

Price Quote for
Tuscola County Bridges
Epoxy Overlays
Cass City, Van Buren, and Chambers Road
Tuscola County
Board of county Road Commissioners

1733 S. Mertz Rd.
Caro, MI 48723

Letting Date – March 18th, 2021 8:45am

Contractor: _____

Address: _____

Sign & Print: _____

Date: _____

Phone & Fax _____

Email: _____

- Cass City Road Bridge STR 10556
Columbia Township , Epoxy Overlay
- Van Buren Road Bridge STR 10488
Denmark Township, Epoxy Overlay
- Chambers Road Bridge STR 10507
Indianfields Township, Epoxy Removal and Epoxy Overlay

LSUM Price \$ _____

Project Completion Date: August 31st, 2021

Tuscola County
Road Commission
Price Quote
For
Tuscola County Bridges – Epoxy Overlays

Signed Insurance Agreement shall be enclosed.

Bid Submittal

Due to the current situation across the state all bids must be submitted electronically and hard copy. The hard copy must be submitted in a plainly marked, sealed envelope. The hard copy can be mailed to the road commission or placed in the dropbox located outside of the Tuscola County Road Commission office. The electronic copy of the bid shall be emailed to highwayengineer@tuscolaroad.org The electronic copy shall include a signed page 1 of the bid, copy of the completed bid tab breakdown, and copy of the completed and signed agreement. No faxed bids accepted. Any addenda must be noted and initialed.

The Contractor has examined the proposal, permits, plans, and the location of the work described here in and is fully informed as to the nature of the work and the conditions relating to its performance.

General:

This project includes placing an epoxy overlay at three bridge locations throughout Tuscola County. The bridges are at the following locations, Cass City Road over the State and Colling Drain, Van Buren Road over Sheboygan I/C Drain, and Chambers Road over the Cass River. The quantities on the plan sheets are estimated quantities and differing quantities will need to be discussed with the engineer before work begins.

The Contractor hereby proposed to furnish all necessary labor, equipment and materials to complete the work called out and shown on the plan sheets, for the lump sum price listed, herein described in strict accordance with the requirements of the Michigan Department of Transportation 2012 Standard Specifications for Construction, and/or such other special provisions and supplemental specifications as may be listed or attached to this proposal.

Construction:

Work Schedule:

Construction can start within 10 days of award. Contract completion is scheduled for August 31th, 2021, unless arranged with Engineer. Once work begins it must continue until the project is completed. Liquidated damages may be assessed at a rate of \$100.00 per day, starting September 1st, 2021 per the discretion of the Engineer.

Tuscola County
Road Commission
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Tuscola County Bridges – Epoxy Overlays

Utility Coordination:

The Contractor is responsible for coordinating all utility relocations as needed. Attached is a list of the contact information for the utilities on site. **Note: Miss Dig must be contacted 72 hours prior to start of work.**

Bridge Deck Cleaning and Prep:

The concrete bridge decks shall be cleaned and prepped in accordance with the Michigan Department of Transportation 2012 Standard Specifications for Construction, and the *attached Special Provisions*.

Epoxy Removal

The epoxy overlay removal shall be completed in accordance with Section 712 of the Michigan Department of Transportation 2012 Standard Specification for Construction and Special Provision 12SP-712D-02 Removal of Thin Epoxy Polymer Bridge Deck Overlay included in this proposal. Epoxy Removal shall be completed on the Chambers Road Bridge.

Epoxy Overlay:

The epoxy overlay shall be applied in accordance with the plan sheets, typical cross sections, Section 712 of the Michigan Department of Transportation 2012 Standard Specifications for Construction, and Special Provision 12SP-712B-05 Thin Epoxy Polymer Bridge Deck Overlay included in this proposal.

Maintaining Traffic:

Temporary Traffic Control required to close the road shall be provided by and maintained by the contractor. The contractor is required to maintain the barricades to block access to the bridge on the weekends and after work is complete every night. The contractor is responsible for the project site and shall provide any additional measures needed to separate the public from the work zone. Full closure with coordination will be allowed for Cass City Road. Partial closure with one lane of traffic maintained under flag control at all times will be required for Van Buren and Chambers Road. The contractor will be responsible for all traffic control and detours. All costs for maintaining traffic control shall be included in the item minor traffic control devices.

Tuscola County
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For
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Sign Removal and Salvage

The removal, salvage, and reinstallation of any street signs will be performed by the Tuscola County Road Commission.

Documents Attached:

- Plan Sheets
- Breakdown of Estimated Quantities
- Utility Coordination
- Special Provision – Bridge Deck Cleaning and Prep
- Special Provision – Thin Epoxy Polymer Bridge Deck Overlay
- Special Provision – Removal of Thin Epoxy Polymer Bridge Deck Overlay
- Title IV Compliance
- Title VI Compliance

Payment and Paperwork:

Liability:

The Contractor shall at all times exercise extreme care and shall assume all liability for any damages resulting from his operation and shall hold the Tuscola County Road Commission harmless from any such claims or damages.

The successful bidder must also furnish certificates for policies giving satisfactory evidence of insurance coverage to the minimum extent of \$500,000.00 property damage and \$1,000,000.00 personal liability to insure adequate payment for any damage caused by his operations.

The Contractor shall, prior to the start of work, file with the Tuscola County Road Commission a certificate that he carries worker's compensation insurance.

Payment:

These projects are quoted on a "NOT TO EXCEED" total basis for all work necessary to complete each project. Payment shall be made by the Tuscola County Road Commission upon receipt of site specific invoice. Invoice shall be accompanied by all necessary material tickets. The lump sum amount bid shall be payment in full for all labor, materials, and equipment needed to accomplish the work.

Tuscola County
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For
Tuscola County Bridges – Epoxy Overlays

NON-COMPLIANCE WITH PROJECT SPECIFICATION PROVISIONS:

Any variation from the specifications of the project herein without written approval from the Tuscola County Road Commission and/or its authorized representative may result in, at the discretion of the Road Commission, the voiding and/or canceling of the acceptance of any bid and/or contract, resulting from this project.

The Board reserves the right to accept or reject any or all proposals and to re-advertise or to accept the proposal that, in their opinion, is in the best interest of Tuscola County.

TCRC Bridge Epoxy Overlays
Cass City Road over the State and Colling Drain STR 10556
Tuscola County, MI

Item No	Quantity	Unit	Description	Unit Price	Amount
1	1	LSUM	Bridge Deck Cleaning and Prep	_____	_____
2	113	SYD	Epoxy Overlay	_____	_____
3	1	LSUM	Traffic Control	_____	_____
TOTAL				Total	_____

TCRC Bridge Epoxy Overlays
Van Buren Road over the Sheboygan I/C Drain STR 10488
Tuscola County, MI

Item No	Quantity	Unit	Description	Unit Price	Amount
1	1	LSUM	Bridge Deck Cleaning and Prep	_____	_____
2	100	SYD	Epoxy Overlay	_____	_____
3	1	LSUM	Traffic Control	_____	_____
TOTAL				Total	_____

TCRC Bridge Epoxy Overlays
Chambers Road over the Cass River STR 10507
Tuscola County, MI

Item No	Quantity	Unit	Description	Unit Price	Amount
1	1	LSUM	Bridge Deck Cleaning and Prep	_____	_____
2	890	SYD	Epoxy Overlay, Removal	_____	_____
3	890	SYD	Epoxy Overlay	_____	_____
4	1	LSUM	Traffic Control	_____	_____
TOTAL				Total	_____

Your bid will not be accepted
unless the enclosed agreement is
signed and returned with your bid.

AGREEMENT

This agreement made this _____ day of _____, 20____

by and between the Board of Tuscola County Road Commissioners and _____
_____.

1. I _____ hereby agrees to undertake the following work in the status of an independent contractor performing the following job:

2. Said contractor, _____, shall at all times exercise extreme care and shall assume any and all liability for property damage or bodily injury resulting from the above operation by this employees, agents, assigns, sub-contractors and anyone else acting under his control or direction; and will indemnify, hold harmless and defend the Tuscola County Road Commission, its Commissioners or employees from any and all claims for property damage 01·bodily injury arising out of this Agreement.

3. Said contractor, _____, while engaged in said job shall maintain and furnish certificates of insurance, naming the Tuscola County Road Commission and Commissioners as an additional insured under the policy, with policy limits of \$500,000/\$1,000,000 for property damage and bodily injury, and shall furnish the Tuscola County Road Commission copies of said certificates of insurance prior to commencing any work on said project. Additionally, said contractor, _____, shall furnish prior to start of said job with the Board of Tuscola County Road Commissioners, a policy of insurance certifying he carries and has in effect worker's compensation insurance on all those required to be covered under Michigan law.

4. The address of the Board of Tuscola County Road Commissioners is 1733 S. Mertz Rd., Caro, MI 48723.

Witnessed:

Board of Tuscola County Road Commissioners

Contractor

TUSCOLA COUNTY
ROAD COMMISSION
"AN EQUAL OPPORTUNITY EMPLOYER"

SPECIAL PROVISION
FOR
MAINTAINING TRAFFIC
I of I

GENERAL

Traffic shall be maintained in accordance with Sections 812 and 922 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction, including any Supplemental Specifications, and as herein specified.

CONSTRUCTION INFLUENCE AREA

The construction influence area (CIA) shall consist of the width of the project right-of-way from 3,500 feet before the project P.O.B. to 3,500 feet beyond the project P.O.E. and 500 feet in all directions along all cross roads.

TRAFFIC CONTROL DEVICES

All traffic control devices and their usage shall conform to the Michigan Manual on Uniform Traffic Control Devices (MMUTCD), 2011 edition as amended, and as herein specified.

Sign covers shall be placed over existing regulatory, warning and construction signs that are not applicable during construction.

Signing for a lane closure shall be according to attached MDOT Maintaining Traffic Typical Figure M0150a. The use of the speed limit signs, R 2-1, will be as needed.

Sheeting shall conform to section 922.02B of the 2012 Standard Specifications for Construction. Engineer grade reflective sheeting must meet the requirements for ASTM D 4956 Type I engineer grade sheeting.

TRAFFIC RESTRICTIONS

Work shall be conducted during daylight hours only. No work shall be conducted on Sundays unless approved by the Engineer.

The maximum distance between the traffic regulators shall be no more than 2 miles in length. All sequences of more than 2 miles in length will require written permission from the Engineer before proceeding.

PAYMENT

Payment for Maintaining Traffic shall be included in other Bid unit prices. There will be no separate payment for Maintaining Traffic.

Approved by Board 1/27/05 rev. 1/17/07 rev. 12/22/11 rev. 11/7/13

TUSCOLA COUNTY ROAD COMMISSION
TITLE IV COMPLIANCE
APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor shall comply with the Regulations relative to non-discrimination in Federally-assisted programs of the Department of Transportation, Title 49, code of Federal Regulations, Part 21 as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulation, including employment practices when the contractor covers a program set forth in Appendix B of the Regulations.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to non-discrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the **Tuscola County Road Commission** to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses this information, the contractor shall so certify to the State highway department, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.
5. **Sanctions for Non-compliance:** In the event of the contractor's non-compliance with the non-discrimination provisions of this contract, the **Tuscola County Road Commission** shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:
 - (a) Withholding of payments to the contractor under the contract until the contractor complies, and/or
 - (b) Cancellation, termination or suspension of the contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor shall include the provisions of paragraphs(1) through (6) in every subcontract, including procurement of materials and leases of equipment, unless exempt by the Regulations, or directives issues pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the **Tuscola County Road Commission** may direct as a means of enforcing such provisions including sanctions for non-compliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the **Tuscola County Road Commission** to enter into such litigation to protect the interests of the County, and, in addition, the contractor may request the State highway department to enter into such litigation to protect the interests of the State and/or the United States to enter into such litigation to protect the interests of the United States.

"The **TUSCOLA COUNTY ROAD COMMISSION**, in accordance with Title VI of the Civil Rights Act of 1964, 78-252, 42 U.S.C. 2000d-222d-4, the Civil Rights Act of 1987, P.L. 100-259, and Title 49, Code of Federal Regulations, Department of Transportation, subtitle A, Office of the Secretary, Part 21, Non-discrimination in federally assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, Disadvantaged Business Enterprise firms will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of Race, Color, Sex, Age, National Origin, or Handicap in consideration for an award. For additional compliance information, please see Appendix A."

TUSCOLA COUNTY ROAD COMMISSION

NOTICE TO BIDDERS FOR UTILITY COORDINATION

TCRC

1 of 2

8/26/2020

The contractor shall cooperate and coordinate activities with the owners of utilities as stated in Section 104 of the 2012 MDOT Standard Specifications for Construction. In addition, for the protection of underground utilities, the contractor shall follow the requirements in Section 107.12 of the 2012 MDOT Standard Specifications for Construction. **Utility coordination will not be paid for separately and will be included in other items of work.**

PUBLIC UTILITIES

Refer to the project Plans for the contact information for public utilities that are located within the Construction Influence Area (CIA).

For the protection of underground utilities and in conformance with Public Act 174 of 2013, the Contractor shall contract the Miss Dig system, Inc. by phone at 811 or (800) 482-7171 or via the web at either elocate.missdig.org for single address or rte.missdig.org, a minimum of 3 business days prior to excavation, excluding weekends and holidays.

The Plans identify the utilities that are required to be relocated or abandoned by others. Contact information for all utilities reflected on these plans is below:

ATT

Attn: Linda Dennisuk
54 N Mill St, 4th Floor
Pontiac, MI 48342
Office (248) 456-8256
Email – ld2154@att.com

CENTURY LINK

Attn: Bobby Walters
Phone: (440) 244-58415
203 W 9th Street
Lorain, OH 44052
Email:
Bobby.d.walters@centurylink.com

DTE Energy

Phone: (313) 235-5632
One Energy Plaza, 518
SB
Detroit, MI 48226
Email:
Design_MissDig@DTEenergy.com

CITY OF CARO

Attn: Charlie Sunblad
741 S Hooper Street
Caro, MI 48723
Phone (989) 673-2571
Email : csunblad@carocity.net

CONSUMERS ENERGY

Attn: Kurt Golding
530 W Willow Street
Lansing, MI 48906
Phone (517) 374-2002

THUMB ELECTRIC

Attn: Clint Seidl
2231 Main Street
Ubly, MI 48475
Phone (989) 553-5656
Email – cseidl@tecmi.coop

CHARTER
COMMUNICATIONS

Attn: Patrick Delisi
1392 Trade Centre Dr
Traverse City, MI 49696
Phone (810) 247-3899
Email :
Patrick.delisi@charter.com

BLUMFIELD-REESE
WATER AUTHORITY

Attn: Ron Ebenhoeh
12810 E Washington
Reese, MI 48906
Phone (989) 233-6429
Email : brwa@airadv.net

DENMARK TOWNSHIP

Attn: Charles Heinlein
9386 W Saginaw Road
PO Box 44
Richville, MI 48758
Phone (989) 868-9801
Email :
denmarktwpcclerk@gmail.com

Owners of public utilities will not be required to move poles or structures not already identified in the Plans to be relocated, in order to facilitate the operation of construction equipment, unless it is determined by the Project Engineer that such poles or structures constitute a hazard to the public or are extraordinarily dangerous to the Contractor's operations. **If the Contractor determines that additional relocations will be required in order to facilitate the operation of construction equipment for completion of this project, the Contractor shall notify the Engineer and the Public Utility in writing, no later than 10 calendar days after award.**

The Contractor shall coordinate with Public Utility companies to relocate any facilities required to accommodate the proposed scope of work, at no additional cost to the Owner.

Underground electrical, cable, phone, and gas services may exist throughout the project limits. **The Contractor shall be prepared to work with these utility companies to coordinate necessary relocations if additional conflicts arise.** The private utility owner is responsible for costs, equipment, and labor to relocate their utilities as shown on the plans, or as deemed necessary by the Engineer.

TUSCOLA COUNTY ROAD COMMISSION
SPECIAL PROVISION
FOR
BRIDGE DECK CLEANING AND PREP

CON:SGI 712

1 of 1

02-10-21

a. Description. This work shall be done in accordance with the requirements of Section 712 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction and as modified herein. The work Bridge Deck Cleaning and Prep shall consist of preparing and cleaning the bridge decks in preparation for the placement of an epoxy overlay.

b. Materials. None specified.

c. Construction. Ensure cleaning operations are inspected and approved prior to the placement of an epoxy overlay. Protect utilities, drainage structures, curbs, and bridge joints adjacent to the epoxy overlay operations from cleaning activities.

Remove all traffic paint lines, clean the entire concrete surface by abrasive blasting or shot blasting to remove all materials that may interfere with the bonding or curing of the binder. Use a vacuum or oil-free moisture-free air blast to remove all dust and other loose material. Brooms are prohibited.

The Engineer will inspect and approve cleaning and prep prior to placement of the epoxy overlay. Ensure the epoxy overlay is placed within 24 hours of cleaning.

No visible moisture can be present on the surface of the concrete at the time of healer sealer application. Remove all debris from the bridge joints. Protect the bridge joints, and any other areas not to be sealed, from damage during preparation of the surface.

d. Measurement and Payment. The completed work as measured for **Bridge Deck Cleaning and Prep** will be paid for at the contract unit price for the following pay item:

Pay Item	Pay Unit
Bridge Deck Cleaning and Prep.....	Lump Sum

The work of **Bridge Deck Cleaning and Prep** includes all labor, material, and equipment necessary to accomplish this work. **Bridge Deck Cleaning and Prep** will be measured by lump sum.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
THIN EPOXY POLYMER BRIDGE DECK OVERLAY

STM:JD

1 of 5

APPR:JAB:EMB:06-14-19

FHWA:APPR:06-26-19

a. Description. This work consists of providing all labor, materials, and equipment for cleaning/preparing entire deck surface and applying a two-coat epoxy overlay. Ensure all work is completed in accordance with section 712 of the Standard Specifications for Construction except as modified herein. Bring any discrepancies between the two to the attention of the Engineer

b. Materials. Use a solvent-free, moisture insensitive, 100 percent solids, low-modulus, and two-component epoxy system to overlay the structure. Ensure containers are marked clearly "Part A" or "Part B". The epoxies that are approved for thin overlays are in Table 1.

Table 1: Approved Two Component 100 Percent Solids Epoxy Systems

Supplier	Product	Contact Information
BASF	MasterSeal 350	BASF (David McCarron) 20611 Windemere Macomb, MI 48044 (586) 557-0235
E-Bond	526 Lo-Mod	Ridgemoor Supply Inc. (Jake Ike) 4484 Roger B. Chaffee Dr. Kentwood, MI 49548 (616) 532-0782
E-Chem	EP50	E-Chem, LLC (Ray Breer) 2944 William St. SE Albuquerque, NM 87102 (505) 217-2121
Euclid Chemical	Flexolith Flexolith Summer Grade Flexolith HD	The Euclid Chemical Co. (Jamie Elsey) 20416 Harper Avenue Harper Woods, MI 48225 (313) 886-9700
Poly-Carb	Flexogrid Mark – 163 Flexogrid Mark - 154	Poly-Carb, Inc. (Dan Patacca) 1881 West Oak Parkway Marletta, GA 30062 (330) 405-3311
Sika	Sikadur 22-Lo Mod	Sika – US (Wesley Pringle) 673 Cherry Orchard Road Canton, MI 48188 (248) 866-8956
Transpo	T-48 Chip Seal	Transpo Industries, Inc. (Tom Donnelly) 20 Jones St. New Rochelle, NY 10801 (573) 808-1040

Unitex	Propoxy Type III DOT	Dayton Superior Corporation (Blair Oldfield) 1125 Byers Road Miamisburg, OH 45342 (224) 217-0447
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Ensure aggregate meets the gradation requirements in Table 2 and has a hardness of seven or higher on the Mohs hardness scale. Ensure aggregate is angular, consists of natural silica sand, basalt, or other nonfriable aggregate, and contains less than 0.2 percent moisture when tested in accordance with *ASTM C 566*.

Table 2: Angular Aggregates Gradation Requirements

Sieve Size	Minimum % Passing	Maximum % Passing
3/8	100	100
4	98	100
8	30	75
16	0	5
30	0	1
Pan	0	0

Unless otherwise approved, ensure the aggregate is chosen from an approved supplier from Table 3.

Table 3: Approved Aggregate Suppliers

Earth Work Solutions - E.O. Sowerwine P.O. Box 1007 Gillette, WY 82717 (307) 682-4346
Flint Rock Products - Tammy Epps 800 S. College Road P.O. Box 217 Picher, Oklahoma 74360 (918) 673-1737 Fax: (918) 673-1749
Red Flint Sand and Gravel - Jim Danzinger 1 American Blvd PO Box 688 Eau Claire, WI 54702 (800) 238-9139
Washington Rock Quarries, Inc. - Greg Lanphere 21711 103 rd Ave. Ct. E Suite C302 Graham, WA 98338 (253) 377-3438
Imerys Refractory Minerals 100 Mansell Court East Suite 615 Roswell, GA 30076 (770) 225-7923

Provide general certification per the MDOT's Materials Quality Assurance Procedures Manual to the Engineer that the materials meet the requirements specified herein.

c. Equipment. For the epoxy overlay, provide a distribution system or distributor capable of accurately blending the epoxy resin and hardening agent, and uniformly and accurately applying the epoxy materials at the specified rate to the bridge deck in such a manner as to cover 100 percent of the work area including 1 inch of the vertical face of curb/barrier. Provide a fine aggregate spreader capable of uniformly and accurately applying dry aggregate to cover 100 percent of the epoxy material. Provide a self-propelled vacuum truck.

For hand applications, provide calibrated containers, a Jiffy® type mixer, and notched squeegees which are suitable for mixing and applying the epoxy and aggregate.

For mechanical applications, provide mixing equipment that will automatically and accurately proportion the components in accordance with the manufacturer's recommendations, mix and continuously place the epoxy overlay. Ensure the operation proceeds in such a manner that will not allow the mixed material to segregate, dry, be exposed or otherwise harden in such a way as to impair the retention and bonding of broadcasted aggregate.

d. Construction.

1. Surface Preparation. The Engineer will inspect patching and cleaning operations. The Engineer's approval is required prior to placement of the overlay. Protect utilities, drainage structures, curbs, bridge joints, and any other structure within or adjacent to the epoxy overlay from surface preparation activities and application of the surface treatment materials. For the purposes of this special provision, the term *bridge joints* does not include sawed construction joints.

Do not perform surface preparation or installation of epoxy overlay on concrete less than 28 days of age. Ensure that all traffic paint lines are removed. Ensure that all tining is removed. Clean the entire concrete surface by abrasive blasting or shotblasting to remove all materials that may interfere with the bonding or curing of the binder. The cleaned concrete surface must meet the *International Concrete Repair Institute Guideline 310.2R, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays and Concrete Repair*, concrete surface profile (CSP) 7. To ensure prepared surface is adequate for epoxy adhesion, perform a direct tension test per *ASTM C 1583*. Perform one direct tension test for every 500 square feet of overlay area. Minimum bond strength must be 250 pounds per square inch (psi) for the surface preparation to be considered adequate. Use a vacuum truck or oil-free moisture-free air blast to remove all dust and other loose material. Brooms are prohibited. Remove any oil or other contamination after initial cleaning.

Ensure both courses of epoxy overlay are applied within 24 hours of the final cleaning, and prior to opening the area to traffic.

No visible moisture can be present on the surface of the concrete at the time of epoxy overlay application. Oil-free moisture-free compressed air may be used to dry the deck surface. Use a plastic sheet left taped in place in accordance with *ASTM D 4263* to identify moisture in the epoxy overlay area except as modified herein. Tape an 18 inch by 18 inch transparent polyethylene sheet (4 mil) to the deck every 500 square feet. Ensure all edges are sealed with tape that will stick to the concrete substrate. Leave the plastic sheet in place for a minimum of 3 hours or the manufacturer's recommended cure time for the conditions, whichever is longer. Ensure there is no moisture visible on the polyethylene sheet. Alternate methods to detect moisture must be approved by the Engineer.

Remove all debris from the bridge joints. Protect the bridge joints, and any other areas not to be overlaid, from damage during preparation of the surface. Ensure the protection is removed once the epoxy and aggregate has been applied and prior to initial set. Ensure removing the protection is done soon enough to in no way harm the adjacent overlay. Ensure protection is applied again prior to the second coat and removed again prior to initial set as to not damage adjacent surfaces. Ensure the protection meets the approval of the Engineer.

2. Application. Ensure handling and mixing of the epoxy resin and hardening agent is performed in a safe manner to achieve the desired results in accordance with the manufacturer's recommendations for a two-coat system or as directed by the Engineer. Do not place epoxy overlay materials when the concrete surface is less than 50 degrees Fahrenheit (F) or ambient air temperature is forecast to fall below 50 degrees F within 8 hours of application. Do not place epoxy overlay materials if weather or surface conditions are such that the material cannot be properly handled, placed, and cured in accordance with the manufacturer's requirements and the specified requirements of traffic control.

Apply the epoxy overlay in two separate courses in accordance with the manufacturer's recommendation for a two-coat system with the following rate of application. Ensure the first course is no less than 2½ gallons per 100 square feet. Ensure the second course is no less than 5 gallons per 100 square feet.

Ensure application of aggregate to both the first and second courses is of sufficient quantity so the entire surface is covered in excess. Ensure no bleed through, or wet spots are visible in the overlay. Remove and replace any areas within course applications with wet spots or where epoxy has bled through.

After the epoxy mixture has been prepared for the overlay, immediately and uniformly apply it to the surface of the bridge deck with a notched squeegee. Apply the dry aggregate in such a manner as to cover the epoxy mixture completely within 5 minutes. Minimize all foot traffic on the uncured epoxy and ensure any foot traffic will only be done with steel spiked shoes approved by the Engineer. Cure each course of epoxy overlay until vacuuming or brooming can be performed without tearing or damaging the surface. Do not allow traffic or equipment on the overlay surface during the curing period. Remove by vacuuming or brooming all loose aggregate after the first course curing period. Immediately apply the next overlay course to complete the overlay. Ensure the minimum curing periods are in accordance with the manufacturer's recommendations, as shown in Table 4, or as directed by the Engineer. Remove by vacuuming or brooming all loose aggregate after the second course curing period. Ensure all bridge joints are free of loose aggregate, epoxy and other debris resulting from overlay operations.

Table 4: Anticipated Cure Time (Hours)

Average Temperature of Deck, Epoxy and Aggregate Components, Degrees F	1 st Course	2 nd Course
<60		(a)
60-64	2	2
65-69	2	2
70-74	1.75	1.75
75-79	1.75	1.75
80-84	1.5	1.5
>85	1	1

- a. Second course must be cured for minimum of 8 hours if the air temperature drops below 60 degrees F during the curing period, or per the manufacturer's recommendations.

Plan and execute the work to provide the minimum curing periods as specified in Table 4, or other longer minimum curing periods as recommended by the manufacturer prior to opening to public or construction traffic, unless otherwise permitted. Ensure first course applications are not opened to traffic. Remove any contamination, detrimental to adhesion of the second course, from the first course at Contractor's expense prior to the application of the second course.

Remove and replace any areas damaged or marred by the Contractor's operations in accordance with this special provision at no additional cost to the Department.

Provide the Engineer with all records including, but not limited to, the following for each batch provided:

- batch numbers and sizes,
- location of batches as placed on deck, referenced by stations,
- batch time,
- temperature of air, deck surface, epoxy components, including aggregates,
- loose aggregate removal time, and
- time open to traffic.

e. 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	Pay Unit
Epoxy Ovly	Square Yard

Epoxy Ovly includes all material, labor, and equipment required for cleaning, preparing and applying a two-coat epoxy overlay system including miscellaneous clean-up. Also includes all labor and equipment necessary for cleaning and protecting bridge joints.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
REMOVAL OF THIN EPOXY POLYMER BRIDGE DECK OVERLAY

STM:JD

1 of 2

APPR:JAB:DMG:06-14-19
FHWA:APPR:06-26-19

a. Description. This work consists of providing all labor and equipment necessary to remove and properly dispose of thin epoxy polymer overlays on bridge decks in accordance with the standard specifications and this special provision at locations shown on the plans.

b. Materials. None specified.

c. Construction. Remove the existing epoxy overlay with a fine tooth mill.

1. Provide fine tooth milling equipment, that meets the minimum requirements below, and consistently mills the surface in one or more passes to the required grade or cross section providing the required uniform textured surface. Do not impair surface drainage or create any areas that allow water to pond. Provide vacuum equipment to extract milled material and excess water from the bridge deck and pavement. Prevent dust from escaping into the air during the vacuuming operation.

Provide machines equipped with the following:

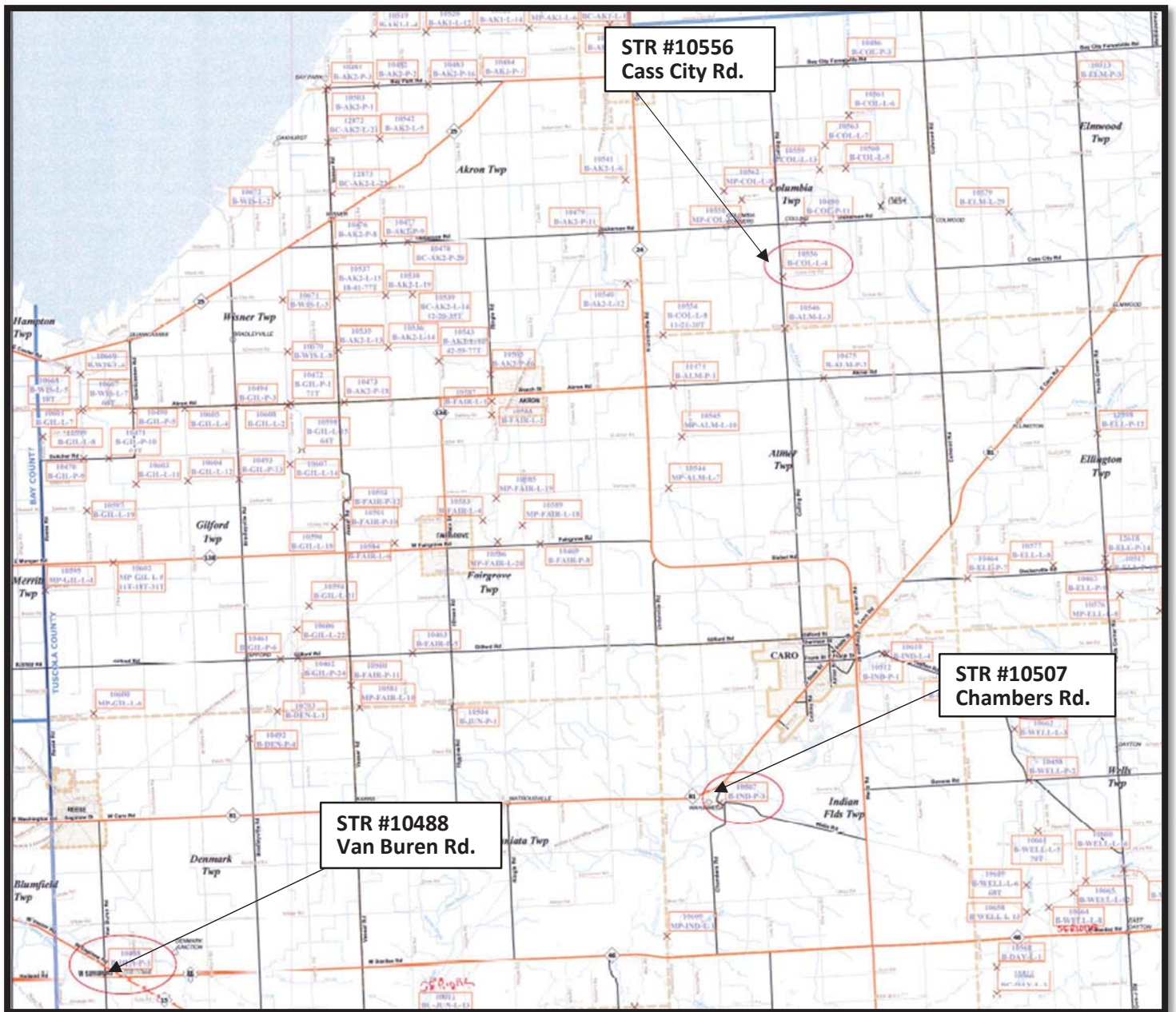
- A. Automatically controlled and activated cutting drums,
- B. Grade reference and transverse slope control capabilities, and
- C. Minimum 3 foot wide cutting drums with teeth spacing at a maximum 5/16 inch.

2. Minimize damage to the underlying concrete substrate from the milling operation. Remove the epoxy overlay as close as possible to the barrier wall, drain structures and bridge joints to avoid damage. Hand chip with a maximum 30 pound chipping hammer, hand grinder, scabbler, shot blaster, scarifier or other method approved by the Engineer to remove the epoxy overlay material from around the above mentioned features.

3. If a new thin epoxy polymer overlay is to be installed, perform all work in accordance with 12SP-712B-04, Thin Epoxy Polymer Bridge Deck Overlay as appropriate. This includes shot blasting immediately prior to application.

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	Pay Unit
Epoxy Ovly, Rem.....	Square Yard



Epoxy Overlay Location Map

TUSCOLA COUNTY ROAD COMMISSION

MICHIGAN DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAYS ADMINISTRATION

CASS CITY ROAD OVER STATE AND COLLING DRAIN

STRUCTURE NUMBER 10556

T14N, R9E, SECTION 34

COLUMBIA TOWNSHIP

TUSCOLA COUNTY



SECTION 34 CONTROL SEC 8079000 JOB NO. 129265A

THESE PLANS WERE PREPARED FOR
TUSCOLA COUNTY ROAD COMMISSION
BY

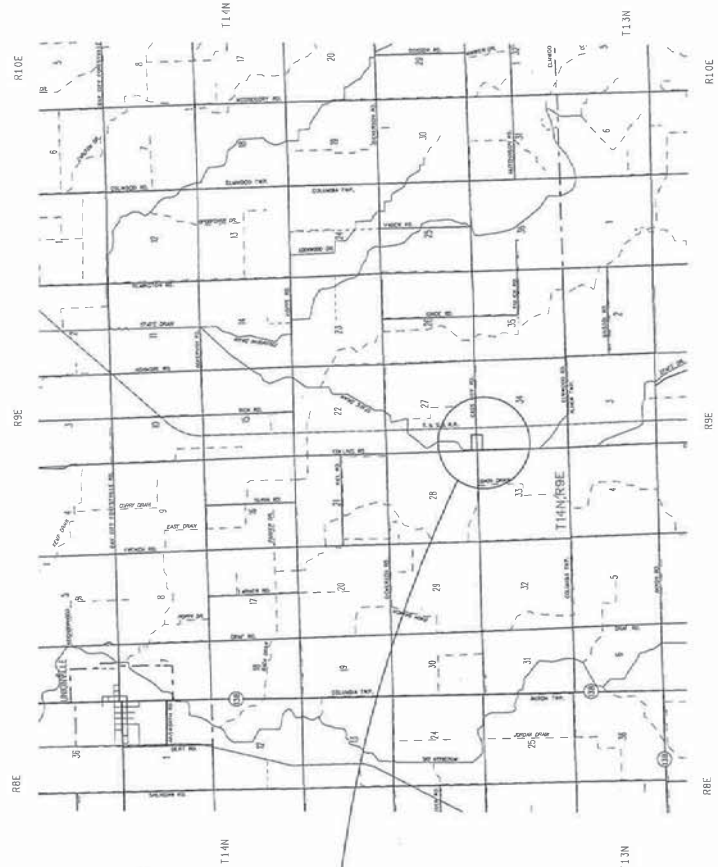


DATE 4-5-18
PROJECT MANAGER
GREAT LAKES ENGINEERING GROUP
521 SEMINAR STREET
TUSCOLA, MI 49853
517-867-4600

APPROVALS
DATE 4-5-18
COMMISSIONER: [Signature]
COMMISSIONER: [Signature]
COMMISSIONER: [Signature]
COMMISSIONER: [Signature]
COMMISSIONER: [Signature]

MILES: 0.03
CONTRACT FOR:
THE WORK COVERED BY THESE PLANS INCLUDES REMOVAL OF SUPERSTRUCTURE,
AND CONSTRUCTION OF NEW SUPERSTRUCTURE, INMA APPROACHES, AND PROPOSED GUARDRAIL.

TITLE SHEET
DRAWING SHEET
CASS CITY RD OVER STATE AND COLLING TC DRAIN
TUSCOLA COUNTY ROAD COMMISSION
SECT 1



PROJECT LOCATION
PROJECT LENGTH 190'

EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS, OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED HEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE ACCORDING TO THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS, 2012 EDITION, LATEST REVISIONS. THE PROPOSED IMPROVEMENTS COVERED BY THESE PLANS ARE DESIGNED IN ACCORDANCE WITH AASHTO GUIDELINES FOR GEOMETRIC DESIGN OF VERY LOW-VOLUME LOCAL ROADS, 2001 EDITION.

THE DESIGN OF THIS STRUCTURE IS BASED ON 1.2 TIMES THE CURRENT AASHTO LIVE BRIDGE DESIGN SPECIFICATION HL-93 LOADING WITH THE EXCEPTION THAT THE DESIGN LIVE LOAD PORTION OF THE DESIGN TRUCK SHALL BE 100,000 LBS. THE RESULTING LOAD IS DESIGNATED HL-93 MOD. LIVE LOAD PLUS DYNAMIC LOAD ALLOWANCE DEFLECTION DOES NOT EXCEED $\frac{1}{800}$ OF THE SPAN LENGTH.

THE DESIGN OF THE DECK SLAB IS BASED UPON THE STIFF METHOD AS DEFINED IN THE CURRENT AASHTO LIVE BRIDGE DESIGN SPECIFICATION. THE DESIGN OF THE STRUCTURAL MEMBERS IS BASED ON MATERIAL OF TENSILE FOLLOWING GRADES AND STRESSES:

- CONCRETE GRADE 52
- CONCRETE GRADE 60
- STEEL GRADE 50
- STEEL REINFORCEMENT: $f_y = 60,000$ psi
- STIRRUPS FOR PRESTRESSED BEAMS $f_y = 60,000$ psi
- STRUCTURAL STEEL: $f_y = 36,000$ psi
- PRESTRESSING STRANDS $f_p = 270,000$ psi
- PRESTRESSED CONCRETE $f_c = 6,000$ psi

ALL EXPOSED CONCRETE CORNERS SHALL BE SQUARE ON THE PLANS SHALL BE BEVELED WITH 2" TRIANGULAR WEDGINGS EXCEPT AS OTHERWISE NOTED.

UNLESS OTHERWISE SHOWN ON THE PLANS PROVIDE MINIMUM CONCRETE CLEAR COVER FOR REINFORCEMENT ACCORDING TO THE FOLLOWING:

- 1 IN.
- 2 IN.
- ALL OTHER CONCRETE BEAMS: 2 IN.

THIS PROJECT HAS BEEN EVALUATED USING THE FAA NOTICE CRITERIA TOOL FOR AIRCRAFT OBSTRUCTION. THE PROJECT MEETS THE CRITERIA ABOVE A GROUND LEVEL ELEVATION OF 657 FEET AND NO PERMITS ARE REQUIRED.

ROAD	YEAR	ADT	DRV	COMM	DESIGN POSTED	SPEED DATA
CASS CITY RD	2018	126	5%	5%	55	55
	2038	154	5%	5%	55	55

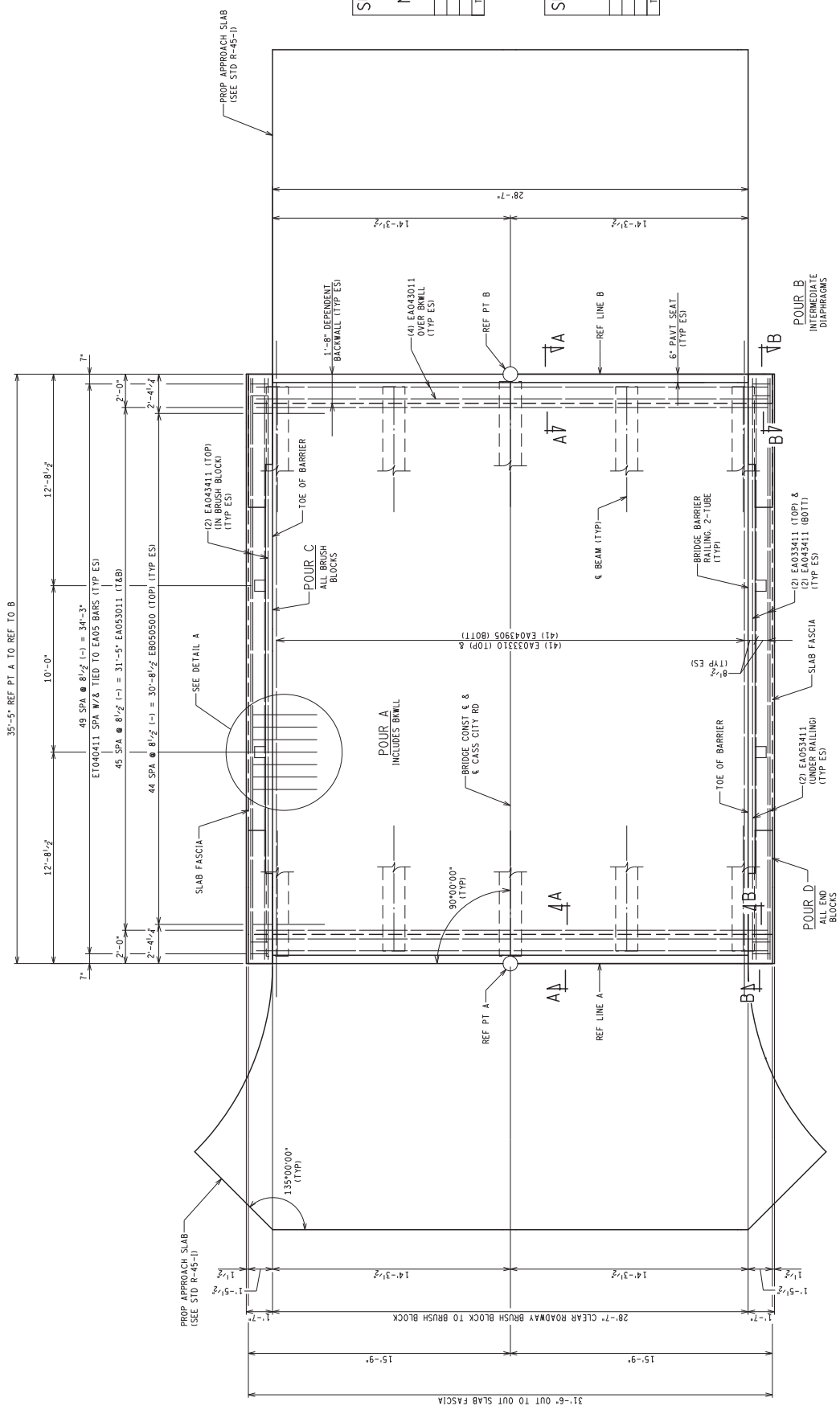


NO.	DATE	AUTH.	DESCRIPTION	REVISIONS	DATE	AUTH.	DESCRIPTION
1							

NO SCALE

DRAWN BY: JLS
CHECKED BY: CJC
FILE: 4311 H.dgn
TSC: HIRON

DATE: 04/04/18
DESIGN UNIT: GLEG
REVISIONS: 02/13/18
CS: 8079000
JN: 129265A
1017-2-431-1



SUPERSTRUCTURE CONCRETE NIGHT CASTING QUANTITIES	
POUR	AMT (CYDS)
A	49
B	1
TOTAL CONC.= 50.0 CYDS	

SUPERSTRUCTURE CONCRETE QUANTITIES		
POUR	AMT (CYDS)	
C	2.4	
D	3.6	
TOTAL CONC. =		6.0 CYDS

PLAN OF DECK[illegible]

TUSCOLA COUNTY ROAD COMMISSION

IN COOPERATION WITH THE

MICHIGAN DEPARTMENT OF TRANSPORTATION

PLANS OF BRIDGE REPLACEMENT

VAN BUREN ROAD OVER

SHEBOYGAN I/C DRAIN

JOB NUMBER: 133041

CONTROL SECTION: CS BRT 79000

STRUCTURE NUMBER: 10488

DENMARK TOWNSHIP, TUSCOLA COUNTY, T12N R7E SECTION 29 & 30

GENERAL NOTES

BY THESE PLANS, THE ROAD APPROACH WORK, EARTH EXCAVATION, REMOVAL OF THE EXISTING BRIDGE, CONSTRUCTION OF THE PROPOSED BRIDGE, HMA PAVING, PLACING GRANULAR MATERIAL, SLOPE PROTECTION, AND REPAIR TO THE EXISTING ROAD.

THE CONTRACTOR SHALL LOCATE ALL ACTIVE UNDERGROUND UTILITIES PRIOR TO STARTING WORK AND SHALL BE RESPONSIBLE FOR PROTECTING THEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE TOWNSHIP, COUNTY, AND STATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE TOWNSHIP, COUNTY, AND STATE.

VAN BUREN ROAD TRAFFIC IS TO BE DETOURED OVER OTHER EXISTING ROADS.

PLAN ELEVATIONS REFER TO NAVD83.

WATER LEVEL IS SUBJECT TO CHANGE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING A DETERMINATION OF WATER LEVELS THAT MAY EXIST DURING CONSTRUCTION.

MEASURES SHALL BE TAKEN TO PREVENT DEBRIS IN WATERWAY. IF DEBRIS FALLS INTO THE WATERWAY, IT SHALL BE REMOVED WITHIN 24 HOURS. SINCE DISTURBANCE OF THE WATERWAY BOTTOM MAY BE AS HARMFUL AS THE DEBRIS ITSELF, THE PREVENTIVE MEASURES MUST BE EFFECTIVE.

IMMEDIATELY AFTER THE CONSTRUCTION OF AN ABUTMENT IS COMPLETED, SLOPE PROTECTION AND SEEDING OR SOILING SHALL BE PLACED ON THE ADJACENT EMBANKMENT SLOPES.

THE DESIGN OF THIS STRUCTURE IS BASED ON 1.2 TIMES THE CURRENT AASHTO LEFD BRIDGE DESIGN STRESS. THE DESIGN OF THE BRIDGE SHALL BE BASED ON THE DESIGN LOADS OF THE AASHTO LEFD BRIDGE DESIGN. THE DESIGN OF THE BRIDGE SHALL BE BASED ON THE DESIGN LOADS OF THE AASHTO LEFD BRIDGE DESIGN.

EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS, OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED HEREIN, ALL MATERIALS AND METHODS SHALL BE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION 2012 EDITION.

THE DESIGN OF THE STRUCTURAL MEMBERS IS BASED ON MATERIAL OF THE FOLLOWING GRADES AND STRESSES:

CONCRETE: GRADE D
 STEEL REINFORCEMENT
 STIRRUPS FOR PRESTRESSED BEAMS
 PRESTRESSED CONCRETE
 PRESTRESSING STRANDS

$f_c = 4,000$ psi
 $f_y = 60,000$ psi
 $f_c = 40,000$ psi
 $f_y = 7,000$ psi
 $f_c = 6,500$ psi
 $f_y = 270,000$ psi

ALL EXPOSED CONCRETE CORNERS SHOWN SQUARE ON THE PLANS SHALL BE BEVELED WITH 1/2" TRIANGULAR MOLDINGS EXCEPT AS OTHERWISE NOTED.

UNLESS OTHERWISE SHOWN ON THE PLANS PROVIDE MINIMUM CONCRETE CLEAR COVER FOR REINFORCEMENT ACCORDING TO THE FOLLOWING:
 CONCRETE CAST AGAINST EARTH: 3 IN.
 PRESTRESSED BEAMS: 1 IN.
 ALL OTHER UNLESS SHOWN ON PLANS: 2 IN.

DESIGNED FOR THE TYPICAL SECTION OF NEW BRIDGE USING ECONOMICALLY STRENGTHENED 50K AIRWAYS AND PRECAST CONCRETE SUPERSTRUCTURE 50K AIRWAYS FOR 10 TO 125.00 FEET.

TUSCOLA COUNTY ROAD COMMISSION APPROVAL

8-22-19 Date

8/22/19 Date

Advertising Commissioner

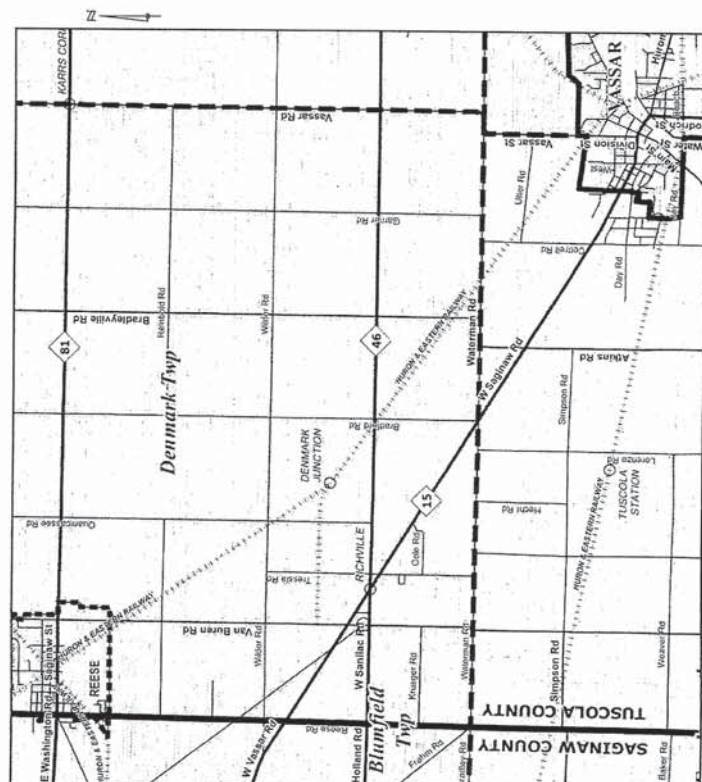
OHM

PREPARED UNDER THE SUPERVISION OF:

AMANDA H. PORATH
 ENGINEER
 No. 49889
 Registration No. 49889
 Date 8/12/2019

REVISIONS

PROJECT NO. 40866-17-0010
 SHEET NO. 1 OF 36



LOCATION MAP
 N.T.S.

3 FULL WORKING DAYS BEFORE YOU DIG CALL MISS DIG 811

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	TYPICAL SHEET
3	LEGEND SHEET
4	LOG OF BORINGS
5	GENERAL PLAN OF SITE
6	GENERAL PLAN OF STRUCTURE
7	ABUTMENT
8	WINGWALLS
9	BEAM DETAILS
10	SUPERSTRUCTURE PLAN
11	SUPERSTRUCTURE DETAILS
12	BRIDGE RAILING
13	MAINTENANCE TRAFFIC
14-22	R-60-J
23-30	R-61-H-LAP
31-32	R-66-E
33-36	R-67-G

TRAFFIC DATA

AD 2006
 AD 2011
 AD 2012
 AD 2013
 AD 2014
 AD 2015
 AD 2016
 AD 2017
 AD 2018
 AD 2019
 AD 2020
 AD 2021
 AD 2022
 AD 2023
 AD 2024
 AD 2025
 AD 2026
 AD 2027
 AD 2028
 AD 2029
 AD 2030

UTILITIES

THE EXISTING UTILITIES LISTED BELOW AND SHOWN ON THESE PLANS REPRESENT THE INFORMATION PROVIDED BY THE TOWNSHIP, COUNTY, AND STATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION.

DESIGNER: J. L. BROWN
 440 NORTH HANNAH, SUITE C
 MOUNTAIN VIEW, MI 48156
 PHONE (989) 751-1184
 FAX (989) 751-1184
 EMAIL: JLBROWN@JLBROWN.COM

DESIGNER: J. L. BROWN
 440 NORTH HANNAH, SUITE C
 MOUNTAIN VIEW, MI 48156
 PHONE (989) 751-1184
 FAX (989) 751-1184
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PROJECT LOCATION

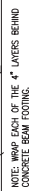
VAN BUREN ROAD OVER

SHEBOYGAN I/C DRAIN

M.D.O.T. STANDARD PLANS	TITLE
R-58-E	GUARDRAIL AT BRIDGES AND EMBANKMENTS
R-60-J	GUARDRAIL TYPES A, B, BO, T, TO, WGS-8, & WGS-8D
R-61-H-LAP	GUARDRAIL APPROACH TERMINAL TYPES IB & IT
R-66-E	GUARDRAIL DEPARTING TERMINAL TYPES B, T, & WGS
R-67-G	GUARDRAIL ANCHORAGE, BRIDGE DETAILS
R-96-E	SOIL EROSION & STABILIZATION CONTROL MEASURES
R-100-H	SEEDING AND TREE PLANTING
B-25-K	BRIDGE RAILING, AESTHETIC FRAPPEY TUBE
B-103-E	MOLDING, LEVEL, LIGHT STANDARD ANCHOR BOLT ASSEMBLY AND NAME PLATE
B-103-E	SPECIAL DETAILS

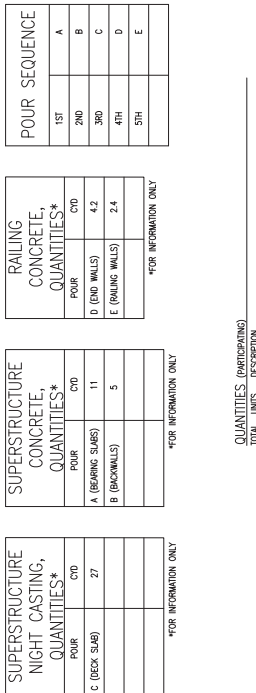
M.D.O.T. WORK ZONE DEVICES	TITLE
WZD-100-A	GROUND MOUNTED SIGN SUPPORTS FOR TEMP SIGNS
WZD-125-E	TEMPORARY TRAFFIC CONTROL DEVICES
WZD-125-E	SPECIAL DETAILS



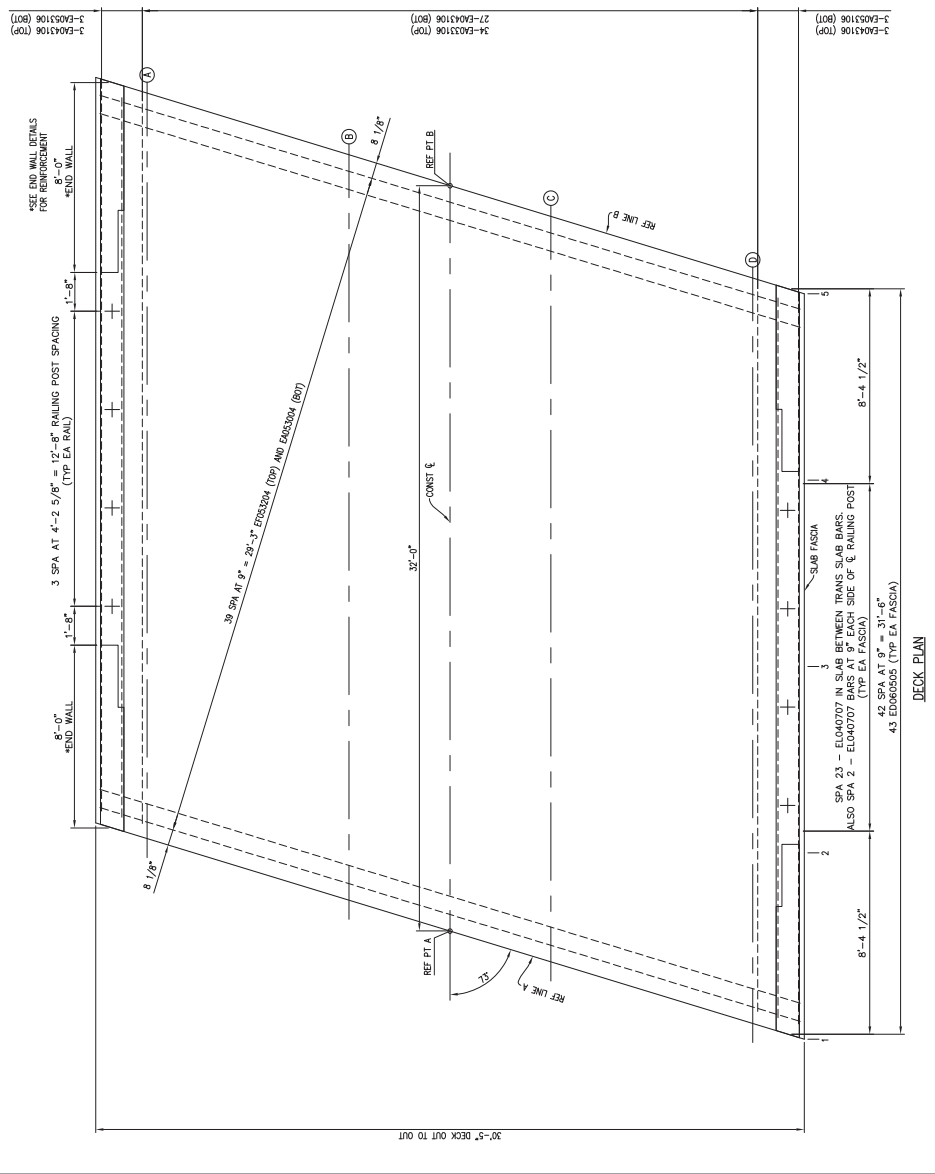


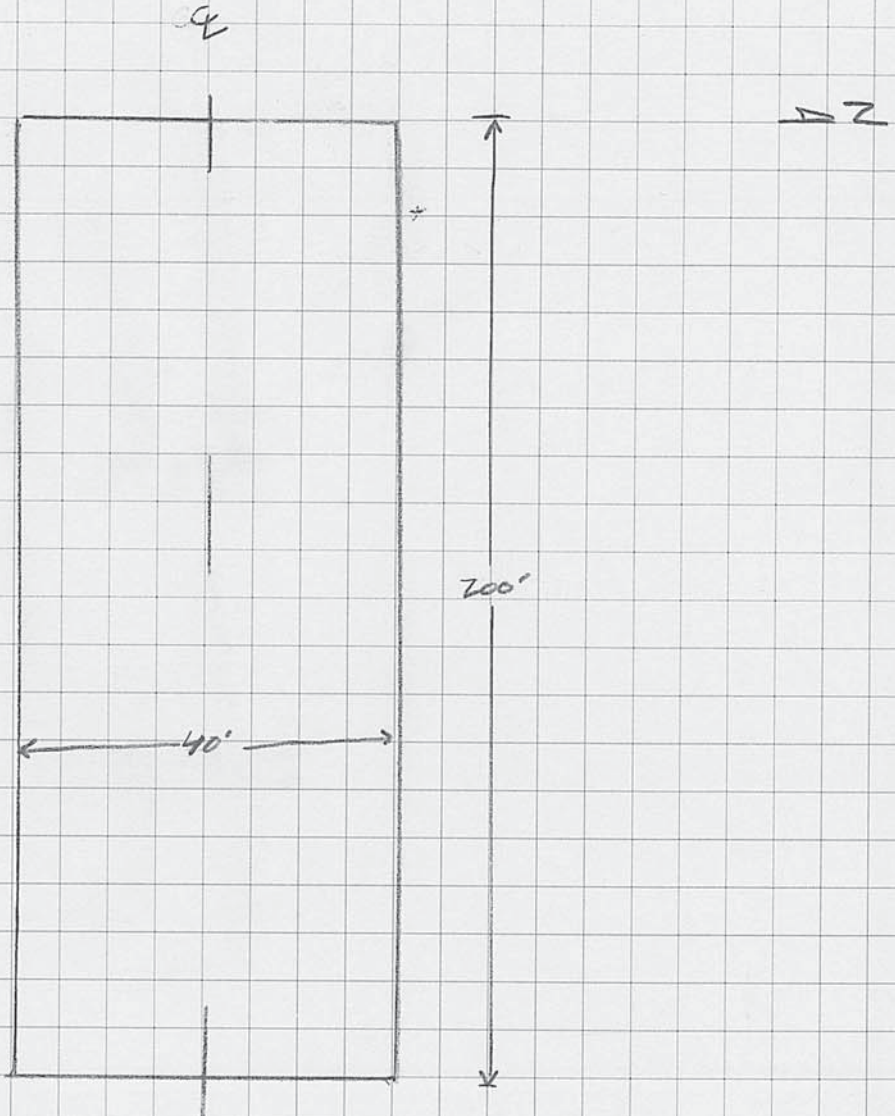
- 1) RODDING THE AGGREGATE FILL BEHIND EACH CMU BLOCK APPROXIMATELY EVERY FOOT WHILE EXERTING DOWNWARD PRESSURE ON THE CMU BLOCK TO PREVENT LATERAL MOVEMENT
- 2) USING A VIBRATORY PLATE COMPACTOR (> 4 PASSES) DIRECTLY BEHIND THE CMU BLOCK WHILE EXERTING DOWNWARD PRESSURE ON THE CMU BLOCK TO PREVENT LATERAL MOVEMENT
- 3) LARGER VIBRATORY COMPACTORS MAY BE USED FOR THE BALANCE OF THE AREA MORE THAN 3' BEHIND THE CMU BLOCK. MULTIPLE PASSES OF A VIBRATORY PLATE COMPACTOR CAN ALSO ACHIEVE PROPER DENSITY.
- 4) THE SURFACE SHALL BE FINISHED TO THE FINISH ELEVATION. THE FINISH SHALL BE A DIRECT SURFACE RUNOFF AWAY FROM THE WALL TO NOT ALLOW SURFACE RUNOFF FROM ADJACENT AREAS TO ENTER THE WALL CONSTRUCTION AREA.

TYPICAL CMU DETAIL
SCALE: 1" = 1'



Know what's below.
Call before you dig.





$$40 \times 200 / 9 = 889 \text{ sqd}$$











