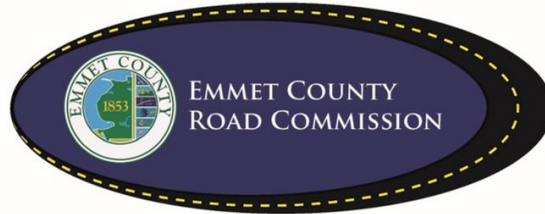


Wade Williams  
Mark W. Hoffman  
Frank Zuluski, Jr.  
Brent Shank, PE  
Engineer-Manager  
Lisa Kleeman  
Finance Director



2265 E. Hathaway Road  
Harbor Springs, MI 49740  
Office: (231) 347-8142  
Fax: (231) 347-5787  
[www.emmetcrc.org](http://www.emmetcrc.org)

## PROPOSAL

**Project: Lower Shore Drive over Five Mile Creek Box Culvert Installation**

Replacement of existing culvert, scour countermeasures, stream improvements, pavement reconstruction, guardrail installation, pavement markings, restoration, and maintain traffic on Lower Shore Drive over Five Mile Creek.

The Emmet County Road Commission will accept Bids until **9:00 a.m.** local time on **February 5, 2024** at: 2265 E. Hathaway Road, Harbor Springs, MI 49740. Bid packages are available at the Emmet County Road Commission Office or on Emmet County Road Commission website at [www.emmetcrc.org](http://www.emmetcrc.org).

**ALL BIDS WILL BE SEALED AND PLAINLY MARKED AS TO THE PROJECT AND PROJECT NUMBER.**

The bidder has examined the plans, specification, special provisions and related materials in the proposal, as well as the location of the work described in the proposal for this project, and is fully informed as to the nature of the work and conditions relating to its performance and understands that the quantities shown are approximate only and are subject to either increase or decrease.

The bidder hereby proposes to furnish all necessary machinery, tools, apparatus and other means of construction, do all the work, furnish all the materials except as otherwise specified and, or each unit price, lump sum, or one each named in the itemized bid, to complete the work in strict conformity with the plans therefore and the entire proposal which is incorporated by reference in these pages, and in strict conformity with the requirements of the 2020 Standard Specifications for Construction, Michigan Department of Transportation and such other special provisions and supplemental specifications as may be part of the proposal for this project.

The bidder further proposes to do such extra work as may be authorized by the Emmet County Road Commission, prices for which are not included in the itemized bid. Compensation shall be made on the basis agreed upon before such extra work is begun.

THE BIDDER UNDERSTANDS AND AGREES THAT THE EMMET COUNTY ROAD COMMISSION RESERVES THE RIGHT TO REJECT ANY AND ALL BIDS; TO WAIVE IRREGULARITIES OR INFORMALITIES; AND NO CONTRACTUAL RELATIONSHIP SHALL EXIST BETWEEN THE BIDDER AND THE EMMET COUNTY ROAD COMMISSION FOR THE WORK DESCRIBED HEREIN UNTIL SUCH TIME AS THE CONTRACT HAS BEEN FORMALLY EXECUTED BY BOTH THE BIDDER AND THE EMMET COUNTY ROAD COMMISSION.

## **Lower Shore Drive over Five Mile Creek Box Culvert Installation**

### **Project Information:**

Job Number: A489.F80

Job Location: Lower Shore Drive over Five Mile Creek Box Culvert Installation

Type of Work: Replacement of existing culvert, scour countermeasures, stream improvements, pavement reconstruction, guardrail installation, pavement markings, restoration, and maintain traffic on Lower Shore Drive over Five Mile Creek.

Owner: Emmet County Road Commission

### **Project Dates:**

Project Start Date: 10 Days after all Contracts are executed.

Project Completion Date: October 1, 2023 (All HMA Paving Items)  
October 15, 2023 (All Project Items)

The project shall be completed within forty-five (45) days of starting date.

A pre-construction meeting will be scheduled by the Emmet County Road Commission prior to project start. All project submittals are to be submitted for review at this meeting.

### **Funding Sources**

#### Project Scope

This project is funded by the Little Traverse Bay Bands of Odawa Indians. All federal-aid project rules are in effect for the project.

#### Pre-Construction Meeting

A Pre-Construction meeting will be scheduled prior to the start of work at the Road Commission office. The Contractor is expected to attend and provide sub-contractor documentation needed for a typical federal-aid project.

#### Additional Instruction

The Contractor must assure prevailing wage rates are in effect. Typical federal-aid submittals are to be sent to Engineer for payroll requirements.

#### Indian Preference

The Contractor agrees to give preference to American Indians who can perform the work required, and

to the extent feasible consistent with training opportunities, regardless of age (subject to existing laws and regulation), sex, religion, or tribal affiliation, for training and employment opportunities under this contract. The Contractor also agrees to give preference to Indian organizations, and Indian-owned economic enterprises in the awarding of any subcontracts consistent with the efficient performance of this contract. The Contractor shall maintain and provide to Bureau's Contracting Officer, such records as are necessary to indicate compliance with this paragraph, if requested.

#### Contractor Payment

The Contractor shall make bi-weekly payment requests after the project starts. The Road Commission will forward the Contractor payment request to the Little Traverse Bay Bands of Odawa Indians (LTBB) for processing. Once the LTBB has forwarded the payment to the Emmet County Road Commission, the Emmet County Road Commission will reimburse the Contractor after the Board approves the payment at the next Road Commission Board meeting after receiving the funding from the BIA.

The NRCS requires the Contractor to attend a pre-construction meeting. In the pre-construction meeting, the Contractor needs to supply a Stream Diversion plan to satisfy NRCS requirements.

#### **Build America, Buy America Act:**

This project is subject to The Build America, Buy America Act requires that all of the iron, steel, manufactured products, and construction materials used in infrastructure projects are produced in the United States.

#### **Project Submittals:**

The following shall be submitted to the Road Commission Engineer for approval prior to project start:

1. Material Source List (MDOT Form 501)
2. Progress Schedule (must be submitted within 5 days of Contract award)
3. See the Special Provision for Acceptance of HMA Mixtures on Township Projects for submittal requirements (must be submitted prior to paving)
4. Damage Claim Program
5. Traffic Control Plan

Upon project completion, the Contractor shall submit a written "Notice of Completion" to the Engineer. After the Engineer receives the Notice of Completion, the Engineer will inspect the project. The Engineer will provide a list of any deficient items (Punch List) to the Contractor. Final acceptance will only be issued when any deficient items are addressed to the satisfaction of the Engineer. Final acceptance will be provided to the Contractor in writing.

#### **Restoration Items:**

Slope Restoration, Non-Freeway, Type B will be replaced with the attached Special Provision for Slope Restoration.

When placing the topsoil, material shall be placed directly on the shoulder. Topsoil material may not be placed on the asphalt. Shoulder material shall be flushed to the edge of gravel shoulder and blended to the existing shoulder on the outside. Topsoil shall be wheel rolled with heavy equipment for density.

A sample fertilizer bag and seed ticket, from the materials used on the project, must be submitted to the Engineer within 7 days of completion of restoration.

Seed Mixture shall be TDS or equivalent.

Place Mulch and Mulch Anchoring on all topsoil surfaces. Mulch material shall be straw.

Culverts, driveways, spillways and rip rap shall be free and clean of straw upon completion of mulching activities.

**Traffic Control:**

Traffic shall be maintained during the project through the use of a Detour. The Contractor shall coordinate operations with contractors performing work on other projects within or adjacent to the Construction Influence Area (CIA).

The Construction Influence Area for this project shall consist of the width of the project right of way, and the width of the right of way on intersecting roads, from a point where advance construction warning signing begins to a point where it ends.

**At no time may Traffic Control Stop and Hold traffic, including loaded & unloaded asphalt trucks on the new HMA surface.**

Advanced Warning signs shall be in place before any work begins.

Traffic will be maintained by the Contractor in accordance with the 2011 Michigan Manual of Uniform Traffic Control Devices.

**Utilities:**

The following utilities are located in or near the right-of-way for this project:

**AT&T**

Jeff Collard  
(231) 347-8010

**DTE**

Matt Logan  
(231) 258-3785

**GREAT LAKES ENERGY**

William LaTourneau  
(231) 487-1339

**TRUE STREAM**

Jeff Wilhelm  
(231) 487-1356

The existing utilities listed above and, on the plans, represent the best information available. This information does not relieve the Contractor of the responsibility to be satisfied as to its accuracy and the location of existing utilities.



For protection of underground utilities, and in compliance with Public Act 174, 2013, the Contractor shall call toll free 1-800-482-7171, or 811, a minimum of three (3) full working days, excluding Saturdays, Sundays and Holidays, prior to beginning excavation in areas where public utilities have not been previously located. All "MISS DIG" participating members will be thus routinely notified. This does not relieve the Contractor from notifying utility owners who may be a part of the "MISS DIG" system.

**General Note:**

All work being performed will be conducted in the safest manner possible and appropriate PPE shall be used at all times. All work shall be done in accordance with the Michigan Department of Transportation 2020 Standard Specification for Construction. Contractor assumes all responsibilities for Quality Control (QC) to assure the plans and specifications are met per the contract and to provide professional craftsmanship in each task being performed. Any errors in plans or discrepancies found in the field shall be brought to the engineer's attention immediately. All materials shall meet the requirements of the Michigan Department of Transportation Materials Source Guide.

**Insurance Requirements:**

The Contractor shall furnish proof of general liability insurance in amounts not less than \$2,000,000 each occurrence and general aggregate, proof of automobile liability in amounts not less than \$2,000,000 combined single limit for each accident, bodily injury per accident, and property damage per accident, and in amount not less than \$1,000,000 for bodily injury per person. Such proof of insurance shall include a valid certificate of insurance demonstrating that the Emmet County Road Commission is additional insured party on the policy. Such insurance shall cover a period not less than the term of the project and shall provide that it cannot be cancelled without 30 days advanced written notice to the Emmet County Road Commission, by certified mail, first class, return receipt requested. The Contract/Project Agreement will be invalid if insurance expires during the authorized period of work described.

In addition to any liability or obligation by the Contractor that may otherwise exist, Contractor shall, to the fullest extent permitted by law, indemnify and hold harmless the Emmet County Road Commission and its commissioners, officers, agents and employees from and against any and all claims, actions, proceedings, liabilities, losses, and damages thereof, and any and all costs and expenses, including legal fees, associated therewith which the Emmet County Road Commission may sustain by reason of claims for or allegations of negligence or violation of the terms and conditions of the Contract/Project Agreement, arising out of the work which is subject of the Contract.

**Bonding Requirements:**

Bonding is not required for projects under \$50,000.00

The successful Contractor shall furnish a performance bond equal to the contract price as assurance for faithful contract performance.

The Contractor shall also furnish a separate **surety bond** equal to the contract price as security for payment to all persons performing labor and furnishing materials in connection with this contract. The Contractor shall pay the premium for all bonds.

The bonds must meet requirements of Michigan Law.

***Bonds shall be submitted and approved before contract execution.***

**Liquidated Damages:**

Liquidated damages will be assessed for failure to complete this project by the specified date, or by the allowed number of days specified once work begins, due to lack of effort, poor organization or ability to perform on the Contractor's part. Liquidated Damages may be waived by the Project Engineer. Liquidated damages will be assessed according to the table below:

Project Award Amount	Liquidated Damages
\$0 - \$150,000	\$500 per Calendar Day
\$150,001 - \$500,000	\$750 per Calendar Day
Over \$500,000	\$1,000 per Calendar Day

**Soil Erosion and Sediment Control (SESC):**

The Contractor shall implement and maintain the soil erosion control measures as shown on the plans before and at all times during construction of this project. All SESC measures shall conform to current MDOT standards, manufacture guidelines and established best practices.

Daily inspections shall be made by the Contractor; periodic inspections shall be made by the Engineer to determine the effectiveness of the SESC measures. Any required corrections shall be made without delay.

All permanent erosion control measures shall be permanently maintained by the Emmet County Road Commission.

**Bid Sheet**

Board of Emmet County Road Commissioners  
2265 East Hathaway Road  
Harbor Springs, MI 49740

Gentlemen:

The undersigned proposes to furnish any and all materials, labor, and equipment necessary for the reconstruction of Lower Shore Drive over Five Mile Creek Box Culvert Installation as spelled out in the "Invitation to Bid" for the prices below.

The Emmet County Road Commission reserves the right to reject any and/or all bids based on what is in the best interest of Emmet County.

Contractor Name: \_\_\_\_\_

Project:

Lower Shore Drive over Five Mile Creek Box Culvert Installation

Item	Quantity	Unit	Unit Price	Total
Mobilization, Max \$30,000	1	LSUM		
Guardrail, Rem	120	Ft		
Structures, Rem	1	LSUM		
Excavation, Earth	750	Cyd		
Backfill, Structure, CIP	800	Cyd		
Erosion Control, Filter Bag	2	Ea		
Erosion Control, Maintenance, Sediment Removal	10	Cyd		
Erosion Control, Silt Fence	125	Ft		
Erosion Control, Turbidity Curtain, Deep	20	Ft		
Subbase, CIP	66	Cyd		
Aggregate Base, 8 inch	185	Syd		
Maintenance Gravel	5	Ton		
Shld, CI II, 3 inch	27	Syd		
Culv, Precast Conc Box, 12 foot by 8 foot	48	Ft		
HMA Surface, Rem	145	Syd		

Pavt for Butt Joints, Rem	10	Syd		
HMA, 4EL	30	Ton		
Guardrail, Type MGS-8	150	Ft		
Guardrail Approach Terminal, Type 2M	2	Ea		
Guardrail Departing Terminal, Type B	2	Ea		
Guardrail Post, Culv	4	Ea		
Guardrail Reflector	12	Ea		
Barricade, Type III, High Intensity, Double Sided, Lighted, Furn	10	Ea		
Barricade, Type III, High Intensity, Double Sided, Lighted, Oper	10	Ea		
Minor Traf Devices	1	LSUM		
Sign, Type B, Temp, Prismatic, Furn	223	Sft		
Sign, Type B, Temp, Prismatic, Oper	223	Sft		
Sign, Type B, Temp, Prismatic, Spec, Furn	36	Sft		
Sign, Type B, Temp, Prismatic, Spec, Oper	36	Sft		
Traf Regulator Control	1	LSUM		
Riprap, Fieldstone	250	Syd		
Riprap, Plain	130	Syd		
Slope Restoration	170	Syd		
TOTAL PROJECT COST ESTIMATE =				

Bidder: \_\_\_\_\_  
 \_\_\_\_\_

Address: \_\_\_\_\_  
 \_\_\_\_\_

Signature: \_\_\_\_\_

Phone No.: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_

Email: \_\_\_\_\_

Emmet County Road Commission  
Special Provision  
For  
**HMA Mixture Acceptance**

ECRC: RBS

01/03/22

**a) Description**

This Special Provision provides acceptance-testing requirements for use on this project. The HMA mixture shall be provided to meet the requirements of the standard specifications for construction except where modified herein. The HMA mixture quality assurance and acceptance shall conform to Section 501 of the 2020 Michigan Department of Transportation Standard Specifications for Construction except where modified herein. The MDOT HMA Production Manual, current edition, applies to this work.

**b) Submittals**

The contractor shall submit the following:

1. Job Mix Formula (MDOT Form 1911 or equivalent) for the project for review and approval by the Engineer. The Contractor shall not place any HMA without an approved JMF. Below are specific values that are required on the JMF (in addition to the normal requirements).
  - a. Fine Aggregate Angularity
  - b. RAP Tiering based on JMF values
  - c. Fines to Asphalt Ratio (based on Effective Asphalt Content)
  - d. Soft Particle Percentage of each JMF Aggregate Type
2. Quality Control Plan.
3. A copy of all Contractor Quality Control Tests submitted within 7 working days of projection completion.
4. A copy of the Bill of Lading or Delivery Ticket for the Asphalt Binder for the project. The Bill of Lading must include the type of material that was previously hauled in the delivery tank.

**c) Materials**

Aggregates, mineral filler (if required), and asphalt binder shall be combined as necessary to produce a mixture proportioned within the master gradation limits and meeting the uniformity tolerances listed Table 1 and the quality assurance testing tolerances in Table 2 of this special provision. The master gradation range is to be used for establishing mix design only. Topsoil, clay or loam shall not be added to aggregates used in plant produced HMA mixtures.

The Maximum Percentage of Soft Particles for any given HMA mixture shall be 5%.

The Minimum Fine Aggregate Angularity for any given HMA mixture shall be 40.0.

The Minimum Crush Percentage for 4EL and 5EL HMA mixtures shall be 65%.

**Table A: HMA Mixture Targets and Parameters**

HMA Mix Type	VMA Minimum on any given Test (a,c)	VMA Target (c)	Asphalt Binder Content Minimum on JMF	Asphalt Binder Content Minimum on any given Test (a)	Fines to Asphalt Ratio Maximum on JMF (b)
4EL	14.0	Based on mix design parameter, the contractor shall establish & state their VMA Target on their mix design JMF, and shall adhere to the VMA Min. requirements	5.80	5.50	1.10
5EL	15.0		6.10	5.80	1.10
Ultra-Thin	15.5		6.00	5.70	1.20
a. The HMA parameter minimum is per any given QC/QA test, regardless of Tolerances listed in Table 2 of this Special Provision. b. Value based on Pbe (Effective Asphalt Percent) for each given mix and JMF. c. VMA values are based on the Gsb (Bulk Specific Gravity) of the given HMA mixture not the Gse (Effective Specific Gravity).					

**Table B: HMA Mixture Targets and Parameters Cont'd (Ultra-Thin)**

Superpave Air Voids (%)	4.5
Superpave Gyration	35
Fine Aggregate Angularity (Min.)	40.0
Percent Crush (Min. %)	50.0
Aggregate Wear Index (AWI)	220
Sieve Size	Total % Passing
1/2 inch	100
3/8 inch	99-100
No. 4	75-95
No. 8	55-75
No.30	25-45
No. 200	3-8

**d) Asphalt Binder**

Liquid Asphalt Binder shall be a Performance Graded (PG) binder as specified in the bid HMA Application Table in the bid specifications and/or as included on the plans. If not specified, then the following apply:

**Table C: Asphalt Binder Selection**

4EL	PG 58-28
5EL	PG 58-28
Ultra-Thin	PG 58-28

e) **Air Voids**

Design Air Voids shall be 4.0% and shall be regressed to 3.0% in production **by the addition of virgin liquid asphalt (4EL and 5EL).**

f) **Recycled Asphalt Materials**

**Recycled Asphalt Shingles (RAS) will not be allowed in the HMA Mixtures.**

Recycled Asphalt Pavement (RAP) is allowed in the HMA mixtures subject to the following requirements. Binder replacement will be determined by weight. ***The use of Reclaimed Asphalt Pavement (RAP) shall be limited to Tier 1 (0% to 17%) RAP binder by weight of the total binder in the mixture, for all mixes (4EL, 5EL, and Ultra-Thin).***

**Tier 1 – 0.0% to 17.0% RAP binder by weight of the total binder in the mixture**

No binder grade adjustment is required to compensate for the stiffness of the asphalt binder in the RAP.

g) **Construction**

After the Job Mix Formula is established, the aggregate gradation of the HMA mixture furnished for the work shall be maintained within the Range 1 uniformity tolerance limits permitted for the job-mix-formula specified in Table 1. However, if deviations are predominantly below or above the job-mix-formula, the Engineer may order alterations in the plant to bring the mixture to the job-mix-formula. If two consecutive aggregate gradations on one sieve as determined by the field tests are outside Range 1 but within Range 2 tolerance limits, the Contractor shall suspend all operations. Contract time will continue during these times when the plant is down. Before resuming any production, the Contractor shall propose, for the Engineer's approval, all necessary alterations to the materials or plant so that the job-mix-formula can be maintained. The Engineer, after evaluating for effects on AWI and mix design properties, will approve or disapprove such alterations.

The crushed particle content of the aggregate used in the HMA mixture shall not be more than 10 percentage points below the crushed particle content used in the job-mix-formula nor less than the minimum specified for the aggregate in the project documents.

Random Liquid Asphalt Binder samples will be witnessed by the Engineer or Consulting Firm. The Engineer reserves the right to test any or all samples taken.

Quality Assurance and Acceptance testing will be as follows:

1. **Asphalt Mixture Sampling**

Acceptance sampling and testing will be performed by the Engineer using the sampling method and testing option agreed upon by the Engineer and Contractor. Each day of production, random samples will be obtained for each mix type. Acceptance testing will be performed at a frequency specified by the Engineer.

For each given day of production, if the daily mix tonnage per HMA mix type is under 500 tons, the Engineer reserves the right to test one sample and obtain a second sample for future testing if necessary. If the daily mix tonnage per HMA mix type is over 500 tons, the Engineer reserves the right to test one sample. If the first sample meets the Range 1 tolerances in Table 1 and Table 2, the Engineer can obtain a second sample and perform any of the following actions:

- a. Perform Full Quality Assurance testing
- b. Perform Volumetric Testing Only (Ignition, Extracted, or Calculated AC/Gmm, Air Voids, VMA)
- c. Retain custody of the sample for future testing if necessary

## 2. **Asphalt Binder Sampling**

The Contractor shall obtain the asphalt binder sample, correctly label the sample container and complete a Sample Identification (Bituminous Material Form 1923B). The form must be filled out correctly, completely, and signed before the sample is given to the Engineer. The daily asphalt binder sample must be taken from a sampling spigot located on the pipeline supplying asphalt binder to the plant, in a position between the asphalt binder pump and the point where the asphalt binder is introduced to the aggregate mixture. Personnel safety is critical when collecting the sample from the sampling spigot. Give the binder sample and completed Form 1923B to the Engineer.

Daily Asphalt Binder Sample are to be in 1 pint (16 ounce), slip top, seamless ointment tins. The tin must be at least three quarters full. All containers must be labeled in a legible format with the following information provided:

- a. Project Name
- b. Binder Grade
- c. Binder Supplier Certification Number
- d. Supplier Name, City, and State
- e. Date Sampled
- f. Mixture Type

The Engineer may request to witness the sampling of the asphalt binder upon visit to the HMA Plant. The Engineer will complete the 1923B Form for the witness sample. The witness sample will be recorded as the daily asphalt binder sample. Any other asphalt binder samples from that same day will be discarded.

The Engineer may request a copy of the MDOT Binder Certification Documents. These copies must be presented to the Engineer when the respective daily binder samples and the 1923B Forms are picked up at the plant. The Engineer will review these documents and communicate any problems that may arise.

## 3. **Mixture Testing**

Mixture samples will be tested to verify gradation, binder content, and volumetric properties per Table 1 and Table 2 listed below.



If the Engineer elects not to perform Quality Assurance testing on a given day or a given project. The Contractor is required to still perform testing in accordance with Table 1 and Table 2 below. The Contractor's Quality Control test results shall be sent to the Engineer within 2 working days of each day's productions for a given HMA mixture.

**Table 1: Quality Assurance/Control Tolerance Limits for HMA Mixtures**

Parameter	Action Limits (Range 1)	Suspension Limits (Range 2)
% Passing the #8 and Larger Sieves	+/- 5.0%	+/- 8.0%
% Passing the #30 Sieve	+/- 4.0%	+/- 6.0%
% Passing #200 Sieve	+/- 1.0%	+/- 2.0%

**Table 2: Quality Assurance/Control Testing Tolerance (+/-) from JMF or Target Values**

Parameter	Action Limits (Range 1)	Suspension Limits (Range 2)
Binder Content (a)	0.30% (a)	0.50% (a)
Maximum Specific Gravity (Gmm)	0.013	0.020
Voids in Mineral Aggregate VMA (a,b)	0.75% (a,b)	0.80% (a,b)
Air Voids (c)	0.60%	0.90%
Fines to Effective Asphalt Ratio	0.65-1.20	0.60-1.25
a. Refer to minimum parameters in Table A of this special provision. b. These given limits are (+/-) from given targets in Table A of this special provision. c. Limits are (+/-) from JMF/Target Values listed in Section e. and Table B of this special provision.		

**4. Density**

Pavement density will be measured by the Engineer, with a Nuclear Density Gauge, using the Gmm from the JMF for the density control target. The in-place density of the HMA mixture shall be at least 92.0% of the density control target. In-place density will be calculated by averaging four QA density test locations. Test locations will not be taken within 12 inches of any pavement edges or pavement joints.

**h) Rejected Materials**

**1. Gradation**

Action Limits - Range of values established in Table 1 – Quality Assurance/Control Tolerance Limits for HMA Mixtures. If exceeded on two consecutive tests, Contractor is required to take corrective action to bring the mixture produced into conformance with the specifications.

Suspension Limits – Range of values established in Table 1 – Quality Assurance/Control Tolerance Limits for HMA Mixtures. If exceeded on a single test, Contractor is required to suspend operations and determine, document, and correct the cause before resuming production. Prior to resuming production, the Engineer must be notified of the findings and approve correction action prior to resuming production.

2. **Asphalt Binder**

If a liquid asphalt binder sample does not meet the required specification, the mix produced from the point of the last liquid asphalt binder sample meeting specification to the failed sample shall be considered defective and shall be replaced at the sole expense of the Contractor.

3. **Volumetric Properties**

The acceptable tolerance for Binder Content, Gmm, VMA, Air Voids, and Fines to Pbe are listed in Table 2 above. Any HMA Mixture produced outside of these tolerances or any HMA Mixture that does not meet the requirements listed in the sub notes of Table 2 above will be subject to a negative adjustment or rejected. The resulting penalty will be a negative adjustment of 10% to 50% or remove/replace, to be determined by the Engineer.

4. **Pavement Density**

A negative 10% adjustment in the HMA Mixture contract price will be imposed if the pavement density (average of all gauge readings) is less than 92%, but equal to or greater than 91%; or if 2 or more readings are less than 91%.

A negative 25% adjustment in the HMA Mixture contract price will be imposed if the pavement density (average of all gauge readings) is less than 91%, but equal to or greater than 90%; or if 2 or more readings are less than 90%.

If the average density is less than 90% (for all gauge readings), the Contractor shall remove and replace the pavement at no cost to the Owner.

EMMET COUNTY ROAD COMMISSION

SPECIAL PROVISION FOR  
**SLOPE RESTORATION**

ECRC:RBS

1 of 1

01/03/22

- a. Description.** Work consists of preparing all lawns and slopes on the projects designated for slope restoration on the plans, or as directed by the Engineer, and applying topsoil, fertilizer, seed and mulch with mulch anchor. Turf establishment shall be in accordance with Section 816 of the Michigan Department of Transportation 2020 Standard Specifications for Construction and Standard Plan R-100 - Series, except as modified herein or otherwise by the Engineer
- b. Materials.** The materials and application rates specified in Section 816 and 917 of the 2020 Standard Specification for Construction apply unless modified by this special provision or otherwise by the Engineer. The following material must be used on the project:
1. Seeding Mixture: TDS.
  2. Fertilizer, Chemical Nutrient, Class A.
  3. Topsoil Surface, Furnished or Salvaged, 3 inch.
  4. Mulch: Straw.
  5. Mulch Anchoring.
- c. Construction.** Construction methods must be in accordance with the subsection 816.03 of the Standard Specifications for Construction. Begin this work as soon as possible after final grading of the areas designated for slope restoration but no later than the maximum time frames stated in subsection 208.03 of the MDOT 2020 Standard Specifications for Construction. It may be necessary, as directed by the Engineer, to place materials by hand.

Shape, compact and assure all areas to be seeded are weed free prior to placing topsoil. Place topsoil to the minimum thickness indicated above, to meet the proposed finished grade.

Topsoil must be weed and weed seed free and friable prior to placing seed. Remove any stones greater than ½ inch in diameter or other debris. Apply seed mixture and fertilizer to prepared soil surface. Incorporate seed into top ½ inch of topsoil.

Apply mulch at a rate of 2 tons per acre. Place Mulch Anchoring over the mulch at a rate specified in Subsection 816.03E of the MDOT 2020 Standard Specifications for Construction.

If an area washes out after this work has been properly installed and approved by the Engineer, make the required corrections to prevent future washouts and replace the topsoil, fertilizer, seed and mulch. This replacement will be paid for as additional work using the applicable contract items. If an area washes out for reasons attributable to the Contractor's activity or failure to take proper precautions, replacement will be at the Contractor's expense

- d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item.

Pay Item:  
Slope Restoration

Pay Unit:  
Square Yard

EMMET COUNTY ROAD COMMISSION

SPECIAL PROVISION FOR  
**TECHNICAL SPECIFICATIONS ORDER OF  
PREFERENCE**

TLH

1 of 1

10-02-2023

The technical specifications for the Lake Shore Drive over Wycamp Creek project shall be in accordance with the 2020 Standard Specifications for Construction of the Michigan Department of Transportation, hereinafter referred to as the "Standard Specifications".

In case of discrepancy, figured dimensions shall govern over scaled dimensions and the parts of the contract will prevail over all other parts in the following order:

1. Special Provisions
2. MDOT Supplemental Specifications
3. Project Plans and Drawings
4. MDOT Standard Plans
5. ECRC Project Specifications
6. MDOT Standard Specifications

The Engineer has the right to increase or decrease quantities based on unit prices bid. Final quantities will be based on the unit price bid per estimated quantities and can be adjusted by the Engineer without adjustment in unit price bid by Contractor.

EMMET COUNTY ROAD COMMISSION

SPECIAL PROVISION FOR  
**RIPRAP, FIELDSTONE**

JDW

1 of 1

01-13-2023

- a. **Description.** This work consists of installing heavy geotextile liner and furnishing and placing fieldstone riprap on channel bottoms and side slopes. All work must be done in accordance with Section 813 of the 2020 Standard Specifications for Construction except where noted in this special provision and as directed by the Engineer.
  
- b. **Materials.** Use stone for riprap that is washed, uncrushed, **rounded fieldstone**. Acceptance will be based on visual inspection of riprap in-place by the Engineer. Size requirements shall be as listed in Section 916 of the Standard Specifications for Construction Heavy Riprap. The smallest footprint dimension must be at least 16 inches. The maximum to minimum dimension ratio must be no greater than 3:1.

Heavy geotextile liner must meet the requirements of Section 910 of the Standard Specifications for Construction. Furnish test data certification from the manufacturer on the specific product intended for use prior to installation.

- c. **Measurement and Payment.** The completed work, as described, will be measured, and paid for at the contract unit price using the following pay item:

<b>Pay Item</b>	<b>Pay Unit</b>
Riprap, Fieldstone .....	Ton

**Riprap, Fieldstone** includes furnishing all labor, equipment and materials to furnish and place heavy geotextile liner, and to place the stone, according to this specification.

# EMMET COUNTY ROAD COMMISSION

IN COOPERATION WITH THE  
Little Traverse Bay Bands of Odawa Indians  
&  
USDA Natural Resources Conservation Services  
PLANS OF PROPOSED CULVERT IMPROVEMENTS

## LOWER SHORE DRIVE OVER FIVE MILE CREEK

SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
WEST TRAVERSE TOWNSHIP, EMMET COUNTY, MICHIGAN

### SHEET INDEX

- 1 COVER SHEET
- 2 LEGEND & NOTES
- 3 TYPICAL CROSS SECTIONS
- 4 REMOVAL & SESC PLAN
- 5 GENERAL PLAN OF SITE
- 6 GENERAL PLAN OF STRUCTURE
- 7 CONSTRUCTION DETAILS
- 8 MAINTENANCE OF TRAFFIC PLAN
- 9 SOIL BORING LOGS

### NRCS STANDARDS

AQUATIC ORGANISM PASSAGE (396)

### MDOT STANDARD PLANS

GUARDRAIL OVER BOX OR SLAB CULVERTS	R-73-F
BEDDING AND FILLING AROUND PIPE CULVERTS	R-82-D
BOX CULVERT JOINT TIE ASSEMBLIES	R-84-A
GUARDRAIL TYPES A, B, BD, T, TD, MGS-B, & MGS-BD	R-59-J
GUARDRAIL APPROACH TERMINALS TYPE 2M	R-62-H
GUARDRAIL DEPARTING TERMINAL TYPES B, T & MGS	R-66-E
SOIL EROSION & SEDIMENTATION CONTROL MEASURES	R-96-E
SEEDING AND TREE PLANTING	R-100-H
GRADING CROSS-SECTIONS	R-105-D

### WORK ZONE DEVICES / SPECIAL DETAILS

GROUND DRIVEN SIGN SUPPORTS FOR TEMP SIGNS	WZD-100-A
TEMPORARY TRAFFIC CONTROL DEVICES	WZD-125-E

### GENERAL NOTES

EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED HEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION.

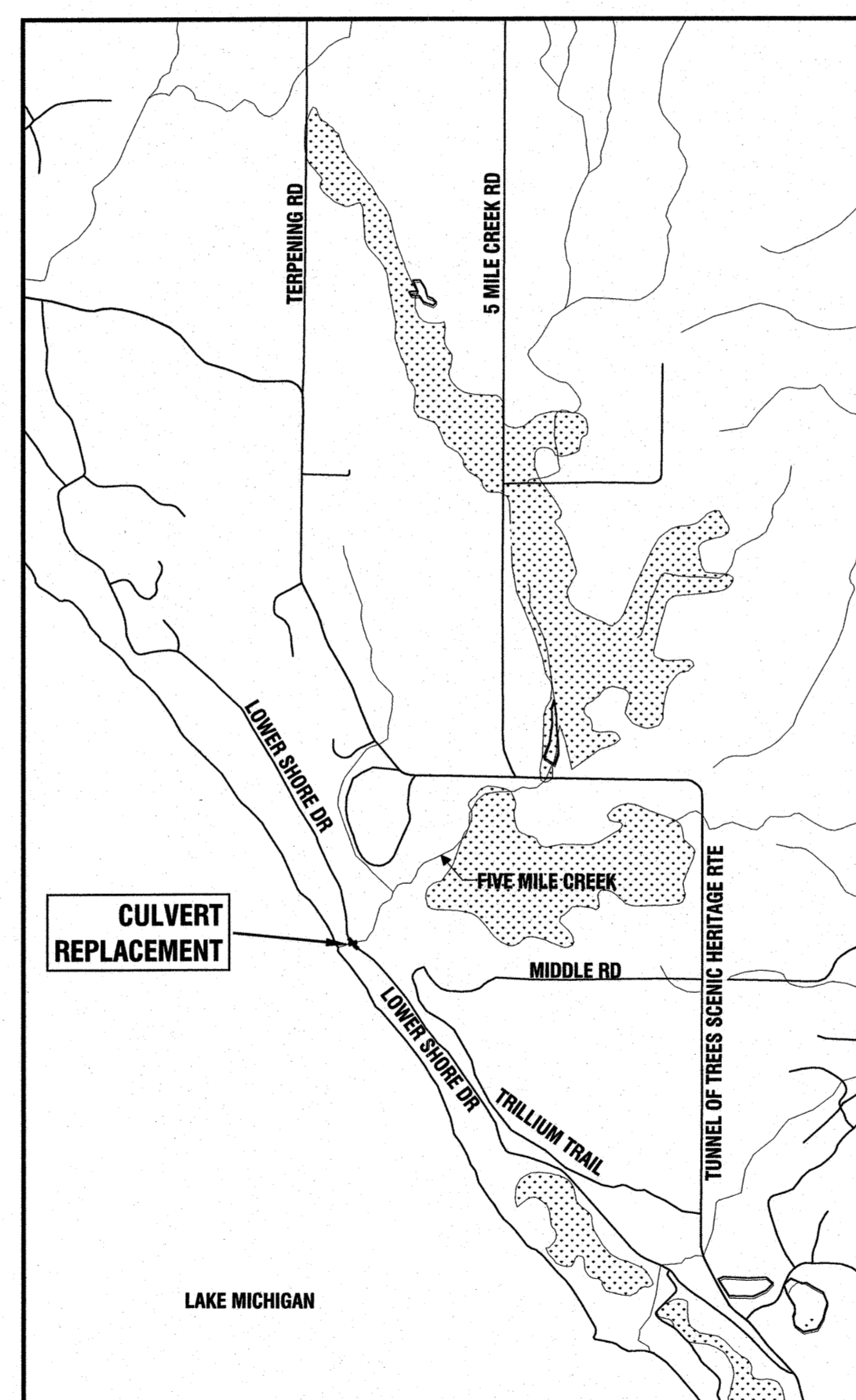
FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174, 2013, THE CONTRACTOR SHALL DIAL 811 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

PLACE TOPSOIL, SEED, FERTILIZER, AND MULCH AS SOON AS POSSIBLE. CRITICAL GRADES SHOULD BE PROTECTED WITH MULCH BLANKETS OR TURF REINFORCEMENT MATS AS DIRECTED BY THE ENGINEER.

CONTRACTOR SHALL PRESERVE AND/OR REPLACE ANY EXISTING PARCEL CORNERS ENCOUNTERED DURING THE WORK.

THE SOIL BORINGS REPRESENT POINT INFORMATION, NO INFERENCE SHOULD BE MADE THAT SUBSURFACE CONDITIONS ARE THE SAME AT OTHER LOCATIONS.

PAVEMENT MARKINGS AND THE PLACING OF TRAFFIC CONTROL SIGNS SHALL BE DONE IN ACCORDANCE WITH THE 2011 MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAVEMENT MARKINGS ARE TO BE PERFORMED AS A PART OF THIS CONTRACT.



SCALE: 1" = 2000'

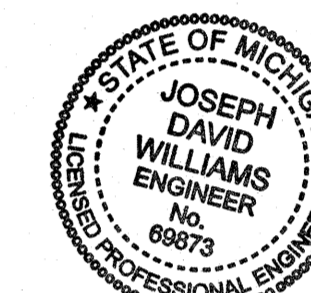
**ISSUED DATE: 3-30-23**  
**FOR CONSTRUCTION**

### Contract For:

THE WORK COVERED IN THESE PLANS INCLUDES REPLACEMENT OF THE EXISTING CULVERT, SCOUR COUNTERMEASURES, STREAM IMPROVEMENTS, PAVEMENT RECONSTRUCTION, GUARDRAIL INSTALLATION, PAVEMENT MARKINGS, RESTORATION, AND MAINTAINING TRAFFIC ON LOWER SHORE DRIVE OVER FIVE MILE CREEK.

### Prepared under Supervision of:

*Joseph Williams*  
Joseph Williams, P.E.  
GOURDIE FRASER  
REGISTERED PROFESSIONAL ENGINEER No. 69873



**gf** **Gourdie-Fraser**  
Municipal | Development | Transportation

PH 231.946.5874  
FAX 231.946.3703  
www.gourdiefrazer.com  
123 W Front Street  
Traverse City, MI 49684



NRCS IS ACCEPTING THESE CONSTRUCTION DRAWINGS AND SPECIFICATIONS ON THE BASIS THAT THEY HAVE BEEN SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER. BASED ON THE INFORMATION PROVIDED BY THE PROFESSIONAL ENGINEER, THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS APPEAR TO MEET APPLICABLE NRCS STANDARDS AND SPECIFICATIONS. ANY DEFICIENCIES IN THE DESIGN, CONSTRUCTION DRAWINGS OR SPECIFICATIONS ARE THE RESPONSIBILITY OF THE PROFESSIONAL ENGINEER WHOSE SEAL APPEARS ON THE CONSTRUCTION DRAWINGS.

*Andrew Palak*  
NRCS REPRESENTATIVE. 4-18-23  
DATE

TO THE BEST OF MY KNOWLEDGE, JUDGEMENT AND BELIEF, THE DESIGN, CONSTRUCTION DRAWINGS AND SPECIFICATIONS MEET APPLICABLE NRCS STANDARDS AND SPECIFICATIONS.

*Joseph D. Williams*  
JOSEPH D. WILLIAMS, P.E. 4/18/23  
DATE

### Emmet County Road Commission

*Frank Zuluski*  
FRANK ZULUSKI, CHAIRMAN 4/14/2023  
DATE

*Brent Shank*  
BRENT SHANK, PE, MANAGER 4/14/2023  
DATE

JOB NO.  
22084

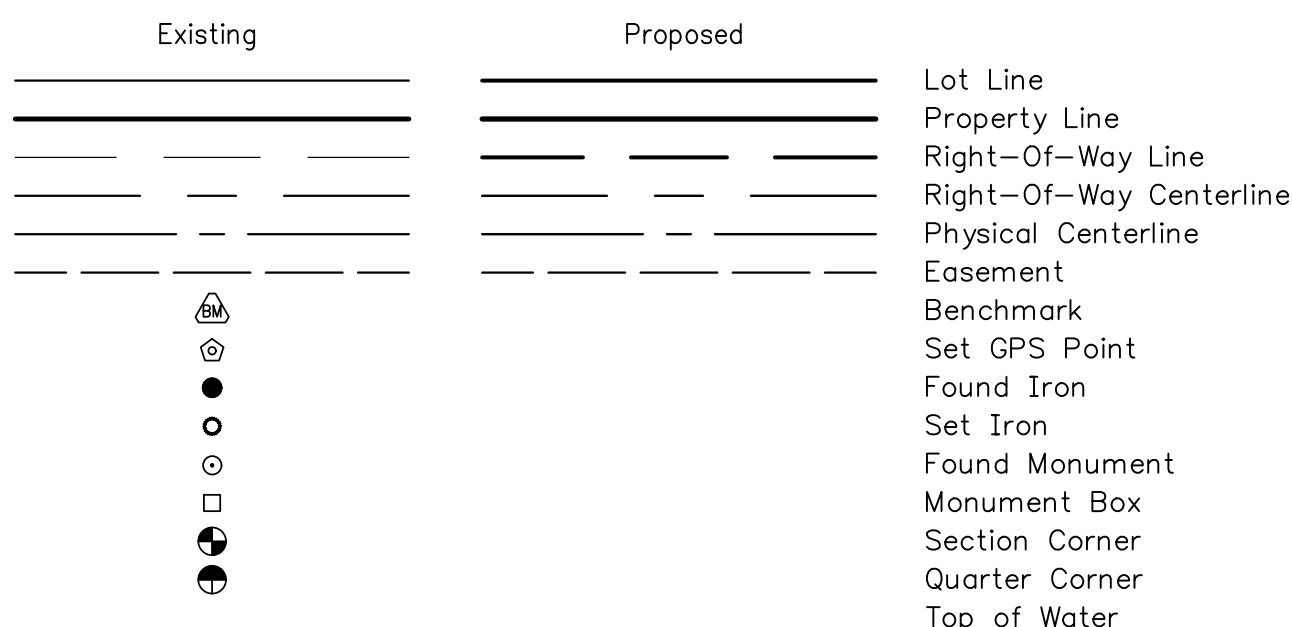
GPF NO.

SHEET NO.  
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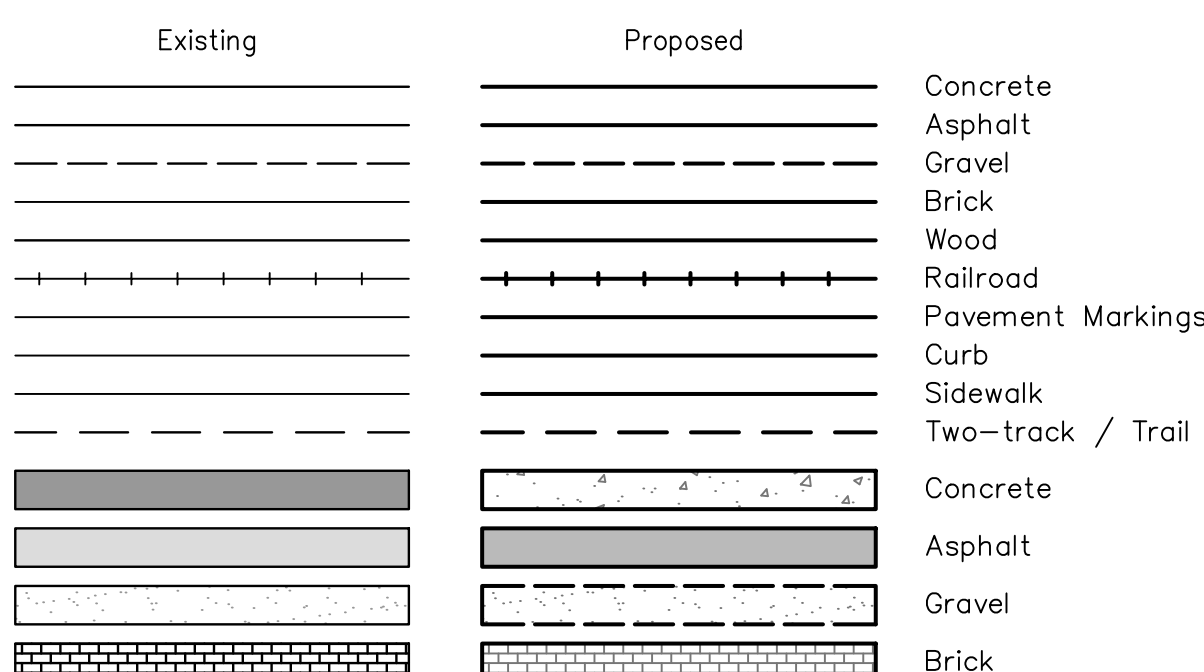


**LEGEND**

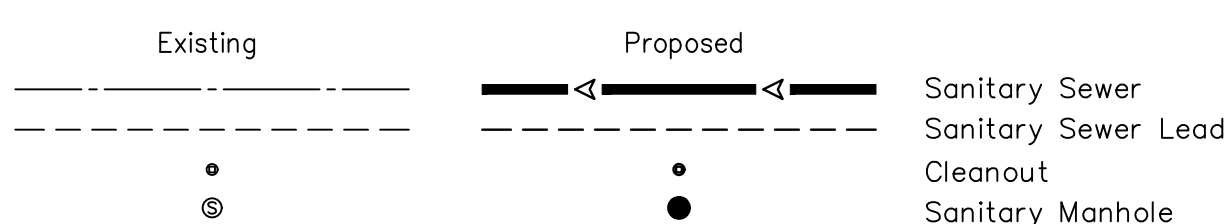
**Survey Legend**



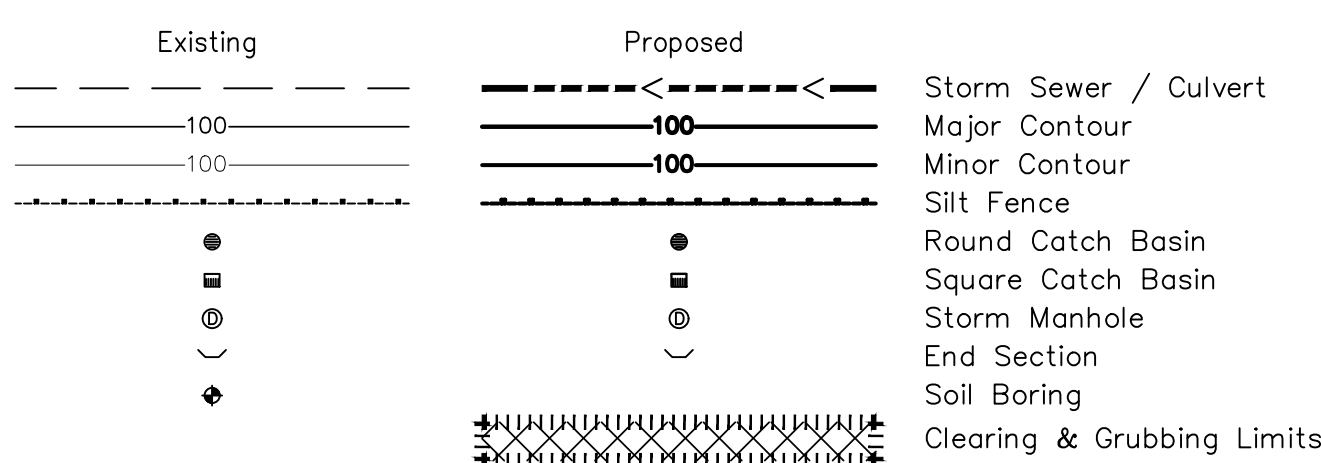
**Paving Legend**



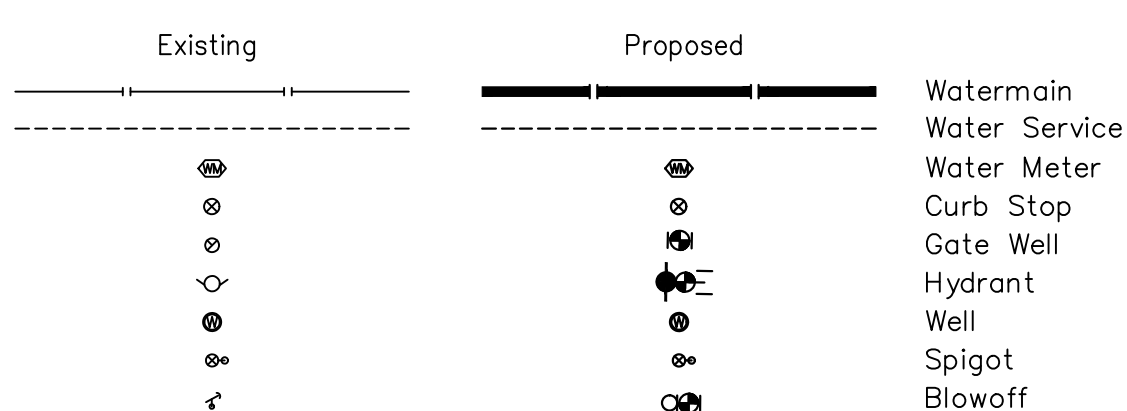
**Sanitary Legend**



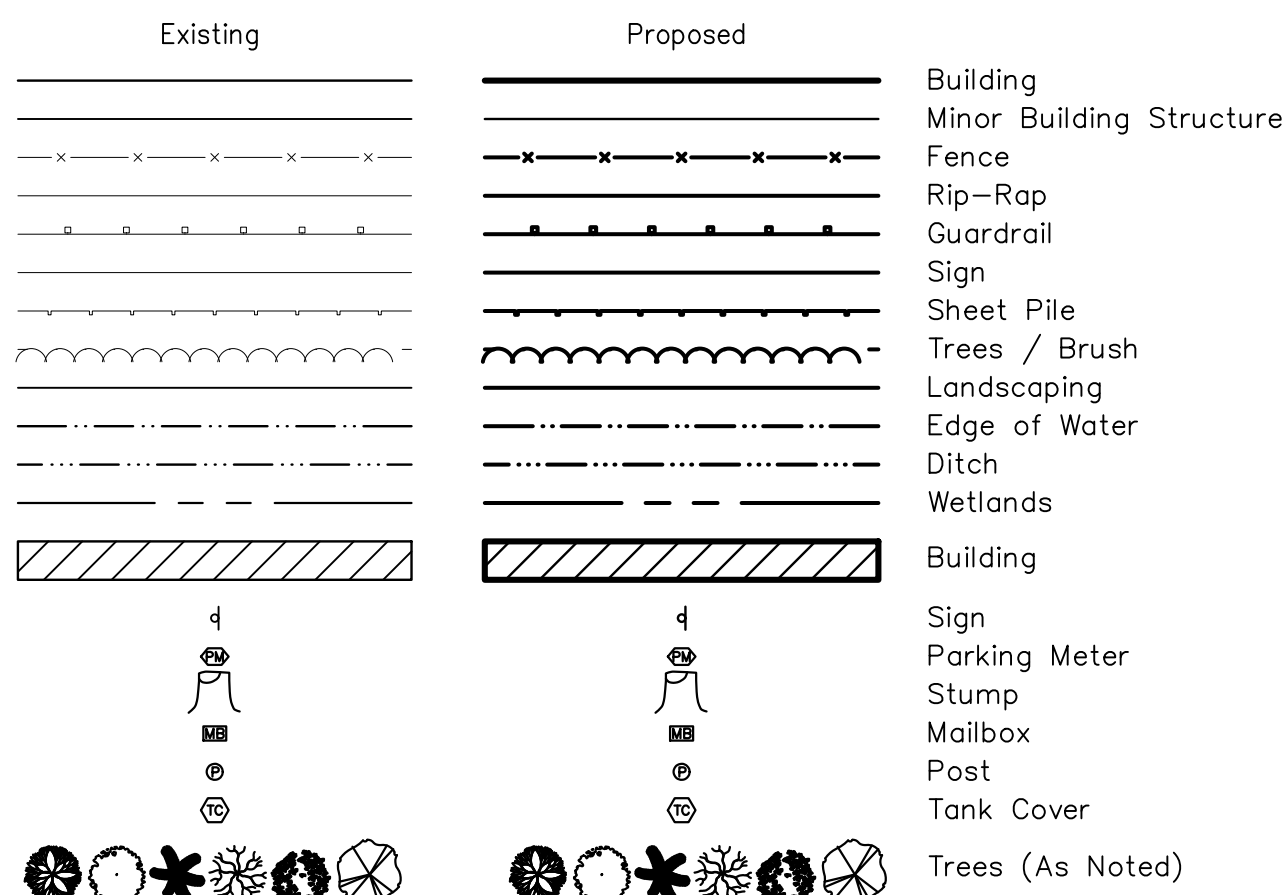
**Storm Water and Grading Legend**



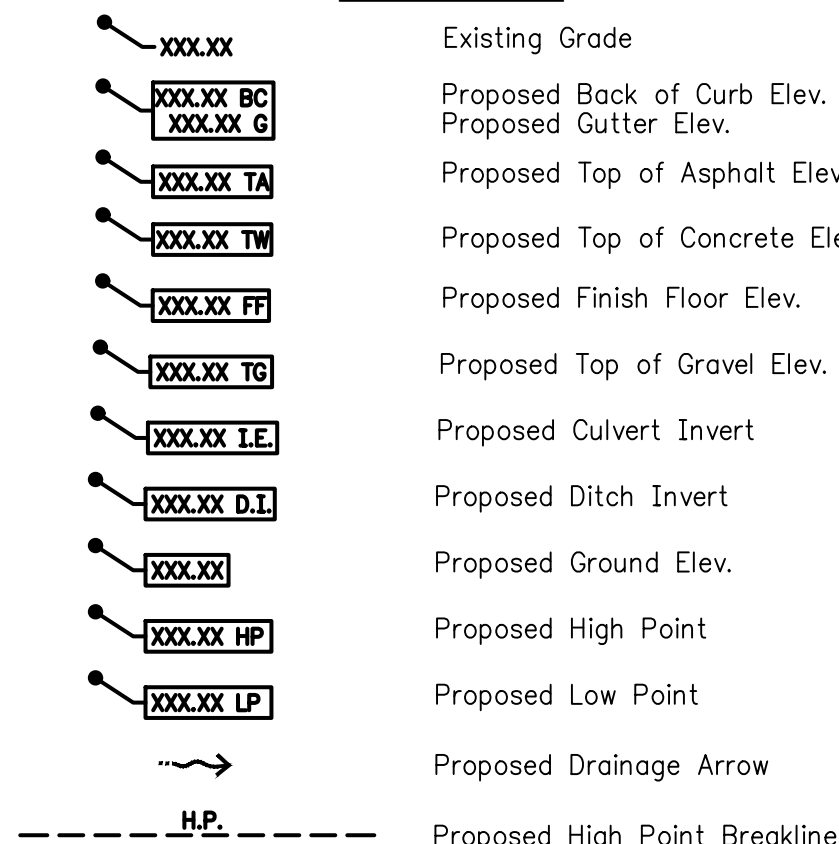
**Watermain Legend**



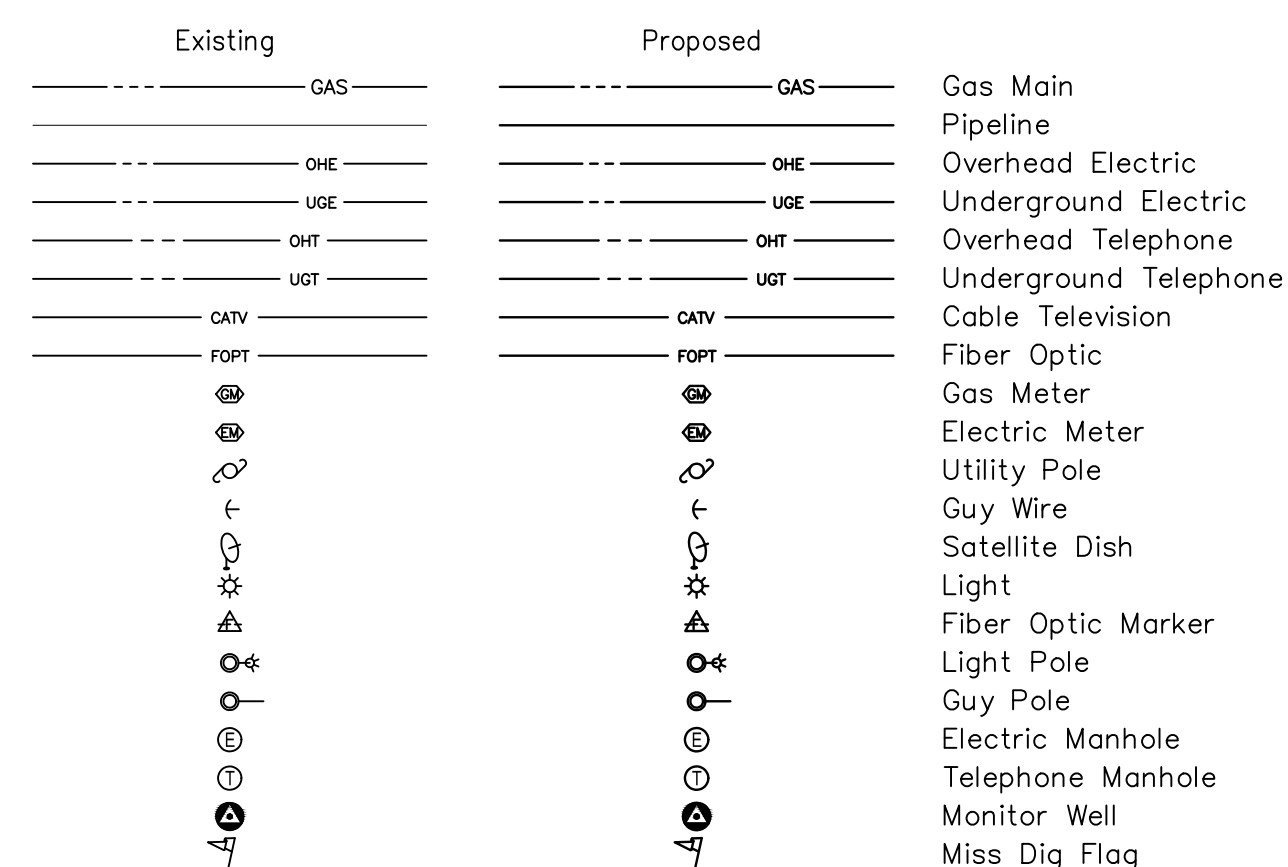
**Miscellaneous Legend**



**Grading Legend**



**Electric & Gas Legend**



**GENERAL NOTES**

- CONTRACTOR SHALL CALL MISS DIG (1-800-482-7171) A MINIMUM OF 3 WORKING DAYS PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL CONFORM TO SOIL EROSION AND SEDIMENTATION CONTROL ACT, PART 91 OF ACT 451 OF 1994.
- DEBRIS CONSIDERED TO BE WASTE SHALL BE DISPOSED OF BY THE CONTRACTOR.
- THE CONTRACTOR SHALL REMOVE, REPLACE, AND MAINTAIN ALL EXISTING MAIL BOXES, FENCES AND SIGNS. MAILBOX POSTS SHALL BE REPLACED AS DIRECTED BY THE ENGINEER. ALL COSTS SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FEET OF CULVERT CONSTRUCTION.
- THE CONTRACTOR SHALL MAINTAIN LOCAL TRAFFIC AT ALL TIMES ON THE PROJECT.
- ALL DEWATERING REQUIRED FOR CONSTRUCTION SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FOOT OF CULV, PRECAST CONC BOX, EXCAVATION, EARTH, OR BACKFILL, STRUCTURE, CIP. CONTRACTOR SHALL SUBMIT DEWATERING PLAN FOR ENGINEERS APPROVAL.
- CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING ANY WORK.
- CONSTRUCT CENTERLINE OF PROPOSED CREEK AT CENTERLINE OF EXISTING CREEK UNLESS OTHERWISE INDICATED.
- CONTRACTOR SHALL SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS DAILY. LAWN AREAS SHALL RECEIVE 4" OF TOPSOIL AND BE RESTORED AS STATED IN THE SPECIFICATIONS AND SHOWN ON THE PLANS.
- COORDINATE RIPRAP INSTALLATIONS WITH THE DESIGN ENGINEER PRIOR TO CONSTRUCTION.
- INSTALL EROSION CONTROL BLANKETS AND FABRICS ACCORDING TO MANUFACTURERS SPECIFICATIONS.
- ALL ELEVATIONS ARE BASED ON NAVD88 DATUM.
- SPECIAL CARE SHALL BE TAKEN IN EXCAVATING IN THE PROXIMITY OF ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL SECURE ASSISTANCE FROM THE APPROPRIATE UTILITY COMPANY IN LOCATING ITS LINES. THE CONTRACTOR SHALL ALSO PROVIDE SUPPORT FOR ANY UTILITY WITHIN THE EXCAVATION, PROVIDE PROPER COMPACTION UNDER ANY UNDERMINED UTILITY STRUCTURE AND, IF NECESSARY, INSTALL TEMPORARY SHEETING OR USE A TRENCH BOX TO MINIMIZE THE EXCAVATION. THE CONTRACTOR SHALL PROTECT AND SAVE HARMLESS FROM DAMAGE ALL UTILITIES, WHETHER PRIVATELY OR PUBLICLY OWNED, ABOVE OR BELOW GROUND SURFACE, WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION, AT NO ADDITIONAL COST TO THE OWNER.
- THE LOCATION OF EXISTING PUBLIC UTILITIES AND UNDERGROUND STRUCTURES SUCH AS PIPE LINES, ELECTRIC CONDUITS, SEWERS AND WATER LINES, OF RECORD ARE SHOWN ON THE PLANS. THE INFORMATION SHOWN IS BELIEVED TO BE REASONABLY CORRECT AND COMPLETE. HOWEVER, NEITHER THE CORRECTNESS NOR THE COMPLETENESS OF SUCH INFORMATION IS GUARANTEED. PRIOR TO THE START OF ANY OPERATIONS IN THE VICINITY OF ANY UTILITIES, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AND MISS DIG AND REQUEST THAT THEY STAKE OUT THE LOCATIONS OF THE UTILITIES IN QUESTION. THE CONTRACTOR SHALL COORDINATE THE RELOCATION OF ANY UTILITIES WITH THE UTILITY PROVIDER. COST OF REPAIR FOR ANY DAMAGED UTILITY LINES THAT IS PROPERLY STAKED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS AND REGULATIONS GOVERNING THE FURNISHING AND USE OF SAFEGUARDS, SAFETY DEVICES AND PROTECTION EQUIPMENT. THE CONTRACTOR SHALL TAKE ANY NECESSARY PRECAUTIONS TO PROTECT THE LIFE AND HEALTH OF EMPLOYEES AND THE PUBLIC IN THE PERFORMANCE OF THE WORK

**SOIL EROSION & SEDIMENTATION CONTROL NOTES**

- TEMPORARY SEEDING SHALL BE CONDUCTED ON ALL DISTURBED AREAS THAT WILL BE FINISH GRADED AT A LATER DATE. TEMPORARY SEEDING SHALL BE LIMITED TO DATES BETWEEN APRIL 1ST AND NOVEMBER 1ST.
- FINAL SEEDING SHALL BE COMPLETED WITHIN 24 HOURS OF FINAL GRADING. WEEKLY INSPECTIONS OF SEEDED AREAS SHALL BE COMPLETED TO VERIFY GRASS GROWTH. ANY AREAS NOT ESTABLISHED SHALL BE FERTILIZED, SOILS AMENDED AND RE-SEEDDED AS NECESSARY.
- CONTRACTOR TO INSTALL AND MAINTAIN ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES IN ACCORDANCE WITH THE APPROVED PLANS PRIOR TO COMMENCEMENT OF CONSTRUCTION OR MASS GRADING.
- ALL MUD, DIRT, AND DEBRIS TRACKED ONTO EXISTING ROADWAYS SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR NO LESS THAN ON A DAILY BASIS BY SCRAPING AND SWEEPING.
- ALL PERMANENT SOIL EROSION CONTROL MEASURES SHALL BE IN PLACE WITHIN 24 HOURS OF FINAL GRADE (GRADE LISTED ON PLANS), THIS INCLUDES ALL VEGETATIVE STABILIZATION. REMOVAL OF TEMPORARY MEASURES, FOLLOWING ACCEPTANCE OF THE PROJECT, IS THE RESPONSIBILITY OF THE CONTRACTOR.
- SHOULD ADDITIONAL SOIL EROSION CONTROL MEASURES BE DETERMINED TO BE NECESSARY BY EITHER THE SOIL EROSION CONTROL OFFICER OR THE OWNER'S ENGINEER THEY SHALL BE IN PLACE NO LATER THAN 24 HOURS FROM THE TIME OF NOTIFICATION TO THE GENERAL CONTRACTOR FOR THE PROJECT. IF NOT PLACED IN 24 HOURS OR LESS ALL ON SITE CONSTRUCTION WILL BE HALTED UNTIL SUCH MEASURES ARE INSTALLED AND APPROVED BY EITHER THE SOIL EROSION CONTROL OFFICER OR THE OWNER'S ENGINEER.
- ALL SOIL EROSION CONTROL MEASURES SHALL BE INSPECTED DAILY BY THE CONTRACTOR, AND INSPECTED AFTER EACH RAIN EVENT TO ENSURE PROPER MAINTENANCE OF THE SOIL EROSION CONTROL MEASURES. ANY DEFICIENCIES OR REPAIRS TO SOIL EROSION CONTROL MEASURES ARE TO BE CORRECTED IMMEDIATELY.
- INSTALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES BEFORE OR UPON COMMENCEMENT OF THE EARTH CHANGE ACTIVITY AND MAINTAIN MEASURES ON A DAILY BASIS. REMOVE TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AFTER PERMANENT SOIL EROSION MEASURES ARE IN PLACE AND THE AREA IS STABILIZED ("STABILIZED" MEANS THE ESTABLISHMENT OF VEGETATION OR THE PROPER PLACEMENT, GRADING, OR COVERING OF SOIL TO ENSURE ITS RESISTANCE TO SOIL EROSION, SLIDING, OR OTHER EARTH MOVEMENT).
- CONTRACTOR IS RESPONSIBLE TO ENSURE THAT MEASURES ARE INSTALLED IN COMPLIANCE WITH THE APA MANUAL AND THAT THE SESC MEASURES ARE MONITORED AND MAINTAINED UNTIL ALL DISTURBED AREAS ARE STABILIZED ("STABILIZED" MEANS THE ESTABLISHMENT OF VEGETATION OR THE PROPER PLACEMENT, GRADING, OR COVERING OF SOIL TO ENSURE ITS RESISTANCE TO SOIL EROSION, SLIDING, OR OTHER EARTH MOVEMENT) AND TEMPORARY MEASURES ARE REMOVED. CONTRACTOR ACKNOWLEDGES THAT SESC MEASURES MAY NEED TO BE ADAPTED, ADJUSTED, OR ADDED BASED ON SITE CONDITIONS IN ORDER TO REMAIN IN COMPLIANCE WITH PART 91 REQUIREMENTS.
- RESTORE DISTURBED AREAS WITH 4" TOPSOIL SURFACE, MDOT CLASS A SEED MIXTURE, 300#/ACRE CHEMICAL FERTILIZER NUTRIENTS AND 2 TONS/ACRE MULCH. PLACE TOPSOIL/SEED/FERTILIZER PRIOR TO PLACING MULCH BLANKET. WORK TO BE INCLUDED IN PAYMENT FOR "SLOPE RESTORATION, NON-FREEWAY".
- CONTRACTOR IS RESPONSIBLE FOR CLEANUP & RESTORATION INCLUDING PROGRESS CLEANING. PROGRESS CLEANING INCLUDES BUT IS NOT LIMITED TO REMOVAL OF WASTE MATERIALS, DEBRIS, RUBBISH, AND EXCESS SPOILS, COMPLETE LEVELING AND RESTORE DAMAGE NOT MORE THAN 1000 FEET BEHIND CONSTRUCTION. ALSO INCLUDES DAILY CLEANING OF ALL ROAD SURFACES.
- CONTRACTOR SHALL OBTAIN AND PAY ALL FEES FOR SOIL EROSION CONTROL PERMIT.

**PUBLIC UTILITIES**

THE EXISTING UTILITIES LISTED BELOW AND SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE AS OBTAINED ON OUR SURVEYS. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO BE SATISFIED AS TO ITS ACCURACY AND THE LOCATION OF EXISTING UTILITIES.

**Charter Communications**  
Attention: Rick Rousseau  
231-463-1941  
rick.rousseau@charter.com

**AT&T**  
Attention: Jeffrey Collard  
586-764-8260  
j:7632@att.com

**DTE Energy**  
Larry Bourke  
231-592-3244

**Emmet County Road Commission**  
Brent Shank  
231-347-9142  
bshank@emmetarc.org

**CONSTRUCTION NOTES**

- REMOVE AND PROPERLY DISPOSE OF EXISTING TILE & STRUCTURES LOCATED WITHIN PROPOSED CULVERT TRENCH. REMOVED STRUCTURES & TILE OR DEBRIS SHALL BECOME PROPERTY OF THE CONTRACTOR. REMOVAL TO BE INCLUDED IN THE COST PER LINEAR FOOT OF BOX CULVERT. EXISTING TILE LOCATED OUTSIDE THE INFLUENCE OF THE PROPOSED TRENCH SHALL BE TIED INTO THE PROPOSED STORM SEWER AT THE DOWNSTREAM END WITH ENGINEER APPROVED FITTINGS.
- DURING REMOVAL OF THE EXISTING STRUCTURE, EVERY PRECAUTION SHALL BE TAKEN TO PREVENT DEBRIS FROM ENTERING WATERCOURSE. ANY DEBRIS REACHING WATERCOURSE DURING THE REMOVAL OF THE STRUCTURE SHALL BE IMMEDIATELY REMOVED FROM WATER. ALL MATERIAL SHALL BE DISPOSED OF IN AN ACCEPTABLE MANNER CONSISTENT WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
- ALL SPRINKLER SYSTEMS DAMAGED SHALL BE REPAIRED BY CONTRACTOR. COST TO BE INCLUDED IN THE LUMP SUM BID PRICE FOR Slope Restoration, Non-Freeway, Type B.
- ANY UTILITIES ENCOUNTERED DURING CONSTRUCTION SHALL BE SUPPORTED, PER THE SPECIFICATIONS OF THE INDIVIDUAL UTILITY COMPANY CLAIMING OWNERSHIP OF THE UTILITY. COST TO BE INCLUDED WITH THE PAY ITEM BEING INSTALLED. ANY UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL MAINTAIN ACCESS FOR MAIL DELIVERY AND GARBAGE PICKUP AT ALL PARCEL AFFECTED BY CONSTRUCTION. IF THESE SERVICES CANNOT BE PERFORMED CONTRACTOR IS RESPONSIBLE FOR TAKING THE NECESSARY MEASURES TO CARRY THEM OUT.
- ALL WORK SHALL BE WITHIN ROAD RIGHT-OF-WAY. WORK OUTSIDE RIGHT-OF-WAY MUST BE AGREED UPON BY LANDOWNER AND ENGINEER WITH A SIGNED LANDOWNER AGREEMENT PRIOR TO WORK ON THAT PROPERTY.
- CONTRACTOR SHALL FIELD VERIFY ANGLE OF CULVERT CONNECTION PRIOR TO CONSTRUCTION.
- GROUNDWATER SEEPAGE IS ANTICIPATED TO BE A FACTOR DURING CONSTRUCTION. DEWATERING METHODS MAY BE NECESSARY. ALL DEWATERING REQUIRED IS THE CONTRACTOR'S RESPONSIBILITY AND COST SHALL BE INCLUDED IN THE PAY ITEM BEING INSTALLED. THE METHOD FOR DEWATERING SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
- ALL PAVEMENT JOINTS BETWEEN EXISTING AND NEW PAVEMENT SHALL BE SAW CUT WITH BUTT-JOINTS.
- STRIP AND SALVAGE TOPSOIL PRIOR TO INSTALLING BOX CULVERT. REPLACE TOPSOIL TO AFTER INSTALLATION.
- CONTRACTOR SHALL PROVIDE ALL TRAFFIC CONTROL DEVICES AS REQUIRED BY THE COUNTY ROAD COMMISSION AND THE TRAFFIC CONTROL PLAN.
- CONTRACTOR IS RESPONSIBLE TO FIELD LOCATE AND USE CARE WHEN WORKING AROUND UTILITIES AND TO NOT DISRUPT SERVICE. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED AND/OR REPLACED AT NO ADDITIONAL COST.
- THE ENGINEER SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO BITUMINOUS PAVING.
- THE PREPARED SUBBASE MUST BE TESTED AND APPROVED PRIOR TO PLACEMENT OF BASE.
- Embankment, CIP, Backfill, Structure, CIP, Excavation, Fdn, and Subbase, CIP ARE TO BE PAID AT PLAN QUANTITY UNLESS OTHERWISE KNOWN CHANGES. EARTHWORK FOR DRIVES, APPROACHES, AND INTERSECTIONS ARE INCLUDED IN PLAN QUANTITIES. ALL NECESSARY EMBANKMENT FOR ROADWAY, APPROACHES, AND DRIVEWAYS SHALL MEET GRANULAR MATERIAL CLASS II REQUIREMENTS UNLESS OTHERWISE NOTED.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT THE GRAVEL TO BE USED ON THIS PROJECT IS APPROVED PRIOR TO PLACEMENT.
- THE PREPARED GRAVEL WIDTH, DEPTH, AND COMPACTION MUST BE REVIEWED AND APPROVED BY THE OWNERS ENGINEER PRIOR TO BITUMINOUS PAVING.
- ALL CONSTRUCTION SIGNING SHALL MEET MDOT STANDARDS.
- ALL PAVEMENT CUTS ARE TO BE MADE WITH SAW, IMMEDIATELY PRIOR TO PAVING.
- THE CONTRACTOR SHALL NOTIFY RESIDENTS 24 HOURS (EXCLUDING SATURDAYS AND SUNDAYS) IN ADVANCE OF DISRUPTION TO SERVICE, SUCH AS DRIVEWAY CLOSING.
- PAVEMENT MARKINGS SHALL MEET MDOT SPECIFICATIONS AND STANDARDS.

**MISCELLANEOUS QUANTITIES**

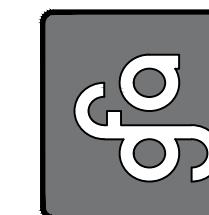
THE FOLLOWING ITEMS OF WORK SHALL BE DONE AS THEY APPLY THROUGHOUT THE PROJECT. THESE ITEMS ARE NOT DETAILED OR INCLUDED ON THE PLAN AND PROFILE SHEETS:

- LSUM Mobilization, Max
- Eq Erosion Control, Filter Bag
- Cyd Erosion Control, Maintenance, Sediment Removal

**GENERAL MAINTENANCE PROCEDURES**

- PERFORM MAINTENANCE ACTIVITIES DURING LOW FLOW PERIODS.
- START MAINTENANCE AT DOWNSTREAM END OF PROJECT.
- REMOVE SEDIMENT WITH LIMITED DISTURBED BANK AREA.
- APPLY SEED AND MULCH DAILY TO DISTURBED AREAS.
- MAINTAIN VEGETATIVE BUFFER BY PLACING SEDIMENT SPOILS AS CLOSE TO EASEMENT BOUNDARY AS POSSIBLE.
- APPLY SEED AND MULCH IMMEDIATELY AFTER LEVELING SPOILS.

http://gca.ic  
231.946.5874 (p)  
231.946.5703 (f)



**ENGINEERING SURVEYING TESTING & OPERATIONS**  
123 West Front Street  
Traverse City, MI 49684

REVISIONS

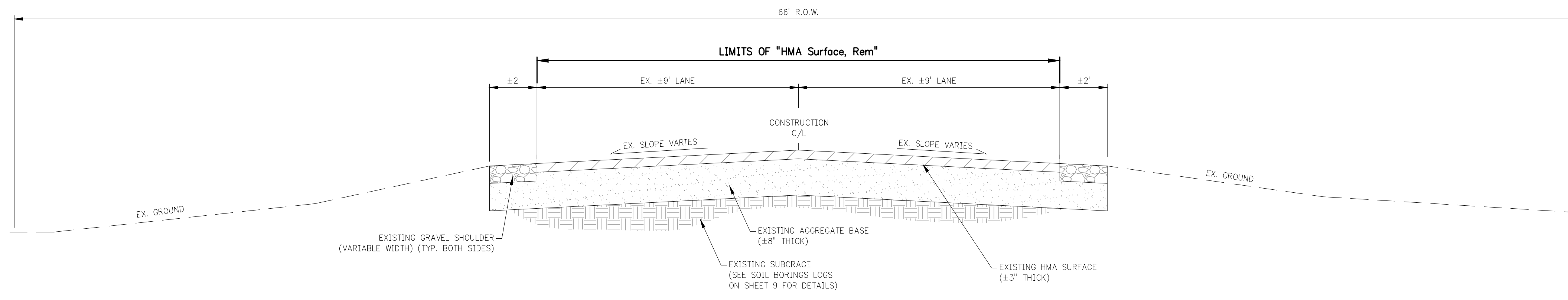
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A	11-19-21	SJS					
B	1-14-23	SJS					
C	3-30-23	SJS					

**EMMET COUNTY ROAD COMMISSION**  
**LOWER SHORE DRIVE OVER FIVE MILE CREEK**  
**LEGEND & NOTES**  
SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
WEST TRAVERSE TOWNSHIP, EMMET COUNTY, MICHIGAN

DATE: JOE WILLIAMS PE  
SIGNED: SJS  
DATE: JDW  
JOB NO: **22084**  
SHT 2 OF 9

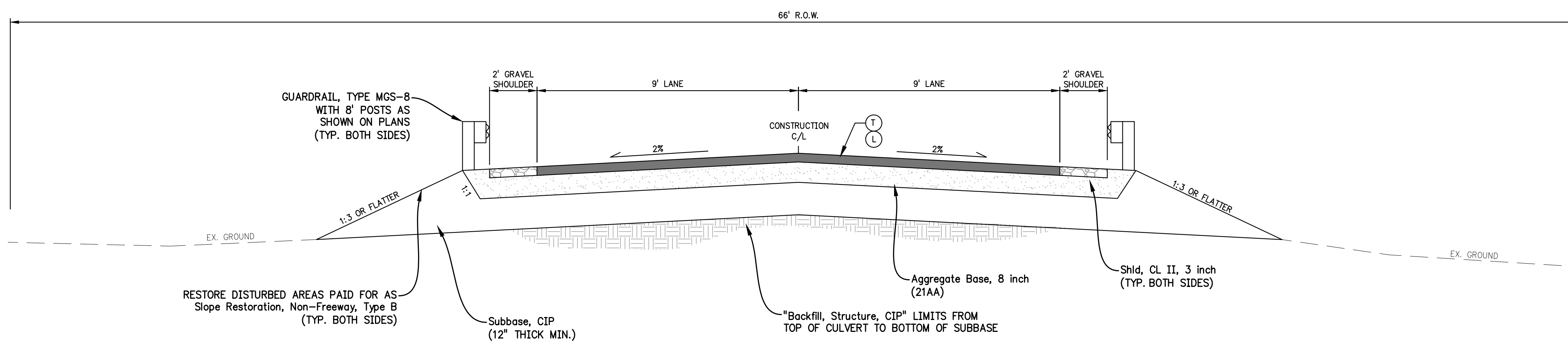






**LOWER SHORE DRIVE EXISTING TYPICAL CROSS SECTION**

TO APPLY: STA 1+50 TO STA 2+01  
SCALE: 1" = 3'



**LOWER SHORE DRIVE PROPOSED TYPICAL CROSS SECTION**

TO APPLY: STA 1+50 TO STA 2+01  
SCALE: 1" = 3'

**HMA APPLICATION ESTIMATE**

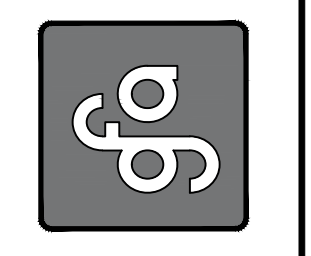
IDENT.	ITEM	RATE LBS/SYD	PERFORMANCE GRADE	AGGREGATE WEAR INDEX	REMARKS
T	HMA, 4EL	165	58-28	220 MIN	TOP COURSE
L	HMA, 4EL	165	58-28	-	LEVELING COURSE
	*BITUMINOUS BOND COAT	0.05 TO 0.15 GAL			

T:\PROJECTS\2018\EMMETT\2018\_05\_10\11251215.dwg (3/21/21) RWS (S) (M)

**EMMETT COUNTY ROAD COMMISSION**  
**LOWER SHORE DRIVE OVER FIVE MILE CREEK**  
**TYPICAL CROSS SECTIONS**  
SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
WEST TRAVERSE TOWNSHIP, EMMETT COUNTY, MICHIGAN

REV#	DATE	DRN	DESC.
A	8-19-21	SUS	FOR PERMITS
B	1-6-23	SUS	REVISED PERMITS COMMENTS
C	3-27-23	SUS	FOR CONSTRUCTION

**ENGINEERING SURVEYING TESTING & OPERATIONS**  
123 West Front Street  
Traverse City, MI 49684

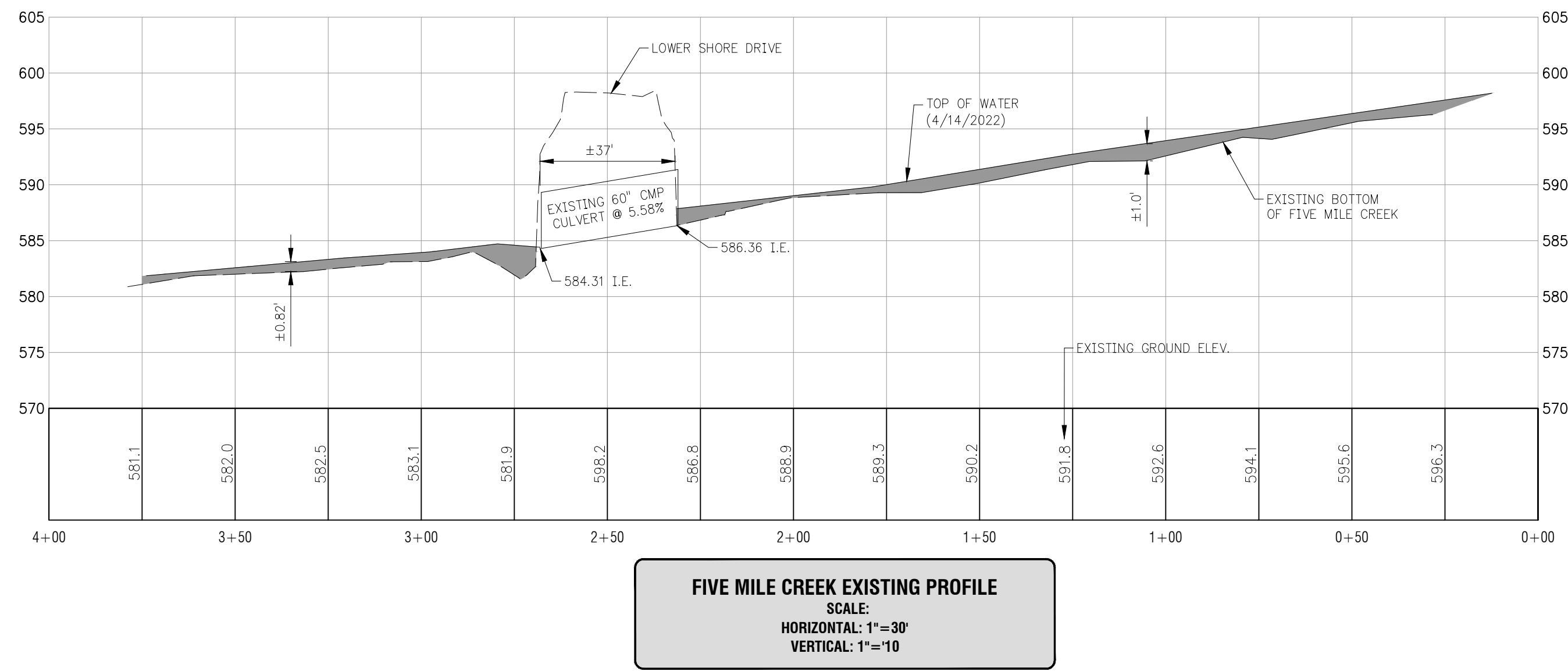
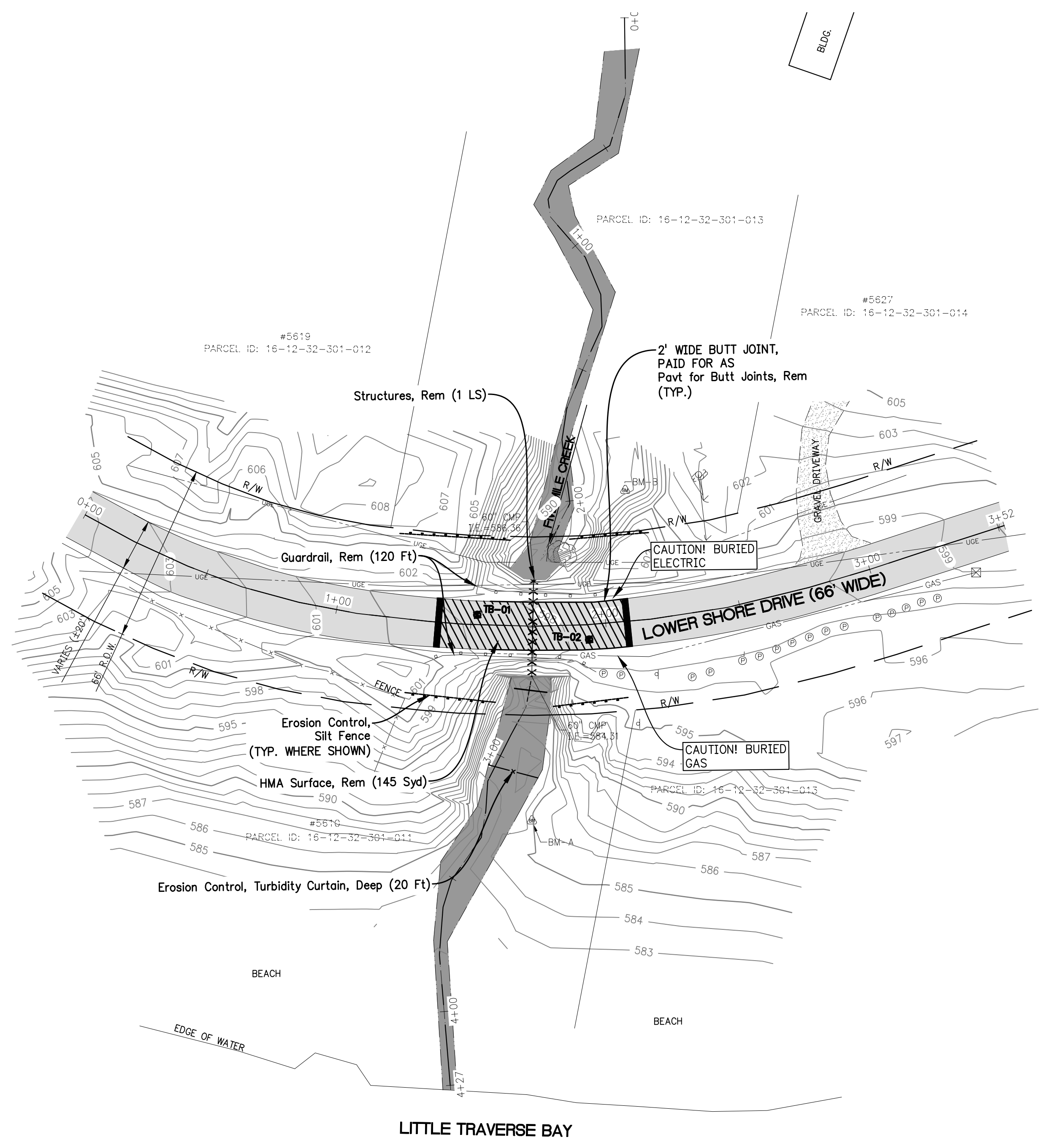
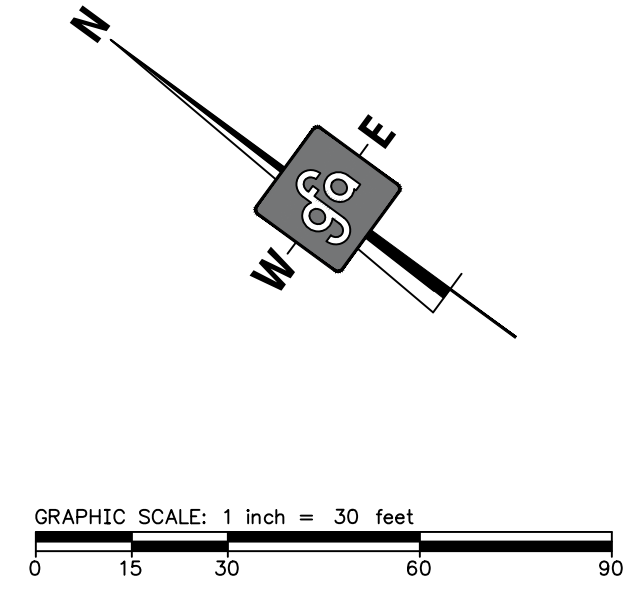


<https://gfa.tc>  
231.946.5874 (p)  
231.946.3703 (f)

These documents are prepared in accordance with the contractual terms and conditions for this project.



**BENCHMARKS**  
 BM-A  
 BENCH TIE IN E. SIDE OF 6" ASH STUMP  
 ELEV. = 587.40 (NAY088)  
 BM-D  
 BENCH TIE IN N.W. SIDE OF 14" CEDAR TREE  
 ELEV. = 595.08 (NAY088)



**FIVE MILE CREEK EXISTING PROFILE**  
 SCALE:  
 HORIZONTAL: 1"=30'  
 VERTICAL: 1"=10'

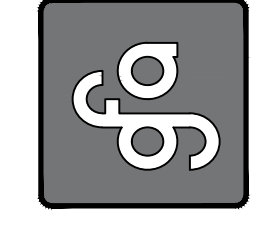
- GENERAL REMOVAL NOTES:**
1. THE WORK COVERED BY THESE PLANS INCLUDES THE REMOVAL OF AN EXISTING UNDERSIZED CULVERT, HMA REMOVAL, MAINTAINING TRAFFIC, CONSTRUCTION OF THE PROPOSED BOX CULVERT AND PLACING SLOPE PROTECTION/RESTORATION.
  2. ALL REMOVED CULVERT MATERIALS AND DEBRIS, UNLESS OTHERWISE NOTED, SHALL BE REMOVED FROM SITE AND ARE THE RESPONSIBILITY OF THE CONTRACTOR.
  3. NO DEBRIS SHALL ENTER FIVE MILE CREEK DURING THE REMOVAL OF THE EXISTING CULVERT AND ASSOCIATED EXCAVATION.
  4. WATER LEVEL IS SUBJECT TO CHANGE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING A DETERMINATION OF WATER LEVELS THAT MAY EXIST DURING CONSTRUCTION.
  5. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK.
  6. CONTRACTOR SHALL SUBMIT SCHEDULE TO ENGINEER FOR REVIEW AND APPROVAL.

Estimated Quantities This Sheet		
Pay Item	Quantity	Unit
Guardrail, Rem	120	Ft
Structures, Rem	1	LS
Erosion Control, Silt Fence	135	Ft
Erosion Control, Turbidity Curtain, Deep	20	Ft
HMA Surface, Rem	145	Syd
Pavt for Butt Joints, Rem	10	Syd

**EMMET COUNTY ROAD COMMISSION**  
**LOWER SHORE DRIVE OVER FIVE MILE CREEK**  
 REMOVAL & SESC PLAN  
 SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
 WEST TRAVERSE TOWNSHIP, EMMET COUNTY, MICHIGAN

REV#	DATE	DRN	FOR PERMITS	DESC.
A	8-19-22	SJS	FOR PERMITS	
B	1-6-23	SJS	REVISED PERMITS COMMENTS	
C	3-29-23	SJS	FOR CONSTRUCTION	

**ENGINEERING SURVEYING TESTING & OPERATIONS**  
 123 West Front Street  
 Traverse City, MI 49684

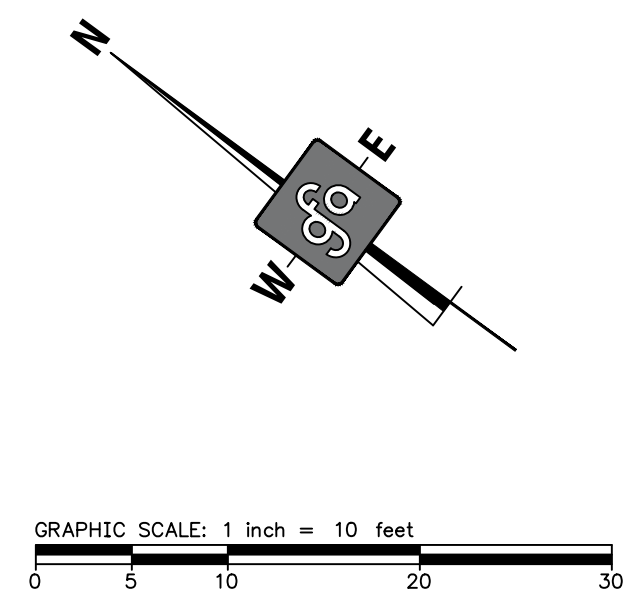
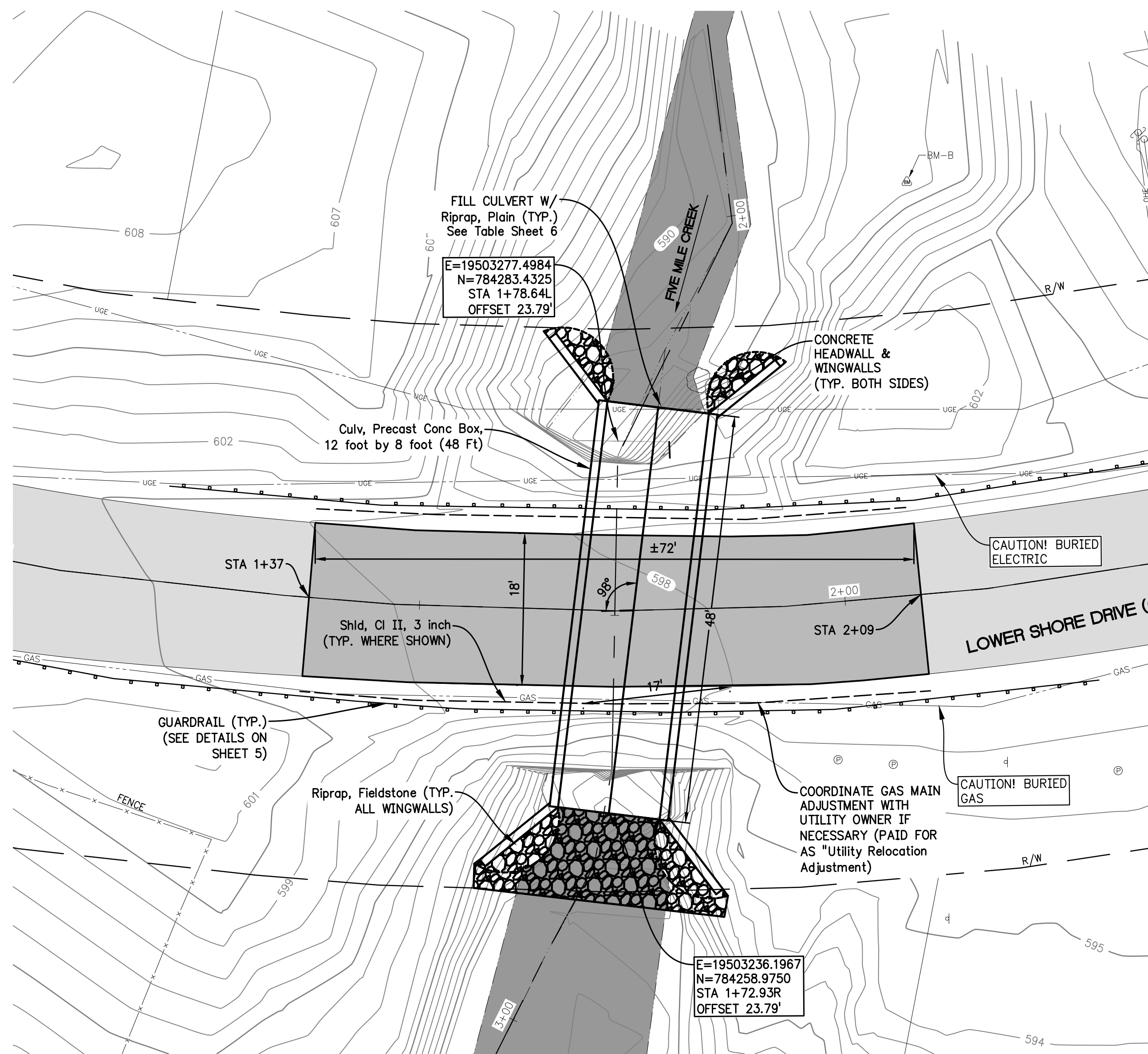


<http://esta.com>  
 231.946.5874 (p)  
 231.946.3703 (f)

These documents are prepared in accordance with the contractual terms and conditions for this project.

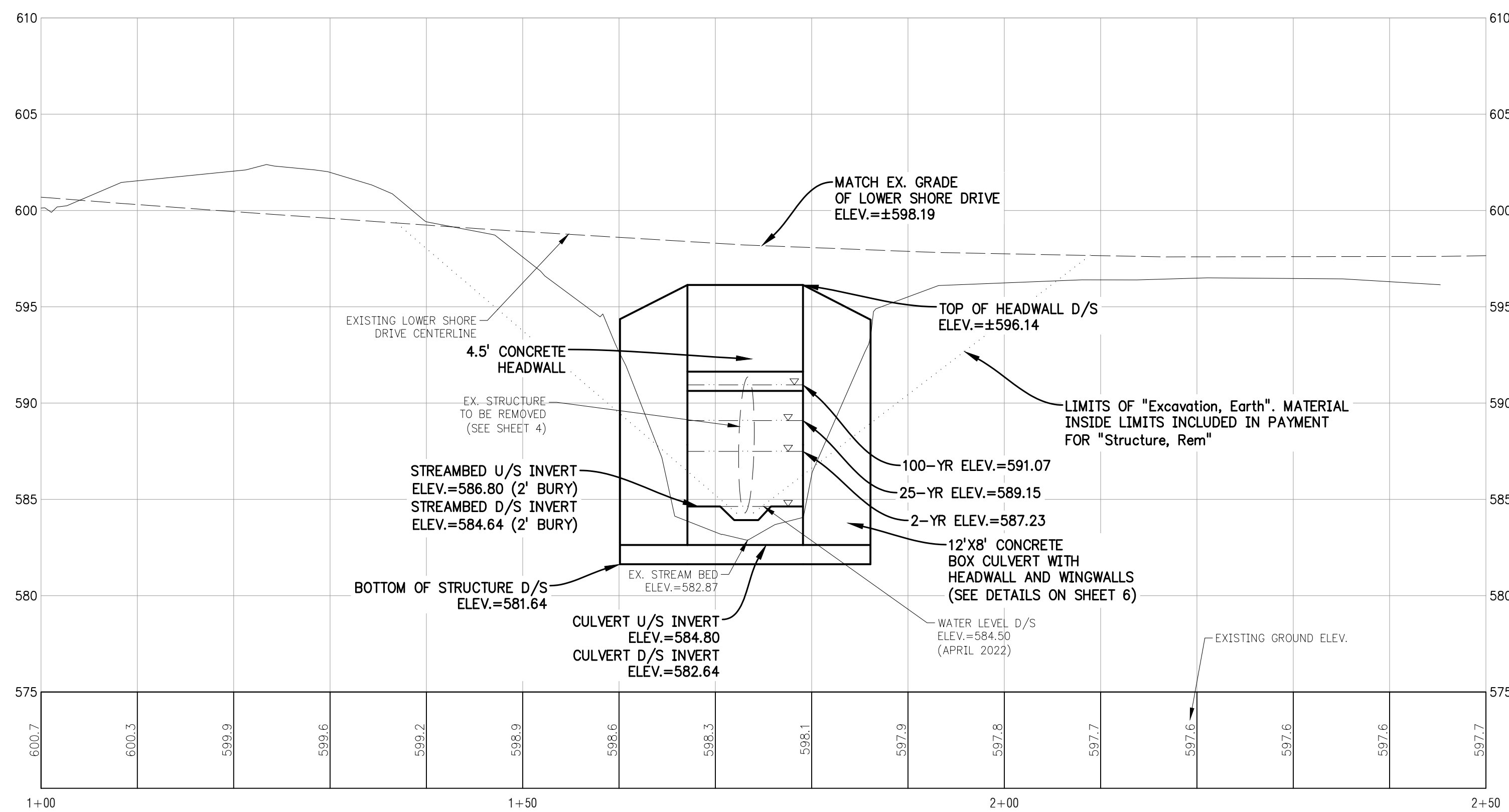


BENCHMARKS	
BM-A	BENCH TIE IN E. SIDE OF 6" ASH STUMP ELEV. = 587.40 (NAV088)
BM-D	BENCH TIE IN N.W. SIDE OF 14" CEDAR TREE ELEV. = 595.08 (NAV088)

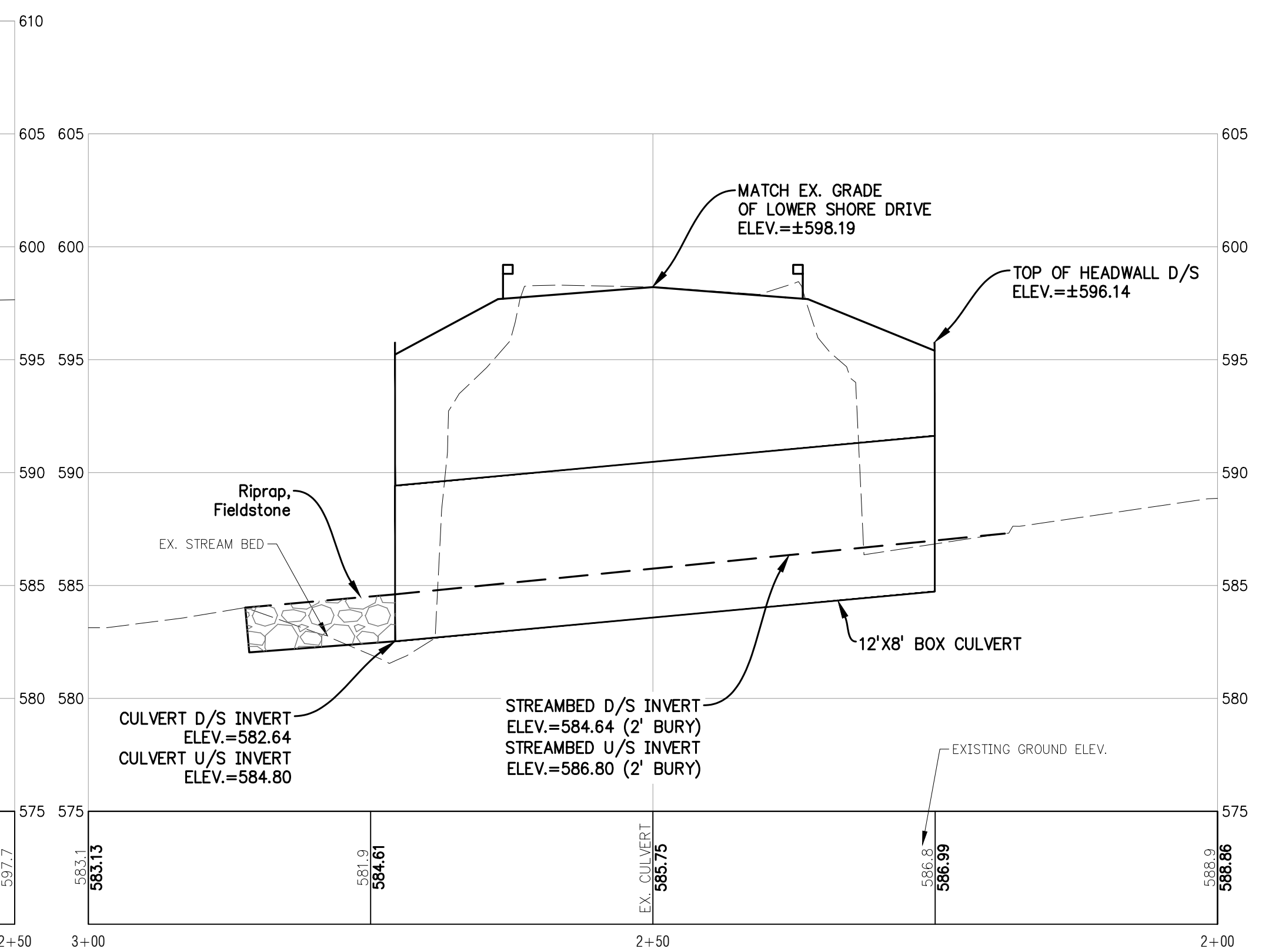


Estimated Quantities This Sheet		
Pay Item	Quantity	Unit
Aggregate Base, 8 Inch	185	Syd
HMA, 4EL	30	Ton
Shld, Cl II, 3 Inch	45	Syd
Slope Restoration, Non-Freeway, Type B	170	Syd
Subbase, CIP	66	Cyd

- NOTES:
- TEMPORARY STORED MATERIAL SHALL NOT BE ALLOWED TO ERODE INTO THE WATERCOURSE.
  - BOX CULVERT AND HEADWORKS SHALL BE PROVIDED BY A SUPPLIER WHO IS Q-CAST CERTIFIED BY THE AMERICAN CONCRETE PIPE ASSOCIATION.
  - STRUCTURE SHALL BE FABRICATED AND INSTALLED PER MDT 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION.
  - ALL JOINTS SHALL BE SEALED WITH BUTYL ROPE AND WRAPPED WITH NON-WOVEN GEOTEXTILE FABRIC.
  - PLUG ALL WEEP HOLES WITH MASTIC COATED CONCRETE PLUGS AND COVER WITH NON-WOVEN GEOTEXTILE FABRIC.
  - MANUFACTURER TO PROVIDE 2' DEEP CURTAIN WALL (KNEEWALL), SEE DETAIL.
  - IMMEDIATELY AFTER THE CONSTRUCTION OF EMBANKMENT IS COMPLETED, TOPSOIL, SEEDING, FERTILIZER, STRAW MULCH BLANKETS AND SLOPE PROTECTION SHALL BE PLACED ON THE ADJACENT EMBANKMENT SLOPES.
  - ALL WORK TO COMPLY WITH CONDITIONS OF EGLE PERMIT.



**LOWER SHORE DRIVE OVER FIVE MILE CREEK PROFILE**  
SCALE:  
HORIZONTAL: 1"=10'  
VERTICAL: 1"=5'



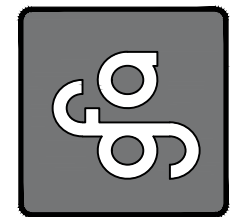
**LIVE MILE CREEK PROFILE**  
SCALE:  
HORIZONTAL: 1"=10'  
VERTICAL: 1"=5'

**EMMETT COUNTY ROAD COMMISSION**  
**LOWER SHORE DRIVE OVER FIVE MILE CREEK**  
**GENERAL PLAN OF SITE**  
SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
WEST TRAVERSE TOWNSHIP, EMMETT COUNTY, MICHIGAN

REV# DATE DRN FOR PERMITS

A	8-19-22	SUS	FOR PERMITS
B	1-6-23	SUS	REVISED PERMITS COMMENTS
C	3-27-23	SUS	FOR CONSTRUCTION

ENGINEERING  
SURVEYING  
TESTING & OPERATIONS



<http://gfa.tc>  
231.946.5874 (p)  
231.946.3703 (f)

123 West Front Street  
Traverse City, MI 49684

PM:

JOE WILLIAMS PE

DR:

SUS

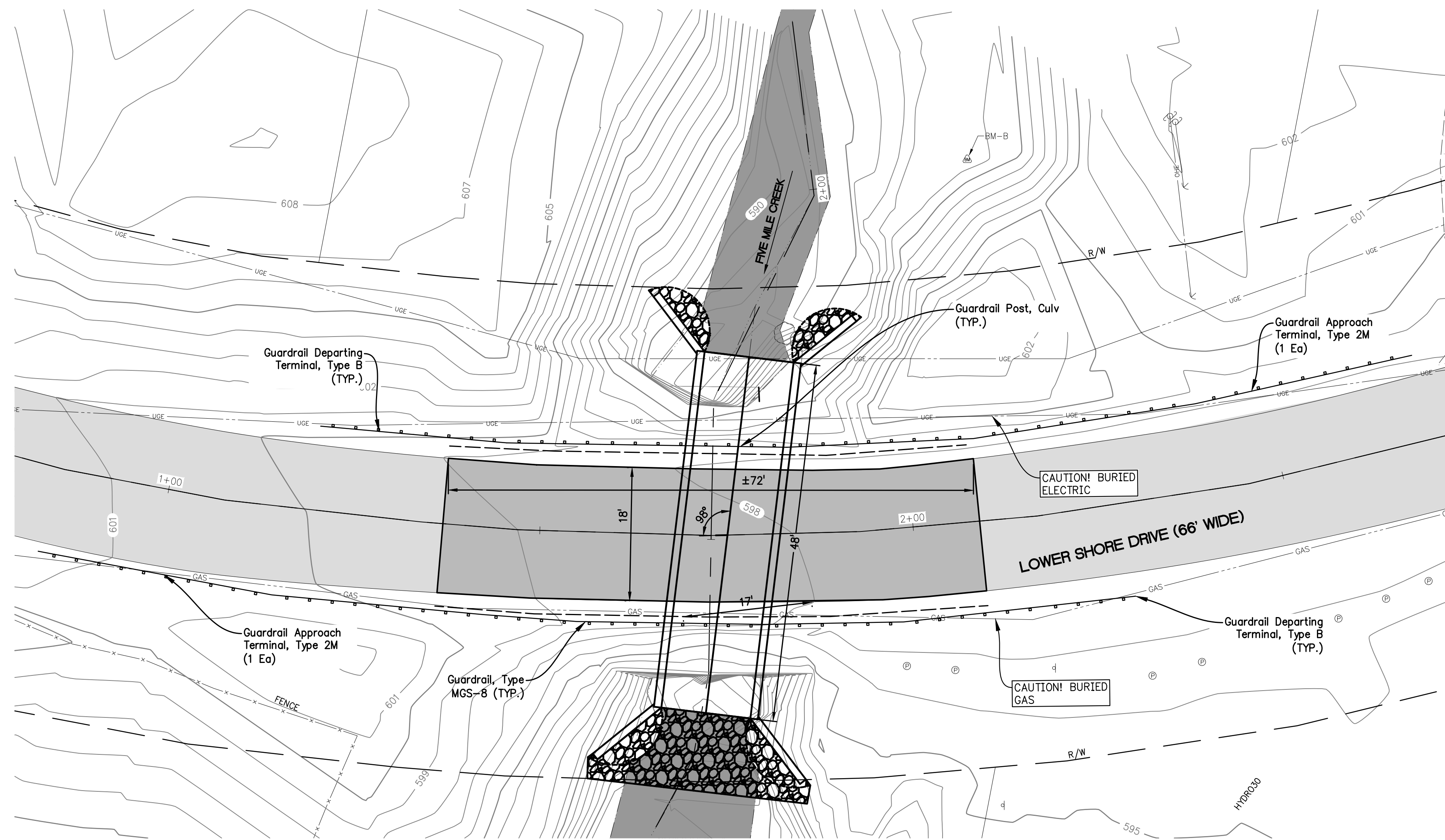
DES:

22084

SHT 5 OF 9



BENCHMARKS	
BM-A	BENCH TIE IN E. SIDE OF 6" ASH STUMP ELEV. = 587.40 (NAV088)
BM-D	BENCH TIE IN N.W. SIDE OF 14" CEDAR TREE ELEV. = 595.08 (NAV088)

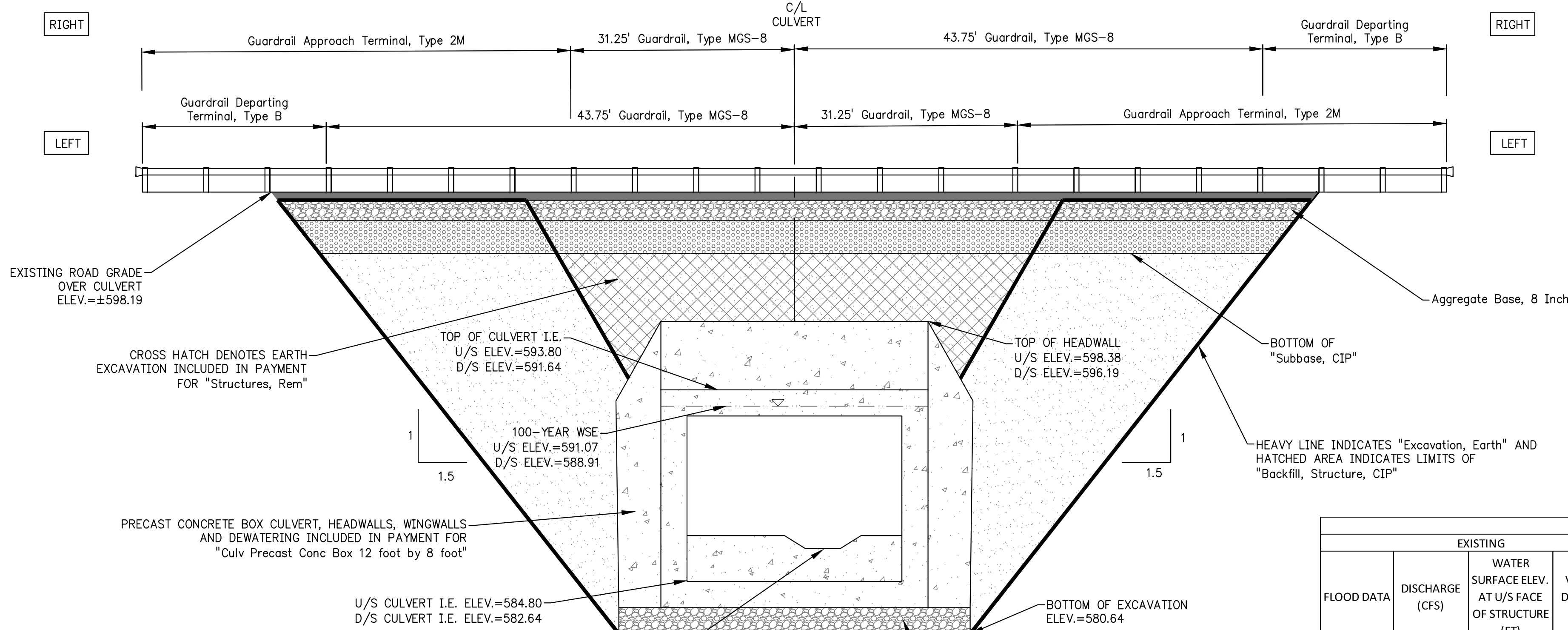


**IN CULVERT MATERIAL - PAID AS RIPRAP, PLAIN**

PERCENT GRADATION SMALLER THAN	PARTICLE DIAMETER (INCHES)
D100	13.0
D85	10.5
D50	9.0
D30	7.5
D10	3.5

Estimated Quantities This Sheet		
Pay Item	Quantity	Unit
Excavation, Earth	950	Cyd
Backfill, Structure, CIP	900	Cyd
Culv Precast Conc Box 12 foot by 8 foot	48	Ft
Guardrail, Type MGS-8	150	Ea
Guardrail Post, Culv	4	Ea
Guardrail Approach Terminal, Type 2M	2	Ea
Guardrail Departing Terminal, Type B	2	Ea
Guardrail Reflector	12	Ea
Riprap, Fieldstone *	250	Syd
Riprap, Plain *	130	Syd

- NOTES:
- TEMPORARY STORED MATERIAL SHALL NOT BE ALLOWED TO ERODE INTO THE WATERCOURSE.
  - BOX CULVERT AND HEADWORKS SHALL BE PROVIDED BY A SUPPLIER WHO IS O-CAST CERTIFIED BY THE AMERICAN CONCRETE PIPE ASSOCIATION.
  - STRUCTURE SHALL BE FABRICATED AND INSTALLED PER MDOT 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION.
  - ALL JOINTS SHALL BE SEALED WITH BUTYL ROPE AND WRAPPED WITH NON-WOVEN GEOTEXTILE FABRIC.
  - PLUG ALL WEEP HOLES WITH MASTIC COATED CONCRETE PLUGS AND COVER WITH NON-WOVEN GEOTEXTILE FABRIC.
  - MANUFACTURER TO PROVIDE 2' DEEP CURTAIN WALL (KNEEWALL), SEE DETAIL.
  - IMMEDIATELY AFTER THE CONSTRUCTION OF EMBANKMENT IS COMPLETED, TOPSOIL, SEEDING, FERTILIZER, STRAW MULCH BLANKETS AND SLOPE PROTECTION SHALL BE PLACED ON THE ADJACENT EMBANKMENT SLOPES.
  - ALL WORK TO COMPLY WITH CONDITIONS OF EGLE PERMIT.
  - THE CONTRIBUTING AREA TO THIS CROSSING IS 5.0 SQUARE MILES. THE 50%, 0.5% AND 0.2% CHANGE FLOODS ARE ESTIMATED TO BE 10 CUBIC FEET PER SECOND (CFS), 445 CFS, AND 650 CFS RESPECTIVELY, AS DETERMINED BY THE MICHIGAN EGLE.
  - RIPRAP, PLAIN AND RIPRAP, FIELDSTONE PLACED STREAMBED GRADE SHALL MIX IN GRANULAR MATERIALS TO FILL VOID SPACE USING A MIXTURE FINE TO MEDIUM SANDS FROM EXCAVATED MATERIALS. EST. QUANTITY 0.25 CYD PER CYD RIPRAP PLACED. IF EXCAVATED MATERIALS IS NOT SALVAGEABLE, USE CLASS II.



**ELEVATION**  
NOT TO SCALE

FLOOD DATA	SUMMARY OF HYDRAULIC ANALYSIS						
	EXISTING	PROPOSED					
DISCHARGE (CFS)	WATER SURFACE ELEV. AT U/S FACE OF STRUCTURE (FT)	VELOCITY IN D/S CHANNEL (FPS)	WATER SURFACE ELEV. AT U/S FACE OF STRUCTURE (CFS)	VELOCITY IN D/S CHANNEL (FPS)	WATERWAY AREA (SFT) AT D/S FACE	CHANGE IN W/S ELEV. 10 FT U/S OF PROPOSED STRUCTURE (FT)	
2-YEAR	10	587.54	2.06	587.23	5.56	9.57	-0.31
25-YEAR	135	591.25	7.04	589.15	7.04	11.49	-2.1
50-YEAR	215	592.89	10.5	590.30	8.18	17.51	-2.86
100-YEAR	325	595.33	13.62	591.07	9.34	23.75	-4.26

- NOTES:
- THE DRAINAGE AREA CONTRIBUTORY TO THIS CROSSING IS 5.0 SQUARE MILES.
  - THE WATER SURFACE AND/OR ENERGY GRADE LINE SHOWN ON THE ABOVE HYDRAULIC TABLE ARE TO BE USED FOR COMPARISON PURPOSES ONLY AND ARE NOT TO BE USED FOR ESTABLISHING A REGULATORY FLOODPLAIN.

**EMMET COUNTY ROAD COMMISSION**

**LOWER SHORE DRIVE OVER FIVE MILE CREEK**

GENERAL PLAN OF STRUCTURE

SECTION 32, TOWN 36 NORTH, RANGE 6 WEST

WEST TRAVERSE TOWNSHIP, EMMET COUNTY, MICHIGAN

DATE: 8-19-22

DESIGNER: J.W.

DATE: 4-13-23

DESIGNER: J.W.

DATE: 3-27-23

DESIGNER: J.W.

PROJECT NO: **22084**

SHT **6** OF **9**

DATE: 8-19-22

DESIGNER: J.W.

DATE: 4-13-23

DESIGNER: J.W.

DATE: 3-27-23

DESIGNER: J.W.

PROJECT NO: **22084**

SHT **6** OF **9**

DATE: 8-19-22

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DESIGNER: J.W.

PROJECT NO: **22084**

SHT **6** OF **9**

DATE: 8-19-22

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DATE: 3-27-23

DESIGNER: J.W.

PROJECT NO: **22084**

SHT **6** OF **9**

DATE: 8-19-22

DESIGNER: J.W.

DATE: 4-13-23

DESIGNER: J.W.

DATE: 3-27-23

DESIGNER: J.W.

PROJECT NO: **22084**

SHT **6** OF **9**

DATE: 8-19-22

DESIGNER: J.W.

DATE: 4-13-23

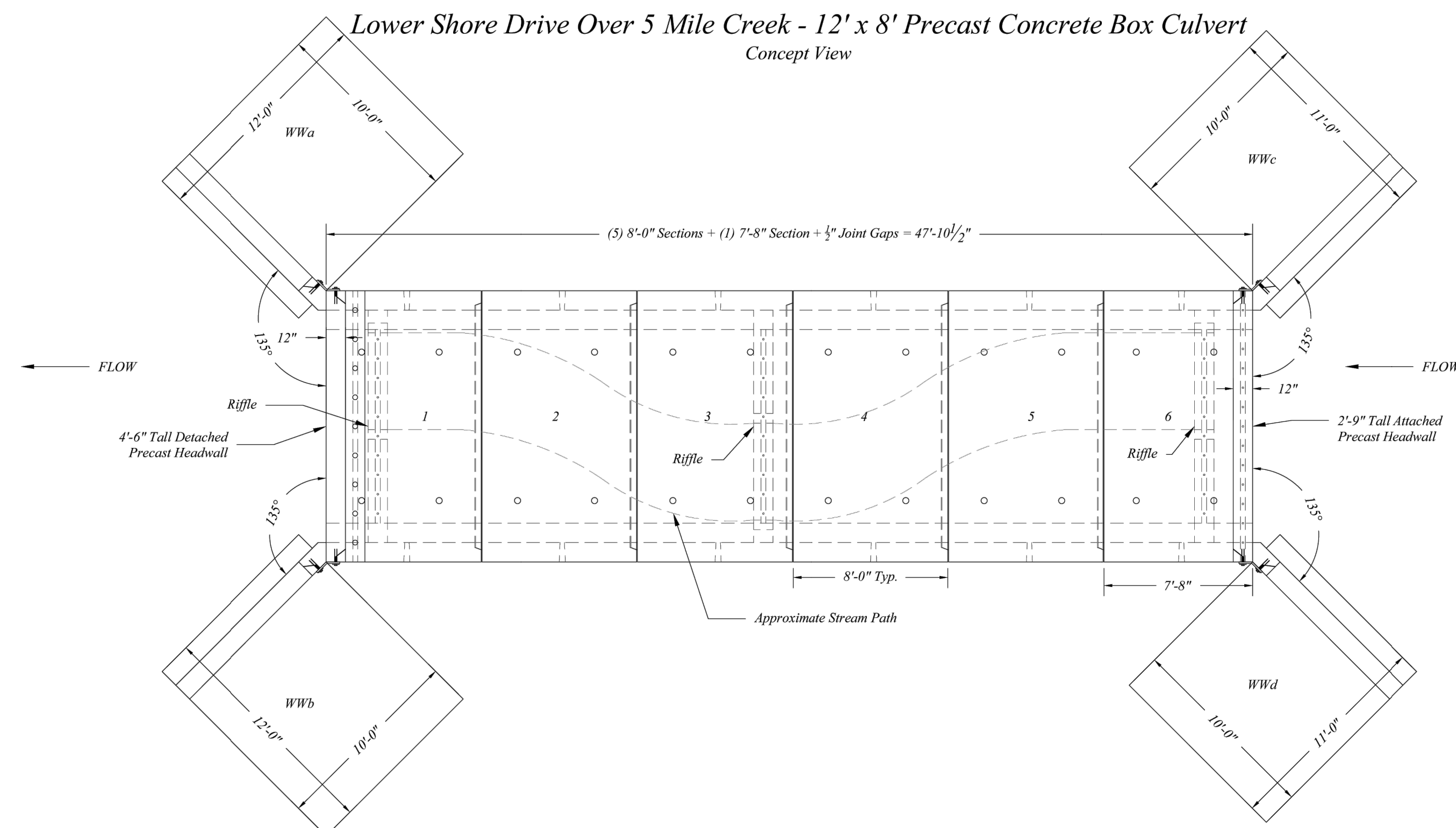
DESIGNER: J.W.

DATE: 3-27-23

DESIGNER: J.W.

These documents are prepared in accordance with the contractual terms and conditions for this project.





- CONSTRUCTION NOTES:
1. BOX CULVERT AND HEADWORKS SHALL BE PROVIDED BY A SUPPLIER WHO IS Q-CAST CERTIFIED BY THE AMERICAN CONCRETE PIPE ASSOCIATION.
  2. STRUCTURE SHALL BE FABRICATED AND INSTALLED PER MDOT 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION.
  3. ALL JOINTS SHALL BE SEALED WITH BUTYL ROPE AND WRAPPED WITH NON-WOVEN GEOTEXTILE FABRIC.
  4. PLUG ALL WEEP HOLES WITH MASTIC COATED CONCRETE PLUGS AND COVER WITH NON-WOVEN GEOTEXTILE FABRIC.
  5. MANUFACTURER TO PROVIDE 2' DEEP CURTAIN WALL (KNEEWALL), SEE DETAIL.
  6. CONTRACTOR TO SUBMIT STAMPED SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO ORDERING.

Box culvert sections to be manufactured to ASTM C-1433 specifications w/ HS-20 loading and 3.0' to 6.0' of cover. The design will meet all other applicable ASTM C-1433 Specifications.

Joints to be sealed w/ 1/2" EZ-Stik & EZ-Primer. Exterior top and sides of joints for box culvert to be sealed with mastic & 36" wide mirafit filter fabric.

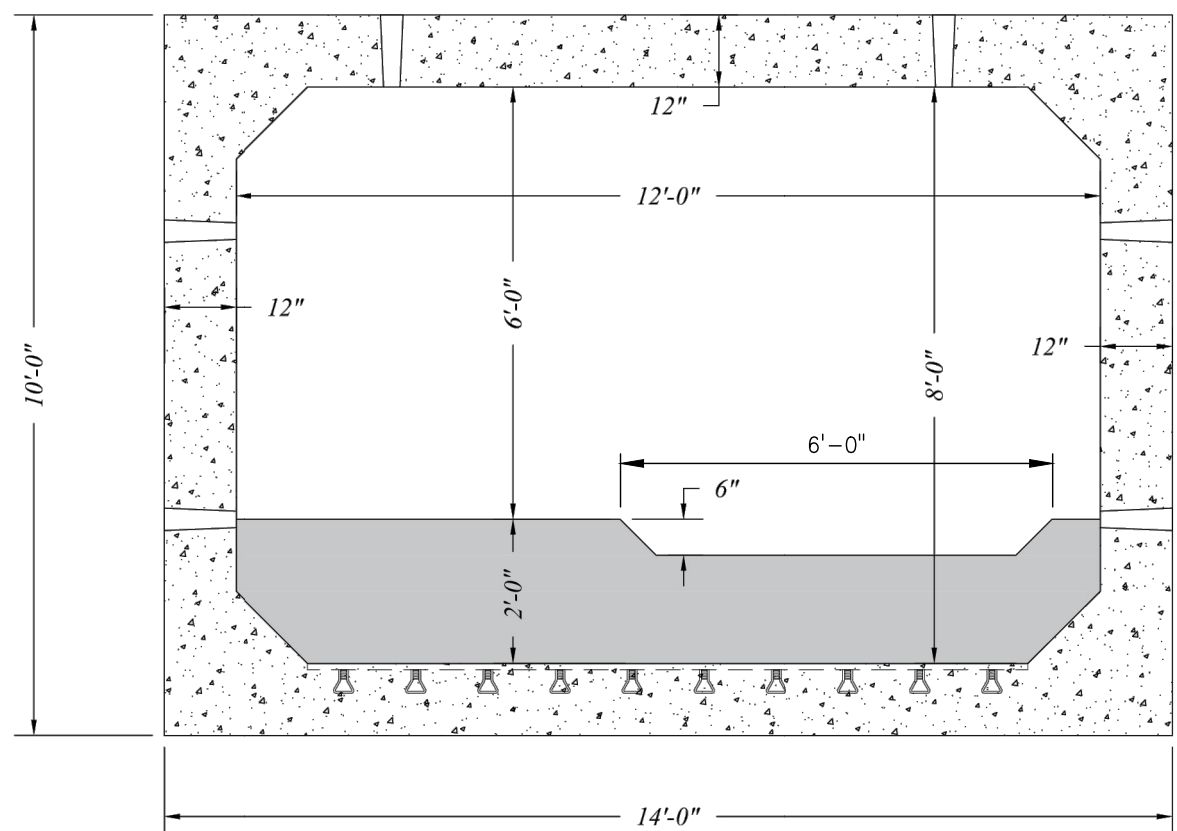
Boxes are designed with lift holes cast in for use with coffee pots and cables. Equipment as well as cables required for unloading and installation to be provided by contractor.

Each section will weigh approximately 6,900 Lbs / L.F. Heaviest lift will be 32.79 Tons.

### CONCRETE BOX CULVERT PLAN VIEW DETAIL

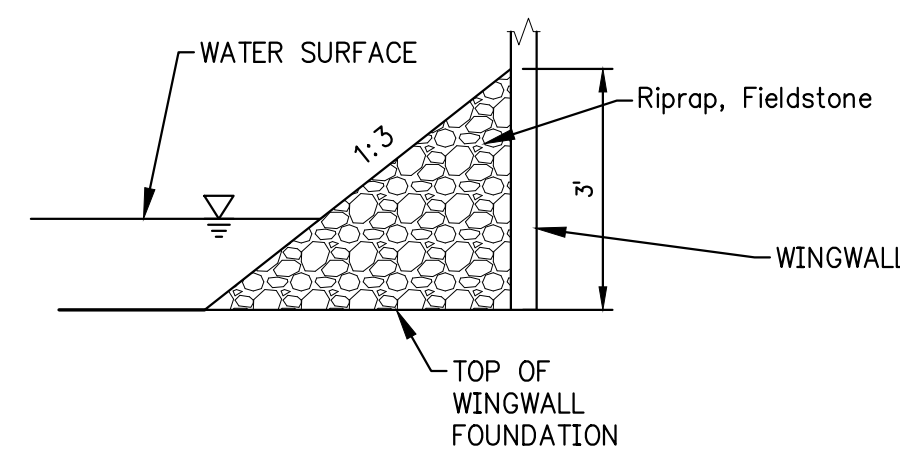
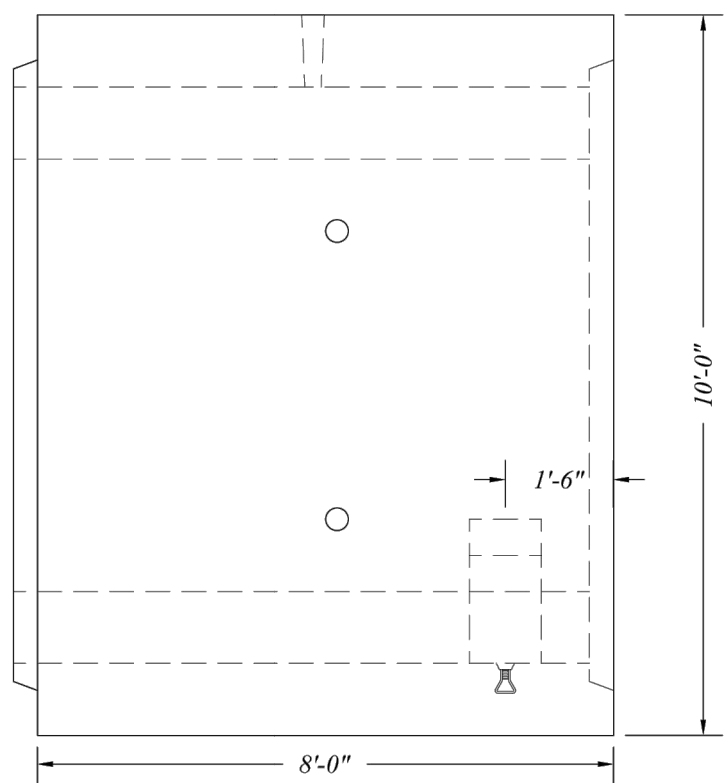
NOT TO SCALE

NOTE: CONTRACTOR SHALL VERIFY FINAL BOX CULVERT DESIGN WITH MANUFACTURER PRIOR TO CONSTRUCTION. THE SHOWN DETAILS ARE CONCEPTUAL AND NOT SUITABLE FOR CONSTRUCTION. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.



### CONCRETE BOX CULVERT DETAILS

NOT TO SCALE



### RIPRAP AT WINGWALLS DETAIL

NOT TO SCALE

<https://gfa.tc>  
  
**ENGINEERING SURVEYING TESTING & OPERATIONS**  
 123 West Front Street  
 Traverse City, MI 49684  
 231.946.5874 (p)  
 231.946.3703 (f)

REV#	DATE	DRN	DESC.
A	8-19-21	SJS	FOR PERMITS
B	1-6-23	SJS	REVISED PERMITS COMMENTS
C	3-29-23	SJS	FOR CONSTRUCTION

**EMMET COUNTY ROAD COMMISSION**  
**LOWER SHORE DRIVE OVER FIVE MILE CREEK**  
**CONSTRUCTION DETAILS**  
 SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
 WEST TRAVERSE TOWNSHIP, EMMET COUNTY, MICHIGAN

PM: JOE WILLIAMS, PE  
 DR: SJS  
 DW: JWW  
 P/S No: **22084**  
 SHT **7** OF **9**

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These documents are prepared in accordance with the contractual terms and conditions for this project.

ROAD CLOSED  
1.5 MILES AHEAD  
LOCAL TRAFFIC ONLY  
R11-3a (LOCATION ONE)

ROAD CLOSED  
2 MILES AHEAD  
LOCAL TRAFFIC ONLY  
R11-3a (LOCATION TWO)

END  
DETOUR M4-8a  
DETOUR M4-9UR(L)  
DETOUR M4-9UR(R)  
ROAD CLOSED R11-2  
DETOUR M4-9U

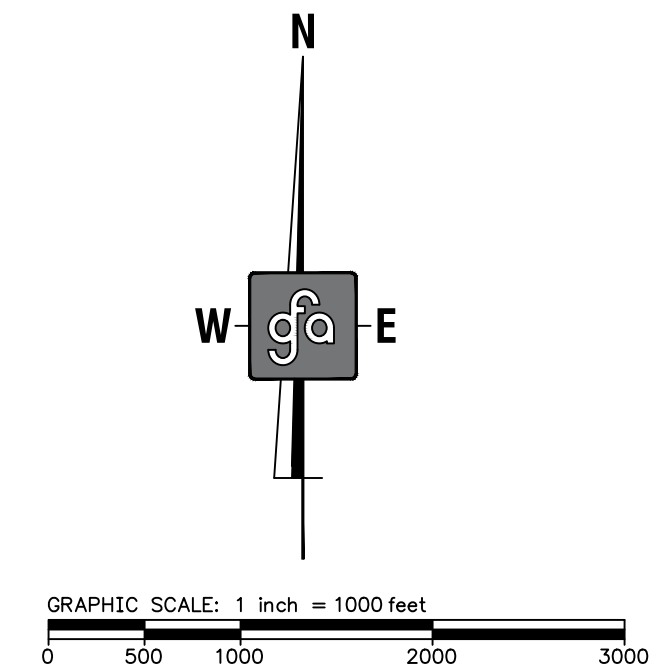
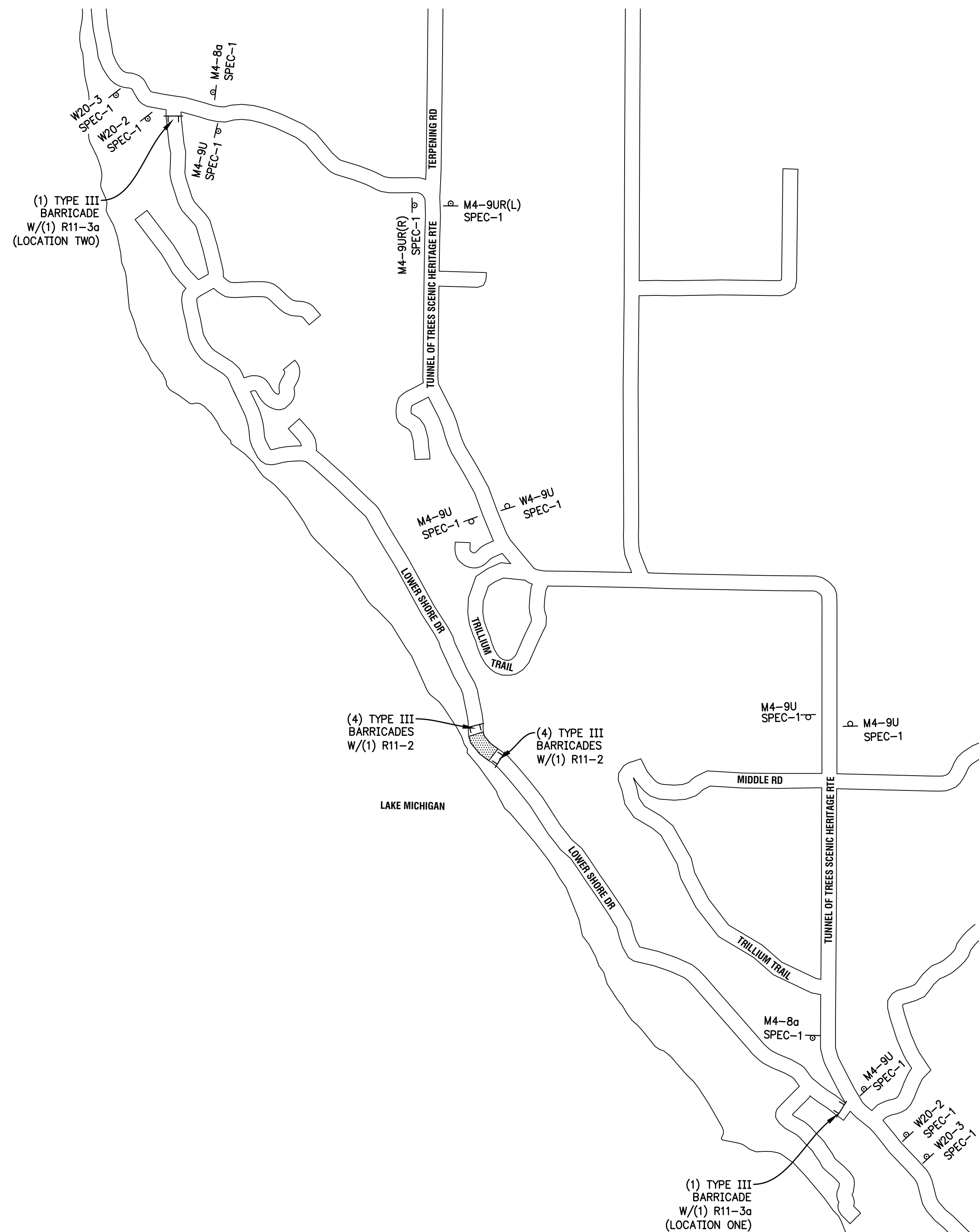
DETOUR AHEAD W20-2  
ROAD CLOSED AHEAD W20-3  
LOWER SHORE DR SPEC-1

LEGEND

▲ TEMPORARY SIGN  
▬ TYPE III BARRICADE  
▨ WORK ZONE

MMTUCD #	DESCRIPTION	SIZE	SFT/SIGN
W20-2	ROAD WORK AHEAD	48" X 48"	16
W20-3	DETOUR AHEAD	48" X 48"	16
SPEC-1	ROAD NAME	9" X 36"	2.25
R11-2	ROAD CLOSED	30" X 48"	30
R11-3a	ROAD CLOSED AHEAD	30" X 60"	30
M4-8a	END DETOUR	18" X 24"	3
M4-9	DETOUR	24" X 30"	5
M4-9UR(L)	DETOUR LEFT TURN	30" X 30"	6.25
M4-9UR(R)	DETOUR RIGHT TURN	30" X 30"	6.25

NOTES:  
1. CONTRACTOR SHALL MAINTAIN ACCESS AT ALL TIMES FOR LOCAL TRAFFIC TO PROPERTIES AND DRIVEWAYS LOCATED WITHIN THE CONSTRUCTION INFLUENCE AREA UTILIZING "Maintenance Gravel", AS DIRECTED BY THE ENGINEER.  
2. TEMPORARY SIGNS SHALL BE PAID FOR AS "Sign, Type B, Temp, Prismatic..." AND "Sign, Type B, Temp, Prismatic, Spec...". BARRICADES SHALL BE PAID FOR AS "Barricade, Type III, High Intensity, Double Sided, Lighted..."



Estimated Quantities This Sheet		
Pay Item	Quantity	Unit
Maintenance Gravel	5	Ton
Barricade, Type III, High Intensity, Double Sided, Lighted, Furn	10	Ea
Barricade, Type III, High Intensity, Double Sided, Lighted, Oper	10	Ea
Minor Traf Devices	1	LS
Sign, Type B, Temp, Prismatic, Furn	222.5	Sft
Sign, Type B, Temp, Prismatic, Oper	222.5	Sft
Sign, Type B, Temp, Prismatic, Special, Furn	36	Sft
Sign, Type B, Temp, Prismatic, Special, Oper	36	Sft
Traf Regulator Control	1	LS

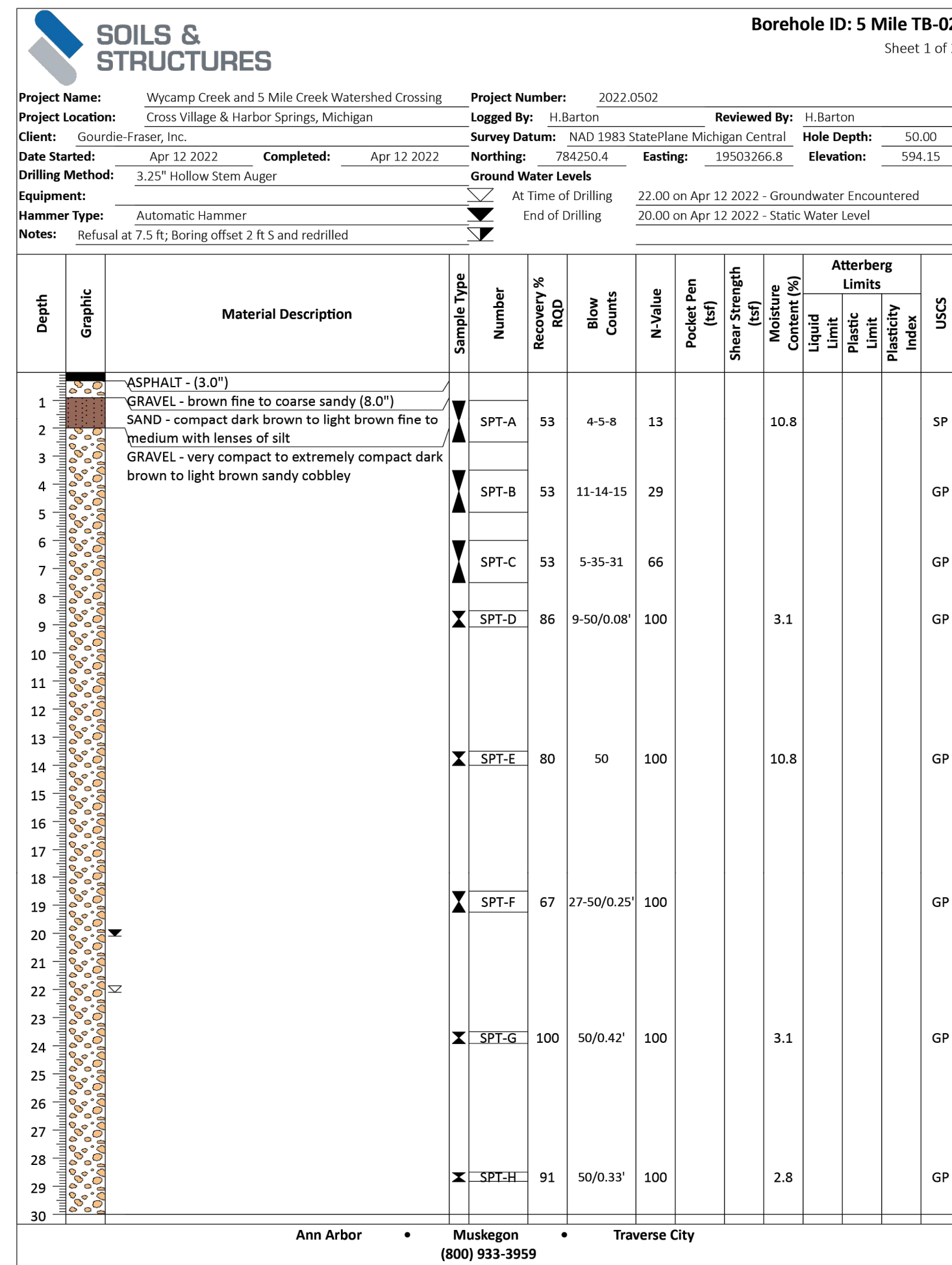
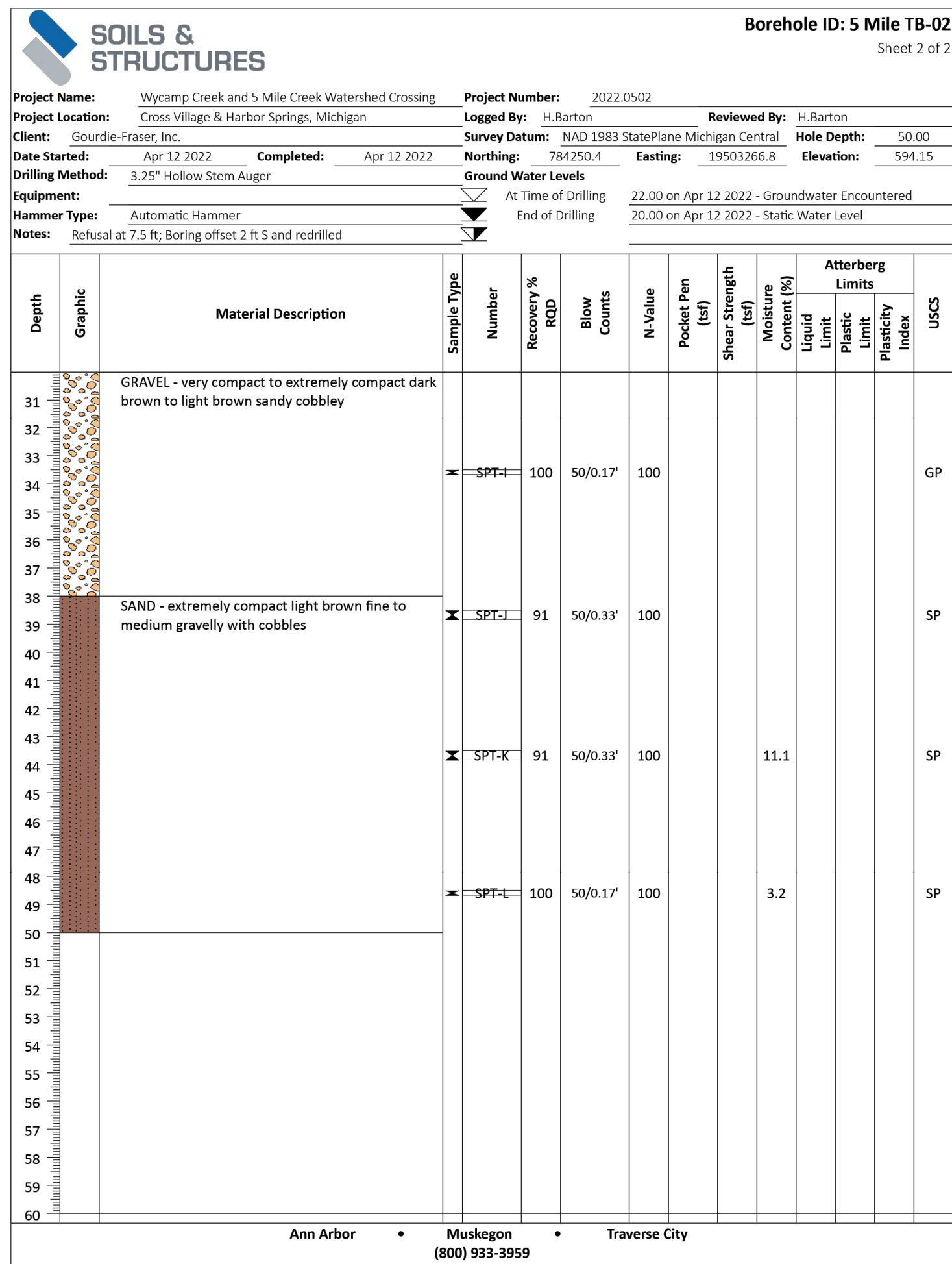
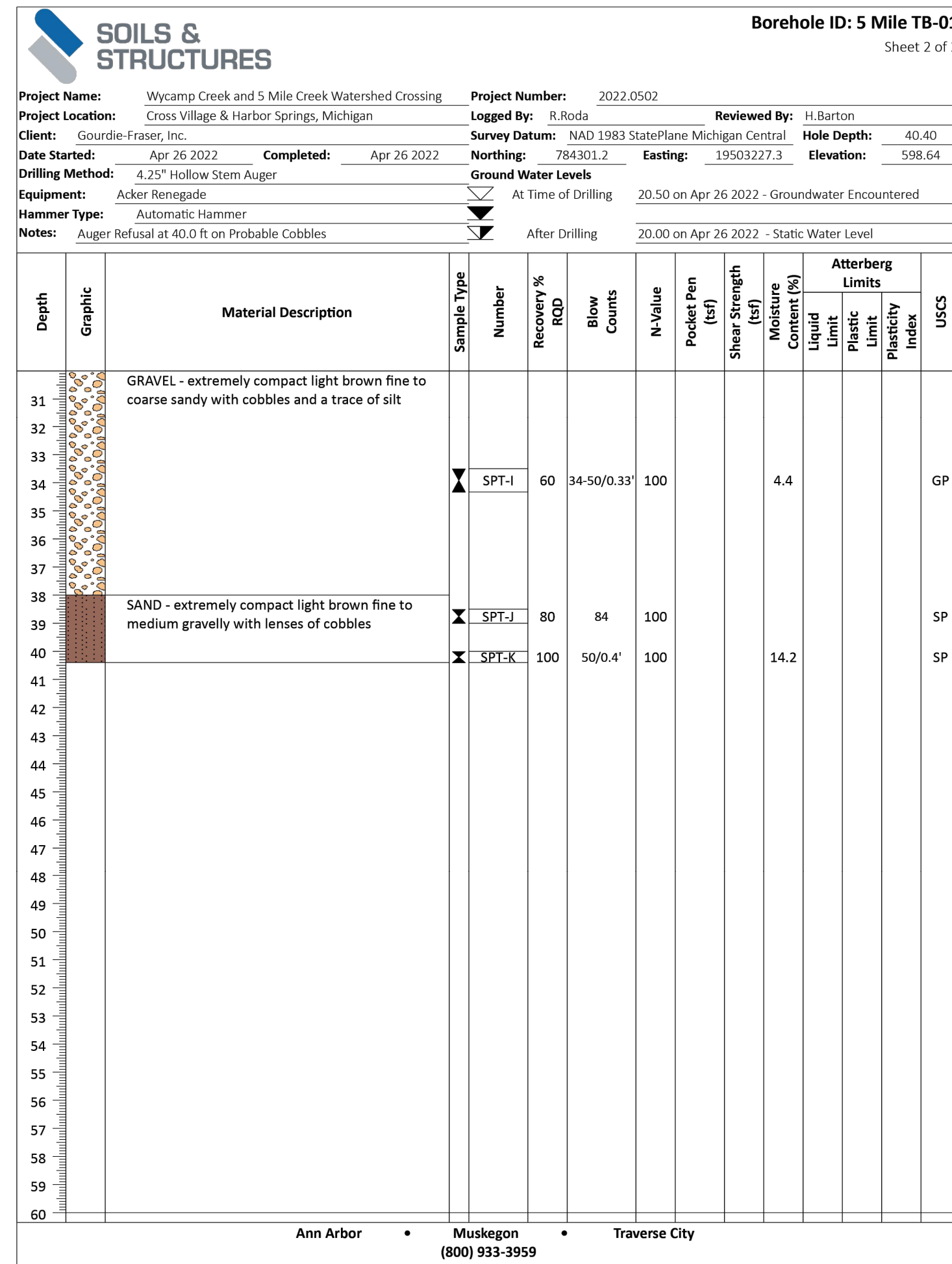
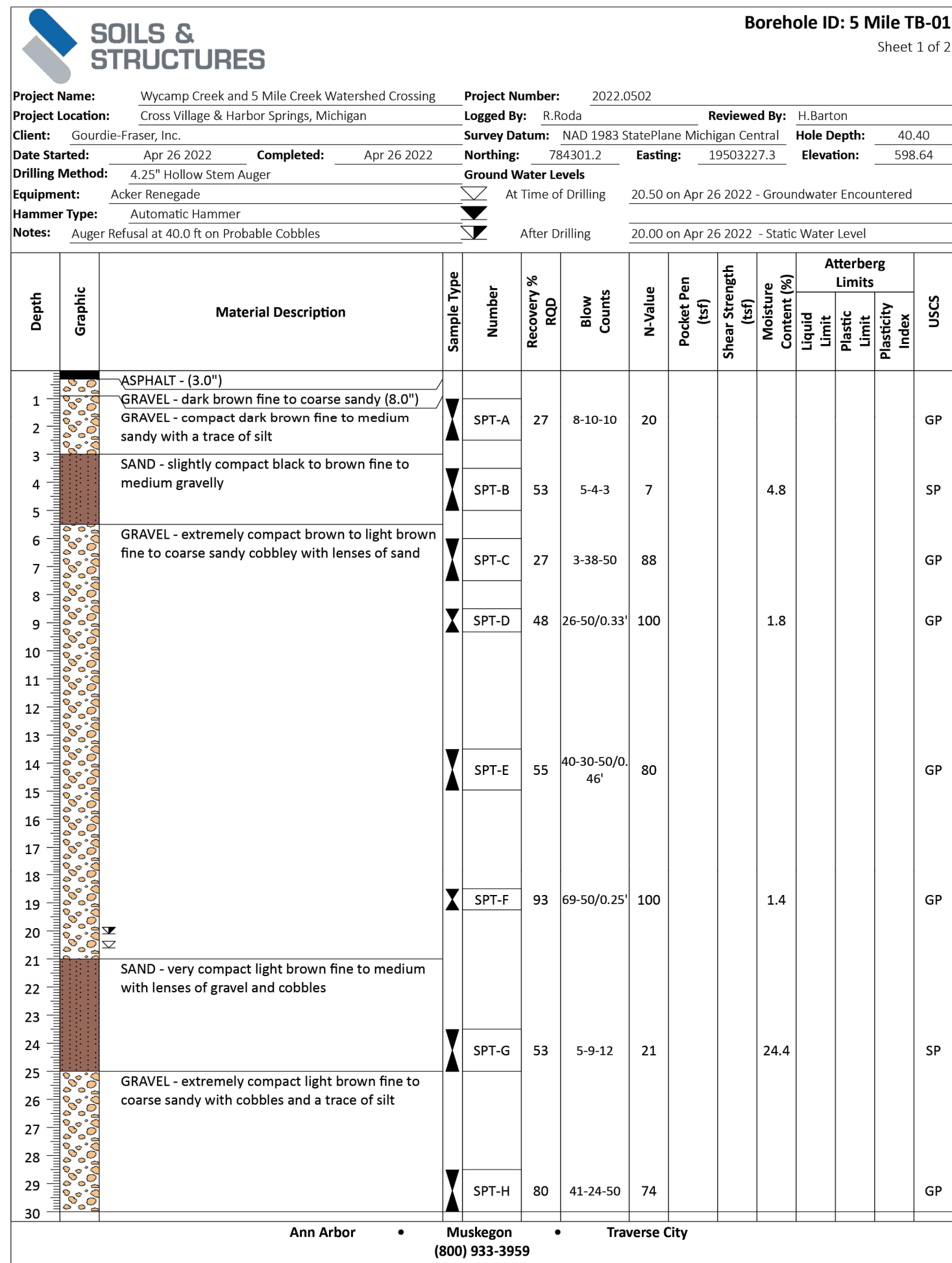
EMMET COUNTY ROAD COMMISSION  
LOWER SHORE DRIVE OVER FIVE MILE CREEK  
MAINTENANCE OF TRAFFIC PLAN  
SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
WEST TRAVERSE TOWNSHIP, EMMET COUNTY, MICHIGAN

REV#	DATE	DRN	FOR PERMITS	FOR CONSTRUCTION
A	8-19-21	SUS	FOR PERMITS	
B	1-6-23	SUS	REVISED PERMITS COMMENTS	
C	3-27-23	SUS	FOR CONSTRUCTION	

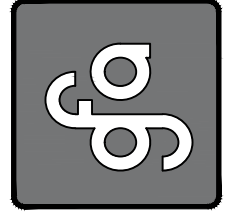
ENGINEERING SURVEYING TESTING & OPERATIONS  
123 West Front Street  
Traverse City, MI 49684

http://gfa.tc  
231.946.5874 (p)  
231.946.3703 (f)





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ENGINEERING  
SURVEYING  
TESTING & OPERATIONS  
123 West Front Street  
Traverse City, MI 49684

REV#	DATE	BY	DESC
A	11-19-21	SJS	FOR PERMITS
B	1-12-23	SJS	REVISED PER IAC COMMENTS
C	3-30-23	SJS	FOR CONSTRUCTION

EMMET COUNTY ROAD COMMISSION  
LOWER SHORE DRIVE OVER FIVE MILE CREEK  
SOIL BORING LOGS  
SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
WEST TRAVERSE TOWNSHIP, EMMET COUNTY, MICHIGAN

These documents are prepared in accordance with the contractual terms and conditions for this project.



## NOTICE OF AUTHORIZATION

**Permit Number: WRP035264 v. 1**  
**Site Name: 24 - Lower Shore Drive at 5 Mile Creek**

**Date Issued: October 5, 2022**  
**Expiration Date: October 5, 2027**

The Michigan Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division, P.O. Box 30458, Lansing, Michigan 48909-7958, under provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; specifically:

- Part 31, Floodplain Regulatory Authority of the Water Resources Protection.
- Part 301, Inland Lakes and Streams.
- Part 303, Wetlands Protection.
- Part 315, Dam Safety.
- Part 323, Shorelands Protection and Management.
- Part 325, Great Lakes Submerged Lands.
- Part 353, Sand Dunes Protection and Management.

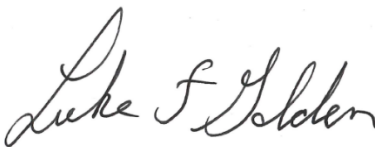
**Authorized activity:**

**Remove the existing 38-foot long by 5-foot span by 5-foot rise corrugated metal pipe culvert and construct a 48-foot long by 12-foot span by 8-foot rise reinforced concrete box culvert with wingwalls, recessed 2-feet below the stream bottom. Install 18-cubic yards of riprap at the wingwalls. Install 4-cubic yards of instream material for riffle creation.**

To be conducted at property located in: Emmet County, Waterbody: 5 Mile Creek  
Section 32, Town 36N, Range 06W, Friendship Township

Permittee:

Emmet County Road Commission  
2265 East Hathaway Road  
Harbor Springs, Michigan 49740

Issued By:   
Luke Golden  
Cadillac District Office  
Water Resources Division  
989-370-1569

*This notice must be displayed at the site of work.  
Laminating this notice or utilizing sheet protectors is recommended.*  
Please refer to the above permit number with any questions or concerns.

**EGLE-WRD**  
**WRP035264 v1.0**  
**Approved**  
**Issued On:10/05/2022**  
**Expires On:10/05/2027**



MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY  
WATER RESOURCES DIVISION PERMIT

Issued To:

Brent Shank  
Emmet County Road Commission  
2265 East Hathaway Road  
Harbor Springs, Michigan 49740

Permit No: WRP035264 v.1  
Submission No.: HPM-GSTQ-7XQYE  
Site Name: 24 - Lower Shore Drive at 5 Mile Creek  
Issued: October 5, 2022  
Revised:  
Expires: October 5, 2027

This permit is being issued by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division (WRD), under the provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); specifically:

- Part 301, Inland Lakes and Streams
- Part 303, Wetlands Protection
- Part 315, Dam Safety
- Part 31, Water Resources Protection (Floodplain Regulatory Authority)
- Part 323, Shorelands Protection and Management
- Part 325, Great Lakes Submerged Lands
- Part 353, Sand Dunes Protection and Management

EGLE certifies that the activities authorized under this permit are in compliance with the State Coastal Zone Management Program and certifies without conditions under the Federal Clean Water Act, Section 401 that the discharge from the activities authorized under this permit will comply with Michigan’s water quality requirements in Part 31, Water Resources Protection, of the NREPA and associated administrative rules, where applicable.

Permission is hereby granted, based on permittee assurance of adherence to State of Michigan requirements and permit conditions, to:

Authorized Activity:

Remove the existing 38-foot long by 5-foot span by 5-foot rise corrugated metal pipe culvert and construct a 48-foot long by 12-foot span by 8-foot rise reinforced concrete box culvert with wingwalls, recessed 2-feet below the stream bottom. Install 18-cubic yards of riprap at the wingwalls. Install 4-cubic yards of instream material for riffle creation.

Waterbody Affected: 5 Mile Creek  
Property Location: Emmet County, Friendship Township, Town/Range/Section 36N06W32  
Property Tax No.

EGLE-WRD  
WRP035264 v1.0  
Approved  
Issued On:10/05/2022  
Expires On:10/05/2027



**Authority granted by this permit is subject to the following limitations:**

- A. Initiation of any work on the permitted project confirms the permittee's acceptance and agreement to comply with all terms and conditions of this permit.
- B. The permittee, in exercising the authority granted by this permit, shall not cause unlawful pollution as defined by Part 31 of the NREPA.
- C. This permit shall be kept at the site of the work and available for inspection at all times during the duration of the project or until its date of expiration.
- D. All work shall be completed in accordance with the approved plans and specifications submitted with the application and/or plans and specifications attached to this permit.
- E. No attempt shall be made by the permittee to forbid the full and free use by the public of public waters at or adjacent to the structure or work approved.
- F. It is made a requirement of this permit that the permittee give notice to public utilities in accordance with 2013 PA 174 (Act 174) and comply with each of the requirements of Act 174.
- G. This permit does not convey property rights in either real estate or material, nor does it authorize any injury to private property or invasion of public or private rights, nor does it waive the necessity of seeking federal assent, all local permits, or complying with other state statutes.
- H. This permit does not prejudice or limit the right of a riparian owner or other person to institute proceedings in any circuit court of this state when necessary to protect his rights.
- I. Permittee shall notify EGLE within one week after the completion of the activity authorized by this permit.
- J. This permit shall not be assigned or transferred without the written approval of EGLE.
- K. Failure to comply with conditions of this permit may subject the permittee to revocation of permit and criminal and/or civil action as cited by the specific state act, federal act, and/or rule under which this permit is granted.
- L. All dredged or excavated materials shall be disposed of in an upland site (outside of floodplains, unless exempt under Part 31 of the NREPA, and wetlands).
- M. In issuing this permit, EGLE has relied on the information and data that the permittee has provided in connection with the submitted application for permit. If, subsequent to the issuance of a permit, such information and data prove to be false, incomplete, or inaccurate, EGLE may modify, revoke, or suspend the permit, in whole or in part, in accordance with the new information.
- N. The permittee shall indemnify and hold harmless the State of Michigan and its departments, agencies, officials, employees, agents, and representatives for any and all claims or causes of action arising from acts or omissions of the permittee, or employees, agents, or representative of the permittee, undertaken in connection with this permit. The permittee's obligation to indemnify the State of Michigan applies only if the state: (1) provides the permittee or its designated representative written notice of the claim or cause of action within 30 days after it is received by the state, and (2) consents to the permittee's participation in the proceeding on the claim or cause of action. It does not apply to contested case proceedings under the Administrative Procedures Act, 1969 PA 306, as amended, challenging the permit. This permit shall not be construed as an indemnity by the State of Michigan for the benefit of the permittee or any other person.
- O. Noncompliance with these terms and conditions and/or the initiation of other regulated activities not specifically authorized shall be cause for the modification, suspension, or revocation of this permit, in whole or in part. Further, EGLE may initiate criminal and/or civil proceedings as may be deemed necessary to correct project deficiencies, protect natural resource values, and secure compliance with statutes.
- P. If any change or deviation from the permitted activity becomes necessary, the permittee shall request, in writing, a revision of the permitted activity from EGLE. Such revision request shall include complete documentation supporting the modification and revised plans detailing the proposed modification. Proposed modifications must be approved, in writing, by EGLE prior to being implemented.
- Q. This permit may be transferred to another person upon written approval of EGLE. The permittee must submit a written request to EGLE to transfer the permit to the new owner. The new owner must also submit a written request to EGLE to accept transfer. The new owner must agree, in writing, to accept all conditions of the permit. A single letter signed by both parties that includes all the above information may be provided to EGLE. EGLE will review the request and, if approved, will provide written notification to the new owner.


- R. Prior to initiating permitted construction, the permittee is required to provide a copy of the permit to the contractor(s) for review. The property owner, contractor(s), and any agent involved in exercising the permit are held responsible to ensure that the project is constructed in accordance with all drawings and specifications. The contractor is required to provide a copy of the permit to all subcontractors doing work authorized by the permit.
- S. Construction must be undertaken and completed during the dry period of the wetland. If the area does not dry out, construction shall be done on equipment mats to prevent compaction of the soil.
- T. Authority granted by this permit does not waive permit requirements under Part 91, Soil Erosion and Sedimentation Control, of the NREPA, or the need to acquire applicable permits from the County Enforcing Agent (CEA).
- U. Authority granted by this permit does not waive permit requirements under the authority of Part 305, Natural Rivers, of the NREPA. A Natural Rivers Zoning Permit may be required for construction, land alteration, streambank stabilization, or vegetation removal along or near a natural river.
- V. The permittee is cautioned that grade changes resulting in increased runoff onto adjacent property is subject to civil damage litigation.
- W. Unless specifically stated in this permit, construction pads, haul roads, temporary structures, or other structural appurtenances to be placed in a wetland or on bottomland of the water body are not authorized and shall not be constructed unless authorized by a separate permit or permit revision granted in accordance with the applicable law.
- X. For projects with potential impacts to fish spawning or migration, no work shall occur within fish spawning or migration timelines (i.e., windows) unless otherwise approved in writing by the Michigan Department of Natural Resources, Fisheries Division.
- Y. Work to be done under authority of this permit is further subject to the following special instructions and specifications:
1. All work shall be completed in accordance with plans attached; kept on file at EGLE's, WRD, Transportation Review Unit.
  2. Authority granted by this permit does not waive compliance requirements under Part 91, Soil Erosion and Sedimentation Control, of the NREPA. Any discharge of sediment into waters of the state and/or off the road right-of-way is a violation of this permit, Part 91, and Part 31, Water Resources Protection, of the NREPA. A violation of these parts subjects the permittee to potential fines and penalties.
  3. This permit does not authorize or sanction work that has been completed in violation of applicable federal, state, or local statutes.
  4. The permittee is responsible for acquiring all necessary easements or rights-of-way before commencing any work authorized by this permit. All construction operations relating to, or part of this project shall be confined to the existing right-of-way limits or other acquired easements.
  5. Temporary soil erosion and sedimentation control measures shall be installed before or upon commencement of the earth change and shall be maintained daily. Temporary soil erosion and sedimentation control measures shall be maintained until permanent soil erosion and sedimentation control measures are in place and the area is stabilized. Permanent soil erosion and sedimentation control measures for all slopes, channels, ditches, or any disturbed area shall be installed within five (5) calendar days after final grading, or the final earth change has been completed.

6. All raw areas in uplands resulting from the permitted construction activity shall be effectively stabilized with sod and/or seed and mulch (or other technology specified by this permit or project plans) in a sufficient quantity and manner to prevent erosion and any potential siltation to surface waters or wetlands. Temporary stabilization measures shall be installed before or upon commencement of the permitted activity, and shall be maintained until permanent measures are in place. Permanent measures shall be in place within five (5) days of achieving final grade.
7. All raw earth within 100 feet of a lake, stream, or wetland that is not brought to final stabilization by the end of the active growing season shall be temporarily stabilized with mulch blankets in accordance with the following dates: September 20<sup>th</sup> for the Upper Peninsula, October 1<sup>st</sup> for the Lower Peninsula north of US-10, and October 10<sup>th</sup> for the Lower Peninsula south of US-10.
8. This permit placard shall be kept posted at the work site, in a prominent location at all times for the duration of the project, or until permit expiration.
9. This permit is being issued for the maximum time allowed and no extensions of this permit will be granted. Initiation of the construction work authorized by this permit indicates the permittee's acceptance of this condition. The permit, when signed by EGLE, will be for a five-year period beginning at the date of issuance. If the project is not completed by the expiration date, a new permit must be sought.
10. All dredge/excavated spoils including organic and inorganic soils, vegetation, and other material removed shall be placed on upland (non-wetland, non-floodplain or non-bottomland), prepared for stabilization, revegetated and reseeded with native Michigan species appropriate to the site, and mulched in such a manner so as to prevent and ensure against erosion of any material into any waterbody, wetland, or floodplain.
11. During removal or repair of the existing structure, every precaution shall be taken to prevent debris from entering any watercourse. Any debris reaching the watercourse during the removal and/or reconstruction of the structure shall be immediately retrieved from the water. All material shall be disposed of in an acceptable manner consistent with local, state, and federal regulations.
12. Prior to the removal of the existing structures, cofferdams of steel sheet piling, gravel bags, clean stone, coarse aggregate, concrete or other acceptable barriers shall be installed to isolate all construction activity from the water. The barriers shall be maintained in good working order throughout the duration of the project. Upon project completion, the accumulated materials shall be removed and disposed of at an upland site.
13. All cofferdam and temporary steel sheet pile shall then be removed in its entirety, unless specifically shown to be left in plan on the accepted plans. Cofferdam and sheet pile that is left in place shall be cut off at the elevation shown on the plans and shall be a minimum of one foot below the stream bottom.
14. The existing structure shall be kept open to pass the stream flow during removal of the existing road fill.

15. The placement of the new culvert and the initial placement of fill in the stream shall be done immediately after removal of the existing culvert. The placement shall be conducted in such a manner that all flow is immediately passed through the new culverts, allowing the major placement of fill to be done in the dry or in still water where erosion and sedimentation will be minimized. The fill material used in this initial placement shall be washed gravel, coarse aggregate, or rock and shall be placed at both ends of the culvert to a level above normal water level before backfill material is placed.
16. The culvert shall be installed to align with the center line of the existing stream at both the inlet and outlet ends, and must be **recessed into the stream bed** to provide a natural channel substrate throughout the structure, as shown on the approved plans.
17. Road fill side slopes shall not be steeper than 1-on-2 (1 vertical to 2 horizontal) except where headwalls of reinforced concrete, mortar masonry, dry masonry, or other acceptable methods are used.
18. Areas to be protected by riprap shall be cleared of brush and debris. All grades shall be shaped and compacted to the required cross section. Geotextile liner shall be placed on the prepared grades. The riprap installation shall not damage the geotextile liner.
19. Any fill shall consist of clean inert material.
20. Any alterations to the existing road grade elevations other than that shown on the plans will require prior approval from the WRD.
21. Road fill side slopes terminating in the stream and any raw streambanks resulting from the construction shall be stabilized with temporary measures in accordance with appropriate Best Management Practices based on site conditions, and if necessary, may be riprapped extending above the ordinary high water mark, before or upon commencement of the permitted activity. Temporary stabilization measures shall be maintained until permanent measures are in place.
22. All other road fill slopes, ditches, and other raw areas draining directly to the stream may be protected with riprap, sod and/or seed and mulch as may be necessary to provide effective erosion protection. The placement of riprap shall be limited to the minimum necessary to ensure proper stabilization of the side slopes and fill in the immediate vicinity of the structure.
23. All ripraps shall be properly sized and graded based on wave action and velocity, and shall consist of natural field stone or rock (free of paint, soil or other fines, asphalt, soluble chemicals, or organic material). Broken concrete is allowed.
24. If the project, or any portion of the project, is stopped and lies incomplete for any length of time other than that encountered in a normal work week, every precaution shall be taken to protect the incomplete work from erosion, including the placement of temporary gravel bag riprap, temporary seed and mulch, or other acceptable temporary protection.
25. No work shall be done in the stream during periods of above-normal flows except as necessary to prevent erosion.
26. **No work or dredging within the water authorized by this permit is allowed from October 1 to March 31<sup>st</sup> due to critical spawning, migration, and/or recreational use periods.**

27. Prior to the start of construction, all adjacent non-work wetland areas shall be protected by properly trenched sedimentation barrier to prevent sediment from entering the wetland. Orange construction fencing shall be installed as needed to prohibit construction personnel and equipment from entering or performing work in these areas. Fence shall be maintained daily throughout the construction process. Upon project completion, the accumulated materials shall be removed and disposed of at an upland site, the sedimentation barrier shall then be removed in its entirety and the area restored to its original configuration and cover.

28. Stormwater shall not directly outlet to the stream.

Issued By:   
Luke Golden  
Cadillac District Office  
Water Resources Division  
989-370-1569

THIS PERMIT MUST BE SIGNED BY THE PERMITTEE TO BE VALID.

I hereby assure that I have read, am familiar with, and agree to adhere to the terms and conditions of this permit.

\_\_\_\_\_

\_\_\_\_\_

Permittee Signature

Date

cc: Friendship Township Clerk  
Emmet County Drain Commissioner - SENT HARD COPY VIA USPS  
Emmet County CEA



# EMMET COUNTY ROAD COMMISSION

IN COOPERATION WITH THE

Little Traverse Bay Bands of Odawa Indians

&

USDA Natural Resources Conservation Services

PLANS OF PROPOSED CULVERT IMPROVEMENTS

## LOWER SHORE DRIVE OVER FIVE MILE CREEK

SECTION 32, TOWN 36 NORTH, RANGE 6 WEST

FRIENDSHIP TOWNSHIP, EMMET COUNTY, MICHIGAN

### Traffic Information:

LOWER SHORE DR

Present ADT	--- (2022)
Future ADT	--- (2042)
% Commercial	5.0%
Design Speed	30 mi/hr
Posted Speed	25 mi/hr

### SHEET INDEX

- 1 COVER SHEET
- 2 LEGEND & NOTES
- 3 TYPICAL CROSS SECTIONS
- 4 REMOVAL & SESC PLAN
- 5 GENERAL PLAN OF SITE
- 6 GENERAL PLAN OF STRUCTURE
- 7 CONSTRUCTION DETAILS
- 8 MAINTENANCE OF TRAFFIC PLAN
- 9 SOIL BORING LOGS

### NRCS STANDARDS

AQUATIC ORGANISM PASSAGE (396)

### MDOT STANDARD PLANS

GUARDRAIL OVER BOX OR SLAB CULVERTS	R-73-F
BEDDING AND FILLING AROUND PIPE CULVERTS	R-82-D
BOX CULVERT JOINT TIE ASSEMBLIES	R-84-A
GUARDRAIL TYPES A, B, BD, T, TD, MGS-8, & MGS-8D	R-59-J
GUARDRAIL APPROACH TERMINALS TYPE 2M	R-62-H
GUARDRAIL DEPARTING TERMINAL TYPES B, T & MGS	R-66-E
SOIL EROSION & SEDIMENTATION CONTROL MEASURES	R-96-E
SEEDING AND TREE PLANTING	R-100-H
GRADING CROSS-SECTIONS	R-105-D

### WORK ZONE DEVICES / SPECIAL DETAILS

GROUND DRIVEN SIGN SUPPORTS FOR TEMP SIGNS	WZD-100-A
TEMPORARY TRAFFIC CONTROL DEVICES	WZD-125-E

### GENERAL NOTES

EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED HEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION.

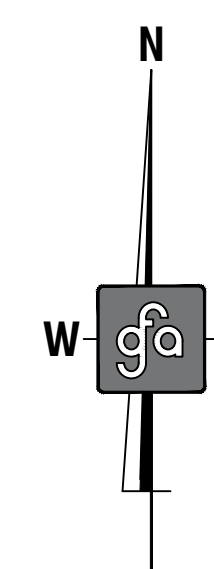
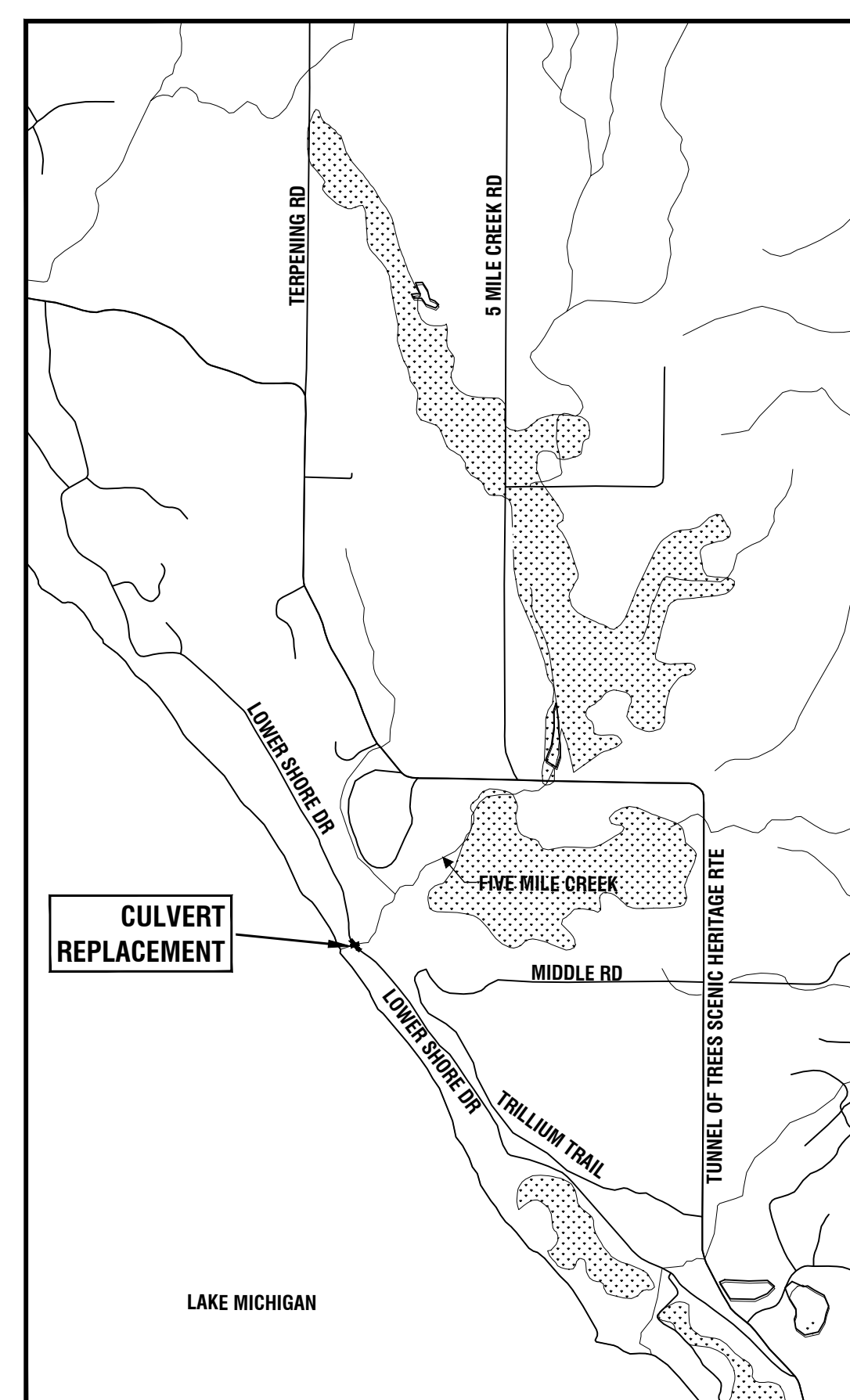
FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174, 2013, THE CONTRACTOR SHALL DIAL 811 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

PLACE TOPSOIL, SEED, FERTILIZER, AND MULCH AS SOON AS POSSIBLE. CRITICAL GRADES SHOULD BE PROTECTED WITH MULCH BLANKETS OR TURF REINFORCEMENT MATS AS DIRECTED BY THE ENGINEER.

CONTRACTOR SHALL PRESERVE AND/OR REPLACE ANY EXISTING PARCEL CORNERS ENCOUNTERED DURING THE WORK.

THE SOIL BORINGS REPRESENT POINT INFORMATION, NO INFERENCE SHOULD BE MADE THAT SUBSURFACE CONDITIONS ARE THE SAME AT OTHER LOCATIONS.

PAVEMENT MARKINGS AND THE PLACING OF TRAFFIC CONTROL SIGNS SHALL BE DONE IN ACCORDANCE WITH THE 2011 MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAVEMENT MARKINGS ARE TO BE PERFORMED AS A PART OF THIS CONTRACT.



SCALE: 1" = 2000'

**ISSUED DATE: 8-26-22**

**FOR PERMITS**

### Contract For:

THE WORK COVERED IN THESE PLANS INCLUDES REPLACEMENT OF THE EXISTING CULVERT, SCOUR COUNTERMEASURES, STREAM IMPROVEMENTS, PAVEMENT RECONSTRUCTION, GUARDRAIL INSTALLATION, PAVEMENT MARKINGS, RESTORATION, AND MAINTAINING TRAFFIC ON LOWER SHORE DRIVE OVER FIVE MILE CREEK.

### Prepared under Supervision of:

Joseph Williams, P.E.  
GOURDIE FRASER  
REGISTERED PROFESSIONAL ENGINEER No. 69873

**gfo Gourdie-Fraser**  
Municipal | Development | Transportation

PH 231.946.5874  
FAX 231.946.3703  
www.gourdiefraser.com  
123 W Front Street  
Traverse City, MI 49684



NRCS IS ACCEPTING THESE CONSTRUCTION DRAWINGS AND SPECIFICATIONS ON THE BASIS THAT THEY HAVE BEEN SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER. BASED ON THE INFORMATION PROVIDED BY THE PROFESSIONAL ENGINEER, THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS APPEAR TO MEET APPLICABLE NRCS STANDARDS AND SPECIFICATIONS. ANY DEFICIENCIES IN THE DESIGN, CONSTRUCTION DRAWINGS OR SPECIFICATIONS ARE THE RESPONSIBILITY OF THE PROFESSIONAL ENGINEER WHOSE SEAL APPEARS ON THE CONSTRUCTION DRAWINGS.

NRCS REPRESENTATIVE: \_\_\_\_\_ DATE \_\_\_\_\_

TO THE BEST OF MY KNOWLEDGE, JUDGEMENT AND BELIEF, THE DESIGN, CONSTRUCTION DRAWINGS AND SPECIFICATIONS MEET APPLICABLE NRCS STANDARDS AND SPECIFICATIONS.

JOSEPH D. WILLIAMS, P.E. \_\_\_\_\_ DATE \_\_\_\_\_

### Emmet County Road Commission

\_\_\_\_\_  
FRANK ZULSKI, CHAIRMAN \_\_\_\_\_ DATE \_\_\_\_\_

\_\_\_\_\_  
WADE WILLIAMS, VICE PRESIDENT \_\_\_\_\_ DATE \_\_\_\_\_

\_\_\_\_\_  
BRENT SHANK, PE, MANAGER \_\_\_\_\_ DATE \_\_\_\_\_

\_\_\_\_\_  
LISA KLEEMAN, CLERK \_\_\_\_\_ DATE \_\_\_\_\_

\_\_\_\_\_  
MARK W. HOFFMAN, MEMBER \_\_\_\_\_ DATE \_\_\_\_\_

JOB NO.  
22084

GPF NO.

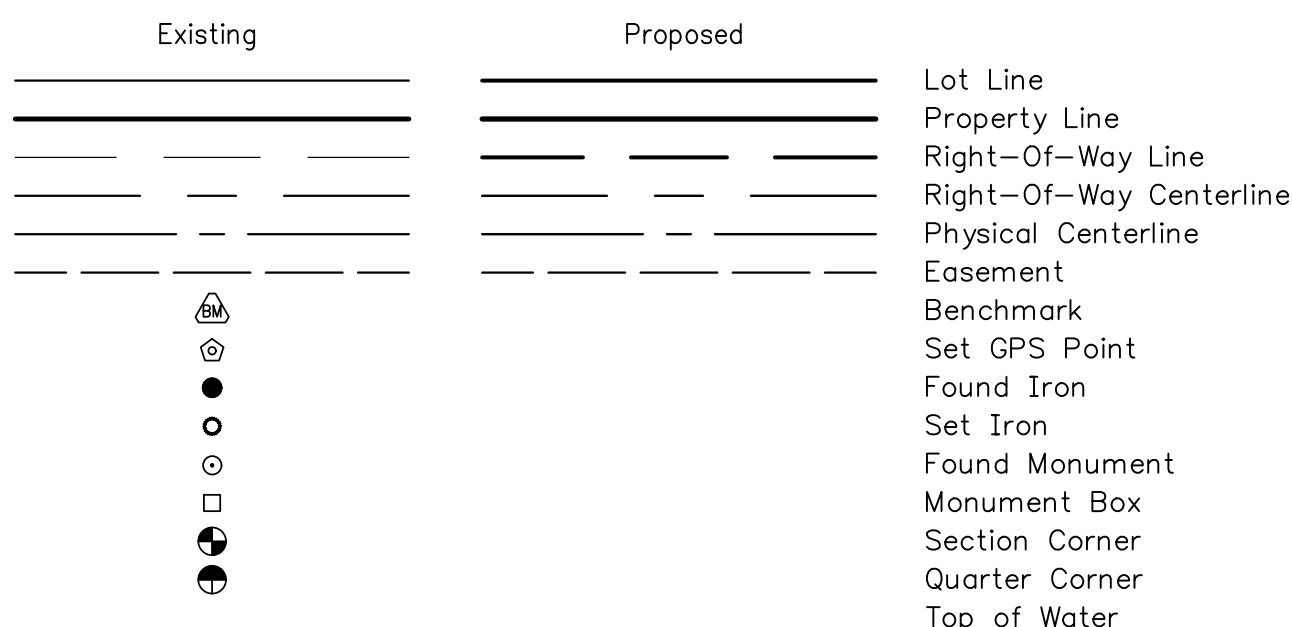
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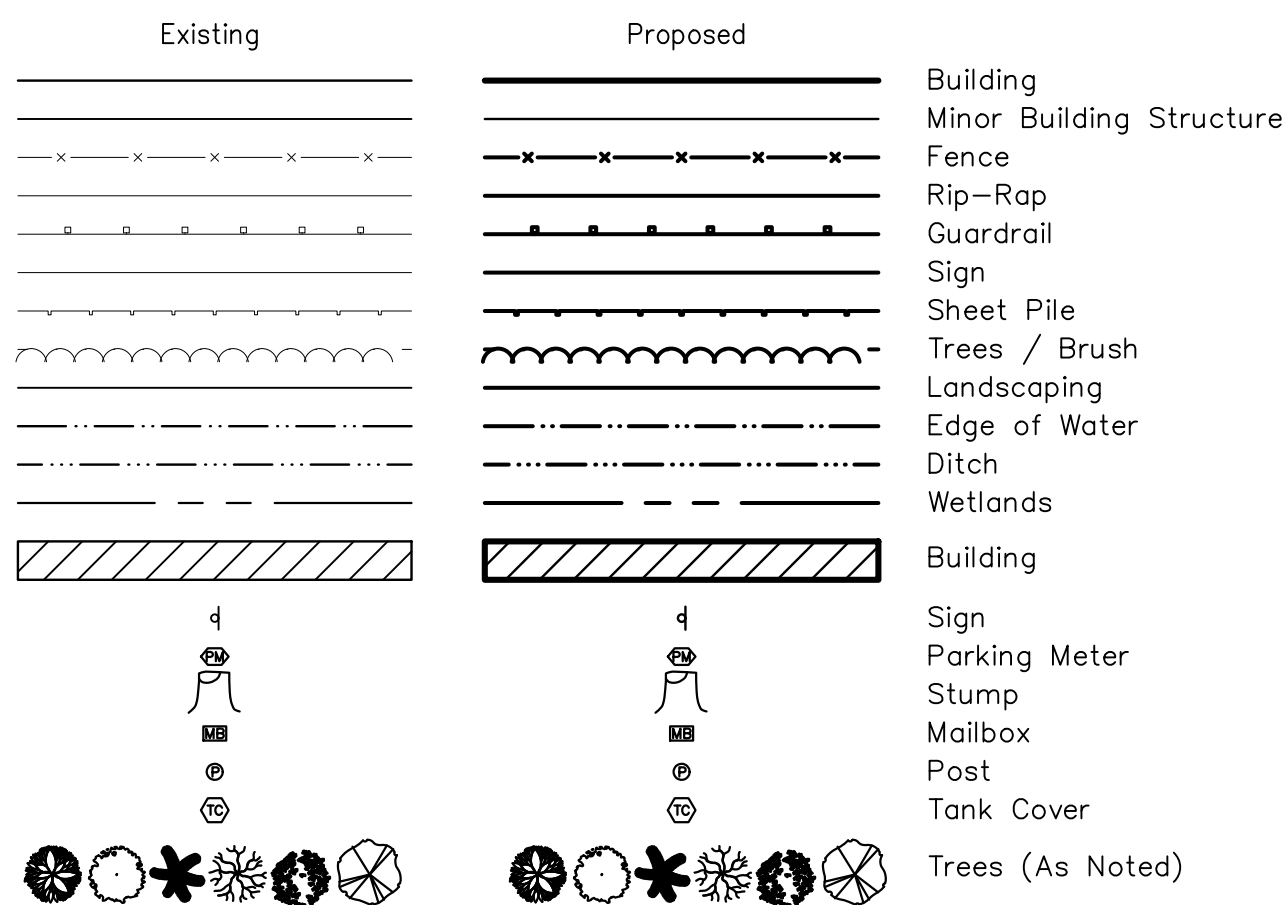


**LEGEND**

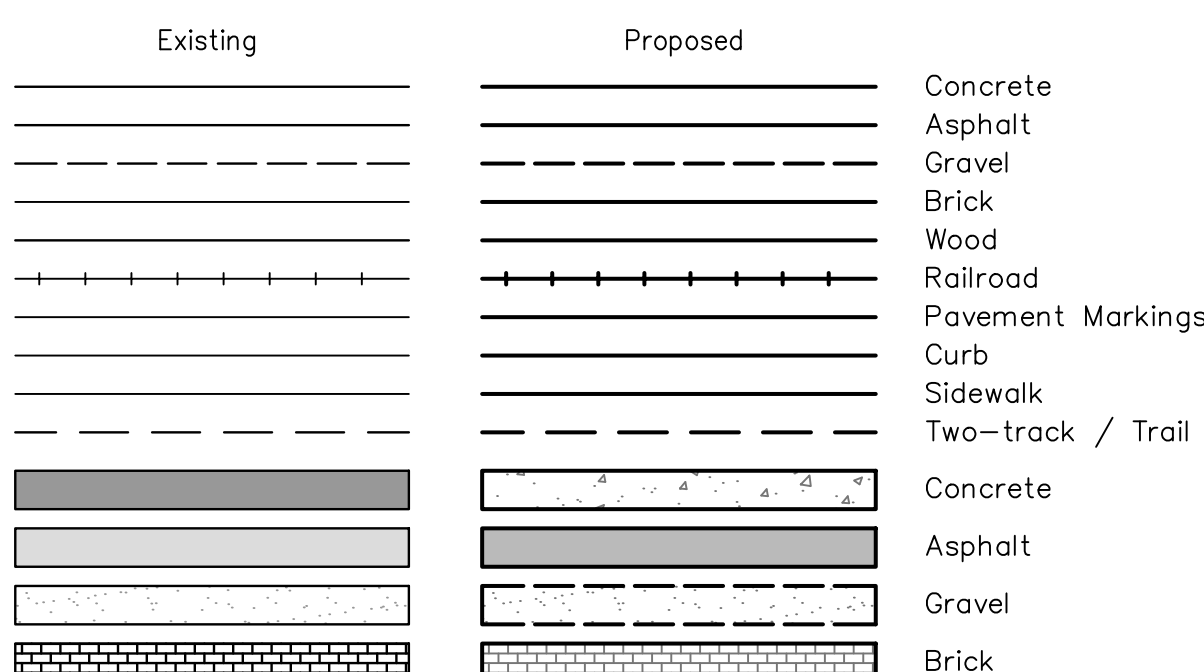
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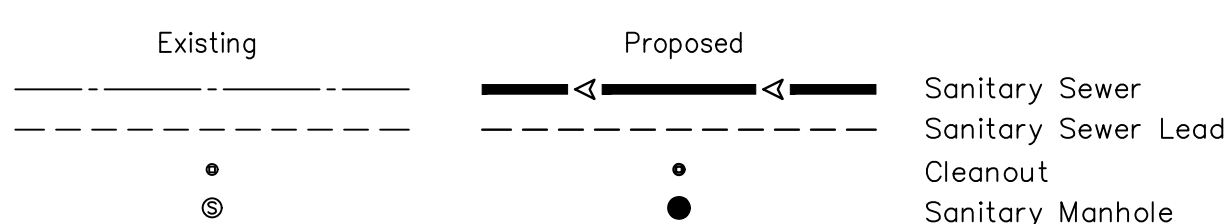
**Miscellaneous Legend**



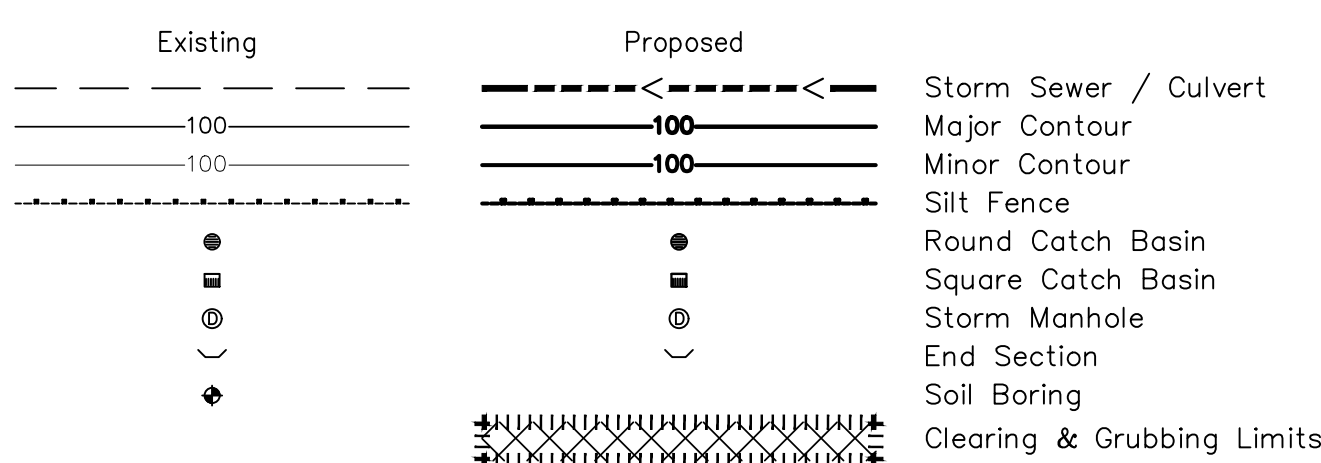
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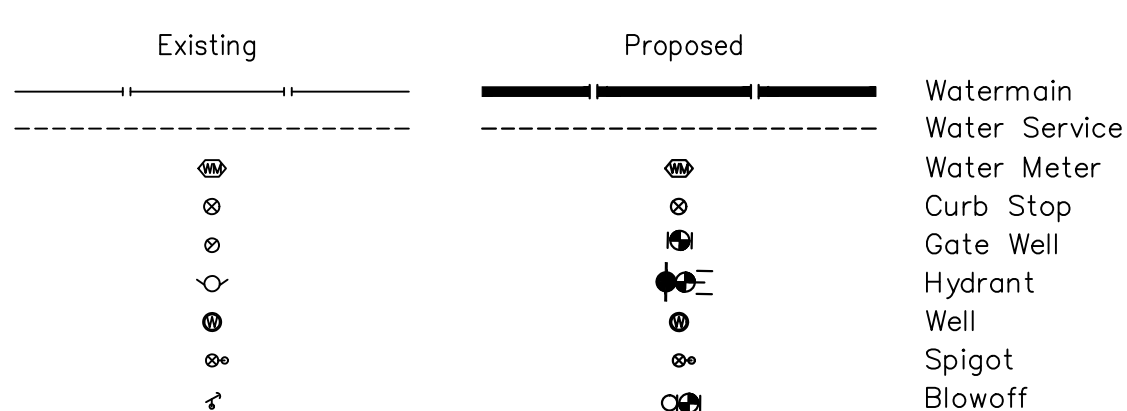
**Sanitary Legend**



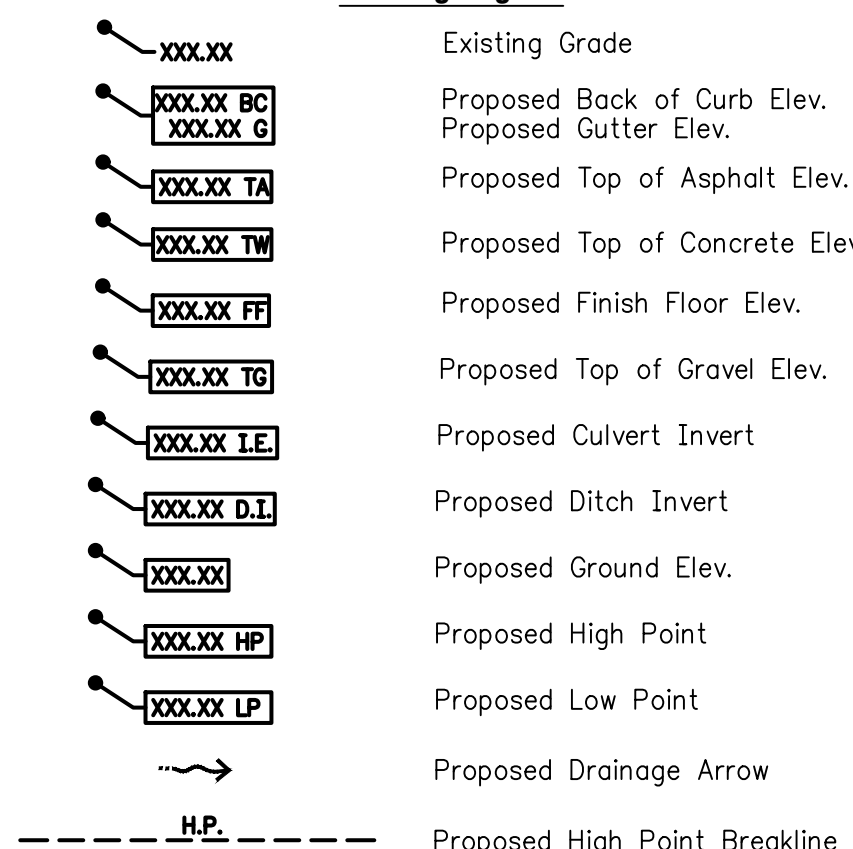
**Storm Water and Grading Legend**



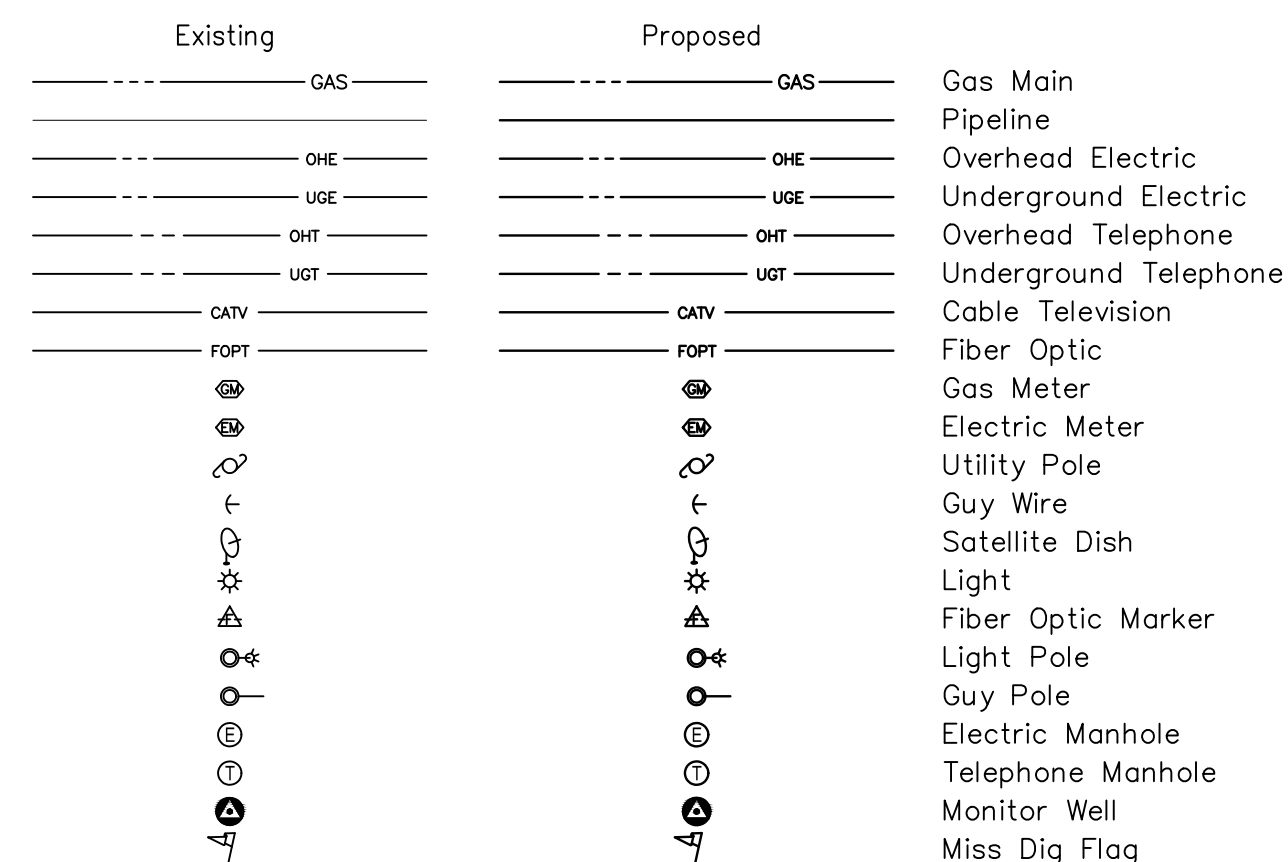
**Watermain Legend**



**Grading Legend**



**Electric & Gas Legend**



**GENERAL NOTES**

- CONTRACTOR SHALL CALL MISS DIG (1-800-482-7171) A MINIMUM OF 3 WORKING DAYS PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL CONFORM TO SOIL EROSION AND SEDIMENTATION CONTROL ACT, PART 91 OF ACT 451 OF 1994.
- DEBRIS CONSIDERED TO BE WASTE SHALL BE DISPOSED OF BY THE CONTRACTOR.
- THE CONTRACTOR SHALL REMOVE, REPLACE, AND MAINTAIN ALL EXISTING MAIL BOXES, FENCES AND SIGNS. MAILBOX POSTS SHALL BE REPLACED AS DIRECTED BY THE ENGINEER. ALL COSTS SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FEET OF CULVERT CONSTRUCTION.
- THE CONTRACTOR SHALL MAINTAIN LOCAL TRAFFIC AT ALL TIMES ON THE PROJECT.
- ALL DEWATERING REQUIRED FOR CONSTRUCTION SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FOOT OF CULV, PRECAST CONC BOX, EXCAVATION, EARTH, OR BACKFILL, STRUCTURE, CIP.
- CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING ANY WORK.
- CONSTRUCT CENTERLINE OF PROPOSED CREEK AT CENTERLINE OF EXISTING CREEK UNLESS OTHERWISE INDICATED.
- CONTRACTOR SHALL SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS DAILY. LAWN AREAS SHALL RECEIVE 4" OF TOPSOIL AND BE RESTORED AS STATED IN THE SPECIFICATIONS AND SHOWN ON THE PLANS.
- COORDINATE RIPRAP INSTALLATIONS WITH THE ENGINEER PRIOR TO CONSTRUCTION.
- INSTALL EROSION CONTROL BLANKETS AND FABRICS ACCORDING TO MANUFACTURERS SPECIFICATIONS.
- ALL ELEVATIONS ARE BASED ON NAVD88 DATUM.
- SPECIAL CARE SHALL BE TAKEN IN EXCAVATING IN THE PROXIMITY OF ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL SECURE ASSISTANCE FROM THE APPROPRIATE UTILITY COMPANY IN LOCATING ITS LINES. THE CONTRACTOR SHALL ALSO PROVIDE SUPPORT FOR ANY UTILITY WITHIN THE EXCAVATION. PROVIDE PROPER COMPACTION UNDER ANY UNDERMINED UTILITY STRUCTURE AND, IF NECESSARY, INSTALL TEMPORARY SHEETING OR USE A TRENCH BOX TO MINIMIZE THE EXCAVATION. THE CONTRACTOR SHALL PROTECT AND SAVE HARMLESS FROM DAMAGE ALL UTILITIES, WHETHER PRIVATELY OR PUBLICLY OWNED, ABOVE OR BELOW GROUND SURFACE, WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION, AT NO ADDITIONAL COST TO THE OWNER.
- THE LOCATION OF EXISTING PUBLIC UTILITIES AND UNDERGROUND STRUCTURES SUCH AS PIPE LINES, ELECTRIC CONDUITS, SEWERS AND WATER LINES, OF RECORD ARE SHOWN ON THE PLANS. THE INFORMATION SHOWN IS BELIEVED TO BE REASONABLY CORRECT AND COMPLETE. HOWEVER, NEITHER THE CORRECTNESS NOR THE COMPLETENESS OF SUCH INFORMATION IS GUARANTEED. PRIOR TO THE START OF ANY OPERATIONS IN THE VICINITY OF ANY UTILITIES, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AND MISS DIG AND REQUEST THAT THEY STAKE OUT THE LOCATIONS OF THE UTILITIES IN QUESTION. THE CONTRACTOR SHALL COORDINATE THE RELOCATION OF ANY UTILITIES WITH THE UTILITY PROVIDER. COST OF REPAIR FOR ANY DAMAGED UTILITY LINES THAT IS PROPERLY STAKED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS AND REGULATIONS GOVERNING THE FURNISHING AND USE OF SAFEGUARDS, SAFETY DEVICES AND PROTECTION EQUIPMENT. THE CONTRACTOR SHALL TAKE ANY NECESSARY PRECAUTIONS TO PROTECT THE LIFE AND HEALTH OF EMPLOYEES AND THE PUBLIC IN THE PERFORMANCE OF THE WORK

**SOIL EROSION & SEDIMENTATION CONTROL NOTES**

- TEMPORARY SEEDING SHALL BE CONDUCTED ON ALL DISTURBED AREAS THAT WILL BE FINISH GRADED AT A LATER DATE. TEMPORARY SEEDING SHALL BE LIMITED TO DATES BETWEEN APRIL 1ST AND NOVEMBER 1ST.
- FINAL SEEDING SHALL BE COMPLETED WITHIN 24 HOURS OF FINAL GRADING. WEEKLY INSPECTIONS OF SEEDED AREAS SHALL BE COMPLETED TO VERIFY GRASS GROWTH. ANY AREAS NOT ESTABLISHED SHALL BE FERTILIZED, SOILS AMENDED AND RE-SEEDDED AS NECESSARY.
- CONTRACTOR TO INSTALL AND MAINTAIN ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES IN ACCORDANCE WITH THE APPROVED PLANS PRIOR TO COMMENCEMENT OF CONSTRUCTION OR MASS GRADING.
- ALL MUD, DIRT, AND DEBRIS TRACKED ONTO EXISTING ROADWAYS SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR NO LESS THAN ON A DAILY BASIS BY SCRAPING AND SWEEPING.
- ALL PERMANENT SOIL EROSION CONTROL MEASURES SHALL BE IN PLACE WITHIN 24 HOURS OF FINAL GRADE (GRADE LISTED ON PLANS), THIS INCLUDES ALL VEGETATIVE STABILIZATION. REMOVAL OF TEMPORARY MEASURES, FOLLOWING ACCEPTANCE OF THE PROJECT, IS THE RESPONSIBILITY OF THE CONTRACTOR.
- SHOULD ADDITIONAL SOIL EROSION CONTROL MEASURES BE DETERMINED TO BE NECESSARY BY EITHER THE SOIL EROSION CONTROL OFFICER OR THE OWNER'S ENGINEER THEY SHALL BE IN PLACE NO LATER THAN 24 HOURS FROM THE TIME OF NOTIFICATION TO THE GENERAL CONTRACTOR FOR THE PROJECT. IF NOT PLACED IN 24 HOURS OR LESS ALL ON SITE CONSTRUCTION WILL BE HALTED UNTIL SUCH MEASURES ARE INSTALLED AND APPROVED BY EITHER THE SOIL EROSION CONTROL OFFICER OR THE OWNER'S ENGINEER.
- ALL SOIL EROSION CONTROL MEASURES SHALL BE INSPECTED DAILY BY THE CONTRACTOR, AND INSPECTED AFTER EACH RAIN EVENT TO ENSURE PROPER MAINTENANCE OF THE SOIL EROSION CONTROL MEASURES. ANY DEFICIENCIES OR REPAIRS TO SOIL EROSION CONTROL MEASURES ARE TO BE CORRECTED IMMEDIATELY.
- INSTALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES BEFORE OR UPON COMMENCEMENT OF THE EARTH CHANGE ACTIVITY AND MAINTAIN MEASURES ON A DAILY BASIS. REMOVE TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AFTER PERMANENT SOIL EROSION MEASURES ARE IN PLACE AND THE AREA IS STABILIZED ("STABILIZED" MEANS THE ESTABLISHMENT OF VEGETATION OR THE PROPER PLACEMENT, GRADING, OR COVERING OF SOIL TO ENSURE ITS RESISTANCE TO SOIL EROSION, SLIDING, OR OTHER EARTH MOVEMENT).
- CONTRACTOR IS RESPONSIBLE TO ENSURE THAT MEASURES ARE INSTALLED IN COMPLIANCE WITH THE APA MANUAL AND THAT THE SECS MEASURES ARE MONITORED AND MAINTAINED UNTIL ALL DISTURBED AREAS ARE STABILIZED ("STABILIZED" MEANS THE ESTABLISHMENT OF VEGETATION OR THE PROPER PLACEMENT, GRADING, OR COVERING OF SOIL TO ENSURE ITS RESISTANCE TO SOIL EROSION, SLIDING, OR OTHER EARTH MOVEMENT) AND TEMPORARY MEASURES ARE REMOVED. CONTRACTOR ACKNOWLEDGES THAT SECS MEASURES MAY NEED TO BE ADAPTED, ADJUSTED, OR ADDED BASED ON SITE CONDITIONS IN ORDER TO REMAIN IN COMPLIANCE WITH PART 91 REQUIREMENTS.
- RESTORE DISTURBED AREAS WITH 4" TOPSOIL SURFACE, MDOT CLASS A SEED MIXTURE, 300#/ACRE CHEMICAL FERTILIZER NUTRIENTS AND 2 TONS/ACRE MULCH. PLACE TOPSOIL/SEED/FERTILIZER PRIOR TO PLACING MULCH BLANKET. WORK TO BE INCLUDED IN PAYMENT FOR "SLOPE RESTORATION, NON-FREEWAY".
- CONTRACTOR IS RESPONSIBLE FOR CLEANUP & RESTORATION INCLUDING PROGRESS CLEANING. PROGRESS CLEANING INCLUDES BUT IS NOT LIMITED TO REMOVAL OF WASTE MATERIALS, DEBRIS, RUBBISH, AND EXCESS SPOILS, COMPLETE LEVELING AND RESTORE DAMAGE NOT MORE THAN 1000 FEET BEHIND CONSTRUCTION. ALSO INCLUDES DAILY CLEANING OF ALL ROAD SURFACES.
- CONTRACTOR SHALL OBTAIN AND PAY ALL FEES FOR SOIL EROSION CONTROL PERMIT.

**PUBLIC UTILITIES**

THE EXISTING UTILITIES LISTED BELOW AND SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE AS OBTAINED ON OUR SURVEYS. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO BE SATISFIED AS TO ITS ACCURACY AND THE LOCATION OF EXISTING UTILITIES.

**Charter Communications**  
Attention: Rick Rousseau  
231-463-1941  
rick.rousseau@charter.com

**AT&T**  
Attention: Jeffrey Collard  
586-764-8260  
j:7632@att.com

**DTE Energy**  
Larry Bourke  
231-592-3244

**Emmet County Road Commission**  
Brent Shank  
231-347-9142  
bshank@emmetarc.org



**CONSTRUCTION NOTES**

- REMOVE AND PROPERLY DISPOSE OF EXISTING TILE & STRUCTURES LOCATED WITHIN PROPOSED CULVERT TRENCH. REMOVED STRUCTURES & TILE OR DEBRIS SHALL BECOME PROPERTY OF THE CONTRACTOR. REMOVAL TO BE INCLUDED IN THE COST PER LINEAR FOOT OF BOX CULVERT. EXISTING TILE LOCATED OUTSIDE THE INFLUENCE OF THE PROPOSED TRENCH SHALL BE TIED INTO THE PROPOSED STORM SEWER AT THE DOWNSTREAM END WITH ENGINEER APPROVED FITTINGS.
- DURING REMOVAL OF THE EXISTING OF THE EXISTING STRUCTURE, EVERY PRECAUTION SHALL BE TAKEN TO PREVENT DEBRIS FROM ENTERING WATERCOURSE. ANY DEBRIS REACHING WATERCOURSE DURING THE REMOVAL OF THE STRUCTURE SHALL BE IMMEDIATELY REMOVED FROM WATER. ALL MATERIAL SHALL BE DISPOSED OF IN AN ACCEPTABLE MANNER CONSISTENT WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
- CONTRACTOR SHALL BURN ALL WOODY DEBRIS FOR CULVERT CONSTRUCTION. COST SHALL BE INCLUDED IN THE LINEAL FOOT COST OF CULVERT INSTALLATION.
- ALL SPRINKLER SYSTEMS DAMAGED SHALL BE REPAIRED BY CONTRACTOR. COST TO BE INCLUDED IN THE LUMP SUM BID PRICE FOR Slope Restoration, Non-Freeway, Type B.
- ANY UTILITIES ENCOUNTERED DURING CONSTRUCTION SHALL BE SUPPORTED, PER THE SPECIFICATIONS OF THE INDIVIDUAL UTILITY COMPANY CLAIMING OWNERSHIP OF THE UTILITY. COST TO BE INCLUDED WITH THE PAY ITEM BEING INSTALLED. ANY UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL MAINTAIN ACCESS FOR MAIL DELIVERY AND GARBAGE PICKUP AT ALL PARCEL AFFECTED BY CONSTRUCTION. IF THESE SERVICES CANNOT BE PERFORMED CONTRACTOR IS RESPONSIBLE FOR TAKING THE NECESSARY MEASURES TO CARRY THEM OUT.
- ALL WORK SHALL BE WITHIN ROAD RIGHT-OF-WAY. WORK OUTSIDE RIGHT-OF-WAY MUST BE AGREED UPON BY LANDOWNER AND ENGINEER WITH A SIGNED LANDOWNER AGREEMENT PRIOR TO WORK ON THAT PROPERTY.
- CONTRACTOR SHALL FIELD VERIFY ANGLE OF CULVERT CONNECTION PRIOR TO CONSTRUCTION.
- GROUNDWATER SEEPAGE IS ANTICIPATED TO BE A FACTOR DURING CONSTRUCTION. DEWATERING METHODS MAY BE NECESSARY. ALL DEWATERING REQUIRED IS THE CONTRACTOR'S RESPONSIBILITY AND COST SHALL BE INCLUDED IN THE PAY ITEM BEING INSTALLED. THE METHOD FOR DEWATERING SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
- ALL PAVEMENT JOINTS BETWEEN EXISTING AND NEW PAVEMENT SHALL BE SAW CUT WITH BUTT-JOINTS.
- STRIP AND SALVAGE TOPSOIL PRIOR TO INSTALLING BOX CULVERT. REPLACE TOPSOIL TO AFTER INSTALLATION.
- CONTRACTOR SHALL PROVIDE ALL TRAFFIC CONTROL DEVICES AS REQUIRED BY THE COUNTY ROAD COMMISSION AND THE TRAFFIC CONTROL PLAN.
- CONTRACTOR IS RESPONSIBLE TO FIELD LOCATE AND USE CARE WHEN WORKING AROUND UTILITIES AND TO NOT DISRUPT SERVICE. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED AND/OR REPLACED AT NO ADDITIONAL COST.
- THE ENGINEER SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO BITUMINOUS PAVING.
- THE PREPARED SUBBASE MUST BE TESTED AND APPROVED PRIOR TO PLACEMENT OF BASE.
- Embankment, CIP, Backfill, Structure, CIP, Excavation, Fdn, and Subbase, CIP ARE TO BE PAID AT PLAN QUANTITY UNLESS OTHERWISE KNOWN CHANGES. EARTHWORK FOR DRIVES, APPROACHES, AND INTERSECTIONS ARE INCLUDED IN PLAN QUANTITIES. ALL NECESSARY EMBANKMENT FOR ROADWAY, APPROACHES, AND DRIVEWAYS SHALL MEET GRANULAR MATERIAL CLASS II REQUIREMENTS UNLESS OTHERWISE NOTED.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT THE GRAVEL TO BE USED ON THIS PROJECT IS APPROVED PRIOR TO PLACEMENT.
- THE PREPARED GRAVEL WIDTH, DEPTH, AND COMPACTION MUST BE REVIEWED AND APPROVED BY THE OWNERS ENGINEER PRIOR TO BITUMINOUS PAVING.
- ALL CONSTRUCTION SIGNING SHALL MEET MMUTCD STANDARDS.
- ALL PAVEMENT CUTS ARE TO BE MADE WITH SAW, IMMEDIATELY PRIOR TO PAVING.
- THE CONTRACTOR SHALL NOTIFY RESIDENTS 24 HOURS (EXCLUDING SATURDAYS AND SUNDAYS) IN ADVANCE OF DISRUPTION TO SERVICE, SUCH AS DRIVEWAY CLOSING.
- PAVEMENT MARKINGS SHALL MEET MDT SPECIFICATIONS AND STANDARDS.

**MISCELLANEOUS QUANTITIES**

THE FOLLOWING ITEMS OF WORK SHALL BE DONE AS THEY APPLY THROUGHOUT THE PROJECT. THESE ITEMS ARE NOT DETAILED OR INCLUDED ON THE PLAN AND PROFILE SHEETS:

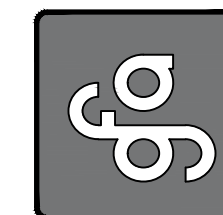
- LSUM Mobilization, Max
- Er Erosion Control, Filter Bag
- Cyd Erosion Control, Maintenance, Sediment Removal

**GENERAL MAINTENANCE PROCEDURES**

- PERFORM MAINTENANCE ACTIVITIES DURING LOW FLOW PERIODS.
- START MAINTENANCE AT DOWNSTREAM END OF PROJECT.
- REMOVE SEDIMENT WITH LIMITED DISTURBED BANK AREA.
- APPLY SEED AND MULCH DAILY TO DISTURBED AREAS.
- MAINTAIN VEGETATIVE BUFFER BY PLACING SEDIMENT SPOILS AS CLOSE TO EASEMENT BOUNDARY AS POSSIBLE.
- APPLY SEED AND MULCH IMMEDIATELY AFTER LEVELING SPOILS.

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231.946.5703 (f)



**ENGINEERING SURVEYING TESTING & OPERATIONS**  
123 West Front Street  
Traverse City, MI 49684

REVISIONS

REV# DATE BYN FOR REVISIONS

**EMMET COUNTY ROAD COMMISSION**  
**LOWER SHORE DRIVE OVER FIVE MILE CREEK**  
**LEGEND & NOTES**  
SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
WEST TRAVERSE TOWNSHIP, EMMET COUNTY, MICHIGAN

DATE: 06/20/24  
BY: JOE WILLIAMS, PE  
CHKD: SJS  
APP'D: JDW

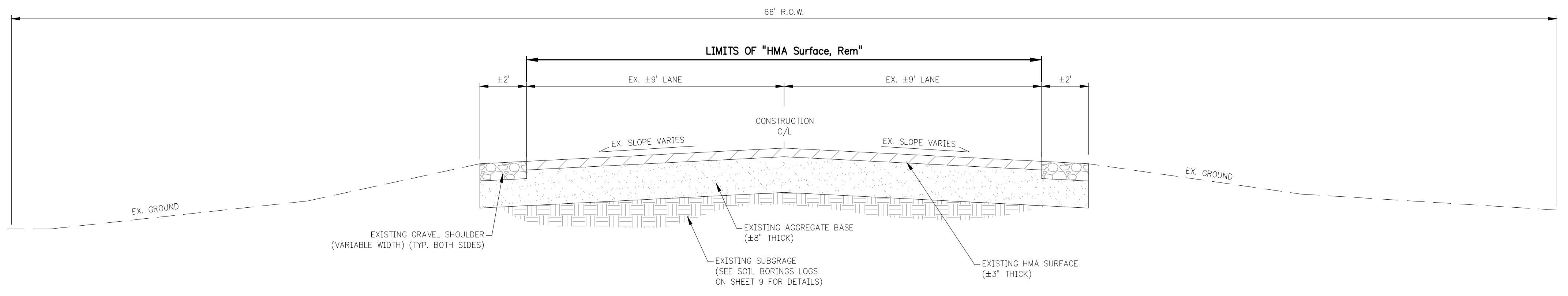
**22084**

SHT 2 OF 9

Approved  
Expire On: 10/05/2022

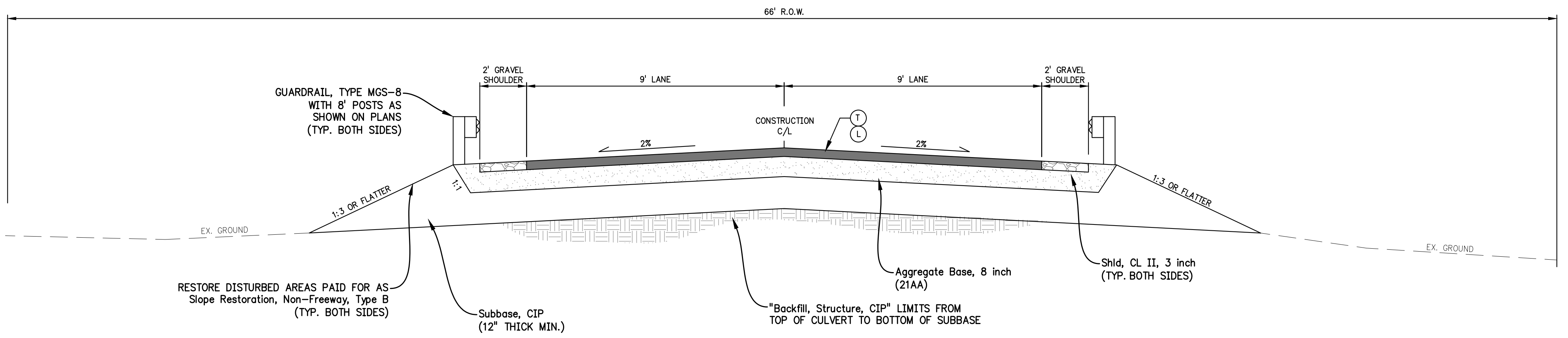
These documents are prepared in accordance with the contractual terms and conditions for this project.





**LOWER SHORE DRIVE EXISTING TYPICAL CROSS SECTION**

TO APPLY: STA 1+50 TO STA 2+01  
SCALE: 1" = 3'



**LOWER SHORE DRIVE PROPOSED TYPICAL CROSS SECTION**

TO APPLY: STA 1+50 TO STA 2+01  
SCALE: 1" = 3'

**HMA APPLICATION ESTIMATE**

IDENT.	ITEM	RATE LBS/SYD	PERFORMANCE GRADE	AGGREGATE WEAR INDEX	REMARKS
T	HMA, 4EL	165	58-28	220 MIN	TOP COURSE
L	HMA, 4EL	165	58-28	-	LEVELING COURSE
	*BITUMINOUS BOND COAT	0.05 TO 0.15 GAL			

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 231.946.3703 (f)

**ENGINEERING SURVEYING TESTING & OPERATIONS**  
 123 West Front Street  
 Traverse City, MI 49684

REV#	DATE	DRN	DESC.
A	8-19-21	SJS	FOR PERMITS

**EMMET COUNTY ROAD COMMISSION**  
**LOWER SHORE DRIVE OVER FIVE MILE CREEK**  
**TYPICAL CROSS SECTIONS**  
 SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
 WEST TRAVERSE TOWNSHIP, EMMET COUNTY, MICHIGAN

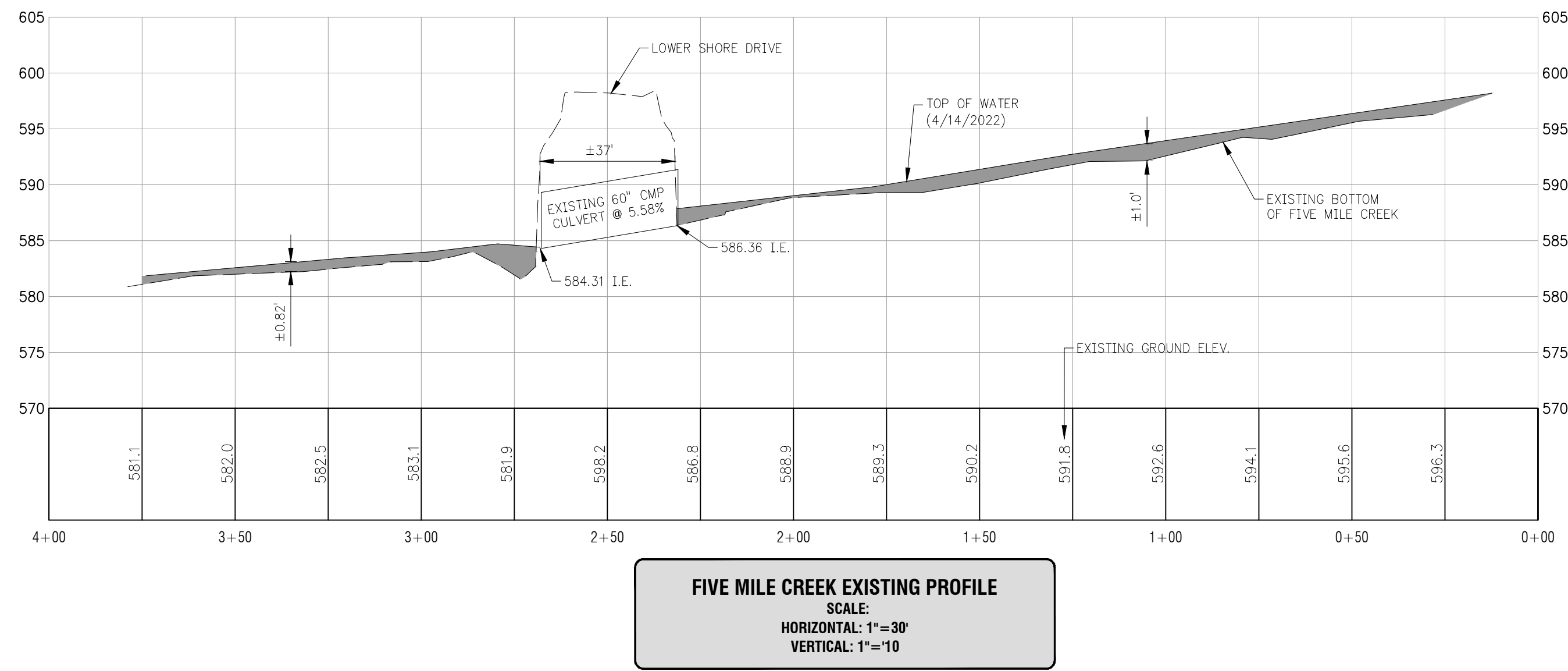
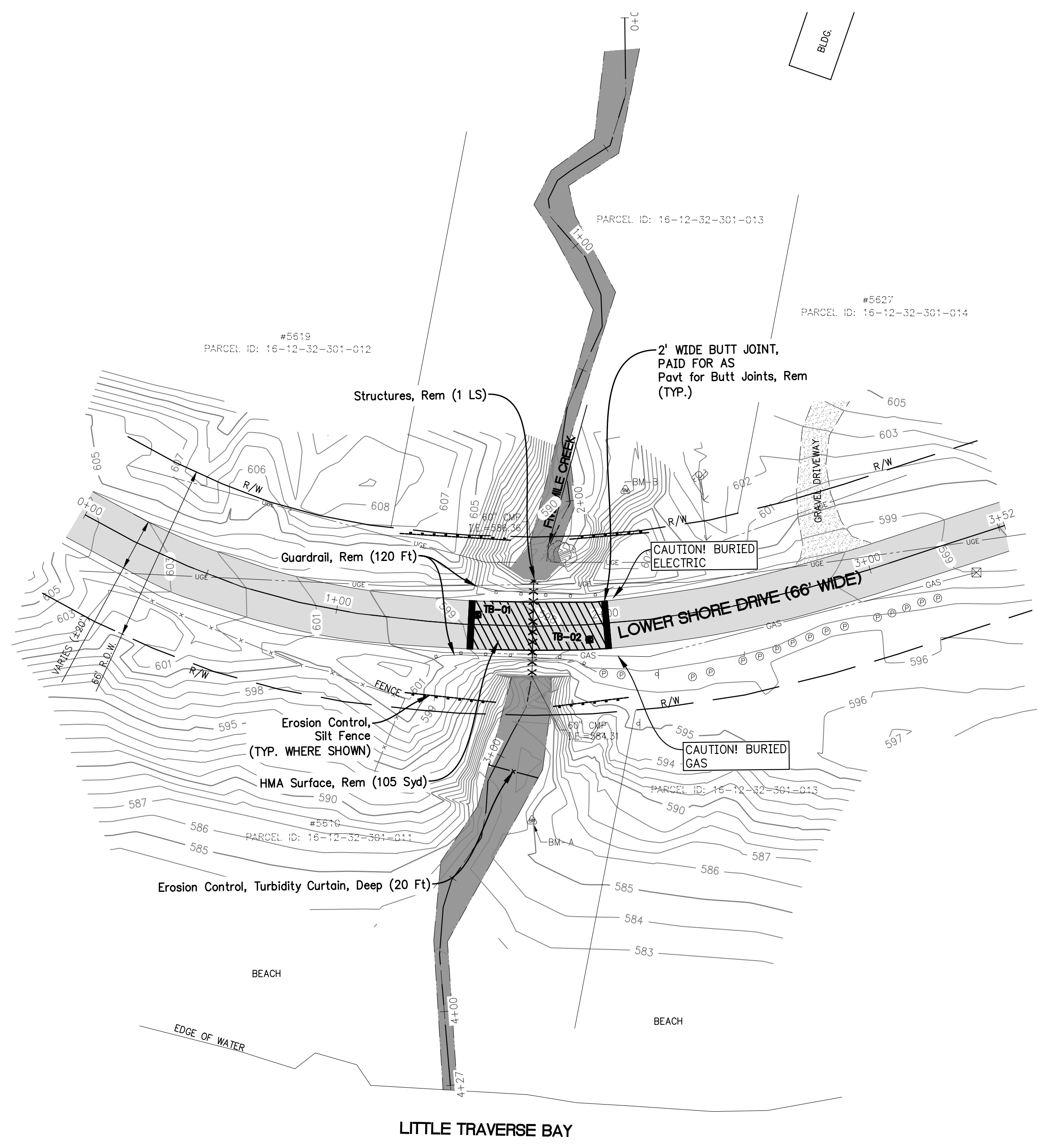
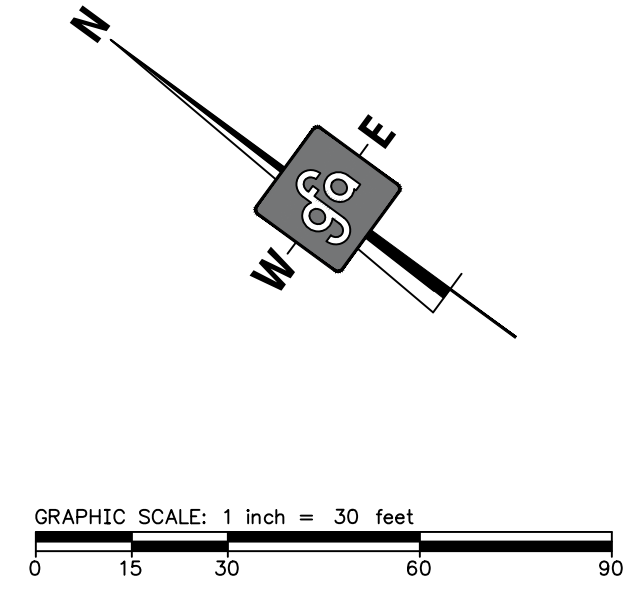
PM: JOE WILLIAMS, PE  
 DR: SJS  
 DESIGNED BY: SJS  
 DRAWN BY: JDW  
**22084**  
 SHT 3 OF 9

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**BENCHMARKS**  
 BM-A  
 BENCH TIE IN E. SIDE OF 6" ASH STUMP  
 ELEV. = 587.40 (NAY088)  
 BM-D  
 BENCH TIE IN N.W. SIDE OF 14" CEDAR TREE  
 ELEV. = 595.08 (NAY088)



- GENERAL REMOVAL NOTES:**
1. THE WORK COVERED BY THESE PLANS INCLUDES THE REMOVAL OF AN EXISTING UNDERSIZED CULVERT, HMA REMOVAL, MAINTAINING TRAFFIC, CONSTRUCTION OF THE PROPOSED BOX CULVERT AND PLACING SLOPE PROTECTION/RESTORATION.
  2. ALL REMOVED CULVERT MATERIALS AND DEBRIS, UNLESS OTHERWISE NOTED, SHALL BE REMOVED FROM SITE AND ARE THE RESPONSIBILITY OF THE CONTRACTOR.
  3. NO DEBRIS SHALL ENTER FIVE MILE CREEK DURING THE REMOVAL OF THE EXISTING CULVERT AND ASSOCIATED EXCAVATION.
  4. WATER LEVEL IS SUBJECT TO CHANGE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING A DETERMINATION OF WATER LEVELS THAT MAY EXIST DURING CONSTRUCTION.
  5. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK.
  6. CONTRACTOR SHALL SUBMIT SCHEDULE TO ENGINEER FOR REVIEW AND APPROVAL.

Estimated Quantities This Sheet		
Pay Item	Quantity	Unit
Guardrail, Rem	120	Ft
Structures, Rem	1	LS
Erosion Control, Silt Fence	125	Ft
Erosion Control, Turbidity Curtain, Deep	20	Ft
HMA Surface, Rem	105	Syd
Pavt for Butt Joints, Rem	10	Syd

**EMMET COUNTY ROAD COMMISSION**  
**LOWER SHORE DRIVE OVER FIVE MILE CREEK**  
 REMOVAL & SESC PLAN  
 SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
 WEST TRAVERSE TOWNSHIP, EMMET COUNTY, MICHIGAN

These documents are prepared in accordance with the contractual terms and conditions for this project.

REV# DATE DRN PERMITS  
 A 8-19-22 SJ

FM: JOE WILLIAMS, PE  
 DR: SUG DO: JDW

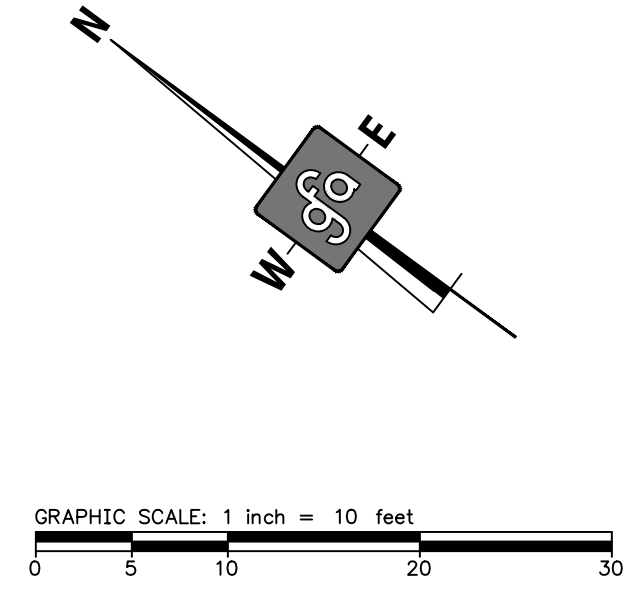
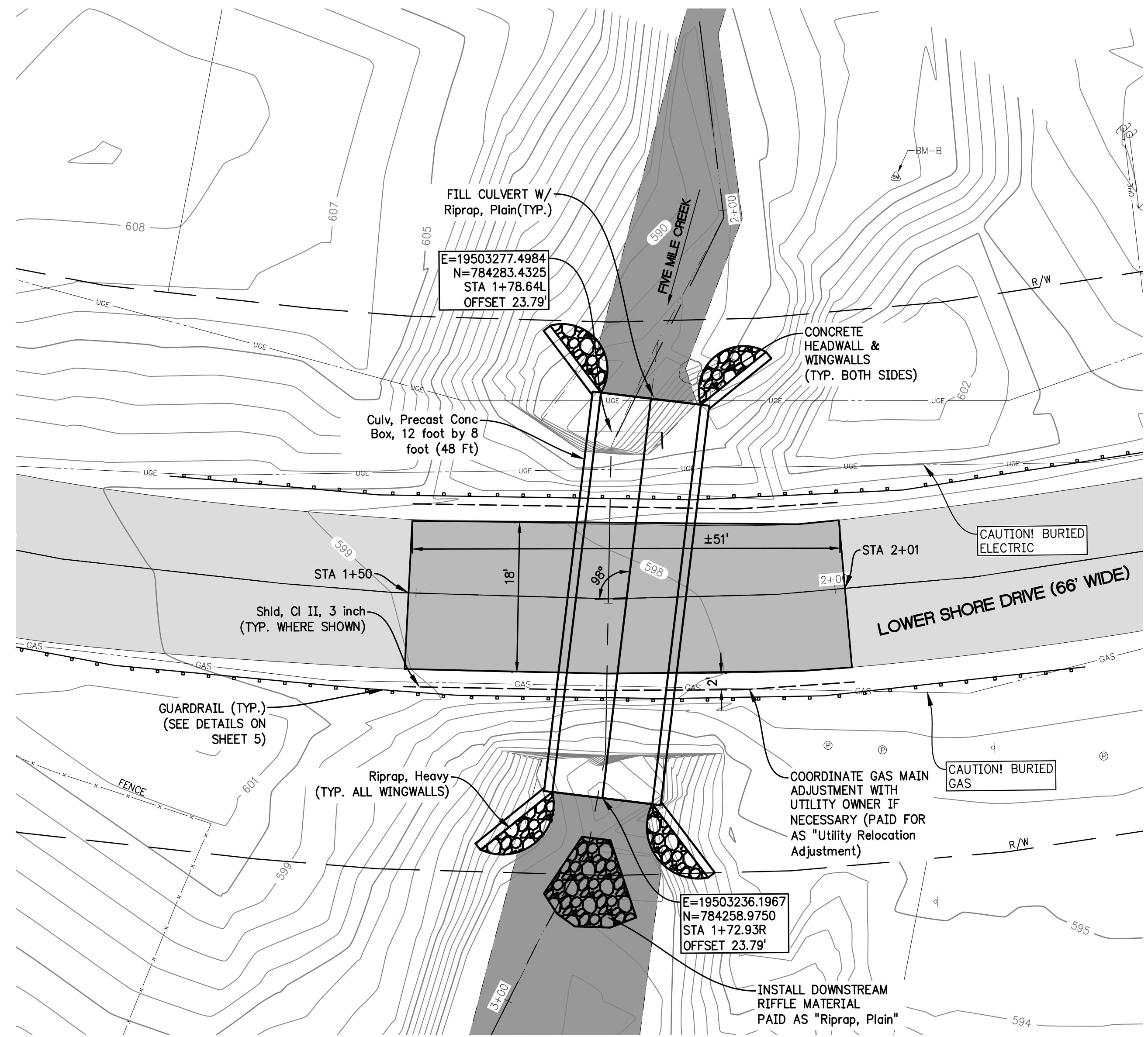
SHT 4 OF 9

22084 EGL-1WRD  
 WRP-264 v1.0  
 10/05/2022  
 10/05/2022

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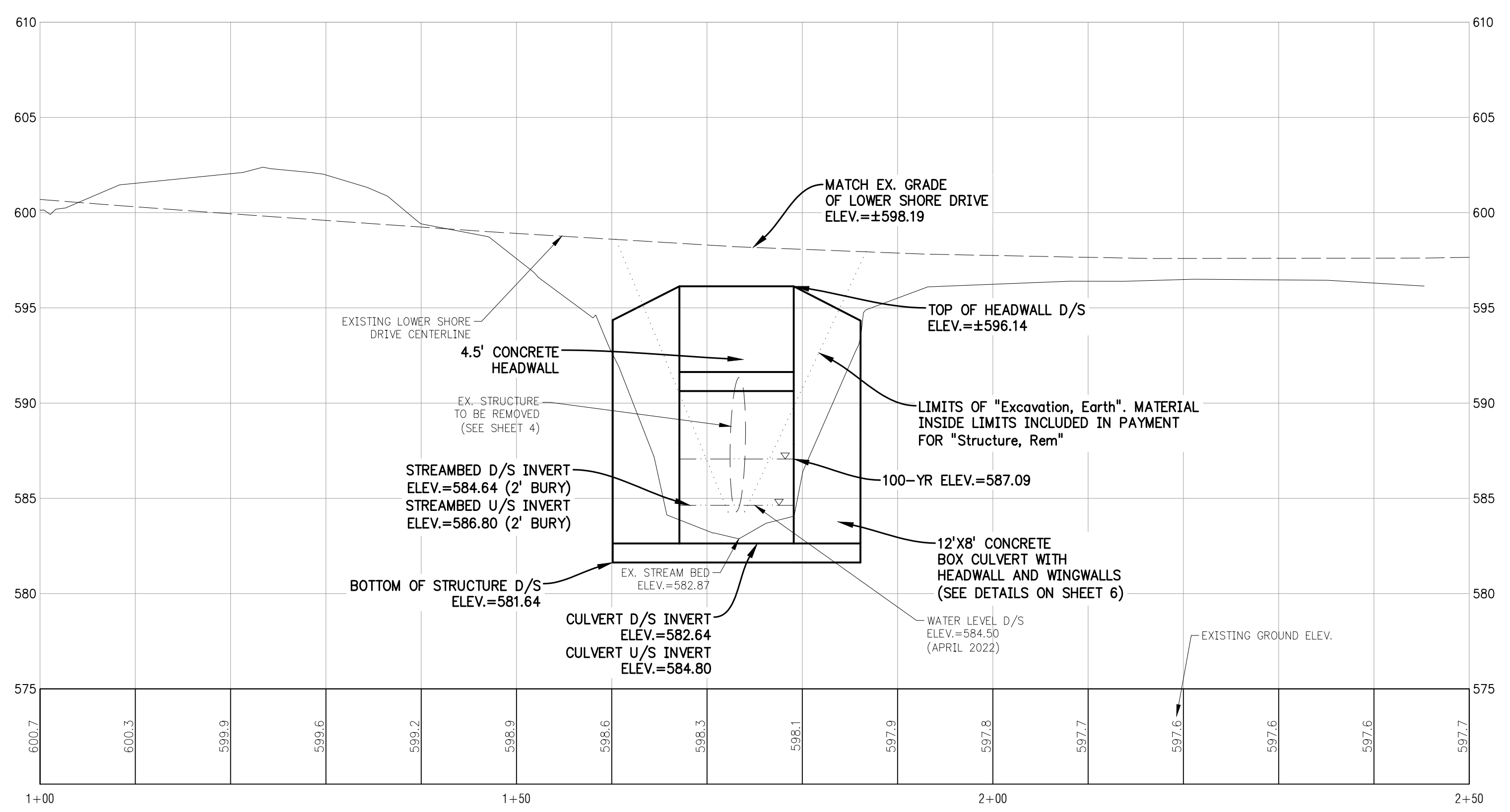


BENCHMARKS	
BM-A	BENCH TIE IN E. SIDE OF 6" ASH STUMP ELEV. = 587.40 (NAV088)
BM-D	BENCH TIE IN N.W. SIDE OF 14" CEDAR TREE ELEV. = 595.08 (NAV088)



Estimated Quantities This Sheet		
Pay Item	Quantity	Unit
Aggregate Base, 6 Inch	125	Syd
Utility Relocation Adjustment	1	Dir
HMA, 4EL	25	Ton
Shld, Cl II, 3 Inch	27	Syd
Slope Restoration, Non-Freeway, Type B	170	Syd
Subbase, CIP	50	Cyd

- NOTES:
1. TEMPORARY STORED MATERIAL SHALL NOT BE ALLOWED TO ERODE INTO THE WATERCOURSE.
  2. BOX CULVERT AND HEADWORKS SHALL BE PROVIDED BY A SUPPLIER WHO IS Q-CAST CERTIFIED BY THE AMERICAN CONCRETE PIPE ASSOCIATION.
  3. STRUCTURE SHALL BE FABRICATED AND INSTALLED PER MDOT 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION.
  4. ALL JOINTS SHALL BE SEALED WITH BUTYL ROPE AND WRAPPED WITH NON-WOVEN GEOTEXTILE FABRIC.
  5. PLUG ALL WEEP HOLES WITH MASTIC COATED CONCRETE PLUGS AND COVER WITH NON-WOVEN GEOTEXTILE FABRIC.
  6. MANUFACTURER TO PROVIDE 2' DEEP CURTAIN WALL (KNEEWALL), SEE DETAIL.
  7. IMMEDIATELY AFTER THE CONSTRUCTION OF EMBANKMENT IS COMPLETED, TOPSOIL, SEEDING, FERTILIZER, STRAW MULCH BLANKETS AND SLOPE PROTECTION SHALL BE PLACED ON THE ADJACENT EMBANKMENT SLOPES.
  8. ALL WORK TO COMPLY WITH CONDITIONS OF EGLE PERMIT.



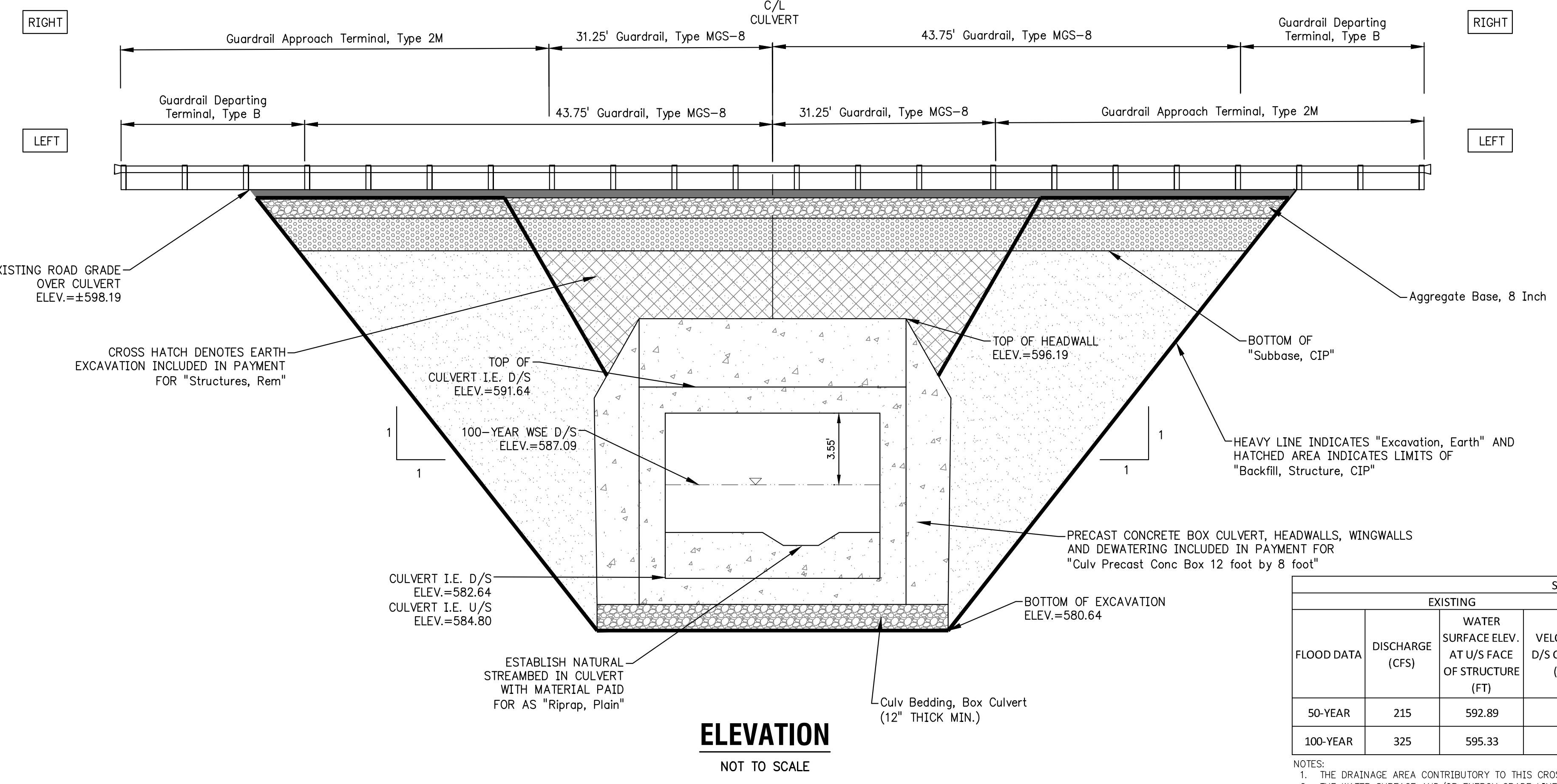
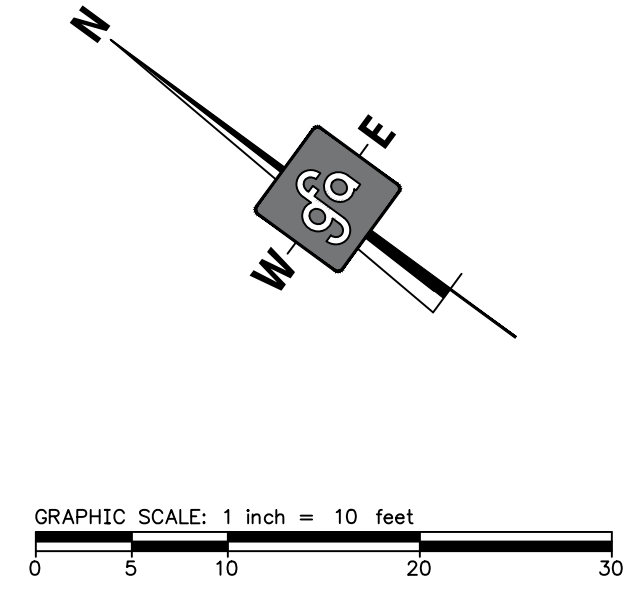
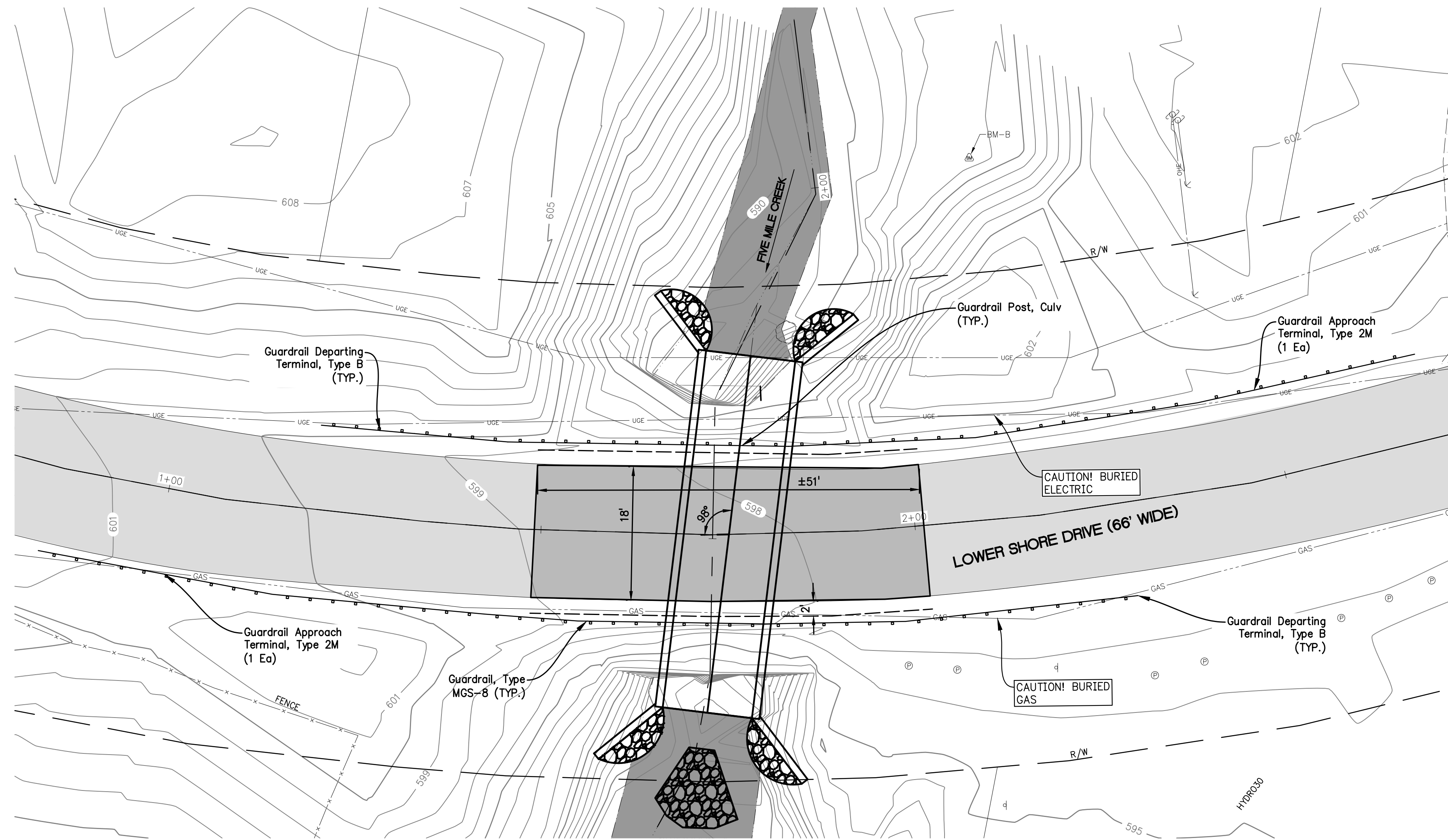
**LOWER SHORE DRIVE OVER FIVE MILE CREEK PROFILE**  
SCALE:  
HORIZONTAL: 1"=10'  
VERTICAL: 1"=5'

<b>ENGINEERING SURVEYING TESTING &amp; OPERATIONS</b> 123 West Front Street Traverse City, MI 49684													
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PROJECT: 22084 EMMET COUNTY ROAD COMMISSION LOWER SHORE DRIVE OVER FIVE MILE CREEK GENERAL PLAN OF SITE SECTION 32, TOWN 36 NORTH, RANGE 6 WEST WEST TRAVERSE TOWNSHIP, EMMET COUNTY, MICHIGAN	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV#</th> <th>DATE</th> <th>DRN</th> <th>SUS</th> <th>FOR PERMITS</th> <th>DESC.</th> </tr> </thead> <tbody> <tr> <td>A.</td> <td>8-19-21</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	REV#	DATE	DRN	SUS	FOR PERMITS	DESC.	A.	8-19-21				
REV#	DATE	DRN	SUS	FOR PERMITS	DESC.								
A.	8-19-21												
PM: JOE WILLIAMS, PE DR: SUG SHT: 5 OF 9 22084 EGL: 264 v1.0 WRP: 10/05/2022 SUB: 10/05/2022 EXP: 10/05/2022													

These documents are prepared in accordance with the contractual terms and conditions for this project.



**BENCHMARKS**  
 BM-A  
 BENCH TIE IN E. SIDE OF 6" ASH STUMP  
 ELEV. = 587.40 (NAV088)  
 BM-D  
 BENCH TIE IN N.W. SIDE OF 14" CEDAR TREE  
 ELEV. = 595.08 (NAV088)



**Estimated Quantities This Sheet**

Pay Item	Quantity	Unit
Excavation, Earth	700	Cyd
Backfill, Structure, CIP	600	Cyd
Culv Precast Conc Box 12 foot by 8 foot	48	Ft
Guardrail, Type MGS-8	150	Ft
Guardrail Post, Culv	4	Ea
Guardrail Approach Terminal, Type 2M	2	Ea
Guardrail Departing Terminal, Type B	2	Ea
Guardrail Reflector	12	Ea
Riprap, Heavy	250	Syd
Riprap, Plain	130	Syd

- NOTES:**
- TEMPORARY STORED MATERIAL SHALL NOT BE ALLOWED TO ERODE INTO THE WATERCOURSE.
  - BOX CULVERT AND HEADWORKS SHALL BE PROVIDED BY A SUPPLIER WHO IS G-CAST CERTIFIED BY THE AMERICAN CONCRETE PIPE ASSOCIATION.
  - STRUCTURE SHALL BE FABRICATED AND INSTALLED PER MDOT 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION.
  - ALL JOINTS SHALL BE SEALED WITH BUTYL ROPE AND WRAPPED WITH NON-WOVEN GEOTEXTILE FABRIC.
  - PLUG ALL WEEP HOLES WITH MASTIC COATED CONCRETE PLUGS AND COVER WITH NON-WOVEN GEOTEXTILE FABRIC.
  - MANUFACTURER TO PROVIDE 2' DEEP CURTAIN WALL (KNEEWALL), SEE DETAIL.
  - IMMEDIATELY AFTER THE CONSTRUCTION OF EMBANKMENT IS COMPLETED, TOPSOIL, SEEDING, FERTILIZER, STRAW MULCH BLANKETS AND SLOPE PROTECTION SHALL BE PLACED ON THE ADJACENT EMBANKMENT SLOPES.
  - ALL WORK TO COMPLY WITH CONDITIONS OF EGLE PERMIT.
  - THE CONTRIBUTING AREA TO THIS CROSSING IS 5.0 SQUARE MILES. THE 50%, 0.5% AND 0.2% CHANCE FLOODS ARE ESTIMATED TO BE 10 CUBIC FEET PER SECOND (CFS), 445 CFS, AND 650 CFS RESPECTIVELY, AS DETERMINED BY THE MICHIGAN EGE.

**SUMMARY OF HYDRAULIC ANALYSIS**

FLOOD DATA	EXISTING		PROPOSED				
	DISCHARGE (CFS)	WATER SURFACE ELEV. AT U/S FACE OF STRUCTURE (FT)	VELOCITY IN D/S CHANNEL (FPS)	WATER SURFACE ELEV. AT U/S FACE OF STRUCTURE (CFS)	VELOCITY IN D/S CHANNEL (FPS)	WATERWAY AREA (SFT) AT D/S FACE	CHANGE IN W/S ELEV. 10 FT U/S OF PROPOSED STRUCTURE (FT)
50-YEAR	215	592.89	10.5	590.3	8.18	17.51	-2.86
100-YEAR	325	595.33	18.6	591.07	9.34	23.75	-4.26

- NOTES:**
- THE DRAINAGE AREA CONTRIBUTORY TO THIS CROSSING IS 5.0 SQUARE MILES.
  - THE WATER SURFACE AND/OR ENERGY GRADE LINE SHOWN ON THE ABOVE HYDRAULIC TABLE ARE TO BE USED FOR COMPARISON PURPOSES ONLY AND ARE NOT TO BE USED FOR ESTABLISHING A REGULATORY FLOODPLAIN.

**EMMETT COUNTY ROAD COMMISSION**  
**LOWER SHORE DRIVE OVER FIVE MILE CREEK**  
 GENERAL PLAN OF STRUCTURE  
 SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
 WEST TRAVERSE TOWNSHIP, EMMETT COUNTY, MICHIGAN

ENGINEERING SURVEYING TESTING & OPERATIONS  
 123 West Front Street  
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REV# DATE DRN SUS PERMITS  
 A 8-19-20 SUS PERMITS

DATE: 8-19-20  
 DRAWN BY: JAW  
 CHECKED BY: JAW  
 DESIGNED BY: JAW

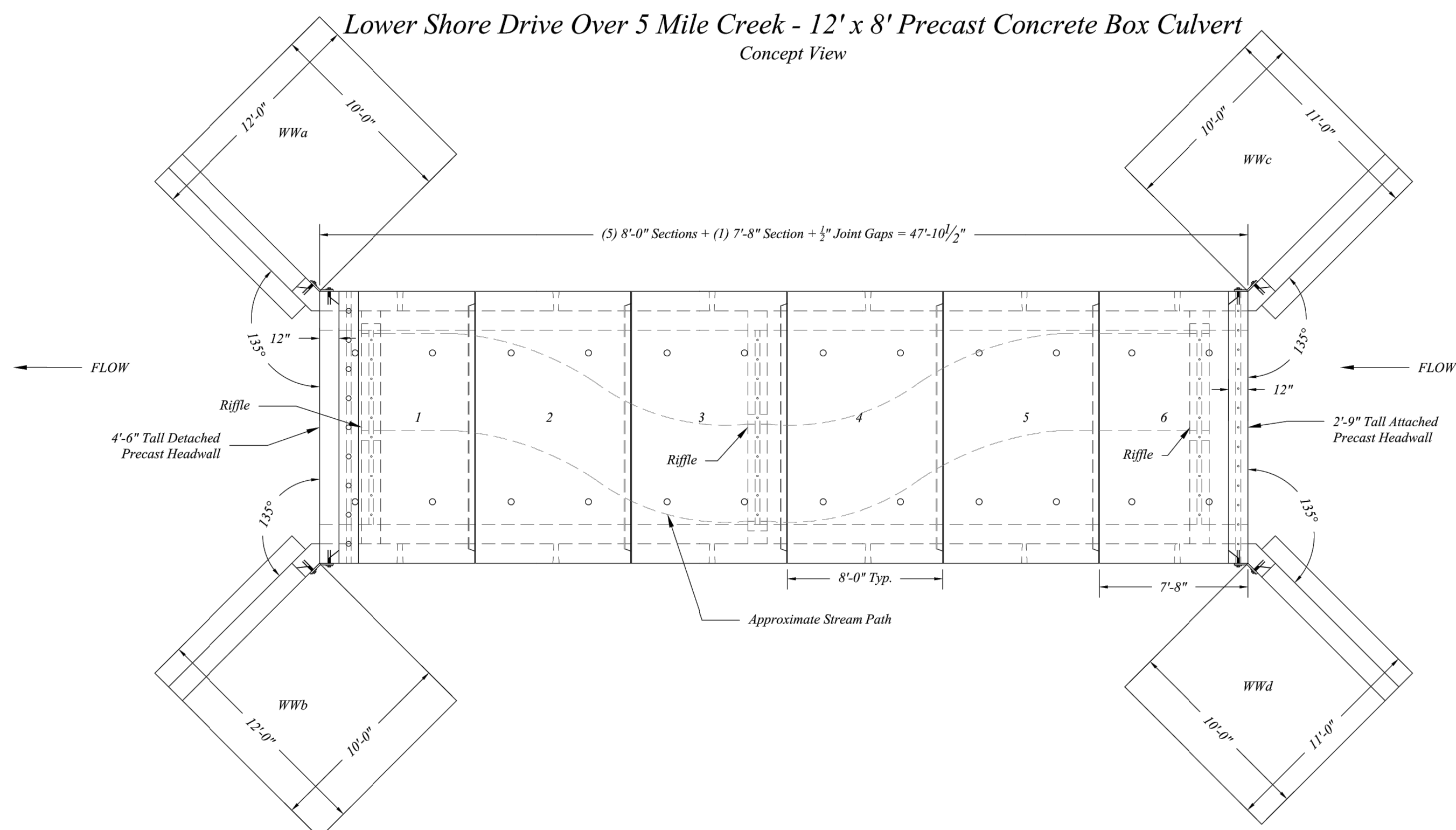
PROJECT NO: 22084  
 SHEET NO: 6 OF 9

SCALE: 1" = 10'

DATE: 10/05/2022

These documents are prepared in accordance with the contractual terms and conditions for this project.





Box culvert sections to be manufactured to ASTM C-1433 specifications w/ HS-20 loading and 3.0' to 6.0' of cover. The design will meet all other applicable ASTM C-1433 Specifications.

Joints to be sealed w/ 1 1/2" EZ-Stik & EZ-Primer. Exterior top and sides of joints for box culvert to be sealed with mastic & 36" wide mirafit filter fabric.

Boxes are designed with lift holes cast in for use with coffee pots and cables. Equipment as well as cables required for unloading and installation to be provided by contractor.

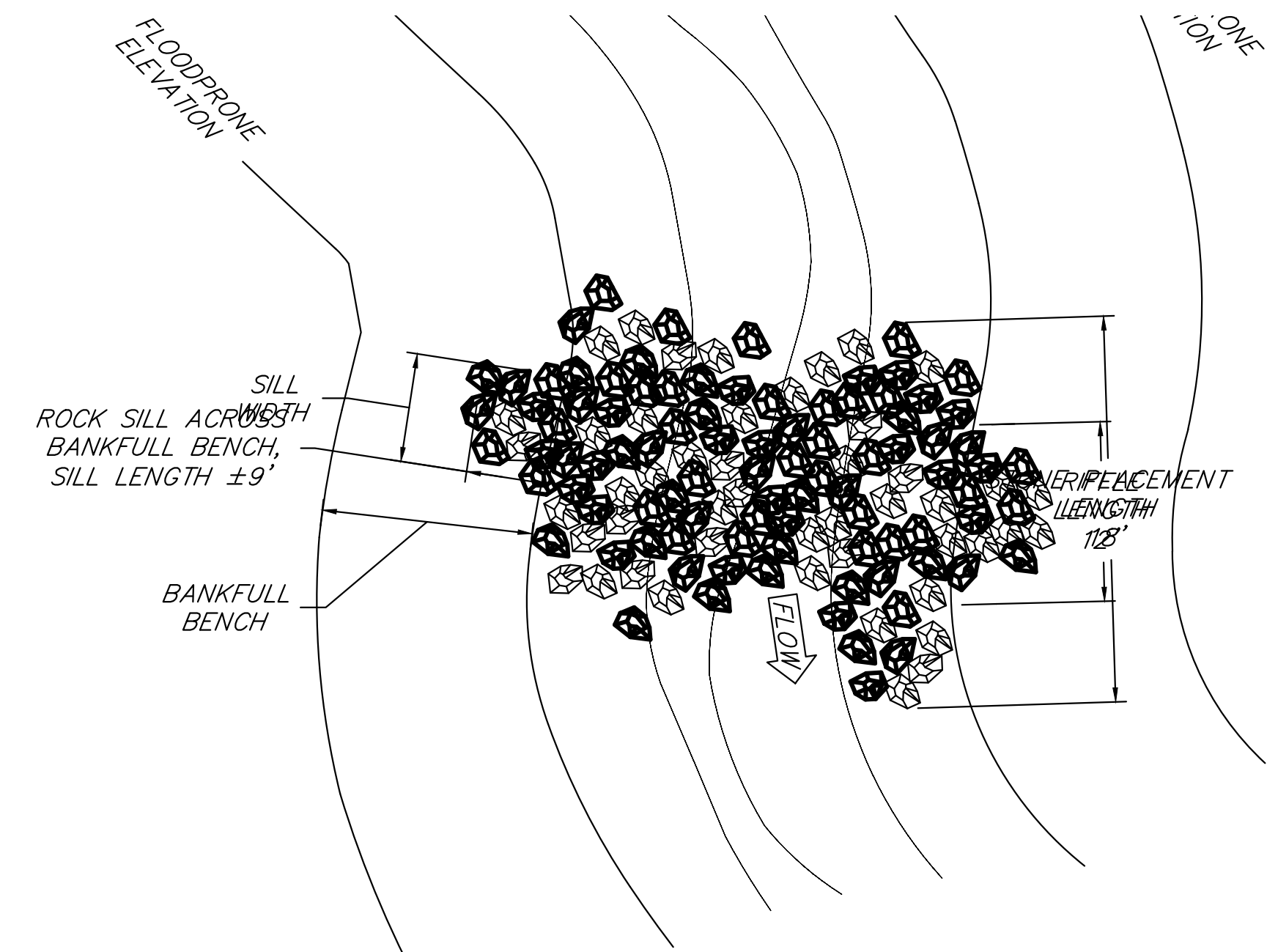
Each section will weigh approximately 6,900 Lbs / L.F. Heaviest lift will be 32.79 Tons.

**CONCRETE BOX CULVERT PLAN VIEW DETAIL**

NOT TO SCALE

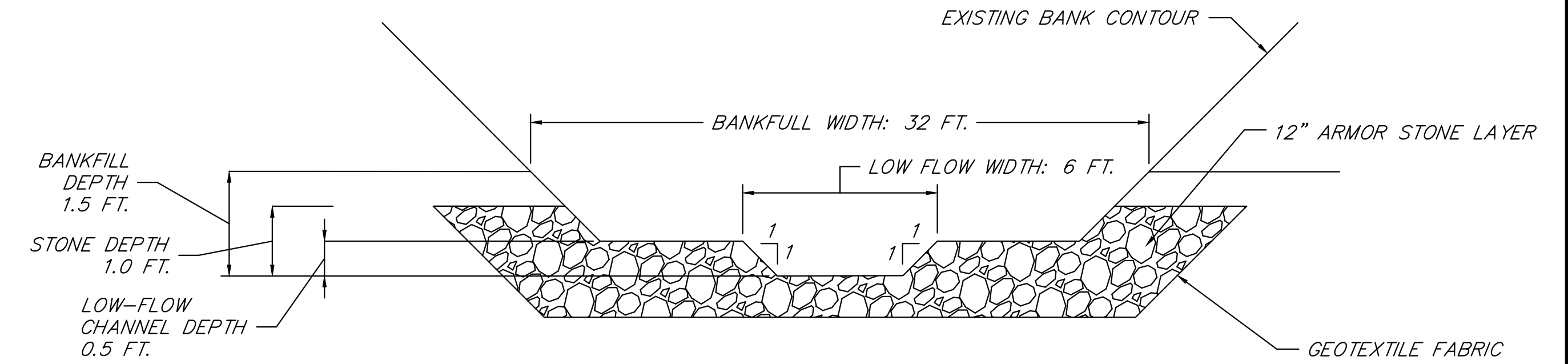
NOTE: CONTRACTOR SHALL VERIFY FINAL BOX CULVERT DESIGN WITH MANUFACTURER PRIOR TO CONSTRUCTION. THE SHOWN DETAILS ARE CONCEPTUAL AND NOT SUITABLE FOR CONSTRUCTION. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.

- CONSTRUCTION NOTES:
- BOX CULVERT AND HEADWORKS SHALL BE PROVIDED BY A SUPPLIER WHO IS Q-CAST CERTIFIED BY THE AMERICAN CONCRETE PIPE ASSOCIATION.
  - STRUCTURE SHALL BE FABRICATED AND INSTALLED PER MDOT 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION.
  - ALL JOINTS SHALL BE SEALED WITH BUTYL ROPE AND WRAPPED WITH NON-WOVEN GEOTEXTILE FABRIC.
  - PLUG ALL WEEP HOLES WITH MASTIC COATED CONCRETE PLUGS AND COVER WITH NON-WOVEN GEOTEXTILE FABRIC.
  - MANUFACTURER TO PROVIDE 2' DEEP CURTAIN WALL (KNEEWALL), SEE DETAIL.
  - CONTRACTOR TO SUBMIT STAMPED SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO ORDERING.



**TYPICAL RIFFLE PLAN**

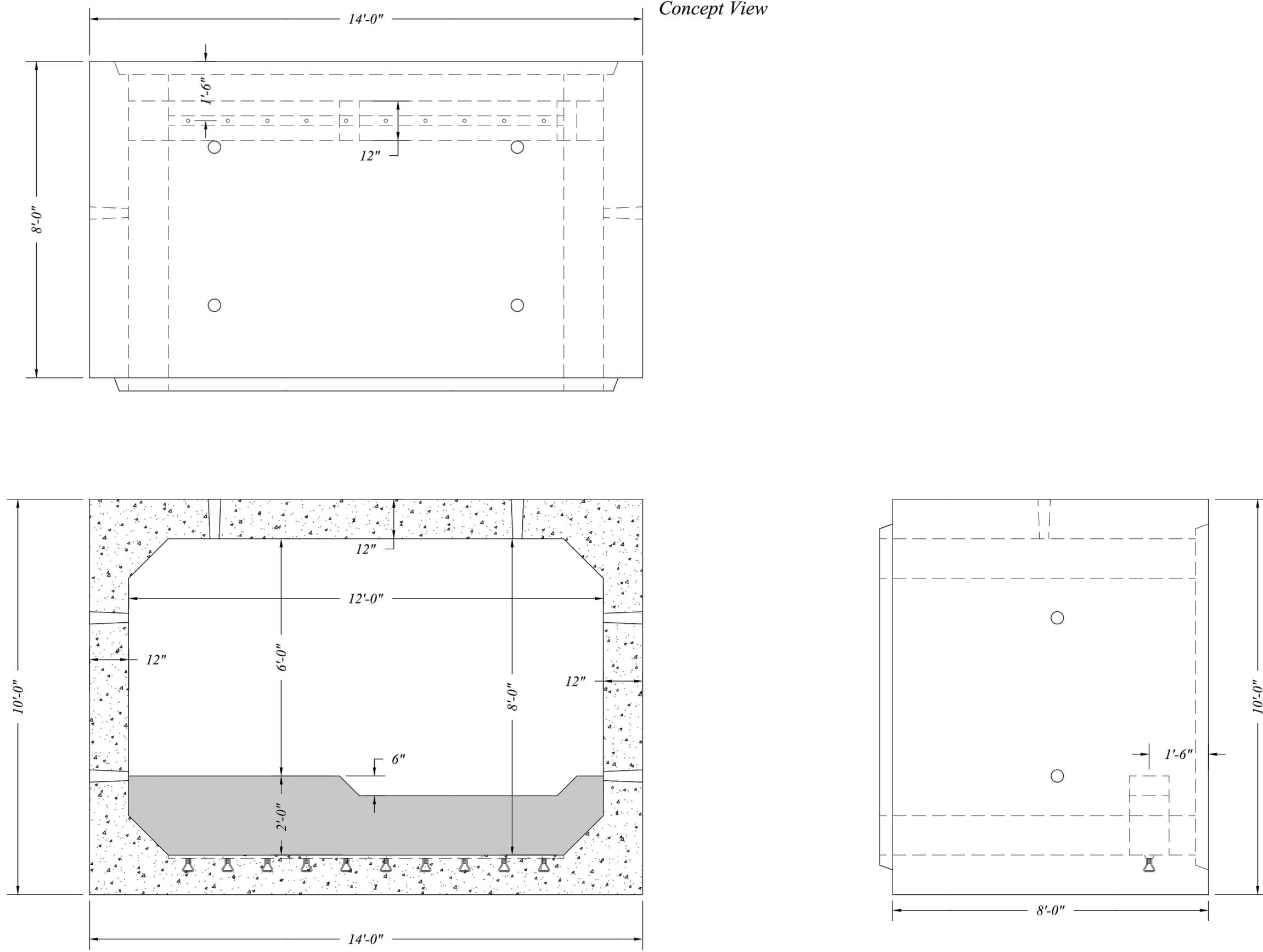
NOT TO SCALE



**TYPICAL RIFFLE CROSS SECTION**

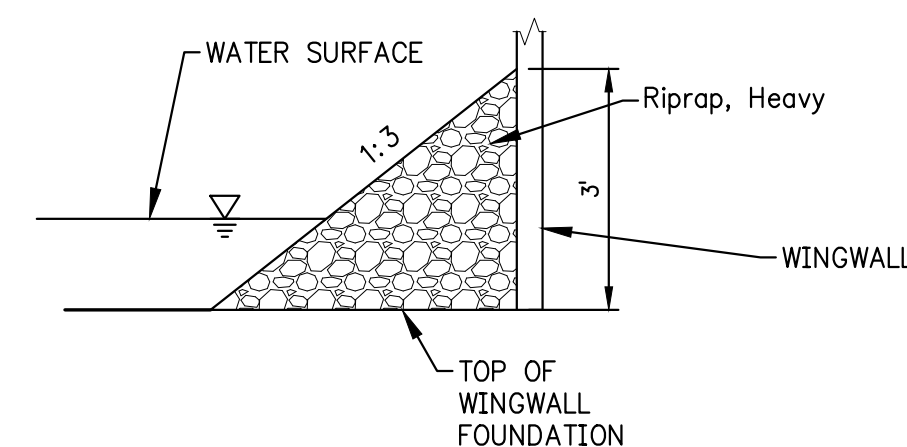
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**CONCRETE BOX CULVERT DETAILS**



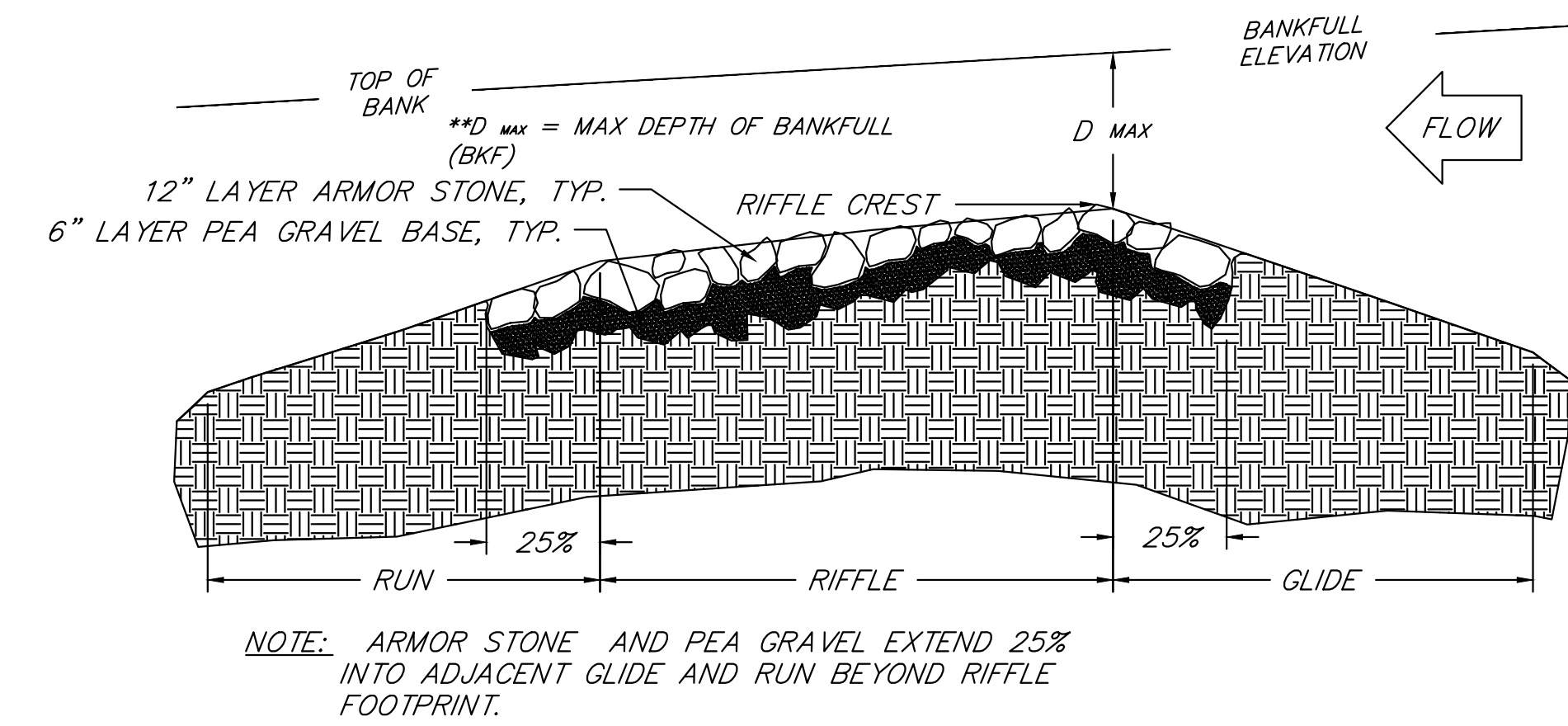
**CONCRETE BOX CULVERT DETAILS**

NOT TO SCALE



**RIPRAP AT WINGWALLS DETAIL**

NOT TO SCALE



**TYPICAL RIFFLE PROFILE**

NOT TO SCALE

<http://gfa.tc>  
 231.946.5874 (p)  
 231.946.3703 (f)

**ENGINEERING SURVEYING TESTING & OPERATIONS**  
 123 West Front Street  
 Traverse City, MI 49684

REV#	DATE	DRN	DES
A	8-19-22	SJS	FOR PERMITS

**EMMET COUNTY ROAD COMMISSION**  
**LOWER SHORE DRIVE OVER FIVE MILE CREEK**  
**CONSTRUCTION DETAILS**  
 SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
 WEST TRAVERSE TOWNSHIP, EMMET COUNTY, MICHIGAN

PM: JOE WILLIAMS, PE  
 DR: SJS  
 DES: JMW  
 SHT 7 OF 9  
 22084

These documents are prepared in accordance with the contractual terms and conditions for this project.

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EGL-264 v1.0  
 WRP-264 v1.0  
 10/05/2022  
 10/05/2022



ROAD CLOSED  
1.5 MILES AHEAD  
LOCAL TRAFFIC ONLY  
R11-3a (LOCATION ONE)

ROAD CLOSED  
2 MILES AHEAD  
LOCAL TRAFFIC ONLY  
R11-3a (LOCATION TWO)

END  
DETOUR  
M4-8a

DETOUR  
M4-9UR(L)

DETOUR  
M4-9UR(R)

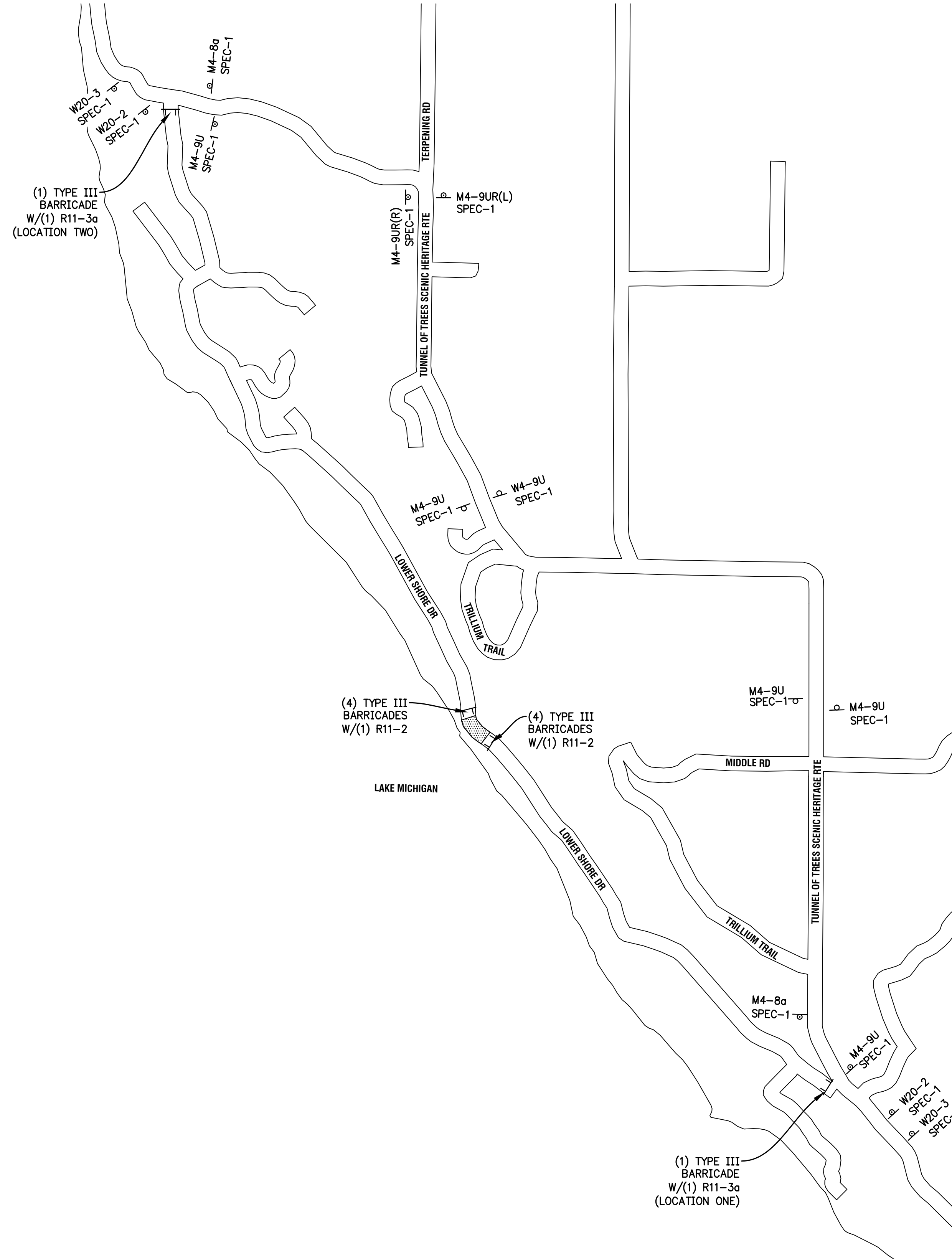
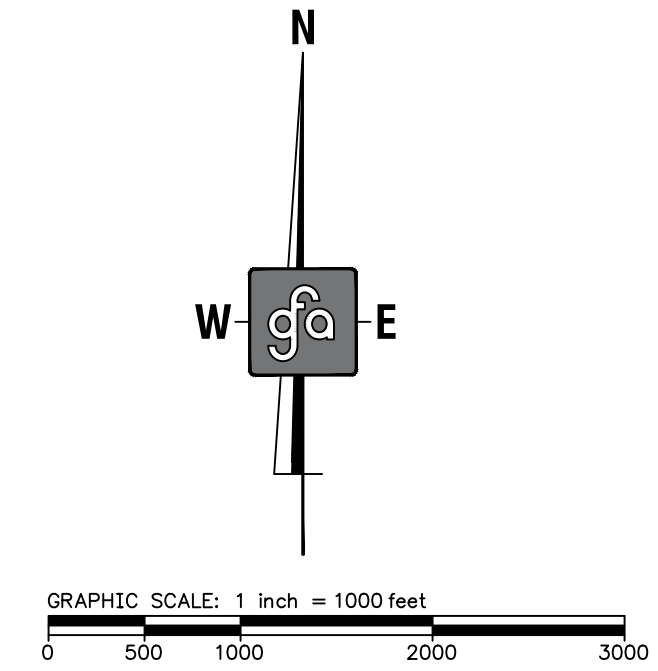
ROAD  
CLOSED  
R11-2

DETOUR  
M4-9U

DETOUR  
AHEAD  
W20-2

ROAD  
CLOSED  
AHEAD  
W20-3

LOWER SHORE DR  
SPEC-1



**LEGEND**



MMTUCD #	DESCRIPTION	SIZE	SFT/SIGN
W20-2	ROAD WORK AHEAD	48" X 48"	16
W20-3	DETOUR AHEAD	48" X 48"	16
SPEC-1	ROAD NAME	9" X 36"	2.25
R11-2	ROAD CLOSED	30" X 48"	30
R11-3a	ROAD CLOSED AHEAD	30" X 60"	30
M4-8a	END DETOUR	18" X 24"	3
M4-9	DETOUR	24" X 30"	5
M4-9UR(L)	DETOUR LEFT TURN	30" X 30"	6.25
M4-9UR(R)	DETOUR RIGHT TURN	30" X 30"	6.25

NOTES:  
1. CONTRACTOR SHALL MAINTAIN ACCESS AT ALL TIMES FOR LOCAL TRAFFIC TO PROPERTIES AND DRIVEWAYS LOCATED WITHIN THE CONSTRUCTION INFLUENCE AREA UTILIZING "Maintenance Gravel", AS DIRECTED BY THE ENGINEER.  
2. TEMPORARY SIGNS SHALL BE PAID FOR AS "Sign, Type B, Temp, Prismatic..." AND "Sign, Type B, Temp, Prismatic, Spec...". BARRICADES SHALL BE PAID FOR AS "Barricade, Type III, High Intensity, Double Sided, Lighted..."

Estimated Quantities This Sheet		
Pay Item	Quantity	Unit
Maintenance Gravel	5	Ton
Barricade, Type III, High Intensity, Double Sided, Lighted, Furn	10	Ea
Barricade, Type III, High Intensity, Double Sided, Lighted, Oper	10	Ea
Minor Traf Devices	1	LS
Sign, Type B, Temp, Prismatic, Furn	222.5	Sft
Sign, Type B, Temp, Prismatic, Oper	222.5	Sft
Sign, Type B, Temp, Prismatic, Special, Furn	36	Sft
Sign, Type B, Temp, Prismatic, Special, Oper	36	Sft
Traf Regulator Control	1	LS

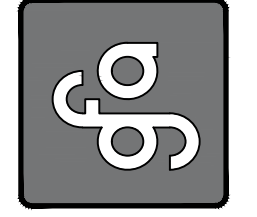
**EMMET COUNTY ROAD COMMISSION  
LOWER SHORE DRIVE OVER FIVE MILE CREEK  
MAINTENANCE OF TRAFFIC PLAN  
SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
WEST TRAVERSE TOWNSHIP, EMMET COUNTY, MICHIGAN**

REV# DATE DRN DESC

REV#	DATE	DRN	DESC
A.	8-18-22	S	FOR PERMITS

ENGINEERING  
SURVEYING  
TESTING & OPERATIONS

123 West Front Street  
Traverse City, MI 49684

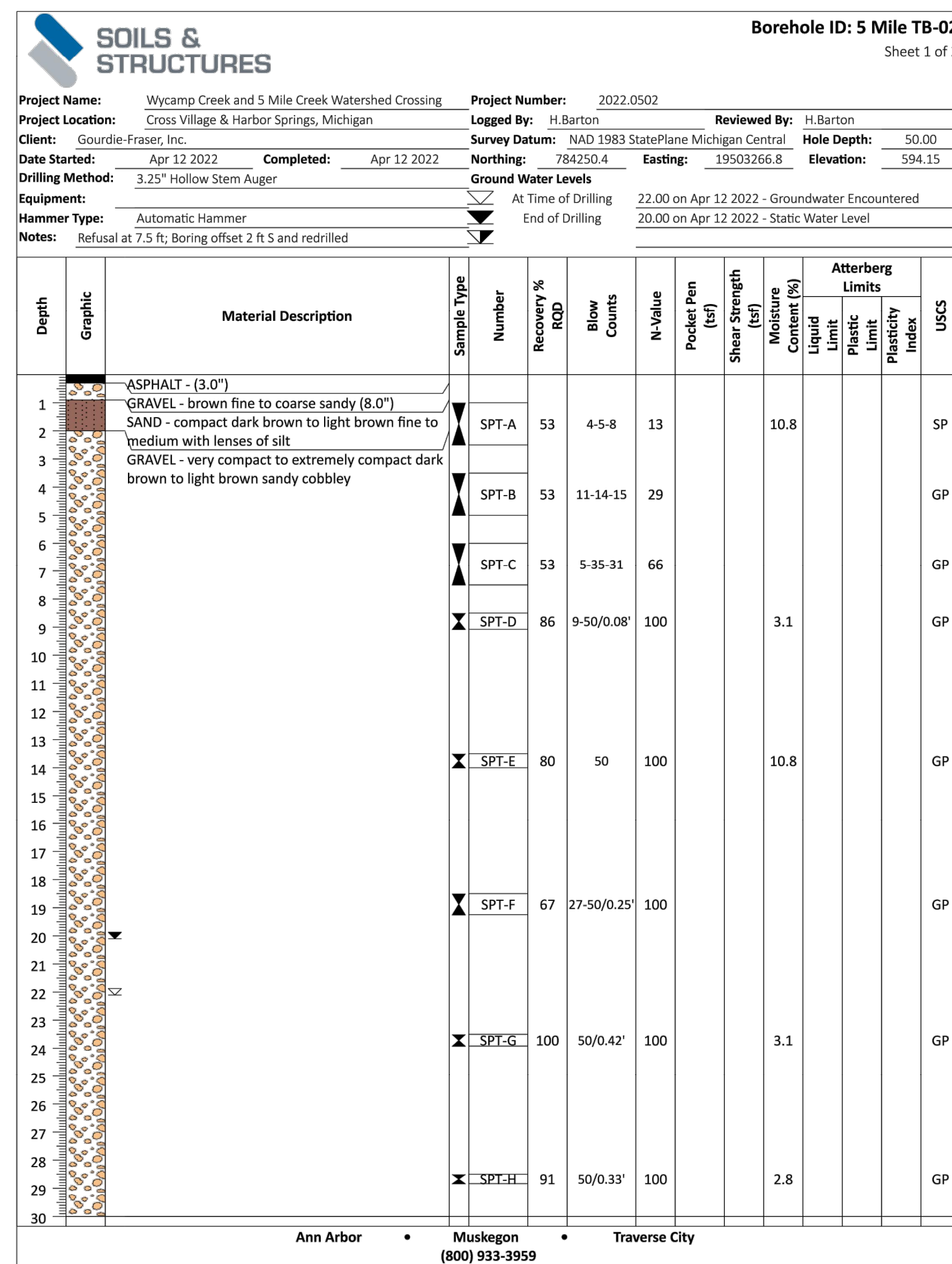
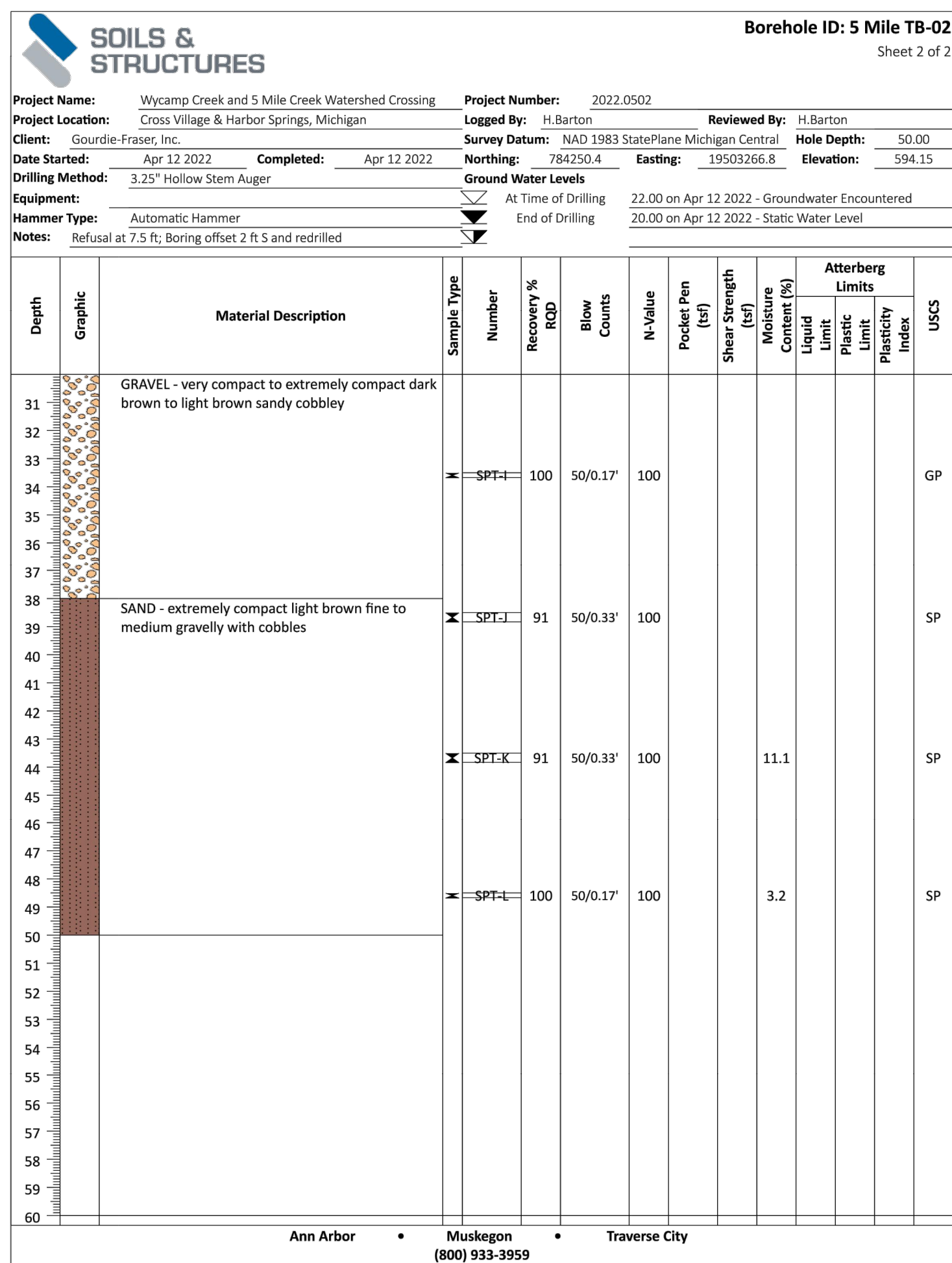
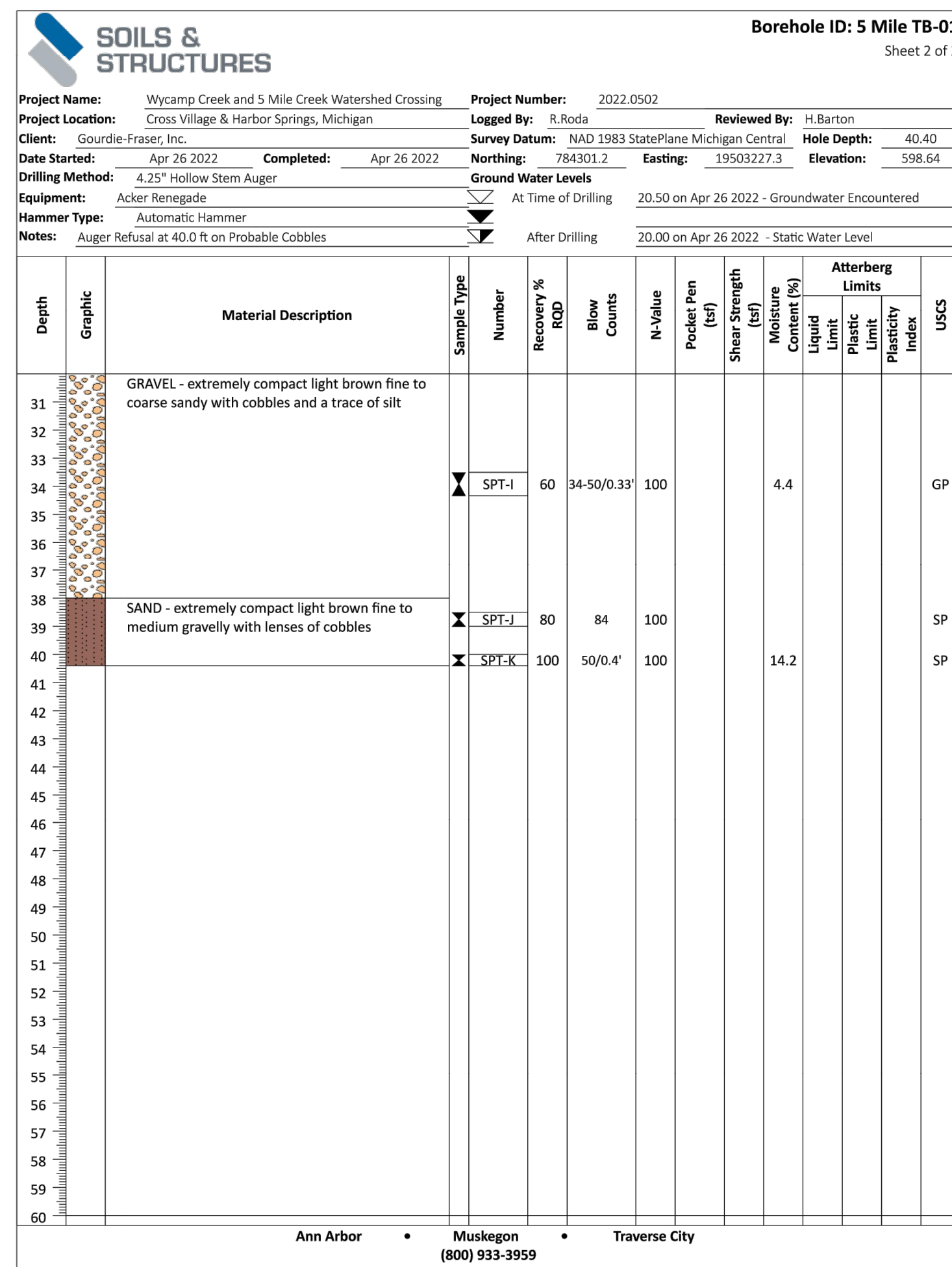
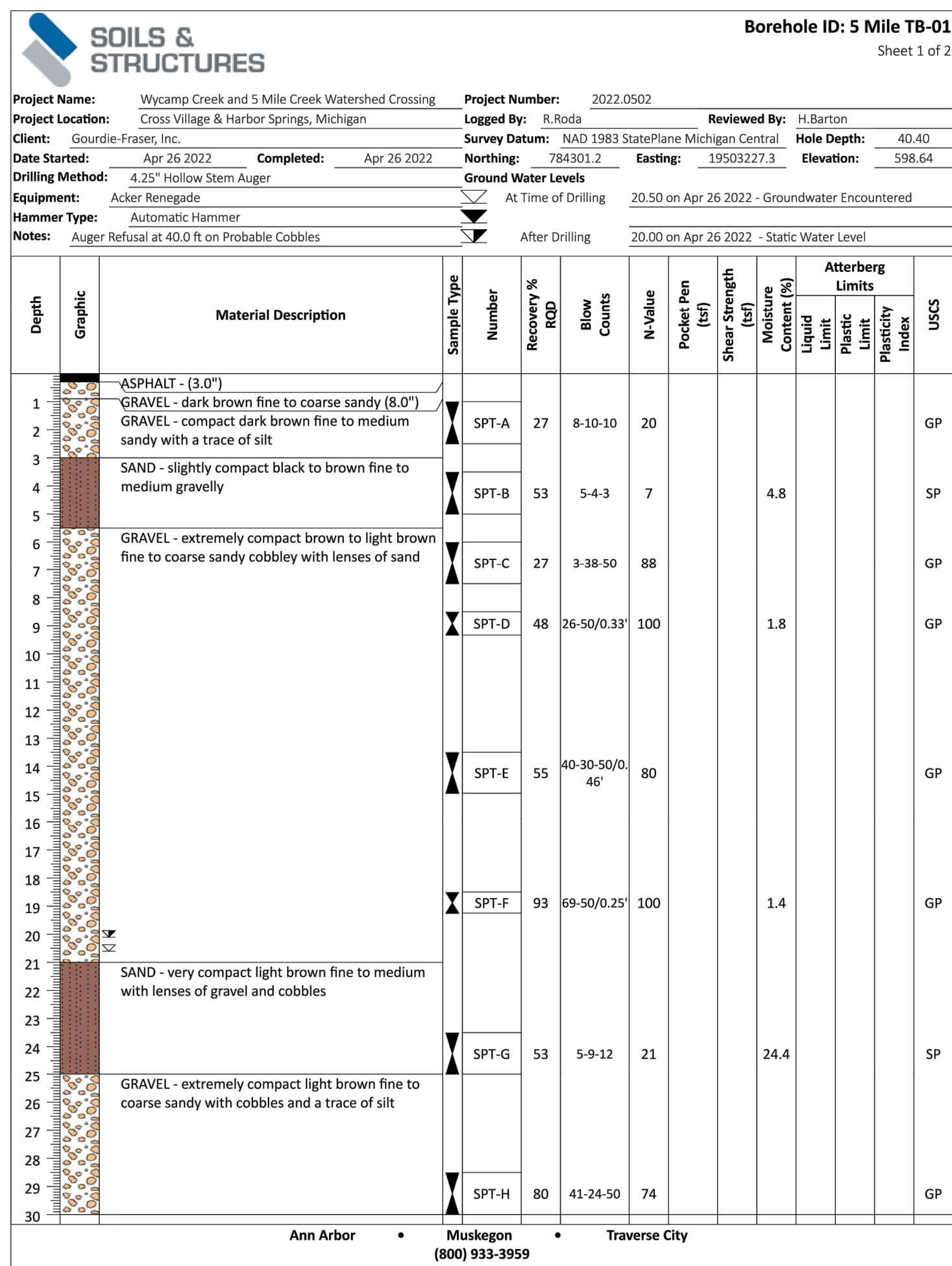


<http://gfa.tc>

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231.946.3703 (f)

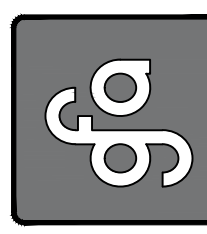
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http://gfa.ic  
 231.946.5874 (p)  
 231.946.3708 (f)



ENGINEERING SURVEYING TESTING & OPERATIONS  
 123 West Front Street  
 Traverse City, MI 49684

REV# DATE BYN FOR PERMITS

EMMET COUNTY ROAD COMMISSION  
 LOWER SHORE DRIVE OVER FIVE MILE CREEK  
 SOIL BORING LOGS  
 SECTION 32, TOWN 36 NORTH, RANGE 6 WEST  
 WEST TRAVERSE TOWNSHIP, EMMET COUNTY, MICHIGAN

DATE: JOE WILLIAMS PE  
 SIGNED: SJS  
 DATE: JMW

22084

SHT 9 OF 9

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