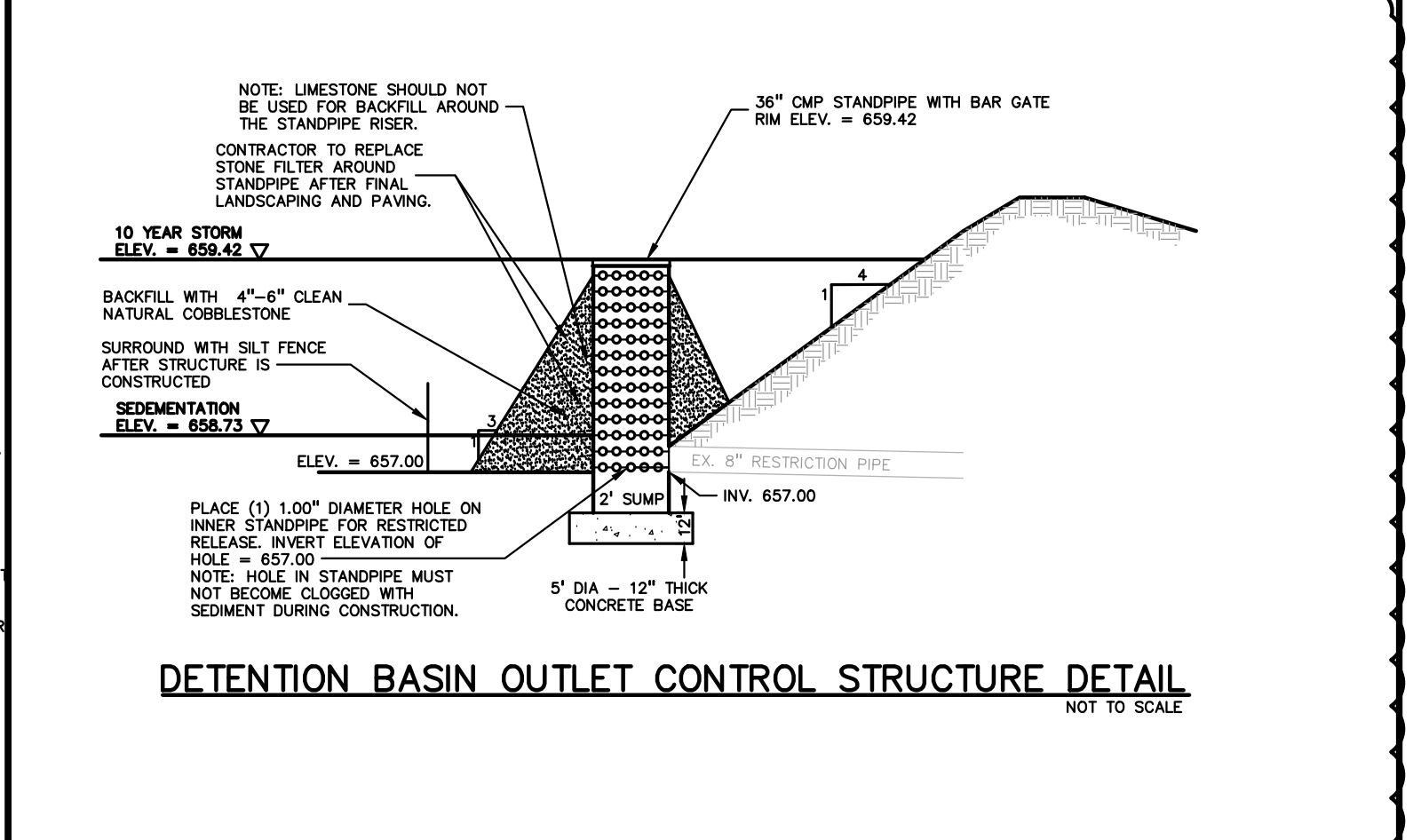
Contributing Area (A):	15.940 AC.
Coefficient of Runoff (C _r):	0.492
STORAGE VOLUME REQUIRED:	
Sedimentation Volume Required:	
V _s = 15% x V _w x C _v	
V _s =	4273.83 Cu. Ft.
Combined Surveyed Detention Volume =	8891 Cu. Ft.

Outlet Control Restriction Calculations

Maximum Storage Elevation:	658.73 ft
Restriction Hole Invert:	657.00 ft
Depth of Water in Pipe:	1.73 ft
Restriction Hole Dia.:	1.00 in
Restriction Hole Area:	0.00545 sq ft
Flow thru Restriction Hole:	0.04 cfs
Time for Release of Volume:	29.68 hrs

Proposed Combined ponds

CONTOUR	AREA	VOLUME	CUMM	V _f	Detention
657	405	-	-	-	-
658	2,103	1,254	1,254	-	-
659	6,216	4,160	5,414	658.73	-
660	10,430	8,323	13,737	-	659.42
661	14,757	12,594	26,330	-	-
662	12,167	13,462	39,792	-	-



NOT FOR CONSTRUCTION **C-2.0**



Addendum 4

Project: **BID NO. 9933 TSD DISTRICT SITE IMPROVEMENTS – DRAINAGE PROJECT - 2022**

Bid Due date: 11:30 AM Wednesday, January 5, 2021 (REVISED)

This Addendum is issued as modifications to the RFP previously issued to provide clarifications to the scope of work. This Addendum supersedes the original RFP. This along with the RFP becomes the bid documents.

I. General Information

1. For questions e-mail purchasingoffice@troyschools.org or through Buildingconnected.com.
2. Revise Bid Package, page 1, 3rd paragraph Sealed bids should be submitted through Buildingconnected.com with the following link: <https://app.buildingconnected.com/public/5cc9d7f637c1a90018cb55dc>. No physical bids will be accepted in person or via delivery service. Bids are to be submitted no later than **11:30 AM Local Time Wednesday, January 5, 2022**. The District will not consider or accept a bid received after the date and time specified for bid submission. Bids will be publicly opened immediately following the close of receiving bids with the following virtual meeting link meet.google.com/gqb-zvdb-gya or phone number **(413) 752-4067 PIN: 274 550 433#**. No oral, email, telephonic or telegraphic proposals shall be considered.
3. Revise Bid Package, page 2, article 2. Sealed bids should be submitted through Buildingconnected.com with the following link: <https://app.buildingconnected.com/public/5cc9d7f637c1a90018cb55dc>. No physical bids will be accepted in person or via delivery service. Bids are to be submitted no later than **11:30 AM Local Time Wednesday, January 5, 2022**. The District will not consider or accept a bid received after the date and time specified for bid submission. Bids will be publicly opened immediately following the close of receiving bids with the following virtual meeting link: meet.google.com/gqb-zvdb-gya or phone number **(413) 752-4067 PIN: 274 550 433#**. No oral, email, telephonic or telegraphic proposals shall be considered.

4. Revise Bid Package page 7, under section labeled "Opening and Awarding of Bids". Bids will be publicly opened and read aloud immediately following the close of receiving bids with the following virtual meeting link: meet.google.com/gqb-zvdb-gya or phone number (413) 752-4067 PIN: 274 550 433# at 11:30 AM. Local Time, Wednesday, January 5, 2022.
5. Revise Bid Package page 9, bid proposal form. Add Unit Price #1. Proposal form reissued & attached.

II. Questions and Answers

- 1Q. Do we assume soil is clean material and is not required to go to class 2 landfill?
- 1A. For bidding process, the material is clean and does not need to go to a class 2 landfill. In this addendum, we have added to the Proposal Form, an unit price to dispose of materials at a class 2 landfill on a cubic yard basis, if required.
- 2Q. Who is responsible for pulling permits for DEQ and soil erosion? Is the Engineer submitting for all permits?
- 2A. The contractor is responsible to obtain all permits and cost of the permits will be charged against the contract allowance. The engineer will submit the drawings to the authority having justification as part of the plan review process.
- 3Q. At Leonard Elementary, do we know how deep the water is and can it be pumped into outlet structure to dewater pond?
- 3A. The depth of water within the pond is not known. Per the survey and historical drawings researched to date, there is not a standpipe or any other type of outlet pipe for the pond to discharge the water and pumping it into the storm system on site will more than likely just recirculate the water back into the pond. The contractor can either get permission from the City to pump the water into their storm system along Tallman Drive with an appropriate SESC BMP, as approved by the City, or discharge the water to the ground outside of the pond using the attached Dandy Dewatering Bag, or approved equal SESC BMP.

END



DUE: 11:30 AM Local Time, Wednesday, January 5, 2022

PROPOSAL: BID 9933 Troy School District
Site Improvement - Drainage Project - 2022

PROPOSAL FORM

We propose to furnish all material, labor and equipment, as per the specifications, for the Troy School District and all other services to complete BID 9933 Troy School District–Site Improvement–Drainage Project-2022

PROJECT #1 – TROY HIGH SCHOOL, TRANSPORTATION CENTER AND LEONARD ELEMENTARY SCHOOL

Base Bid Amount Troy High School: \$ _____

Bond Amount Troy High School: \$ _____

Base Bid Amount Transportation Center: \$ _____

Bond Amount Transportation Center: \$ _____

Base Bid Amount Leonard Elementary School: \$ _____

Bond Amount Leonard Elementary School: \$ _____

Allowance Amount Project #1: \$ 15,000.00

Grand Total Project #1 - \$ _____

PROJECT #2 – ATHENS HIGH, BAKER MIDDLE AND COSTELLO ELEMENTARY SCHOOLS

Base Bid Amount Athens High School: \$ _____

Bond Amount Athens High School: \$ _____

Base Bid Amount Baker Middle School: \$ _____

Bond Amount Baker Middle School: \$ _____

Base Bid Amount Costello Elementary School: \$ _____

Bond Amount Costello Elementary School: \$ _____

Allowance Amount Project #2: \$ 15,000.00

Grand Total Project #2 - \$ _____

Combined Bid Amount if Award Projects #1 and #2 \$ _____

Unit Price #1 – Dispose of Material to Class 2 Landfill (C.Y.) \$ _____

BIDDER'S FIRM NAME _____

ADDRESS _____

CITY/STATE _____ ZIP _____

CELL NUMBER _____ FAX # _____

SIGNED BY _____ TITLE _____

TYPED NAME _____ DATE _____

E-MAIL ADDRESS _____

VENDOR: LIST FIVE RECENT REFERENCES, PREFERABLY SCHOOL DISTRICTS:

_____	_____	_____
School District	Person to Contact	Phone Number

_____	_____	_____
School District	Person to Contact	Phone Number

_____	_____	_____
School District	Person to Contact	Phone Number

_____	_____	_____
School District	Person to Contact	Phone Number

_____	_____	_____
School District	Person to Contact	Phone Number

Interested vendors will note in this space only any additional information, criteria or contingencies affecting their proposal, understanding that this additional information, criteria or contingency may be utilized in the evaluation process and subsequent award.

**SWORN AND NOTARIZED FAMILIAL DISCLOSURE STATEMENT
FAMILIAR DISCLOSURE AFFIDAVIT**

The undersigned, the owner or authorized office of the below-named contractor (the ‘Contractor’), pursuant to the familial disclosure requirement provided to Troy Schools, hereby represents and warrants that, excepts as provided below, no familial relationship exists between the owner or key employee of the Contractor, and any member of the Troy School Board or the Troy School Superintendent. A list of the School District’s Board of Education Members and its Superintendent may be found at <http://www.troy.k12.mi.us>.

List any Familial Relationships:

Contractor:

Print Name of Contractor

By: _____

Its: _____

Subscribed and sworn before me, this _____ Seal:

day of _____, 20 ____, a Notary Public

in and for _____ County, _____

(Signature)
NOTARY PUBLIC

My Commission expires _____

CERTIFICATION OF COMPLIANCE – IRAN ECONOMIC SANCTIONS ACT

Michigan Public Act No. 517 of 2012

The undersigned, the owner, or authorized officer of the below-named Company, pursuant to the compliance certification requirement provided in Troy School District’s Request For Proposal, the “RFP”, hereby certifies, represents, and warrants that the Company and its officers, directors and employees, is not an “Iran Linked Business” within the meaning of the Iran Economic Sanctions Act, Michigan Public Act No. 517 of 2012 (the “Act”), and that in the event the Company is awarded a contract by Troy School District as a result of the aforementioned RFP, the Company is not and will not become an “Iran Linked Business” at any time during the course of performing any services under the contract.

The Company further acknowledges that any person who is found to have submitted a false certification is responsible for a civil penalty of not more than \$250,000.00 or two (2) times the amount of the contract or proposed contract for which the false certification was made, whichever is greater, the cost of Troy School District’s investigation, and reasonable attorney fees, in addition to the fine. Moreover, any person who submitted a false certification shall be ineligible to bid on a request for proposal for three (3) years from the date the it is determined that the person has submitted the false certification.

NAME OF COMPANY

NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

SIGNATURE

DATE

Acceptance of Proposal

The undersigned agrees to execute a Contract for work covered by this Proposal provided that he is notified of its acceptance within thirty days after the opening of the Proposal.

It is agreed that this bid will not be withdrawn until after forty-five (45) days after receipt of bids.

The undersigned affirms that the bid was developed without any collusion, undertaking, or agreement, either directly or indirectly, with any other bidder(s) to maintain the prices of indicated work or prevent any other bidder(s) from bidding the work.

BIDDER'S FIRM NAME _____

BUSINESS ADDRESS _____

TELEPHONE NUMBER _____

CELL NUMBER _____

FAX NUMBER _____

BY (SIGNATURE) _____

PRINTED NAME _____

TITLE _____

SIGNED THIS _____ DAY OF _____, 20 _____

E-MAIL ADDRESS _____

Bid Tabulation
Bid 9933
Site Improvements - Drainage Project - 2022

Vendors	Project 1 Troy High School, Transportation and Leonard Elementary	Project 2 Athens High School, Baker Middle School and Costello Elementary	Bid Amount if Awarded Both Projects 1 and 2
Eagle Excavation, Inc.	\$ 512,000	\$ 557,000.00	\$ 1,037,000
Gibraltar Construction Co.	425,280	426,950.00	* 827,000
M.L. Charter Excavating, Inc.	404,680	441,480.00	846,160
ProEx, Inc.	428,075	590,125.00	998,200
Simone Construction Services	362,950	425,820.00	* 780,000

* Leonard Elementary School Alternate - Add \$ 38,000
* Leonard Elementary School Alternate - Add \$ 26,000