Specifications & Contract Documents

Iron Belle Trail, Van Buren Township, Section D

Van Buren Township
Elizabeth Renaud
46425 Tyler Road
Van Buren Twp., MI 48111
P: 734-699-8900

PEA Group - Project No. 2019-369
Jeff Smith, PLA, LEED AP
7927 Nemco Way, Suite 115
Brighton, MI 48116
P: 517-546-8583

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INVITATION FOR BIDS

VAN BUREN TOWNSHIP
WAYNE COUNTY, MICHIGAN

IRON BELLE TRAIL SECTION D

Sealed proposals will be received by the Van Buren Township at the office of the Township Clerk, 46425 Tyler Road, Van Buren, Michigan 48111 until **11:00 a.m.** local time (EST), on **October 2, 2024** for construction of this project. Proposals are to be delivered to the Township Clerk's Office in a sealed envelope marked on the outside as described in the Instruction to Bidders.

Project Description:
The project site is located along the east side of Denton Road south of I-94 Service Drive and within Van Buren Township Park. The project includes the construction of a variable width asphalt path (8'-12'), a 70' linear foot bridge and abutments, as well as sidewalk along Old Denton Road and within Denton Road. Restriping Denton Road is also proposed to add a bike lane/sharrow.

The drawings and specifications under which the work is to be performed are on file and may be examined at the following locations:

Van Buren Township 46425 Tyler Road Van Buren Twp., MI 48111	Or	PEA Group 7927 Nemco Way, Suite 115 Brighton, MI 48116

Digital copies of the bid package (drawings and specifications) are accompanied with this invitation via email. Hard copies may be obtained from **PEA Group, 7927 Nemco Way #115, Brighton, Michigan 48116** at a cost of $150.00 to the bidder.

Each proposal shall be accompanied by a certified check or acceptable bid bond for a sum not less than five percent (5%) of the proposal amount. All questions regarding clarification or interpretation of the documents shall be directed to Jeffrey Smith, PLA, LEED AP, of PEA Group by the following means: Office: (517) 546-8583, Fax: (248) 689-1044, and e-mail: jsmith@peagroup.com.

The right is reserved by the Owner to accept any proposal, to reject any proposal, and to waive irregularities in proposals. No bid may be withdrawn after the above date and time for receiving bids for a period of one-hundred-twenty (120) days.

Van Buren Twp, MI
Leon Wright, Township Clerk

INSTRUCTIONS TO BIDDERS

1. SCOPE OF WORK

The work under this Contract shall consist of the items contained in the Proposal, including all incidentals necessary to fully complete the project in accordance with the Contract Documents.

This project is located in Van Buren Township.

Please note the following requirements:

A. State or federal funds are not being used to assist in construction and relevant State or federal requirements will not apply.

B. Communities must comply with all requirements of 1976 PA 453 (Elliott-Larsen Civil Rights Act) and 1976 PA 220 (Persons with Disabilities Civil Rights Act), as amended. In accordance with these laws, all contracts must contain a covenant that "The contractor and any subcontractors shall not discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, height, weight, marital status or a disability that is unrelated to the individual's ability to perform the duties of a particular job or position."

2. RECEIPT OF OPENING OF BID PROPOSALS

A. Sealed bid proposals will be received as indicated in the Invitation for Bids.

B. The Proposal shall be submitted only on forms provided by the Owner. All blank spaces for bid prices must be filled in, in ink or typewritten, and the bid form must be fully executed when submitted.

C. Proposals shall be enclosed in a sealed envelope marked:

Office of the Township Clerk
Van Buren Township
46425 Tyler Road
Van Buren Twp, Michigan 48111

Project: Iron Belle Trail, Van Buren Section D
Proposal Deadline: 11:00 a.m. on **October 2, 2024**
Attention: Township Clerk

and shall be delivered to the Office of the Township Clerk on or before the time specified in the Invitation for Bids.

Each sealed envelope shall bear on the outside the Bidder's name and address.

D. Proposals shall be made in full conformity with the instruction, requirements and conditions set forth in the Instructions to Bidders and in the Drawings, Specifications and other Contract Documents. Bids are firm and no bid may be withdrawn for a period of 90 days after opening of bids.

E. Any bid received at the office designated in the solicitation after the exact time specified for receipt will not be considered and will be returned to the bidder unopened. This material requirement is not subject to waiver by Owner.

F. Bidders are strongly encouraged to hand-deliver their bids to the Office of the Township Clerk. Telegraphic and facsimile bids shall not be considered. Bids delivered by certified, registered or express mail will be accepted, however, subject to the following conditions:
   1) If by express mail, a bid must be postmarked no later than 5:00 pm at the place of mailing two working days prior to the date specified for receipt of bids. The term working days excludes weekends and holidays.
   2) If by certified or registered mail, a bid must be postmarked no later than five (5) calendar days before the date specified for receipt of bids.
   3) Before 12:00 p.m. local time, on the date specified for receipt of bids, bidders who did not hand deliver their bids, must confirm via telephone with the Township Clerk, or his designee, that their bids have been received by the Office of the Township Clerk.

G. If a dispute later arises regarding the timeliness of a late bid which is sent either by registered or certified mail, the only acceptable evidence to establish the date of mailing of a late bid is a postmark both on the bid envelope or wrapper and on the original receipt from the U.S. Postal Service. Both postmarks must show a legible date, or the bid shall be deemed to have been mailed late. The term postmark means a printed, stamped, or otherwise placed impression (exclusive of a postage meter machine impression) that is readily identifiable without further action as having been supplied and affixed on the date of mailing by employees of the U.S Postal Service. Therefore, Bidders should request that the postal clerk place a legible hand cancellation bull's-eye postmark on both the receipt and the envelope.

H. The only acceptable evidence to establish the date of mailing of a late bid sent by express mail is the date entered by the express mail receiving clerk on the express mail label and the postmark on the envelope or wrapper and on the original receipt from the express mail service. Postmark has the same meaning as set forth above. Therefore, bidders should request that the express mail clerk place a legible hand cancellation bull's-eye postmark on both the receipt and the envelope.

3. PROJECT TIMELINE

It is agreed that the Contractor shall, upon execution of this contract, begin work within ten (10) consecutive calendar days from the date of the notice to proceed, and shall prosecute the work in such a manner to complete the installation of all proposed improvements by **December 1, 2025.**

4. CONSTRUCTION CONDITIONS

It is required that each bidder will examine the drawings and specifications for this work and make a personal examination of the site of the proposed work and its surroundings. It is also expected that he will obtain first-hand information concerning the available facilities for receiving, transporting, handling and storing construction equipment and materials and concerning other local conditions that may affect this work.

5. QUALIFICATIONS OF BIDDERS

Any bidder being considered for award of this contract shall be subject to the following:

A. The Bidder declares that he has had prior experience in the type of work required by the Contract Documents and that he has the necessary finances, personnel and working organization and equipment available to execute the proposed work in accordance with the requirements of the Contract Documents. The Bidder further declares that he will furnish proof of these qualifications and work performance references. The Bidder shall provide a resume and references to the Owner demonstrating the Bidder's ability to satisfy the requirements as set forth in these Contract Documents.

B. All bidders must sign the proposal section titled "Progress Schedule" indicating the calendar days within which the work must be completed. Also, within ten (10) days after the contract is awarded by the Owner, the Contractor who shall submit to the Engineer four (4) copies of a Construction Progress Schedule. Such Schedule shall comply with the requirements set forth in Item 15 PROGRESS SCHEDULE of the GENERAL SPECIFICATIONS.

C. Upon request, the Owner may require the submission of any additional information necessary and the Contractor shall attend a pre-award conference to satisfy the Owner that the bidder is adequately prepared to fulfill the Contract.

6. NAME, ADDRESS AND LEGAL STATUS OF BIDDER

The name and legal status of the bidder, that is, as a corporation, limited liability company, partnership, sole proprietor, or an individual shall be stated in the proposal. A corporation bidder shall name the state in which its Articles of Incorporation are held, and must give the title of the official having authority, under the by-laws, to sign contracts; a partnership bidder shall give the full names and addresses of all partners. Anyone signing a proposal as an agent of another or others must submit with his proposal legal evidence of his authority to do so. The place of residence of the bidder, or the office of others in the case of a firm or company with county and state, must be given after his signature.

7. BID DEPOSIT

Each proposal must be accompanied by a bid deposit in the form of an acceptable bid bond or a certified check or cashier's check drawn upon a US bank for a sum of not less than five percent (5%) of the amount of the proposal as a guarantee on the part of the bidder that he will, if called upon to do so, enter into contract in the attached form, to do the work covered by such proposal and at the prices stated therein and to furnish acceptable surety for its faithful and entire fulfillment. Such bid bond, certified check or cashier's check shall be made out to the Owner, and shall be subject to the conditions specified in the contract documents.

ANY PROPOSAL NOT ACCOMPANIED BY THE SPECIFIED BID DEPOSIT WILL BE CONSIDERED NON-RESPONSIVE AND WILL NEITHER BE READ NOR CONSIDERED.

A. The bid deposit checks (or bid bonds if applicable) of all except the three lowest bidders may be obtained at the office of the Engineer (PEA Group) between the hours of 9:00 A.M. and 4:00 P.M. on the normal working day, the day after the opening of bids after which time said checks or bid bonds will be mailed.

B. The bid deposit checks (or Bid Bond if applicable) of the three lowest bidders will be returned within three (3) working days after the Owner and the accepted bidder have entered into contract or, if the contract has not been executed within the time limits as specified in paragraph #11, IB-5, after the opening of bids, upon demand of the bidder at any time thereafter, so long as he has not been notified of the acceptance of his bid.

8. FORM OF PROPOSAL

All proposals must be made and signed by the bidder in the form attached hereto and without removal from the bound specifications. Additional copies of the Proposal Form may be obtained from the Township Engineer or Owner upon request.

All prices stated in the proposal must be plainly written in ink in legible figures or typed. Illegibility of any figure in the proposal may be sufficient cause for rejection of the proposal by the Owner.

9. BASIS OF PROPOSAL

Proposals are solicited on the basis of unit prices for each type of work as set forth in the form of Proposal. Proposals will be compared on the basis of the quantities stated therein and the prices offered for each item. Written unit prices in words shall be used to determine the amount of the bid.

10. EXPLANATION TO BIDDERS BY ADDENDUM

A. Neither the Owner nor the Township Engineer will give verbal answer to inquiries regarding the meaning of the drawings or specifications, or give verbal instructions previous to the award of the contract. Any verbal statements regarding same by any person, previous to the award, shall be unauthoritative.

B. Explanations desired by bidders shall be requested of the Owner or Township Engineer in writing and if explanations are necessary, a reply will be made in the form of an addendum, a copy of which will be forwarded to each bidder.

C. Addenda issued to bidders shall become a part of the specifications and contract documents, and all proposals shall include the work described in the addenda. The bidders are hereby instructed to acknowledge receipt of all addenda on page P-1 of the Proposal.

D. No inquiry received within three (3) days of the date fixed for the deadline of bids will be given consideration.

E. Failure of the Owner to send, or of the bidder to receive, any such interpretations shall not relieve the bidder from obligation under his bid as submitted.

F. It is the Contractor's responsibility to track addendums. Addendums will be posted at the same locations as the original bid notification including MITN and the Township Website.

11. AWARD AND EXECUTION OF CONTRACT

The Contract shall be deemed as having been awarded when formal notice of award shall have been duly served by the Owner upon the bidder.

The bidder to whom the contract shall have been awarded will be required to execute the Agreement in the form attached hereto and to furnish Surety and Insurance Certificates, all as required. In case of his refusal or failure to do so within ten (10) calendar days after award, he will be considered to have abandoned all his rights and interests in the award, and his bid deposit may be declared forfeited to the Owner as liquidated damages and the work may be awarded to another bidder.

12. GUARANTY BONDS

In addition to the bid bond or bid deposit, the contractor shall furnish the Owner the following bonds (templates provided in these contract documents) prior to the contract being executed:

A. The Contractor shall furnish a surety bond in an amount at least equal to 100 percent of the contract price as security for faithful performance of this contract.

B. The Contractor shall also furnish a separate surety bond in an amount at least equal to 100 percent of the contract price as security for payment of all persons performing labor, furnishing materials and/or renting equipment in connection with this contract.

C. The Contractor shall furnish a two (2) -year Maintenance and Guarantee Bond in an amount at least equal to 100 percent (100%) of the contract price.

D. Premium for the three bonds heretofore described shall be paid by the Contractor.

E. The form of the bonds shall be as appended herewith.

F. The Contractor shall provide liability insurance and bond in an amount specified by the Owner (Township) pursuant to and in accordance with MCL Section 129.201 et seq., MSA Section 5.2321 (1) et seq. The Contractor shall provide satisfactory evidence that the corporate surety and the insurer are licensed and/or approved to conduct business in the state of Michigan. Such evidence shall include a certified copy of the certificate of authority issued by the Insurance Licensing Division of the Insurance Bureau.

13. INSURANCE

Proof of all required insurances, as stated in Section 47 of the General Conditions shall be provided with the bid proposal. For all contracts over $600, also include a completed W9. All sole proprietors must submit a completed and notarized Sole Proprietor Form.

14. RIGHT TO ACCEPT, TO REJECT AND TO WAIVE DEFECTS

The Owner reserves the right to accept any proposal, to reject any or all proposals, and to waive defects or irregularities in any proposal. In particular, any alteration, erasure or interlineation of the Contract Documents and of the Form of Proposal shall render the accompanying proposal irregular and subject to rejection by the Owner.

15. WITHDRAWAL OF BIDS

Any bidder who has submitted a proposal to the Owner may withdraw his bid in writing received by the Township Clerk at any time prior to the scheduled time for the receipt of bids. Unless otherwise stated in the Supplemental Specifications contained herein, no bidder may withdraw his bid after the time stated in the advertisement for opening bids for a period of one-hundred-twenty (120) days thereafter.

16. TAXES

The Contractor shall include and be deemed to have included in his bid and contract price all Michigan sales and use taxes currently imposed by legislative enactment and as administered by the Michigan Department of Revenue on the bid date.

If the Contractor is not required to pay or bear the burden, or obtains a refund or drawback, in whole or in part, of any Michigan sales or use tax, interest or penalty thereon, which was required to be and was deemed to have been included in the bid and contract price, the contract price shall be reduced by the amount thereof and the amount of such reduction, whether as a refund or otherwise, shall inure solely to the benefit of Van Buren Charter Township.

17. DRAWINGS AND CONTRACT DOCUMENTS

The Bidding Documents include the Advertisement for Bids, Instruction to Bidders, Bid Form, General Conditions, Contract Form, Bonds, Technical Specifications, and Drawings, including any Addenda issued prior to receipt of bids.

The drawings upon which the proposal shall be based consist of a title sheet and other plan-profile and detail sheets numbered as follows:

Iron Belle Trail Section D Drawings:
Project No. 2019-369 - Drawings Numbered C-0.0 thru C-6.2, and B-1.0 thru B-4.0 and any other sheets added by an addendum issued by Owner or Township Engineer.

18. CONSTRUCTION PERMITS, ROAD PERMITS, MISCELLANEOUS PERMITS

The project requires construction work within the following jurisdictions:

Van Buren Township
Wayne County Environmental Services (SESC)
Wayne County Department of Public Services (Permits Office)

The Contractor shall conform to the various requirements of the jurisdictional agency within which work is being performed and shall obtain, at his own expense, all permits required.

The Wayne county Environmental Services Department has jurisdiction over work at the following locations: All Erosion Control.

The Wayne County Department of Public Services has jurisdiction over any work performed within public road rights-of-way.

NOTICE TO BIDDERS

TO ALL PROSPECTIVE BIDDERS

PLEASE COMPLETE ALL PARTS
OF YOUR BIDDING DOCUMENTS
INCLUDING ACKNOWLEDGMENT OF
RECEIPT OF ANY ISSUED ADDENDA

IMPROPERLY SIGNED BIDS
OR FAILURE TO COMPLETE ALL SECTIONS
OF THE DOCUMENT
MAY RESULT IN THE REJECTION OF YOUR BID

BID FORM
FOR THE CONSTRUCTION OF THE

IRON BELLE TRAIL
SECTION D

CHARTER TOWNSHIP OF VAN BUREN
WAYNE COUNTY, MICHIGAN

TO: Charter Township of Van Buren
46425 Tyler Road
Van Buren, Michigan 48111

The undersigned, having familiarized themselves with the local conditions affecting the cost of the work and with the Contract Documents, including the Invitation to Bid, Notice to Bidders, Instructions to Bidders, Proposal, The Agreement, Bonds, General Conditions, all Specifications, Addendum and Construction Drawings on file in the office of the Charter Township of Van Buren Michigan 48111, and the Consulting Engineers, hereby proposes to perform all work required to be performed and provide and furnish all labor, materials, necessary tools and equipment, and all utility and transportation services necessary to perform and complete in a workmanlike manner all work required for construction of the following:

IRON BELLE TRAIL SECTION D, in Wayne County, all in accordance with the contract documents, drawings and specifications as prepared by:

PEA Group
7927 Nemco Way #115
Brighton, MI 48116

Including Addendum Nos. (if applicable):

Addendum No. 1 _____, Dated _____

Addendum No. 2_____, Dated _____

BID FORM
IRON BELLE TRAIL SECTION D
CHARTER TOWNSHIP OF VAN BUREN, WAYNE COUNTY, MICHIGAN

BASE BID: The undersigned, referred to as Bidder, having examined the Bidding Documents and the Project site, herby proposes to furnish all labor, materials, tools, equipment, services, and insurance required to complete the Work in connection with the contract, in accordance with the bidding documents, for the **BASE BID AMOUNT** of:

_____

_____ Dollars

($_____),

(the amount is shown in both words and numbers. In case of discrepancy, the words will govern; typical throughout.)

(area left intentionally blank)

BID FORM

Section 1 – Schedule of Prices

Project: Iron Belle Trail Section D

Quantities provided below are an engineer's estimate. Contractor is responsible for verifying quantities and providing adequate quantities, material, methods and equipment to complete the scope of work specified on the construction plans per the specifications and details provided.

	Description	Unit	Estimated Quantity		Unit Price		Total Price
1.	Wayne County Permit Fees	LSUM	1	$	1	$	4724.55
2.	Mobilization (5% Max)	LSUM	1	$		$	
3.	Audio Video File Special	LSUM	1	$		$	
4.	Exploratory Excavation, Vertical	VFT	60	$		$	
5.	Contractor Staking	LSUM	1	$		$	
6.	Clearing	ACRE	2.0	$		$	
7.	Sign, Rem, Salvage	EA	3	$		$	
8.	Sawcut, Pavt	LFT	105	$		$	
9.	Sawcut, Horizontal	LFT	20	$		$	
10.	Fence, Rem	LFT	75	$		$	
11.	Pavt, Rem, Gravel	SYD	1335	$		$	
12.	Pavt, Rem, Conc	SYD	15	$		$	
13.	Curb and Gutter, Rem, Conc	LFT	35	$		$	
14.	Curb and Gutter, Rem, Asphalt	LFT	60	$		$	
15.	Pavt Mrkg, Longit, 6" or Less Width, Rem	LFT	17100	$		$	
16.	Guard Rail, Rem	LFT	485	$		$	
17.	Curb, Asphalt	LFT	65	$		$	
18.	Curb, Concrete	LFT	40	$		$	
19.	Erosion Control, Silt Fence	LFT	4700	$		$	
20.	Erosion Control, Inlet Protection Fabric Drop, Modified	EA	3	$		$	
21.	Earthmoving	LSUM	1	$		$	
22.	Mulch Blanket, High Velocity	SYD	1680	$		$	
23.	Shared Path Grading	LFT	4130	$		$	
24.	Maintenance Gravel, Special	TON	20	$		$	
25.	Subgrade Undercutting, Class II, Special	CYD	100	$		$	
26.	Subgrade Undercutting, 21AA, Special	CYD	200	$		$	
27.	Subgrade Undercutting, 6A, Special	CYD	100	$		$	
28.	Shared Use Path, 6" Aggregate, Modified	SYD	3660	**$**		**$**	
	SUBTOTAL – BF3					**$**	

Item	Description	Unit	Estimated Quantity		Unit Price		Total Price
29.	2.0” Asphalt 4E1	SYD	2980	$		$	
30.	2.0” Asphalt 5E1	SYD	2980	$		$	
31.	Sidewalk, Conc 4”	SFT	7560	$		$	
32.	Sidewalk Ramp, Conc 6”	SFT	200	$		$	
33.	Aggregate Base, 6”, 21AA	SYD	165	$		$	
34.	Granular Material, CLII	CYD	95	$		$	
35.	Aggregate Shoulder, 10”, 21AA	SYD	300	$		$	
36.	Rip Rap Plain	SYD	150	$		$	
37.	Rip Rap Heavy	SYD	250	$		$	
38.	Sanitary Structure Cover, ADJ	EA	1	$		$	
39.	Detectable Warning Surface	LFT	28	$		$	
40.	Fence, Ornamental	LFT	115	$		$	
41.	Fence, Safety	LFT	680	$		$	
42.	Guard Rail	LFT	400	$		$	
43.	Guard Rail Approach Terminal, SKT	EA	5	$		$	
44.	Guard Rail, ANCH, Bridge	EA	2	$		$	
45.	Pavt, Conc, 8”	SYD	116	$		$	
46.	Underdrain, Pipe, Open Graded, 6”	LFT	620	$		$	
47.	Permanent Pavement Markings	LSUM	1	$		$	
48.	Topsoil, 3 inch	SYD	4750	$		$	
49.	Seed Mixture Type 2	SYD	1000	$		$	
50.	Seed Mixture Type 6	SYD	3750	$		$	
51.	Signs, Permanent, Complete	LSUM	1	$		$	
52.	Boulder Retaining Wall	SFT	1050	$		$	
53.	Temporary Traffic Control for Construction Zone Operations	LSUM	1	$		$	
54.	Steel Pedestrian Bridge, Furn	LSUM	1	$		$	
55.	Steel Pedestrian Bridge, Erect	LSUM	1	$		$	
56.	Helical Pile Equipment, Furn	LSUM	1	$		$	
57.	Helical Pile	EA	58	$		$	
58.	Helical Pile, Load Test	EA	2	$		$	
59.	Obstruction Removal, Unexpected	DLR	1	$		$	
60.	Substructure, Conc	CYD	145	$		$	
61.	Conc, Low Temperature Protection	CYD	145	$		$	
62.	Joint Waterproofing	SFT	171	$		$	
63.	Water Repellent Treatment, Penetrating	SYD	75	$		$	
64.	Substructure Horizontal Surface Sealer	SYD	5	$		$	
	SUBTOTAL – BF4					**$**	

Item	Description	Unit	Estimated Quantity		Unit Price		Total Price
65.	Excavation, Fdn	CYD	490	$		$	
66.	Backfill, Structure, CIP	CYD	380	$		$	
67.	Aggregate, 6A	CYD	30	$		$	
68.	Underdrain, Fdn, 4 inch	FT	114	$		$	
69.	Underdrain, Outlet, 4 inch	FT	40	$		$	
70.	Underdrain, Outlet Ending 4 inch	EA	4	$		$	
71.	Superstructure, Conc, Form, and Cure	LSUM	1	$		$	
72.	Reinforcement, Steel, Epoxy Coated	LB	15900	$		$	
73.	2” Sanitary Sewer Force Main (open cut)	LFT	185	$		$	
74.	2” Sanitary Sewer Force Main (subsurface)	LFT	260	$		$	
75.	Connect to Ex. Force Main	EA	4	$		$	
76.	4” Steel Sleeve	LFT	100	$		$	
75.	Dewatering	LSUM	1	$		$	
75.	Connect to Ex. Force Main	EA	4	$		$	
	SUBTOTAL THIS SHEET					**$**	
	SUBTOTAL – BF3					**$**	
	SUBTOTAL – BF4					**$**	
	TOTAL					**$**	

Alternate Bid:

Item	Description	Unit	Estimated Quantity		Unit Price		Total Price
1.	Shared Use Path, Conc, 6”	SYD	2990	$		$	

ADDITIONAL REQUIREMENTS

The undersigned affirms that in making such proposal neither he nor any company that he may represent nor anyone in behalf of him or company directly or indirectly has entered into any combination or collusion, undertaking or agreement with any bidder or bidders to maintain the prices of said work, or any compact to prevent any other bidder or bidders from bidding on said contract or work, and further affirms that such proposal is made without regard or reference to any other bidder or proposal and without any agreement or understanding or combination either directly or indirectly with any other person or persons with reference to such bidding in any way or manner whatsoever.

The undersigned hereby agrees that if the foregoing proposal shall be accepted by the Owner, he will, within ten (10) consecutive calendar days after receiving formal notice of award, enter into a contract with Owner, in the appropriate form, to furnish the labor, materials, equipment, tools and construction equipment necessary for the full and complete execution of the work at and for the price named in his proposal, and he will furnish to the said Owner and to the State of Michigan, such surety for the faithful performance of such contract and for all labor expended thereon as shall be approved and accepted by the said Owner.

The undersigned agrees to complete all of the work items, necessary items and incidental items whether noted on the plan or required in the specifications in a workmanlike manner and does include in the proposal bid items compensation covering all cost to perform the work.

Further the undersigned agrees on the basis of this lump sum base bid proposal and to accept as final payment this amount for all work necessary to complete the project.

Extra work not covered by the schedule ordered by the Engineer or required to complete the project will be agreed upon in writing by the Contractor and Engineer in accordance with the General Conditions which the Contractor agrees to accept as full compensation as written.

The undersigned bidder does hereby represent and warrant that the total price bid in this Proposal is a complete and correct statement of the price bid for the work included in said Proposal, and further that all other information given in or furnished with this said Proposal is complete, correct, and submitted as intended by him. He does hereby waive any right or claim he may now have or that may hereafter accrue to him by reason of errors, mistakes, or omissions made by him in said Proposal, to refuse to execute the Contract if awarded to him, or to demand the return of the bid deposit, or to be relieved from any of his obligations required by said Proposal.

The undersigned attaches hereto, as a bid deposit, a (certified check) or (cashier's check) or (bid bond) in the sum of $_____ Dollars ($_____) as required in the Instruction to Bidders and the undersigned agrees that in case he shall fail to fulfill his obligations under the foregoing Proposal and agreement, the said Owner may determine that the undersigned has abandoned his rights and interests in such Proposal and that the bid deposit accompanying his proposal has been forfeited to the said Owner; but otherwise, the said bid deposit shall be returned to the undersigned upon the execution of such contract and the acceptance of his bonds and insurance coverage, or upon the rejection of his Proposal as provided in the Instructions to Bidders.

In the interest of expediting the award of this contract, the undersigned shall comply with Item 5. **Qualifications of Bidders** of the **INSTRUCTIONS TO BIDDER** within the time limits specified therein to show that he is qualified and is adequately prepared to perform the work under the Proposed Contract for which this proposal is offered.

In submitting this bid, it is understood and accepted that the Owner expressly reserves and has the right to, in its sole and exclusive discretion, reject any and all bids, withdraw its request for proposals and/or not award the contract to any of the bidders.

Dated and signed at _____,

State of _____, this _____ day of _____, 20_____

Name of Bidder: _____

Signature: _____

Title of Signer: _____

Business Address of Bidder: _____

_____

_____

Telephone No.: _____

BID FORM SUPPLEMENTAL
FOR THE CONSTRUCTION OF THE

IRON BELLE TRAIL
SECTION D
WAYNE COUNTY, MICHIGAN

TO: Van Buren Township
46425 Tyler Road
Van Buren Twp., MI 48111

In accordance with the Instruction to Bidders and Bid Form, we include the Appendices to Bid Form Supplements listed below. The information provided shall be considered an integral part of the Bid Form.

The following Appendices are attached to this document:

Appendix A - List of Subcontractors: Include names of major Subcontractors and portions of the Work each Subcontractor will perform.

Appendix B - List of Alternates: Include cost variation to Bid Price applicable to the Work described on the construction plans.

Appendix C – Time Alternate: If the bidder takes exception to the time stipulated in the proposal, it is requested to stipulate its proposed time for performance of work.

BID FORM SUPPLEMENTS SIGNATURES

The Corporate Seal of

_____
(Bidder - print the full name of your firm)

was hereunto affixed in the presence of:

_____
(Authorized signing officer Title)

(Seal)

_____
(Authorized signing officer Title)

(Seal)

APPENDIX A - LIST OF SUBCONTRACTORS

For purposes of this contract, a Major Subcontractor is anyone (other than the Contractor) who performs work (other than or in addition to the furnishing of materials, plans or equipment) at or about the construction site, directly or indirectly for or on behalf of the Contractor (and whether or not in privity of contract with the Contractor), but shall not include any individual who furnishes merely the individual's own personal labor or services. Major subcontractors shall be listed if the work planned to be subcontracted is 15% or more of the bid sum or over $50,000, whichever is less. The Bidder shall identify the work to be subcontracted to each major subcontractor.

For the work outlined in these documents the Bidder expects to engage the following major subcontractors to perform the work identified:

Subcontractor (Name and Address)	Work	Amount

If the Bidder does not expect to engage any major subcontractor, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT expect to engage any major subcontractor to perform work under the contract.

_____

Signature of Authorized Representative of Bidder

APPENDIX B – MATERIAL AND EQUIPMENT ALTERNATES

The Lump Sum Bid proposal price shall include materials and equipment selected from the designated items and manufacturers listed in the bidding documents. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

If the Contractor wishes to quote alternate items for consideration by the Van Buren Township, it may do so under this Section. A complete description of the item and the proposed price differential must be provided. Unless approved at the time of award, substitutions where items are specifically named will be considered only as a negotiated change in Contract Sum.

Item Number	Description	Add/Deduct Amount

If the Bidder does not suggest any material or equipment alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any material or equipment alternate under the contract.

_____

Signature of Authorized Representative of Bidder

APPENDIX C – TIME ALTERNATIVE

If the Bidder takes exception to the time stipulated in the proposal, Time of Completion, it is requested to stipulate below its proposed time for performance of the work. Consideration will be given to time in evaluating bids.

If the Bidder does not suggest any time alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any time alternate under the contract.

_____

Signature of Authorized Representative of Bidder

CONTRACT

THIS CONTRACT, made and entered into this _____ day of _____, 20___, by and between **Van Buren Township, 46425 Tyler Road, Van Buren Township, Michigan 48111** Party of the First Part, hereinafter called the Owner, and_____, Party of the Second Part, hereinafter called the Contractor.

WITNESSETH, that the Contractor and the Owner, for the considerations hereinafter named, agree as follows:

ARTICLE I - THE WORK

It is agreed that the Contractor shall furnish all labor, materials, and equipment, and perform all of the work described, shown and called for in the Contract Documents and on the Construction Drawings for the **Iron Belle Trail Section D** (also referred to as the "Drawings" and "Contract Drawings"), in the Specifications entitled -

Specifications & Contract Documents
Iron Belle Trail Section D
Wayne, Michigan

(both of which Drawings and Specifications have been prepared by PEA Group, which is hereinafter called the "Engineer"), and in the other Contract Documents. Contractor agrees to and shall do everything required by the Contract Documents. The Contract Documents being hereby defined to include the Contract, Bonds, Drawings, Advertisement, Instructions to Bidders, Bid Form, Bid Form Supplemental, Specifications, General Conditions, and any attachments, supplements, and addendums thereto. The Contract Documents are hereby incorporated herein as part of this Contract.

ARTICLE II - THE TIME

It is agreed that the Contractor shall, upon execution of this Contract, begin work within ten (10) consecutive calendar days from the date of the notice to proceed, and shall prosecute the work in such a manner so as to complete the installation of all proposed improvements and all related or required under the Contract Documents by **December 1, 2025**. It is agreed that if the Contractor shall be unavoidably delayed in beginning or fulfilling this Contract by reason of excessive storms or floods, or by Acts of Providence, or by general strikes, or by court injunction, or by stopping of the work by the Owner because of any emergency or public necessity, or by any preference, priority or allocation order duly issued by the government, or by reason of alterations ordered by the Owner, the Contractor shall have no valid claim for damages on account of any cause or delay; but Contractor shall in such case be entitled to such an extension of the above time limits herein, as the Engineer shall adjudge and agree, in writing, to be just and reasonable; provided, however, that formal claim for such extension shall be made in writing by the Contractor within one (1) week after the date upon which such alleged cause or delay shall have occurred.

ARTICLE III – LIQUIDATED DAMAGES

It is expressly covenanted and agreed that time is and shall be considered of the essence in the Contractor's performance of the work under this Contract. In the event that the Contractor shall fail to perform the entire work agreed to by or at the times referred to in the Contract Documents, or within some other certain date subsequent which may have been advanced under the provisions of Article II, the Contractor shall pay unto the Owner as and for liquidated damages and not as a penalty, the sum of Five Hundred Dollars **($500.00)** for each and every calendar day that the Contractor shall be in default. Said sum of five hundred dollars **($500.00)** per day, in view of the difficulty of estimating such damages with exactness is hereby expressly fixed and agreed upon as the damages which will be suffered by the Owner for reason of such defaults. It is also understood and agreed that the liquidated damages hereinbefore mentioned are in lieu of the actual damages arising from such breaches of this Contract, which said sums the Owner shall have the right to deduct from any moneys in its hand otherwise due or to become due to the Contractor or to sue for and recover compensation for damages for nonperformance of this Contract at the time stipulated herein and provided.

ARTICLE IV - OWNER'S RIGHT TO COMPLETE

It is agreed that if at any time the Contractor should abandon his work; or if he should be adjudged as bankrupt, or if his performance of this Contract is unnecessarily or unreasonably delayed; or if he should make a general assignment for the benefit of his creditors; or if a receiver should be appointed on account of his insolvency; or if he should persistently or repeatedly fail to supply enough properly skilled workmen or sufficient materials for the work; or if he should habitually fail to make prompt payment to sub-contractors or to pay promptly for materials and labor; or if he should persistently disregard laws or ordinances or the directions of the Engineer; or if he should willfully and repeatedly violate any of the substantial provisions of this Contract, then in such case the Owner, after giving the Contractor and his sureties written notice thereof, may order him to discontinue all work under this Contract, or any part thereof. Thereupon, the Contractor shall at once discontinue such work or such part thereof, and shall cease to have any right to access the property. The Owner shall have the right to finish the work, or part thereof, by contract or otherwise as Owner may elect, and for that purpose to take possession and make use of such materials, tools, building appliances and equipment as may be found upon the property, and to charge the cost and expense of such completion to the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, the amount of such excess shall be paid to the Contractor; and if such expense shall exceed such unpaid balance, the Contractor or his sureties shall pay to the Owner the amount of such excess.

It is expressly stipulated and agreed that from and after the date of the order to discontinue work, and until such work shall have been finally completed by the Owner, neither the Contractor nor any of his agents or employees shall remove, or make any effort directly or indirectly to remove any of the above-mentioned materials, tools, building appliances or equipment from the points at which they were located on the property on the date of said order, except upon the written consent of the Owner to do so.

It is further understood and agreed that the foregoing provisions of these articles are optional at owner's discretion, nonexclusive remedies, and without prejudice to any other right or remedy which the Owner may have under this Contract, at law, or in equity.

ARTICLE V - ASSIGNMENT OF CONTRACT

It is agreed that the Contractor shall not assign or transfer this Contract or sublet any part of the work embraced in it, except with written consent of the Owner to do so.

It is further agreed that all parts of the work which may be performed by a subcontractor shall be done in conformity with and be subject to all the provisions of the Contract Documents exactly as if performed by the Contractor and his immediate employees and workmen. No subletting of the work shall in any way diminish or weaken the responsibility of the Contractor for all parts of the work or lessen his obligations and liabilities under this Contract.

It is likewise agreed that the Contractor shall not assign, either legally or equitably, any of the monies payable to him under this Contract, or his claim thereto, except with the written consent of the Owner.

ARTICLE VI - THE CONTRACT BASE BID

It is agreed that, in consideration of the faithful and entire performance by the Contractor of his obligations under this Contract, the Owner shall pay to him, at the time and in the manner hereinafter stipulated, the base bid price as given in the bid form for the estimated total of:

_____ Dollars

($ _____).

On or about the fifteenth (15th) of each month during which satisfactory progress has been made toward the final completion of the work, the Engineer will make an estimate of the amount and value of the work which has been completed under this Contract during that month, or since the date of the last preceding estimate. Such estimate shall not be required to be made by strict measurement or with exactness but may be made either wholly or in part by appraisement or estimation or by a consideration of accounts for labor and materials, and it shall be sufficient if it is approximate only. Any error or inaccuracy which may occur in any such progress estimate may be allowed for or corrected in any subsequent estimate.

It is agreed that the Contractor shall submit to the Owner a written request for each partial or final estimate of payment. It is further agreed that the Contractor shall submit sworn statements or other satisfactory evidence, as requested by the Owner, that all persons who have supplied labor, materials, or equipment for the work embraced under this Contract as well as persons who have claimed damages arising out of the performance of this Contract have been fully paid for the same.

Payments based on progress estimates will be made within thirty (30) days of receipt by the Township of the progress estimates for work completed during the preceding month or since the date of the last preceding progress payment. Payments will be in accordance with the provisions of Act 524 of the Michigan Public Acts of 1980 and in accordance with the terms of this Contract.

No allowance will be made for materials furnished which are not incorporated in the finish work, unless otherwise stated.

Pursuant to Act No. 524, Michigan Public Acts of 1980, the Owner hereby designates PEA Group as the person representing it to whom written requests for payments are to be submitted. The Contractor hereby designates PEA Group as the person who will submit written requests for payments to the Owner.

It is agreed that in the event a dispute arises over an avoidable or unacceptable delay in the performance of the work as described in Section 4 (3) of Act 524 of the Michigan Public Acts of 1980 (MCLA 125.1564 (3)) the dispute may, at the option of the Owner, be submitted for resolution in accordance with the provisions of Section 4 (2) of said Act. The dispute resolution process herein described shall be used only for the purpose of determining the rights of the parties to retained funds and interest earned on retained funds. Nothing herein shall impair the right of the Owner to bring an action in any court of jurisdiction to determine the rights of the parties.

The progress estimates and payments will include all alterations which may be done under the provisions of Section 45 of the General Conditions on the same basis as other work is included. All such work is regarded herein as essentially a part of the Contract and not merely an addition to it.

No progress estimate made or certified by the Engineer and no partial payment made to the Contractor by the Owner shall be deemed or construed as an acceptance of any part of the work under this Contract or any portion thereof prior to the final completion of the work and payment of the final estimate.

Within thirty (30) days after satisfactory completion of the work covered by this Contract, the Engineer will make a final inspection of the work as a whole and will make up a final estimate of the total amount due the Contractor under the terms of the Contract. Upon the acceptance of the completed work, the Owner will pay to the Contractor the entire amount of such final estimate less the sums previously paid. The Contractor shall file with the Owner the Contractor's Affidavit included in the Contract Documents.

ARTICLE VII - ANTICIPATED CONDITIONS AND WORK BY OTHERS

The Contractor further acknowledges that he is not entitled to any additional compensation by reason of conditions being different from those anticipated or by reason of his failing to fully acquaint himself with the site, the conditions, and the work now in place or on account of interference by the Owner or by any other contractor's activities which affect the work of this Contract.

ARTICLE VIII - MISCELLANEOUS

The Contractor acknowledges that he has not received or relied upon any representations or warranties of any nature whatsoever from **Van Buren Township**, its agents or employees, and that this Contract is entered into solely upon the Contractor's own independent business judgment.

ARTICLE IX - BONDS

The Contractor shall provide liability insurance and bonds in an amount specified by the Owner Township) pursuant to and in accordance with this Contract, the Contract Documents and MCL 129.201 et seq. The Contractor shall provide satisfactory evidence that the corporate surety and the insurer are licensed and/or approved to conduct business in the state of Michigan. Such evidence shall include a certified copy of the Certificate of Authority issued by the Insurer Licensing Division of the Insurance Bureau.

ARTICLE X - INDEPENDENT CONTRACTOR RELATIONSHIP

In the performance of this Contract, the relationship of Owner to the Township shall be that of an independent contractor and not that of an employee or agent of the Owner. Contractor is and shall perform under this Contract as an independent contractor, and no liability or responsibility with respect to benefits of any kind, including without limitation, medical benefits, worker’s compensation, pension rights, or other rights or liabilities arising out of or related to a contract for hire or employer/employee relationship shall arise or accrue to either party as a result of the performance of this Contract.

Contractor, as an independent contractor, is not authorized to enter into or sign any Contracts on behalf of the Owner or to make any representations to third parties that are binding upon the Owner. Although Contractor may be required under this Contract to advise, make recommendations to and to a limited extent represent the Owner, all plans, studies, applications, submittals, surveys, reports and any other information relating to the work must be submitted to and approved by the Owner or the Owner's authorized official prior to being disseminated to any third party and shall only be so disseminated if such dissemination is approved in advance by the Owner or an authorized official of the Owner.

Contractor represents that it will dedicate sufficient resources and provide all necessary personnel, labor, materials and equipment required to perform the work described in this Contract in accordance with the terms and conditions of this Contract.

ARTICLE XI - LIABILITY AND INSURANCE.

Contractor agrees to indemnify and hold harmless the Owner, its elected and appointed officials and employees and attorneys, and all Additional Named Insureds from and against any and all claims, demands, suits, losses and settlements, including actual attorney fees incurred and all costs connected therewith, for any damages which may be asserted, claimed or recovered against the Owner and/or any Additional Named Insured by reason of: (i) personal injury, death and/or property damages which arises out of or is in any way connected or associated with the actions or inactions of Contractor in performing or failing to perform the work; (ii) civil damages which arise out of any dispute between Contractor and its subcontractors, affiliates, employees or other private third parties in connection with this Contract; or (iii) civil damages and penalties, including without limitation damages and penalties resulting from claims of discrimination, civil rights violations, statutory violations or constitutional violations, which arise out of any or are in any way connected or associated with the actions or inactions of Contractor. Contractor also agrees to indemnify and hold harmless the Owner, its elected and appointed officials and employees and attorneys, and all Additional Named Insureds from and against any and all claims, demands for payment, suits, losses and settlements, including actual attorney fees incurred and all costs connected therewith, for or relating to any patented or copyrighted material, process, or device that may be used in the course of performing the work or form a part of the work.

Contractor shall provide evidence of adequate insurance coverage in the types and amounts required under the Contract Documents. Such insurance shall be maintained at the specified level of coverage throughout the term of this Contract, including any extension of such term, and will cover all work, acts and omissions by and on behalf of Contractor in connection with this Contract with such coverage being primary and non-contributory. Contractor shall provide evidence of insurance coverage as set forth herein at any time requested by the Owner.

ARTICLE XII - GENERAL PROVISIONS.

A. *Entire Contract.* This instrument, together with the Contract Documents, contains the entire Contract between the Owner and Contractor. No verbal Contract, conversation, or representation by or between any officer, agent, or employee of the parties hereto, either before or after the execution of this Contract, shall affect or modify any of the terms or obligations herein contained.

B. *Compliance with Laws.* This Contract and all of Contractor's work and practices shall be subject to all applicable state, federal and local laws, ordinances, rules or regulations, including without limitation, those which apply because the Owner is a public governmental agency or body. Contractor represents that it is in compliance with all such laws and eligible and qualified to enter into this Contract.

C. *Governing Law.* This Contract shall be governed by the laws of the State of Michigan.

D. *Assignment.* Contractor shall not assign this Contract or any part thereof without the written consent of the Owner. This Contract shall be binding on the parties, their successors, assigns and legal representatives.

E. *Notices.* Written notices under this Contract shall be given to the parties at their addresses contained in this Contract by personal or registered mail delivery to the attention of the following persons:

Engineer: Jeffrey Smith, PLA, LEED AP of PEA Group

Owner: **VAN BUREN TOWNSHIP**
46425 Tyler Road
Van Buren Twp., MI 48111

Contractor: _____

F. *Changes.* Any changes in the provisions of this Contract must be in writing and signed by the Owner and Contractor.

G. *Waivers.* No waiver of any term or condition of this Contract shall be binding and effective unless in writing and signed by all parties, with any such waiver being limited to that circumstance only and not applicable to subsequent actions or events.

H. *Jurisdiction and Venue of Contract.* This Contract shall be considered for all purposes, including the establishment of jurisdiction and venue in any court action between the parties, as having been entered into and consummated in the Charter Township of Van Buren, Wayne County, Michigan.

If any section, paragraph, sentence, clause or phrase of this Contract or the Contract Documents shall be held invalid, the same shall not affect any other part of this Contract or the Contract Documents.

WITNESSES:

_____

_____

Van Buren Township

By _____
Kevin McNamara, Its Supervisor

By _____
Leon Wright, Its Clerk

CONTRACTOR: (insert Contractor name below)

_____

_____

_____

By _____

_____, Its _____
(print name) (print title)

INSTRUCTIONS FOR EXECUTING CONTRACT

If the Contractor be a Corporation, the following certificate should be executed:

I,_____, certify that I am the Secretary of the Corporation named as Contractor hereinabove; that _____ who signed the foregoing Contract on behalf of the Contractor, was then _____ of said Corporation; that said Contract was duly signed for and on behalf of said Corporation by authority of its governing body, and is within the scope of its corporate powers.

_____

(Corporate Seal)

If the Contract be signed by the Secretary of the corporation, the above certificate should be executed by some other officer of the Corporation, under the Corporate Seal. In lieu of the foregoing certificate, there may be attached to the Contract copies of so much of the records of the Corporation as will show the official character and authority of the officers signing, duly certified by the Secretary or Assistant Secretary under the Corporate Seal to be true copies.

The full name and business address of the Contractor should be inserted and the Contract must be signed by a duly authorized officer of the Corporation. Please have the name and title of the signing party or parties typewritten or printed under all signatures to the Contract.

If the Contractor should be operating as a partnership, each partner should sign the Contract. If the Contract be not signed by each partner, there shall be attached to the Contract a duly authenticated Power of Attorney evidencing the signer's (signers') authority to sign such Contract for and in behalf of the partnership.

If the Contractor is a limited liability company, the Contract must be signed by a duly authorized member of the company and copies of the records of the company shall be attached to the Contract showing, to the satisfaction of the Owner in its discretion, the authority of the member to sign the Contract on behalf of the company and bind the company at the time of signing, and also an affidavit certifying such authority and that the records attached are true copies shall be attached.

If the Contractor be an individual, the trade name (if the Contractor be operating under a trade name) should be indicated in the Contract and the Contract should be signed by such individual. If signed by one other than the Contractor, there should be attached to the Contract a duly authenticated Power of Attorney evidencing the signer's authority to execute such Contract for and in behalf of the Contractor.

END OF SECTION

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that _____, Contractor, as Principal, and _____, as Surety, are held and firmly bound unto the **VAN BUREN TOWNSHIP, COUNTY OF WAYNE**, Owner, in the sum of Dollars ($_____) to be paid to the Owner for which payment well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns firmly by these presents.

THE CONDITIONS OF THE ABOVE OBLIGATIONS are such that, WHEREAS, the said _____ did, on the _____day of _____, 20___, by articles that date enter into a contract with said Owner for the

NOW, THEREFORE, if said Contractor shall save and hold harmless the said Owner from all public liability and damages of every description in connection therewith, shall well and faithfully in all things fulfill the said contract according to all the conditions and stipulations therein contained in all respects, and shall save and hold harmless the said Owner from and against all liens and claims of every description in connection therewith, then this obligation shall be void and of no effect; but otherwise it shall remain in full force and virtue, and in the event that the said Owner shall extend the time for the completion of said work or otherwise modify elements of the contract in accordance with provisions thereof, such extension of time or modification of the contract shall not in any way release the sureties of this bond.

WITNESS our hands and seals this _____ day of _____, 20___.

WITNESSES:

_____ _____ (SEAL)

_____ _____ (SEAL)

Principal

_____ _____ (SEAL)

_____ _____ (SEAL)

Surety

_____

_____

Mailing Address

LABOR, MATERIAL & EQUIPMENT RENTAL BOND

KNOW ALL MEN BY THESE PRESENTS, That we, _____

of the_____hereinafter called the Principal, and _____ _____ hereinafter called the Surety, are held and firmly bound unto VAN BUREN TOWNSHIP, County of WAYNE, State of Michigan, in the sum of _____Dollars ($_____) to the payment whereof, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

Sealed with our seals and dated this ___ day of _____A.D. 20___.

WHEREAS, the above named Principal has entered into a certain contract with the VAN BUREN TOWNSHIP, COUNTY OF WAYNE, hereinafter called the Owner, dated the ____ day of _____, A.D. 20_____, (hereinafter called the Contract) for which contract and the specifications for said work shall be deemed a part hereof as fully as if set our herein, and WHEREAS, this bond is given in compliance with and subject to all the provisions and conditions of PA 1963, No. 213 as amended, being CL 1948, Sections 129.201 - 129.211.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH that if the above named Principal, legal representatives, or successors shall pay or cause to be paid to all subcontractors, persons, firms and corporations, as the same may become due and payable, all indebtedness which may arise from said Principal to a subcontractor or party performing labor or furnishing materials or renting equipment, or any subcontractor to any person, firm, or corporation on account of any labor performed, materials furnished or equipment rented, in connection with

the contract, construction, and work herein referred to, then this obligation shall be void; otherwise to remain in full force and effect.

This bond is given upon the express condition that any changes, alterations, or modifications that may be hereafter recorded or made in the construction and complete installation of the work herein referred to, or the placing of an inspector or superintendent thereon by the Owner shall not operate to discharge or release the sureties thereon.

IN WITNESS THEREOF, the parties hereto have caused this instrument to be executed by their respective authorized officers this _____ day of _____, A.D. 20____.

_____ (SEAL)

_____ (SEAL)
Principal

_____ (SEAL)

_____ (SEAL)
Surety

_____

_____
Mailing Address

Signed, sealed, and delivered in
the presence of:

_____

_____

Bonds correct in form:

MAINTENANCE AND GUARANTEE BOND

KNOW ALL MEN BY THESE PRESENTS, That _____, as principal, and _____, as surety, are held and firmly bound unto the VAN BUREN TOWNSHIP, COUNTY OF WAYNE, State of Michigan, in the sum of _____ ($_____) good and lawful money of the United States of America, to be paid to said Van Buren Township, its legal representatives and assigns, for which payment well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, and each and every one of them jointly and severally, firmly by these presents.

Sealed with our seals and dated this _____ day of _____, A.D., 20___.

WHEREAS, the above named principal has entered into a certain written contract with the Van Buren Township, dated this _____ day of _____, A.D. 20___ , wherein the said principal covenanted and agreed as follows, to-wit:

_____

_____NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that by and under said contract, the above named principal has agreed with Van Buren Township that for a period of two (2) years from the date of final acceptance, to keep in good order and repair any defect in all the work done under said contract either by the principal or his sub-contractors, or his material suppliers, that may develop during said period due to improper materials, defective equipment, workmanship or arrangements, and any other work affected in making good such imperfections shall also be made good all without expense to the Owner, excepting only such part or parts of said work as may have been disturbed without the consent or approval of the principal after the final acceptance of the work, and that whenever directed so to do by Van Buren Township by notice served in writing, either personally or by mail, on the principal at _____ OR _____ legal representatives, or successors, or on the surety at _____ WILL PROCEED at once to make such repairs as directed by said Van Buren Township and in case of failure so to do within one (1) week from the date of service of such notice, then Van Buren Township shall have the right to purchase such materials and employ such labor and equipment as may be necessary for the purpose, and to undertake, do and make such repairs, and charge the expense thereof to, and receive same from said principal or surety. If any repair is necessary to be made at once to protect life and property, then and in that case, Van Buren Township may take immediate steps to repair or barricade such defects without notice to the contractor. In such accounting, Van Buren Township shall not be

held to obtain the lowest figures for the doing of the work, or any part thereof, but all sums actually paid therefor shall be charged to the principal or surety. In this connection, the judgement of Van Buren Township is final and conclusive. If the said principal, for a period of two (2) years from the date of final acceptance, shall keep said work so constructed under said contract in good order and repair, excepting only such part or parts of said work which may have been disturbed without the consent or approval of said principal after the final acceptance of the same, and shall whenever notice is given as hereinbefore specified, at once proceed to make repair as in said notice directed, or shall reimburse said Van Buren Township for any expense incurred by making such repairs, should the principal or surety fail to do as hereinbefore specified, and shall fully indemnify, defend and save harmless the Van Buren Township, and PEA Group (PEA) from all suits and actions for damages of every name and description brought or claimed against it for or on account of any injury or damage to person or property received or sustained by any party or parties, by or from any of the acts or omissions or through the negligence of said principal, servants, agents, or employees, in the prosecution of the work included in said contract, and from any and all claims arising under the Workman's Compensation Act, so-called of the State of Michigan, then the above obligation shall be void, otherwise to remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed by their respective authorized officers this _____ day of _____, A.D., 20___.

Signed, Sealed and Delivered _____ (L.S.)
in the Presence of:

_____ _____ (L.S.)
Principal

_____
_____

_____ _____ (L.S.)
Surety

_____
_____

_____ _____
Mailing Address

GENERAL CONDITIONS

1. DEFINITION OF TERMS

The following definition of terms shall be applied to the Contract Documents:

A.	Owner/Township	Van Buren Township
B.	Engineer	PEA Group
C.	Landscape Architect	PEA Group

The terms “Contract” and “Agreement” are used interchangeably in the Contract Documents and both such terms mean and refer to “The Contract” signed by Contractor and Owner to which these General Conditions are attached, inclusive of the Contract Documents.

The terms “Owner” and “Township” are used interchangeably in the Contract Documents and both such terms mean and refer to the Van Buren Township.

2. CONTRACT DOCUMENTS

The original and three (3) counter prints of the Contract shall be signed by the Owner and the Contractor.

The work under this Contract shall consist of the items listed in the Proposal, including all incidentals necessary to fully complete the project in accordance with the Contract Documents. The Contract Documents shall consist of this complete book of documents as listed in the index and the Contract Drawings titled **“Iron Belle Trail Section D”.**

3. CONTRACT DRAWINGS AND SPECIFICATIONS

The work to be done is shown on the accompanying set of original drawings and are hereby made a part of this Contract, it being mutually understood and agreed that when taken together, the plans and Contract Documents, including the Specifications and the General Conditions, are complementary, and what is called for by any one shall be binding as if called for by all. The intent of the Contract Documents is to include in the contract price the cost of all labor and materials, water, fuel, tools, plant, equipment, light, transportation, and all other expenses as may be necessary for the proper execution and completion of the work.

These original drawings may be supplemented by other drawings furnished by the Contractor and approved by the Engineer or supplied to the Contractor by the Engineer during the progress of the work as the Engineer may deem to be necessary or expedient. All such supplementary contract drawings or instructions are intended to be consistent with the Contract Documents, true developments thereof and reasonably inferable therefrom.

Therefore, no additional charge will be allowed on a claim that particular supplemental contract drawings or instructions differed from the Contract Documents incurring extra work, unless the Contractor has first brought the matter, in writing, to the Engineer's attention for proper adjustment before starting on the work covered by such and has received from the Engineer an order in writing to so proceed.

These original and supplementary drawings constitute the drawings according to which the work is to be done. The Contractor shall keep at the site of the work an approved or confirmed copy of all drawings and specifications and shall at all times give the Engineer or Owner access thereto.

In case any inconsistency, omission, or conflict shall be discovered in either specifications or drawings, or if in any place the meaning of either or both shall be obscure, or uncertain, or in dispute, the Engineer shall decide as to the true intent of the documents.

4. ENGINEER'S STATUS DURING CONSTRUCTION

Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth herein and shall not be extended without written consent of Owner and Engineer.

The Engineer will coordinate review and approve construction sequencing. Engineer will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site observations as an experienced and qualified design professional, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defects and deficiencies in the Work.

If Owner and Engineer agree, Engineer will furnish an Inspector to assist Engineer in observing the performance of the Work. The duties, responsibilities and limitations of authority of any such Inspector and assistants will be provided as follows:

The Owner may appoint on-the-job inspectors who shall be under the direction of the Engineer. (1) The inspector on the work will inform the Engineer as to the progress of the work, the manner in which it is being done, and the quality of the materials being used. (2) The inspector will call to the attention of the Contractor any failure to follow the plans and specifications that he may observe. (3) The inspector shall have the authority to reject materials that do not conform to plans and specifications. (4) The inspector shall have no authority to direct the Contractor's work or workmen, to supervise the Contractor's operations or to change the contract plans or specifications. (5) In no instance shall any action or omission on the part of the inspector release the Contractor of the responsibility of completing the work in accordance with the plans and specifications.

Engineer will have authority to disapprove or reject Work which Engineer believes to be defective, and will also have authority to require special inspection or testing of the Work.

5. LIMITATIONS ON ENGINEER'S RESPONSIBILITIES

Neither Engineer's authority to act under this Article or elsewhere in the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of Engineer to Contractor, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," "as approved" or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of Engineer as to the Work, it is intended that such requirement, direction, review or judgment of Engineer as to the Work, will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to Engineer any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of the following:

A. The Engineer will not be responsible for Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and Engineer will not be responsible for Contractor's failure to perform or furnish the Work in accordance with the Contract Documents.

B. The Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

6. CONTRACTOR'S RESPONSIBILITY

The Contractor shall assume full responsibility for the work and take all precautions for preventing injuries to persons and property on or about the work; shall bear all losses resulting to him on account of the amount or character of the work or because the conditions under which the work is done are different, or because the nature of the ground in which the work is done is different from what was estimated or expected, or on account of the weather, floods, elements, or other causes, and he shall assume the defense and save harmless the Owner, PEA Group, and its individual officers and agents, and all additional named assured, from all claims relating to labor provided and materials furnished for the work; to inventions, patents, and patent rights used in doing the work; to injuries to any persons or property received or sustained by or from the Contractor, his agents or employees in doing the work or arising out of the work performed or to be performed; and to any act, or neglect of the Contractor, his agents or employees.

The mention of any specific duty or liability of the Contractor - in this or in any part of the Contract Documents shall not be construed as a limitation or restriction upon any general liability or duty imposed on the Contractor by the Contract Documents.

7. PERMITS AND REGULATIONS

The Contractor shall secure, at no cost to the Owner, all permits and licenses necessary for the prosecution of the work. The Contractor shall keep himself fully informed of all laws, ordinances and regulations in any manner affecting those engaged or employed in the work, or the materials used in the work, or in any way affecting the conduct of the work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over the same.

He shall at all times observe and comply with, and shall cause all his agents and employees to observe and comply with all existing laws, ordinances, regulations, orders and decrees. Provided, that if the drawings and specifications are at variance therewith, the Contractor shall promptly notify the Engineer in writing and any necessary changes shall be adjusted as provided in the Contract Documents.

The Contractor shall assume the responsibility of performing his work in compliance with all provisions of the permits and/or applications and conditions.

8. SUBCONTRACTS

The Contractor shall not sublet, assign, or transfer this Contract or any portion thereof or any payments due him thereunder, without the written consent of the Owner.

Assignment or subletting any portion of this Contract shall not operate to release the Contractor or his bondsmen hereunder from any of the Contract obligations.

Any subcontractor performing work under this contract may be requested by the Owner to submit a resume and references as proof of their qualifications and demonstrating their ability to satisfy the requirements as set forth in these Contract Documents. The Owner may also require the submission of any additional information necessary to satisfy the Owner that the subcontractor is adequately prepared to fulfill the subcontract in accordance with these Contract Documents.

The Contractor shall, as soon as practicable after the signing of the Contract, notify the Engineer and Owner in writing of the names of subcontractors proposed for the work and shall not employ any that the Engineer or Owner may object to as incompetent or unfit.

If the Contractor shall cause any part of the work under this Contract to be performed by a subcontractor, the provisions of this Contract shall apply to such subcontractor and his officers and employees in all respects as if he and they were employees of the Contractor, and the Contractor shall not be in any manner thereby relieved from his obligation and liabilities; and the work and materials furnished by the subcontractor shall be subject to the same provisions as if furnished by the Contractor.

9. INFORMATION BY THE CONTRACTOR

The Contractor shall submit to the Engineer full information as to the materials, equipment, and arrangements which the Contractor proposes to furnish. This information shall be complete to the extent that the Engineer may intelligently judge if the proposed materials, equipment, and arrangements will meet the Contract requirements.
Prior to the approval of materials, equipment, and arrangements by the Engineer based on the information submitted by the Contractor, any work done by the Contractor shall be at his own risk.

The approval of information covering materials, equipment, and arrangements by the Engineer shall in no way release the Contractor from his responsibility for the proper design, installation, and performance of any material, equipment, or arrangement, or from his liability to replace same should it prove defective.

10. GENERAL REQUIREMENTS FOR MATERIALS AND WORKMANSHIP

In the specifications where a particular material or piece of equipment is specified by reference to some particular make or type, or equal, it is not the intent to limit competition but to set up by such reference a standard of quality most easily understood and defined. If materials or equipment of other make or type than that specified by name are offered by the Contractor they will be given full consideration by the Engineer and the Engineer's decision will be final as to whether the materials or equipment offered are equal to those specified.

Unless otherwise stipulated in the specifications, all equipment, materials, and articles incorporated in the work covered by this contract are to be new and of the best grade of their respective kinds for the purpose. The Contractor shall, if required, furnish such evidence as to kinds and quality of materials as the Engineer may require.

The Contractor shall furnish suitable tools and building appliances and employ competent labor to perform the work to be done, and any labor or tools or appliances that shall not in the judgment of the Engineer, be suitable or competent to produce this result may be ordered from the work by him, and such labor or tools or appliances shall be substituted therefor by the Contractor as will meet with the approval of the Engineer.

If not otherwise provided, material or work called for in this Contract shall be furnished and performed in accordance with well-known established practice and standards recognized by architects, engineers and the trade.

If any type of machinery, equipment, or tools are specifically needed to prosecute the work in an orderly, workmanlike manner, the Engineer may so direct the Contractor to procure same, before work is continued.

The Owner reserves the right to reject any material at the job site even though having been previously tested. All materials rejected by the Owner or his representative shall be removed from the site of work immediately.

The Contractor shall obtain, from his supplier, certificate of compliance to manufacturing and specifications for which the materials are to be used or incorporated in the project.

11. TESTING AND SAMPLES

Where called for in the specifications, samples of materials in the quantity named shall be submitted to the Engineer for approval. Where tests are required, they shall be made at the expense of the Contractor, except as otherwise called for in the specifications. For materials covered by ASTM or Federal Specifications, unless otherwise stipulated, the required tests are to be made by the manufacturer and his certificate therefor submitted to the Engineer.

12. LINES AND GRADES

Principal reference lines or points and bench marks shall be given by the Engineer at such time as he may deem necessary; or if the Contractor shall be in need of such reference lines or bench marks, he shall notify the Engineer twenty-four (24) hours in advance.

The contractor will employ a surveyor to set suitable stakes and marks showing the locations and elevations of the various parts of the work and will furnish the Contractor with "cut sheets" referred to the reference points. No work shall be undertaken until such stakes and marks shall have been set a surveyor. The Contractor shall take due and proper precautions for the preservation of these stakes and marks, and shall see to it that the work at all times proceeds in accordance therewith and shall provide all labor and material to set required batter boards or laser and locate the work accurately with reference to the above points.

Good judgment will be exercised in placing construction stakes in positions most useful and at positions requested by the Contractor. However, an excessive amount of re-staking shall be at the expense of the Contractor and no work shall proceed without re-establishment of reference stakes and "cut sheets" in those areas wherein re-staking is necessary.

13. PROTECTION OF WORK AND PROPERTY

The Contractor shall continuously maintain adequate protection of all his work from damage and shall protect all public property and private property, within and/or abutting the work area, from injury or loss arising in connection with this Contract.

He shall, without delay, make good any such damage, injury or loss, and shall defend and save the Owner, and PEA Group, and all additional named assured, harmless from all such damages or injuries occurring because of his work.

He shall furnish and maintain all passageways, barricades, guard fences, lights, and danger signals, provide watchmen and other facilities for protection required by public authority or by local conditions or as directed by the Engineer, all at no additional cost to the Owner. In an emergency affecting the safety of life or of the work or of adjoining property, the Contractor, without special instruction or authorization from the owner, shall take such action as may be necessary to prevent such threatened damage, injury or loss.

The Contractor shall assume full responsibility of loss or damage to the work during the entire construction period resulting from caving earth and from storms, floods, frosts, and other adverse weather conditions, and from all other causes whatsoever not directly due to the acts or neglect of the Owner, including fire, vandalism and malicious mischief, and shall turn the finished work over to the Owner in good condition and repair, at the time of the final pay estimate. For the purpose of this section the decision of the Engineer, with respect to existing conditions and for the need for corrective action by the Contractor, shall be final.

14. RESPONSIBILITY FOR ADJOINING STRUCTURES AND TREES

The Contractor shall assume full responsibilities for the protection of all pavements, curbs, bridges, railroads, poles, and any other surface structures and all water mains, sewers, telephone, gas mains, and other underground services and structures along and near the work which may be affected by his operations, and shall indemnify, defend and save harmless the Owner, and PEA Group, against all damages or alleged damages to any such structure arising out of his work. The Contractor shall bear the cost of repair or replacement of any such structure damaged as a result of his operations.

No trees or shrubbery of any kind shall be removed or destroyed by the Contractor without the written permission of the Owner, and the Contractor will be held fully responsible for any damages caused by his work to adjoining trees and shrubs. Ample precautions shall be taken by the Contractor to protect such trees and shrubs as are to remain in place by surrounding them with fences or other protection before construction work begins. Shrubbery that has to be removed shall be preserved and replaced in a manner acceptable to the Owner.

15. MAINTENANCE OF SERVICE

Drainage through existing sewers and drains shall be maintained at all times during construction and all nearby gutters shall be kept open for drainage.

Where existing sewers are encountered in the line of the work which interfere with the construction, the flow in the sewers, including both dry weather flow and storm flow, shall be maintained by constructing a satisfactory flume or any other means approved by the Engineer.

All detours shown on the Drawings or required because of the Contractor's operation shall be built and maintained at the Contractor's expense.

Safety precautions shall be followed at all street openings; substantial barricades shall be erected as deemed necessary to prevent accidents to vehicular or pedestrian traffic and red flags by day and red lights by night shall be diligently posted by the Contractor at all points of possible danger. In case detours or other traffic instructions are necessary, suitable warning or direction signs shall be erected and maintained by the Contractor. In all cases the detour roadways shall be maintained so as to keep free from undue dust conditions and reasonably graded.

During the progress of the work, the Contractor shall accommodate both vehicular and foot traffic and shall provide free access to fire hydrants, water and gas valves. Except as otherwise specified herein or as noted on the drawings, street intersections may be blocked but one-half at a time, and the Contractor shall lay and maintain temporary driveways, bridges and crossings, such as in the opinion of the Engineer are necessary to reasonably accommodate the public.

In the event of the Contractor's failure to comply with these provisions, the Owner may with or without notice, cause the same to be done, and will deduct the cost of such work from any money due or to become due the Contractor under this Contract, but the performance of such work by the Owner, or at his insistence, shall serve in no way to release the Contractor from his general or particular liability for the safety of the public or the work.

16. STORAGE OF MATERIALS

Materials and equipment distributed, stored, and placed upon or near the site of the work shall at all times be so disposed as not to interfere with work being prosecuted by other contractors in the employ of the Owner, or with street drainage, or with fire hydrants or with access thereto, and not to unreasonably inconvenience the public from access to or use of their property. When construction staging areas are provided per easement, the Contractor shall place and store all materials for the work within the limits of the construction staging area. The Contractor shall access the construction staging area as designated on the construction and easement documents.

17. RELATION TO OTHER CONTRACTORS

The Contractor shall so conduct his operations as not to interfere with or injure the work of other contractors or workmen employed on adjoining or related work and he shall promptly make good any injury or damage which may be done to such work by him or his employees or agent. Should a contract for adjoining work be awarded to another contractor, and should the work of one of these contracts interfere with that of the other, the Owner shall decide which contractor shall cease work for the time being and which shall continue or whether the work in both contracts shall continue at the same time and in what manner.

18. CONTRACTOR'S SUPERVISION AND ORGANIZATION

The work under this Contract shall be under the direct charge and direction of the Contractor. The Contractor shall give effective superintendence to the work, using his best skill and attention. The Contractor shall at all times keep on the site of the work, during its progress, a competent superintendent and any and all necessary foremen and assistants. The superintendent shall represent and have full authority to act for the Contractor in the latter's absence, and all directions given to him shall be as binding as if given to the Contractor. On written request in each case, all such directions will be confirmed in writing to the Contractor.

The Contractor shall employ only competent, effective workmen and shall not use on the work any unfit person or one not skilled in the work assigned to him, and he shall at all times enforce strict discipline and good order among his employees. Whenever the Engineer shall notify the Contractor, in writing, that any man on the work is, in the opinion of the Engineer, careless, incompetent, disorderly, or otherwise unsatisfactory, such man shall be discharged from work and shall not again be employed on it except with the written consent of the Engineer.

The Contractor shall establish and maintain an office on the site of the work, or at some convenient point adjacent thereto, during the continuance of this contract and shall have at all times during working hours, a representative authorized to act on behalf of the Contractor. Any communication given to and received by said representative shall be deemed to have been given to and received by the Contractor. Copies of the drawings and specifications shall at all times be kept on file by the Contractor at readily accessible points near the work.

19. FACILITIES FOR INSPECTION

The Owner, the Engineer, and their employees shall at all times have the right to enter upon the premises upon which work is being done, or upon which material is stored for the work under this Contract, and to inspect the work and materials, and to ascertain whether or not the construction is carried out in accordance with this Contract, and the Contractor shall furnish all reasonable facilities, and give ample time for such inspection. All materials shall be subject to mill and shop inspection, as provided in the specifications.

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

If the Contractor does not remove such rejected work and materials promptly, after written notice, the Owner may remove them and store the material at the expense of the Contractor.

The Engineer has the right to have removed by the Contractor such portion of the work as he may deem necessary for the discovery of improper work or material, and the Contractor must restore such work at his own expense if improperly done and at the expense of the party of the first part if found to be in proper condition. Any work which during its progress and before its final acceptance may become damaged from any cause, shall be removed and replaced by good, satisfactory work at the Contractor's expense.

20. SHOP DRAWINGS

Where called for in the specifications, the Contractor shall submit to the Engineer for approval in not less than five (5) copies, details, specifications, cuts and drawings of such equipment and structural work as may be required. The Contractor shall make any changes or alterations required by the Engineer and re-submit same without delay. The approval of the Engineer shall not relieve the Contractor of responsibility for errors in the drawings, as the Engineer's checking is intended to cover compliance with the drawings, and specifications and not to enter into every detail of the shop work. No work shall be undertaken until the Engineer has approved the shop drawings.

21. ERRORS, CORRECTIONS AND CHANGES IN DRAWINGS AND SPECIFICATIONS

The Contractor shall examine and check all drawings and specifications furnished by the Owner for dimensions, quantities, types of materials, and coordination with other parts of the work on this or related contracts. No structure, sewer pipe, water main or fixtures thereto shall be placed or constructed under conditions which may be expected to result in defective work. If the soil is not sufficiently stable to properly support structure, or if the Contractor wishes to question the materials prescribed, the Contractor shall stop work and immediately notify the Owner and Engineer. The Engineer shall review these conditions, and if he may deem it necessary, he shall make changes in design or accept suggested contractor changes in construction procedure before work is to continue. The Contractor shall not be allowed to take advantage of any such error, omission or discrepancy, as full instructions will be furnished by the Engineer, and the Contractor shall carry out such instructions as if originally specified. In no case shall the Contractor proceed with the work in uncertainty, and any work done by the Contractor after the discovery of any error, omission or discrepancy, until authorized, will be at the Contractor's risk and responsibility. The work is to be made complete and to the satisfaction of the Owner and Engineer, notwithstanding any minor omissions in the specifications or plans.

22. CHANGES IN THE WORK

The Owner shall have the right to require, by written order, changes in, additions to, or deductions from the work required by the contract Documents; provided that if changes, additions or deductions are made, the general character of the work as a whole is not changed thereby. Adjustments in the Contract price, if any, because of any change, addition, or deduction in the work shall be determined as hereinafter provided, and any claim for extension of time for completion shall be adjusted at the time of ordering the change, addition, or deduction. No claim for change, addition, or deduction, or adjustment of price, or extension of time for completion thereof, shall be made or allowed unless done in pursuance of written order from the Owner specifically authorized such change, addition, or deduction. Drawings without a written order shall not be considered such authority. Written notice of such claims shall be made to the Engineer before the commencement of the work. Where the written order diminishes the quantity of work to be done, this shall not constitute a basis for a claim for damages or anticipated profits on the work that may be dispensed with.

Under circumstances which, in the judgment of the Engineer, so necessitate, the Engineer shall have authority to require, by written order, changes in, additions to, or deductions from the work. Such written order by the Engineer shall be subject to later confirmation by the Owner when the extent and costs have been established.

It is understood and agreed that in case any change in, addition to, or deduction from the work is required, said change shall in no way invalidate the Contract and shall not affect or discharge the bonds furnished by the Contractor.

The Contractor, without extra charge, shall make such slight alternations as may be necessary to make adjustable parts fit to fixed parts, leaving all complete and in proper shape when done.

23. BASIS FOR DETERMINING COST OF CHANGES IN THE WORK

Adjustments, if any, in the Contract price by reason of change in the work shall be limited to the amount specified in the written order authorizing the change in the work. Adjustments shall be determined by one or more of the following methods, the Owner reserving the right to select the method or methods at the time the written order is issued:

A. An acceptable lump sum proposal: To facilitate checking and acceptance, the proposal shall be itemized with quantities and prices given for the various items. In determining the acceptability of such proposals, the Owner will use as a general guideline the various items contained in paragraph 23 (c) below.

B. Unit price: The unit prices may be the "Unit Price" set in the Agreement, or fixed by subsequent agreement between the Owner and the Contractor.

C. On a cost-plus-limited-basis, not to exceed a specified maximum limit of cost:
"COST" as herein used shall be the actual and necessary cost incurred by the Contractor by reasons of the change in the work for:
   1) labor
   2) materials
   3) equipment rental
   4) insurance premiums
      a) Labor costs shall be the amount shown on the Contractor's payroll taxes added when such taxes can be shown to have been incurred. In no case shall the rates charged for labor exceed the rates paid by the Contractor for the same class of labor employed by him to perform work under the regular items of the Contract.
      b) Materials costs shall be the net price paid for material delivered to the site of the work. If any material previously required is omitted by the written order of the Owner after it has been delivered to or partially worked on by the Contractor and consequently will remain its full value for other uses, the Contractor shall be allowed the actual cost of the omitted material less a fair market value of the material as determined by the Owner.
      c) Equipment rental shall be the actual additional costs incurred for necessary equipment. Costs shall not be allowed in excess of usual rentals charged in the area for similar equipment of like size and condition; including the costs of necessary supplies and repairs for operating the equipment. No costs, however, shall be allowed for the use of equipment on the site in connection with other work unless its use incurs actual and additional cost to the Contractor. If equipment not on the site is required for the change in the work only, the cost of transporting such equipment to and from the site shall be allowed.

d) Insurance premiums shall be limited to those based on labor payroll and to the types of insurance required by the Contract. The amount allowed shall be limited to the net costs incurred as determined from the labor payroll covering the work. The Contractor shall, upon request of the Owner, submit verification of the applicable insurance rates and premium computations.

"PLUS" as herein used is defined as a percentage to be added to the items of "Cost" to cover superintendence, use of ordinary tools, bonds, overhead expense and profit. The percentage shall not exceed 15 percent on work done entirely by the Contractor and shall not exceed an aggregate total of 20 percent on work done by a subcontractor.

"SPECIFIED MAXIMUM LIMIT OF COST" is the amount stated in the written order of the Owner authorizing the change in the work. The amount to be allowed the Contractor shall be the "cost," "plus" the percentage or the specified maximum, whichever is the lesser amount.

The Contractor shall keep complete, accurate, daily record of the net actual cost of changes in the work and shall present such information in such form and at such times as the Owner may direct.

24. PATENTS

The Contractor shall pay all royalties and license fees and shall hold and save the Owner, PEA Group, and his agents harmless from all liability of any nature or kind, including cost and expenses, for, or account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the Owner, unless otherwise specifically stipulated in the Contract Documents. In this respect the Contractor shall defend all suits or claims for infringement of any patent or license right.

In the event that any claim, suit, or action at law or in equity of any kind, whatsoever is brought against the Owner, involving any such patents or license rights, then the Owner shall have the right to, and may, retain from any money due or to become due to the Contractor, such sufficient sum as is considered necessary to protect said Owner against loss, and such sum may be retained by the Owner until such claim or suit shall have been settled and satisfactory evidence to that effect shall have been furnished the Owner.

25. "OR EQUAL CLAUSE"

Whenever in any of the Contractor Documents an article, material or equipment is defined by describing a proprietary product, or by using the name of a manufacturer or vender, the term "or equivalent" if not inserted, shall be implied. The specific article, material or equipment mentioned shall be understood as indicating the type, function, minimum standard or design, effectiveness and quality desired and shall not be construed in such a manner as to exclude manufacturer's products of comparable quality, design and effectiveness. The Contractor shall comply with the requirements of the Contract Documents relative to an Owner's approval of materials and equipment before they are incorporated in the work.

26. CLEANING UP

The Contractor shall, as directed by the Engineer, remove at his own expense from the Owner's property and from all public and private property all temporary structures, rubbish and waste materials resulting from his operations. Unless otherwise stated on the plans or in supplemental specifications, the Contractor shall restore the job site to substantially the same condition as existed prior to beginning of work.

27. USE OF COMPLETED PORTIONS OF THE WORK

The Owner may, at any time during progress of the work, after written notice to the Contractor, take over and place in service any completed portions of the work which are ready for service, although the entire work of the Contract is not fully completed, and notwithstanding the time for completion of the entire work or such portions may not have expired. In such event, the Contractor will be relieved of maintenance of said portion, except as covered by his guarantee of same. The use of any portion of the work by the Owner under the provisions of this section, shall not constitute final acceptance of the work and shall not be construed to be a final pay estimate for such work.

The date of final pay estimate shall be the date of final pay estimate for the entire project covered under this Contract.

28. PAYMENTS WITHHELD

The Owner may withhold or, on account of subsequently discovered evidence, nullify the whole or a part of any certificate for progress payment to such extent as may be necessary to protect the Owner from loss on account of:

A. Defective work not remedied;

B. Claims filed or reasonable evidence indicating probable filing of claims;

C. Failure of the Contractor to make payments properly to subcontractors or for material or labor;

D. A reasonable doubt that the Contract cannot be completed for the balance then unpaid;

E. Damage to another contractor.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

29. CONTRACTOR'S RIGHT TO STOP WORK

If the work should be stopped under an order of any court, or other public authority for a period of three (3) months, through no act or fault of the Contractor or of anyone employed by him, or if the Owner should fail to pay to the Contractor within sixty (60) days of its maturity and presentation any sum certified by the Engineer, provided no appeal is taken, the Contractor may, upon fourteen (14) days' written notice to the Owner and the Engineer, stop work or terminate this Contract, and shall receive from the Owner payment in full for all work executed, as determined from the prices contained in the approved detailed estimate as computed by the Engineer, but no claim for extra compensation or damages shall be made or allowed because of such termination of the Contract.

30. FAIR EMPLOYMENT PRACTICES ACT

"The contractor and any subcontractors shall not discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, height, weight, marital status or a disability that is unrelated to the individual's ability to perform the duties of a particular job or position." Breach of these covenants may be regarded as a material breach of this Contract.

31. AUTHORITY

No agent of the Owner shall have power to revoke, alter, enlarge, or relax the stipulations or requirements of these specifications, except insofar as such authority may be specifically conferred by the specifications themselves, without the formal authorization to do so, conferred by the Contract or which the specifications are a part, or by ordinance, resolution, or other usual official action by the Owner.

32. STARTING WORK

Material shall be ordered and work shall begin on the ground within ten (10) days after the notice to proceed has been given, unless otherwise stated.

33. SANITARY REGULATIONS

Necessary sanitary conveniences for the use of laborers on the work, properly secluded from public observation, shall be constructed and maintained in sanitary condition by the Contractor, and their use shall be strictly enforced.

34. SUNDAY, HOLIDAY AND NIGHT WORK

The Contractor is required to prosecute work done under this Contract during the hours of daylight, and no work will be permitted at night or on Sundays or Holidays, except to save property or life or as specifically authorized or directed by the Engineer.

35. PROGRESS OF WORK

The work shall be prosecuted regularly and uninterruptedly, unless the Engineer shall otherwise specifically direct, with such force and at such points as to insure its full completion within the time herein stated.

If, in the opinion of the Engineer, it is necessary or advisable that certain portions of the work be done immediately, the Contractor, upon written order, shall proceed with such work without delay. Should he fail to so proceed, the Engineer may do or cause to be done, such work, and the cost of the same will be deducted from any money due or to become due the Contractor under this Contract.

36. TIME OF COMPLETION

The time allowed for completion of the work contemplated in this Contract shall be as stated in the Agreement or specifications.

37. DELAYS AND EXTENSION OF TIME

Should the Contractor be unavoidably delayed in the commencement, prosecution or completion of the work under this Contract by:

A. Any act or omission of the Owner, or his agents;

B. Injunctions, or acts of omissions of public authorities in consequence of acts of omissions of the Owner, or his agent;

C. Reason of any cause or circumstances, weather conditions being specifically excepted, which the Owner shall decide is absolutely and clearly beyond the control of the Contract and not covered or contemplated by the Contract Documents; then the time for completion of said work shall be extended by the Owner, in writing, for a period equivalent to the time lost by reason of any of the aforesaid causes mentioned above. No such extensions shall be made unless the Contractor shall have presented to the Owner a written notice of the claim therefor within 48 hours of the occurrence of such delay; or in case of extra work or modification of the plans and specifications, unless he extension of time has been mutually agreed to by the Contractor and the Owner at the time the extra work or modification is ordered. It shall be the sole responsibility of the Contractor to present such pertinent facts and data as will satisfy the Owner that the delays as claimed are unavoidable and substantial, and could not be reasonable anticipated or adequately guarded against.

If, in the opinion of the Owner, it becomes necessary for maintaining the progress required to complete the Contract within the specified time or to the time extended, to work after regular hours, on Sundays or Holidays, the Contractor must immediately do so upon request without additional cost to Owner.

Permitting the Contractor to continue and finish the work, or any part of it, after the time fixed for its completion, or after the date in which the time for completion may have been extended shall in no way operate as a waiver on the part of the Owner of any of its rights under this Contract.

All days in which work is suspended by order of the Engineer, or in accordance with these specifications, shall automatically extend the time for completion an equal number of days.

38. LIQUIDATED DAMAGES

In the event of delay in the completion of the entire work required hereunder beyond the period here prescribed or beyond the period to which such time may be extended by authority of the Owner for good cause shown, the Owner shall be paid damages for such delay. In as much as the amount of such damage will be extremely difficult to ascertain, the Contractor agrees to compensate the Owner in the sum of $500.00 for each and every calendar day that the time consumed in said performance and completion exceeds the time herein allowed for that purpose, which said sum is hereby agreed upon, fixed and determined by the parties hereto as the liquidated damages that the Owner will suffer by reason of said delay and default and not as penalty; and the Owner shall have the right to deduct and retain the amount of such liquidated damages from any moneys due or which may become due under this Contract.

It is further agreed that permitting the Contractor to complete the work after the time fixed for its completion shall in no way operate as a waiver on the part of the Owner of any of his rights under this Contract.

39. TIME IS ESSENCE OF CONTRACT

It is distinctly understood and agreed to by the parties hereto that the time specified for the completion of the work is the essence of this Contract, and the Contractor shall not be entitled to claim performance of this agreement unless the work is satisfactorily completed in every respect, within the time herein specified.

40. ESTIMATED QUANTITIES

The quantities of the various classes of work to be done and materials to be furnished under this Contract, which have been estimated as stated elsewhere herein, are approximate and only for the purpose of comparing, on a uniform basis, the bids offered for the work under this Contract; and neither the Owner nor his agents is to be held responsible should any of the said estimated quantities be found incorrect during the construction of the work; and the Contractor shall make no claim for anticipated profit, nor for loss of profit, because of a difference between the quantities of the various classes of work actually done or materials actually delivered and the estimated quantities as herein stated.

41. FORFEITURE OF CONTRACT

If the work to be done under the Contract shall be abandoned by the Contractor, or if at any time in the judgment of the Owner, the Contractor shall fail to prosecute the work at a reasonable rate of progress, or to comply with all or any part of the terms and requirements herein set forth, then the Owner shall have the right to take possession of the work, including Contractor's plant, supplies, and materials, at any time after having notified the Contractor in writing to discontinue the work under this Contract for said cause or causes, and such action shall not affect the right of the Owner to recover damages resulting from such failure. Upon receiving such notice, the Contractor shall and will, upon demand, immediately give the Owner safe and peaceable possession of the work, including the plant, and shall then cease to have control over any portion thereof or the men employed thereon.

The Owner may then proceed to complete the work herein specified by Contract or otherwise; and the entire cost of same shall be charged to the Contractor and deducted from any sum or sums due or to become due under the Contract; the excess cost, if any, to be paid by the Contractor or his sureties, to said Owner.

42. NO WAIVER OF CONTRACT

Neither the acceptance of the whole or any part of the work by the Owner or his Engineer, or any of its agents, nor any order, measurements, or certificate by the Engineer, nor any order by the Owner for the payment of money, nor any payment for the whole or any part of the work by the Owner, nor any extension of time, nor any possession taken by the Owner or its agents, shall operate as a waiver for any portion of the Contract or any power therein reserved to the Owner, or any right to damages therein provided; nor shall any waiver of any breach of the Contract be held to be a waiver of any other or subsequent breach.

43. PAYMENT NOT TO BE STOPPED

The Owner shall not, nor shall any office thereof, be precluded or stopped by any return or certificate made or given by the Engineer or other office, agent or appointee, under the provisions of this agreement, at any time (either before or after the final completion and acceptance of the work and payment made therefor pursuant to any such return or certificates showing the true and correct amount of money due therefore notwithstanding any such return or certificate, or any payment made in accordance therewith) from demanding and receiving from the Contractor or his sureties, separately or collectively, such sums as may have been improperly paid said Contractor by reason of any return or certificate which has been untruly or incorrectly compiled.

44. GUARANTEE

The Contractor shall guarantee to the Owner for a period of two (2) years from the date of final payment to keep in good order and repair any defect in all the work done under this Contract, either by the Contractor or his subcontractors, or the material suppliers, that may develop during said period due to improper materials, defective equipment, workmanship, or arrangements, and any other work affected in making good such imperfections shall also be made good, all without expense to the Owner, and the Contractor shall execute, in favor of the Owner, a Maintenance and Guarantee Bond, which is a part of these Contract Documents.

45. ESTIMATES AND PAYMENTS

The Owner shall pay and the Contractor receive the prices bid in the proposal, or agreed upon, less any deduction for any uncompleted portion, based upon measurements made by the Engineer or as otherwise herein stipulated, and such measurements shall be final and conclusive.

As an aid to the Owner in preparing estimates for progress payments, the Contractor may be required to submit to the Owner for approval, a breakdown of some or all Contract unit prices into their essential component parts. The sum of the component parts shall not exceed the total Contract price per unit and the breakdown shall not overrule the Contract price per unit.

The Contractor shall submit to the Owner a written request for each payment and a Contractor's Declaration declaring that he has not performed any work, furnished any material, sustained any loss, damage or delay, for any reasons, including soil conditions encountered or created, or otherwise done anything for which he will ask, demand, sue for, or claim compensation from the Owner other than as indicated on the Contractor's Declaration.

When requested by the Owner, the Contractor shall submit receipts or other vouchers showing his payments for materials and labor, including payments to subcontractors.

Payments based on progress estimates will be made within thirty (30) days of receipt by the Township of the progress estimates for work completed during the preceding month or since the date of the last preceding progress payment. Payments will be in accordance with the provisions of Act 524 of the Michigan Public Acts of 1980 and in accordance with the terms of this Contract. No allowance will be made for materials furnished which are not incorporated in the finish work, unless otherwise stated.

Pursuant to Act 524, Michigan Public Acts of 1980, the Owner shall designate a person representing it to whom written requests for payments shall be submitted. The Contractor shall designate a person who shall submit written requests for payment to the Owner.

In the event a dispute arises over an avoidable or unacceptable delay in the performance of the work as described in Section 4 (3) of Act 524 of Michigan Public Acts of 1980 (MCLA 125.1564 (3) the dispute may, at the option of the Owner, be submitted for resolution in accordance with the provisions of Section 4 of Act 524 of Michigan Public Acts of 1980 to an agent designated pursuant to Section 4 (2) of the Act. The dispute resolution process described above shall be used only for the purpose of determining the rights of the parties to retained funds and interest earned on retained funds. Nothing herein shall impair the right of the Owner to bring an action in any court of jurisdiction to determine the rights of the parties.

The Owner may withhold payment of any estimates or portion of estimate until the Contractor shall have furnished satisfactory evidence that he has paid all claims of every nature.

No payment shall be considered as acceptance of the work or any portion thereof prior to the final completion of the work and payment of the final estimate.

Within thirty (30) days after the completion of the work under this Contract to the satisfaction of the Owner and the Engineer, in accordance with all and singular terms and stipulations herein contained, the Owner shall make final payment, from a final estimate made by the Engineer. Before final payment is made, the Contractor shall, as directed by the Owner, make Contractors Affidavit that he has paid or satisfactorily secured all claims of every nature; and shall furnish releases from the surety or sureties and permit agencies, as applicable, approving payment of final estimate by the Owner.

The acceptance by the Contractor of the final payment aforesaid shall operate as, and shall be, a release to the Owner and his Agents, from all claim and liability to the Contractor for anything done or furnished for, relating to the work, or for any act or neglect of the Owner or of any person relating to or affecting the work.

46. WAIVERS OF LIENS

Before receiving final payment, the Contractor shall furnish the Engineer with two (2) copies of waivers of lien from all supplies of labor and material for the project.

Neither the final payment nor any part of the retained percentage shall become due until the Contractor shall deliver to the Owner a complete release of any or all claims or liens arising out of this Contract, or receipts in full in lien thereof, and in either case, an affidavit that so far as he has knowledge or information, the releases and/or receipts include all the labor and material for which a claim or lien could be filed. However, if any person, firm, or corporation which has filed a claim or lien refuses to furnish a release or a receipt in full therefor, any payment which would otherwise become due will be made, provided, the Surety on the Contractor's Labor and Material Bond consents in writing to such payment to the Owner and further furnishes the Owner an affidavit that said Surety will indemnify the Owner against such claim or lien. If any claim or lien remains unsatisfied the Owner reserves the right to use monies earned by the Contractor to discharge said claim or lien including all associated costs.

47. INSURANCE

The Contractor, and any and all of their subcontractors, shall not commence work under this contract until they have obtained the insurance required under this paragraph, and shall keep such insurance in force during the entire life of this contract. All coverage shall be with insurance companies licensed and admitted to do business in the State of Michigan and acceptable to Van Buren Township. The requirements below should not be interpreted to limit the liability of the Contractor. All deductibles and SIRs are the responsibility of the Contractor.
The Contractor shall procure and maintain the following insurance coverage:

A. Workers' Compensation Insurance, including Employers' Liability Coverage, in accordance with all applicable statutes of the State of Michigan. Minimum coverages shall include;

Bodily Injury by Accident - $500,000 each accident
Bodily Injury by Disease - $500,000 each employee
Bodily Injury by Disease - $500,000 each policy limit

B. Commercial General Liability Insurance on an "Occurrence Basis" with limits of liability not less than $1,000,000 per occurrence and aggregate. Coverage shall include, but not limited to, the following: (A) Contractual Liability; (B) Products and Completed Operations; (C) Independent Contractors Coverage; (D) Broad Form General Liability Extensions or equivalent; (E) Explosion, Collapse, and Underground, if applicable.

C. Automobile Liability, including Michigan No-Fault Coverages, with limits of liability not less than $1,000,000 per occurrence combined single limit for Bodily Injury, and Property Damage. Coverage shall include all owned vehicles, all non-owned vehicles, and all hired vehicles.

D. Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of $3,000,000.

E. Additional Insured: Policy(ies) and coverages as described above, excluding Workers' Compensation Insurance, shall include an endorsement stating the following shall be *Additional Insureds*: Van Buren Township, all elected and appointed officials, all employees and volunteers, agents, all boards, commissions, and/or authorities and board members, including employees and volunteers thereof. It is understood and agreed by naming Van Buren Township as additional insureds, coverage afforded is considered to be primary and any other insurance the township may have in effect shall be considered secondary and/or excess.

F. Owners' and Contractors' Protective Liability: A separate Owners' and Contractors' Protective Liability Policy with limits of liability not less than $1,000,000 per occurrence and aggregate. Van Buren Township shall be "Named Insured" on said coverage.

G. Cancellation Notice: Policy(ies), as described above, shall be endorsed to state the following: It is understood and agreed Thirty (30) days, Ten (10) days for non-payment of premium, Advance Written Notice of Cancellation, Non-Renewal, Reduction, and/or Material Change shall be sent to: Van Buren Township, Jennifer Wright, 46425 Tyler Road, Van Buren Township, MI 48111.

H. Proof of Insurance Coverage: The Contractor shall provide Van Buren Township at the time the contracts are returned for execution a Certificate of Insurance as well as the required endorsements. In lieu of required endorsements, a copy of the policy sections, where coverage is provided for additional insured and cancellation notice, may be acceptable. Copies of all policies mentioned above shall be furnished, if so requested.

If any of the above coverages expire during the term of this contract, the Contractor shall deliver renewal certificates, endorsements, and/or policies to Van Buren Township at least ten (10) days prior to the expiration date.

END OF SECTION

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period _____ to _____ , A.D., 20__ performed any work, furnished any material, sustained any loss, damage or delay for any reason, including soil conditions encountered or created, or otherwise done anything for which I shall ask, demand, sue for, or claim compensation from _____ the Owner, or his agents, in addition to the regular items set forth in the contract numbered _____ and dated _____, A.D., 20__, for

_____

executed between myself and the Owner, and in the Change Orders for work issued by the Owner in writing as provided thereunder, except as I hereby claim for additional compensation and/or extension of time, as set forth on the itemized statement attached hereto.

Date: _____ _____

(Contractor)

By _____

_____

Title

CONTRACTOR'S AFFIDAVIT

STATE OF MICHIGAN)
) ss
County of Wayne)

The undersigned, _____ hereby represents that on _____ he (it) was awarded a contract by _____, hereinafter called the Owner, to _____in accordance with the terms and conditions of Contract No. _____and the undersigned further represents that the subject work has now been accomplished and the said contract has now been completed.

The undersigned hereby warrants and certifies that all of his (its) indebtedness arising by reason of the said contract has been fully or satisfactorily secured, and that all claims from subcontractors and others for labor and material used in accomplishing the said project, as well as all other claims arising from the performance of the said contract, have been fully paid or satisfactorily secured. The undersigned further agrees that if any such claim should hereafter arise, he (it) shall assume responsibility for the same immediately upon request to do so by the Owner.

The undersigned, for a valuable consideration, the receipt of which is hereby acknowledged, does further hereby waive, release and relinquish any and all claims or right of lien which the undersigned now has or may hereafter acquire upon the subject premises for labor and material used in accomplishing said project owned by the Owner.

This affidavit is freely and voluntarily given with full knowledge of the facts, on this_____ day of _____20__.

_____
(Contractor)
By_____

_____
Title

Subscribed and sworn to before me, a Notary Public in and for _____ County, Michigan, on this _____ day of _____, 20__.

_____
Notary Public
My Commission Expires _____

SPECIAL PROVISIONS

Note: The following articles form an integral part of these bidding/contract documents. The Bidder/Contractor shall be responsible for inclusion of all detailed information described herein when deriving unit prices/contract price.

Conflicts arising between these Special Provisions and the remainder of the bid/contract package (plans and bid/contract book) shall defer to the Special Provisions.

1. All work shall conform to the Michigan Department of Transportation 2020 Standard Specifications for Construction or the special provisions and supplemental specifications.

2. It shall be the Contractor's responsibility to secure all permits and pay all permit fees associated with the permits. All permits must be obtained by the Contractor prior to commencing any construction work.

3. Plans showing approximate locations of existing utilities are provided for reference purposes only. Contractor will still be required to contact Miss Dig for field location of private utility lines prior to commencing construction work.

4. The Bidder/Contractor shall be responsible for all traffic control as required to provide a safe work environment as well as for safe passage of traffic. It shall be incumbent upon the Contractor to supply all required lightboards, barricades, signs, flaggers, or other resources as necessary to ensure safe traffic conditions.

IRON BELLE TRAIL SECTION D

SPECIAL PROVISION
FOR
CLEARING

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes all labor, material, and equipment necessary to clear the site and removal of all trees, stumps, and corduroy, regardless of size, within the identified project limits as shown on the construction plans. All work is to be performed in accordance with MDOT Standard Specifications for Construction Section 201 and 202. It shall be the contractor's responsibility to verify the limits of disturbance as shown on the plans.

To prevent the spread of Oak Wilt Disease, any oak trees to remain on site shall be protected from injury during construction. If pruning or removal is required for on-site oak trees, it must be done during the dormant season. If an oak tree is injured during construction, the wounded area of the tree shall be immediately treated with commercial tree paint or wound dressing.

PART 2 - EXECUTION

2.01 All work shall be in accordance with the MDOT Standard Specifications for Construction Section 201 and 202.

PART 3 - MEASUREMENT AND PAYMENT

3.01 The completed work shall be incidental to the lump sum contract price for the following Contract Item (pay item):

Contract Pay Item	Pay Unit
CLEARING	ACRE

END OF SECTION

IRON BELLE TRAIL SECTION D

SPECIAL PROVISION
FOR
EROSION CONTROL, INLET PROTECTION, FABRIC DROP, MODIFIED

a. Description. This work consists of furnishing and installing acceptable inlet protection devices (devices).

This work consists of providing all labor, equipment and materials necessary to furnish, install, maintain, and dispose of collected material and remove devices at the locations directed by the Engineer.

b. Materials. The following devices are approved for use:

1. Siltsack Type B, Regular Flow, by ACF Environmental, Inc.

2. Dandy Curb Bag, Dandy Bag, Dandy Curb Sack, Dandy Sack, or Dandy Pop by Dandy Products, Inc.

3. Approved equal.

Ensure provided devices are sized appropriately for the drainage structures in which they will be installed. Install devices per manufacturer's recommendations.

c. Construction. Install, maintain and remove the devices according to the manufacturer's guidelines. Remove material collected by the devices according to the manufacturer's guidelines or as directed by the Engineer.

Dispose of collected material in accordance with Subsection 205.03.P of the Michigan Department of Transportation (MDOT) Standard Specifications for Construction. Those devices that are no longer needed and have been removed may be reused elsewhere on the project as approved by the Engineer.

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

Contract Pay Item	Pay Unit
Erosion Control, Inlet Protection, Fabric Drop Modified	Each

IRON BELLE TRAIL SECTION D

SPECIAL PROVISION
FOR
CONTRACTOR STAKING

a. Description. This work consists of providing all equipment and labor provide, place, protect, and maintain staking for all points needed to complete the Contractors work. Work shall be completed according to the MDOT Standard Specifications for Construction (Section 104.09 and 824) and the Contract working drawings. There will be no Engineer Staking. All staking shall be provided by the Contractor.

b. Materials. All work shall be completed with Contractor Equipment to the minimum tolerances.

1. Contractor shall provide the following information for Engineer approval: Project Team – If more than one person: Name; Project Roles and Responsibilities; Experience, Certifications, Qualifications; Additional background information that makes them qualified to be part of this project.
2. Owner will provide Contractor with Civil3D2023 Project Drawing.

c. Construction Methods. Construction shall conform to Section 824 of the MDOT Standard Specifications for Construction and related sections. The Contractor shall perform constructing staking in accordance with 824 including but not limited to layout, baselines, grades, building corners and other necessary components, foundations, utilities, alignments, trees, landscaping, turf restoration and pavements and other project components as shown on the Contract working drawings.

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

Contract Item (Pay Item)	**Pay Unit**
Contractor Staking	Lump Sum (LS)

Construction Staking shall include all materials, labor and equipment necessary to perform the completed work herein as described.

END OF SECTION

IRON BELLE TRAIL SECTION D

SPECIAL PROVISION
FOR
AUDIO VIDEO FILE, SPECIAL

a. Description. The work shall include a color **Audio-Video File, Special** of all areas proposed for improvement.

b. Material. The audio video recording shall be color and of such quality to accurately describe the existing conditions.

c. Construction. The video file shall be produced one (1) week prior to the placement of materials or equipment in the construction area. The tape shall be of commercial quality and can be submitted via thumb drive or electronically as agreed upon by the Engineer.

The entire project area must be recorded with the rate of speed less than 48 feet per minute. Camera functions such as panning rate and zoom-in/zoom-out shall be controlled to provide optimum object clarity.

The video must be recorded while the visibility is clear and at no time will it be allowed during periods of ground cover.

The video shall be continuous running and shall include date, time, and location at appropriate intervals. The location shall be easily referenced to the Contract Drawings.

d. Measurement and Payment. The completed work, as described, will be measured as a lump sum and paid for at the contact price using the following pay item:

e.

Pay Item	**Pay Unit**
Audio Video File, Special	Lump Sum

END OF SECTION

IRON BELLE TRAIL SECTION D

SPECIAL PROVISION
FOR
SUBGRADE UNDERCUTTING, SPECIAL

a. Description. The item of **Subgrade Undercutting, Special** shall be in accordance with Section 205 of the Michigan Department of Transportation (MDOT) Standard Specifications for Construction except as herein specified. **Subgrade Undercutting, Special** shall include undercutting any unsuitable material as determined by the Engineer, placing geotextile separator, and placing backfill.

b. Materials. The material used for **Subgrade Undercutting, Special** shall meet the requirements as specified in Section 902 and 910 of the MDOT 2012 Standard Specifications for Construction except as modified herein. The backfill material shall meet the requirements of MDOT 6A limestone aggregate, 21AA limestone aggregate, or Granular Material Class II as required.

c. Construction. Construction methods shall follow Section 205 of the MDOT 2012 Standard Specifications for Construction. The Contractor shall excavate any areas where peat, muck, marl, underlying very soft clay, or other unacceptable material is present under the proposed path. Subgrade Undercutting, Special shall be performed as established by the Engineer, and the excavated material shall become the property of the Contractor.

Following removal of the material compact the undercut work area and allow inspection by the Engineer prior to backfilling. Geotextile, Separator shall be placed between the backfill material and the subgrade.

Backfill material shall be MDOT 6A limestone aggregate in high ground water areas, MDOT 21AA in dry clay areas, and Granular Material Class II in existing sandy areas. The Engineer must approve the backfill material for each undercut site.

d. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following contract items (pay items):

Pay Item	**Pay Unit**
Subgrade Undercutting, 21AA, Special	Cubic Yard
Subgrade Undercutting, 6A, Special	Cubic Yard
Subgrade Undercutting, Class II, Special	Cubic Yard

Subgrade Undercutting, Special shall be measured in place. All materials, labor and equipment necessary to install **Subgrade Undercutting, Special** will be included in the pay item, including **Geotextile, Separator**.

END OF SECTION

IRON BELLE TRAIL SECTION D

SPECIAL PROVISION
FOR
DETECTABLE WARNING SURFACE

a. Description. This work shall consist of all equipment, materials, and labor required to furnish and install RediMat Surface Applied Detectable/Tactile Warning Tile where it has been called for in the plans per the manufacture's recommendation.

b. Materials. "RediMat" surface applied detectable warning tile, color "Red" elsewhere, as Manufactured by DWS (Detectable Warning Systems) or approved equal.

c. Construction Methods. The Contractor shall place detectable warning tile per manufacturer's recommendation and as directed by the Engineer. Ensure surface applied products include mechanical anchors. Installation shall meet current ADA requirements.

d. Measurement and Payment. The completed work will be paid for at the contract unit price of linear foot for the following contract item (pay item)

Contract Item (Pay Item)	**Pay Unit**
Detectable Warning Surface	LFT

Detectable Warning Surface shall include all materials, labor and equipment necessary to perform the completed work herein as described and in accordance with MDOT 803

END OF SECTION

IRON BELLE TRAIL SECTION D

SPECIAL PROVISION
FOR
TEMPORARY TRAFFIC CONTROL FOR CONSTRUCTION ZONE OPERATIONS

a. Description. This work consists of protecting, regulating, warning, guiding, and maintaining traffic through and around the Construction Influence Area (CIA). The CIA includes any area of work including roadways, trails, and site improvements. The work shall be completed according to the current MDOT Standard Specifications for Construction, The Michigan Manual of Uniform Traffic Control Devices and the Contract working drawings. The Contractor shall be solely responsible for all traffic control, the Owner will NOT supply any materials, equipment, or manpower to assist with this work. The work shall be performed in accordance with Section 812 of the Standard Specifications for Construction.

b. Materials. Per Section 812 and 922 of the MDOT Standard Specifications for Construction.

c. Construction Methods. Per Section 812 and 922 of the MDOT Standard Specifications for Construction.

d. Measurement and Payment. The completed work will be paid for at the contract unit price of lump sum for the following Contract Item (pay item):

Contract Item (Pay Item)	**Pay Unit**
Temporary Traffic Control for Construction Zone Operations	Lump Sum (LS)

The Contract Unit price for temporary traffic control includes all cost to furnish, install, maintain and remove any and all temporary traffic control items. Additional payment will not be made for additional traffic control markings and devices not shown on the plans but required to be furnished, installed, maintained and removed to allow the Contractor to provide a safe travel way within and outside of the CIA.

END OF SECTION

IRON BELLE TRAIL SECTION D

SPECIAL PROVISION
FOR
SANITARY STRUCTURE COVER, ADJ

a. Description. This work consists of adjusting sanitary sewer structures shown on the plans or approved by the Engineer.

b. Materials. Sanitary manholes must be in accordance with Section 403 of the Michigan Department of Transportation (MDOT) Standard Specifications for Construction, Standard Plan R-1 series and the Municipality's Standards. Joints must meet ASTM C 923. The sanitary manhole cover must be in accordance with the Municipality Standard as shown on the plans.

c. Construction. Perform all work in accordance with Sections 203, 206, 402 and 403 of the MDOT 2012 Standard Specifications for Construction as well as federal, state and local requirements. The riser section must be constructed in accordance with ASTM C 478.

d. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following contract items (pay items):

Pay Items	**Pay Unit**
Sanitary Structure Cover, Adj	EA

Sanitary Structure Cover, Adj, will be measured in accordance with Sanitary Structure Cover, Adj, and paid for in accordance with the above pay item. Additional depth of adjustment beyond 6 inches will be considered a part of this pay item and will not be paid for separately.

END OF SECTION

IRON BELLE TRAIL SECTION D

SPECIAL PROVISION
FOR
HELICAL PILES

a. Description. This work consists of designing, furnishing, installing, and load testing helical piles and bracket assemblies in accordance with the project plans, industry standard design methodology, the standard specifications, and this special provision. Install each helical pile at the location and to the elevation, minimum length, and load capacities shown on the plans.

The following definitions apply when used herein and on the plans:

Allowable Pile Capacity. Ultimate pile capacity divided by a factor of safety as designated on the plans. If the factor of safety is not designated on the plans then the factor of safety will be 2.0.

Alignment Load (AL). A small load applied to a helical pile during testing to keep the testing equipment correctly positioned.

Brackets. Cap plate or other termination device that is bolted, slipped over, or welded to the end of a helical pile after completion of installation, to facilitate attachments to structures or embedment in cast-in-place structures.

Designer. A Professional Engineer, licensed in the State of Michigan, who is retained by the Contractor and is responsible for the design and working drawings required herein.

Elastic Movement. The recoverable movement measured during a helical pile test.

Extension Section. Helical pile section(s), which follow the lead section into the ground and extend the helical lead to the appropriate depth. Extension section(s) consist of a central shaft and may have helical bearing plates affixed to the shaft.

Helical Pile. Manufactured steel foundation element with one or more helical bearing plates that is rotated into the ground to support structures. The element consists of a lead or starter section, extension section(s), brackets, and a pile cap.

Installation Torque. The resistance generated by a helical pile when installed into soil. The installation resistance is a function of the soil type and the size and shape of the various components of the helical pile.

Lead Section. The first section of a helical pile to enter the ground, lead sections consist of a central shaft with a tapered end and one or more helical bearing plates affixed to the shaft.

Manufacturer. The individual or legal entity that performs part of the work required through a contract agreement with the Contractor. This includes an individual or legal entity that owns the patent, product trademark, product copyright, or product name for the approved helical pile system.

Minimum Pile Penetration Elevation. The elevation shown on the plans to or below which the bottom of piles must be installed.

Shop Drawings. A submittal consisting of drawings and calculations related to the design, installation, and load testing of the helical pile system by the Contractor.

Torque Strength Rating. The maximum torque energy you can apply to the helical pile foundation during installation in soil, i.e., allowable or safe torque.

Unsupported Length. Unsupported shaft lengths shall include the length of the shaft in air, water, or in fluid soils.

Verification Load Test. A helical pile load test performed to verify the helical pile ultimate capacity based on the construction methods proposed. Verification load tests are performed on non- production piles, prior to installation of production piles.

b. Materials. Unless noted otherwise, it is the responsibility of the Contractor to select the appropriate type and design strength of helical plates, shaft connections, shafts, brackets, and the overall helical pile system to support the load capacities and criteria specified on the project plans. Materials used for helical piles must meet the requirements of ICC-ES AC358. In addition, all helical piles must be manufactured to the following criteria.

1. Central Steel Shaft. The central shaft must consist of high strength structural steel tube, pipe, or solid steel bars meeting the requirements of ASTM A 36, A 252 Grade 3, A 500 Grade C, or A 576 Grade 1045 or Grade 1530.

2. Helix Bearing Plate. Bearing plate material must conform to ASTM A 572 Grade 50 or A 1018 Grade 55.

3. Bolts, Nuts, and Washers. Must meet the material and hot-dip galvanizing requirements of subsection 906.07 of the Standard Specifications for Construction.

4. Brackets. Bracket must conform to ASTM A 36, ASTM A 572 Grade 50, or ASTM A 958 Grade SC 1045.

5. Couplings. Couplings, if applicable, must conform to ASTM A 958.

6. Corrosion Protection. At minimum, all helical piles and hardware must have corrosion protection consisting of hot-dip galvanization in conformance with ASTM A 153 and ASTM A 123, as applicable.

c. Construction. Furnish, design, install and load test the helical piles in accordance with the project plans, this special provision, and the approved shop drawings.

1. Qualifications.

A. Manufacturer. The manufacturer must be a company specializing in the manufacturing and distribution of these products. Manufacturer's qualifications are to be submitted to the Engineer in accordance with subsection c.2.A of this special provision. The submittal must include:

(1) A product catalog and evidence showing the manufacturer has at least 10 years of experience in the design and manufacture of helical piles.
(2) Current ICC-ES product evaluation report or complete description of product testing and engineering calculations used to assess product capacity.

B. Contractor. The Contractor performing the work described in the contract must be a company specializing in the installation of helical piles. The submittal must include:

(1) Evidence the Contractor has completed training in the proper methods for installation of helical piles and brackets.
(2) Documentation that the Contractor's fulltime onsite supervisor and drillers performing the work have completed at least 10 projects and have 3 years of experience installing similar types of helical piles in similar subsurface conditions to this project. Documentation must, at minimum, include project name, description, dates, number and type of helical piles, project location, and client contact information.
(3) List of installation equipment and detailed description of proposed method of installation.

C. Designer. The design of the helical piles must be done by a licensed design professional specialized in the engineering and design of helical piles. The designer must have the following qualifications:

(1) A Professional Engineer licensed in the State of Michigan.
(2) Documentation indicating the designer has designed at least five projects utilizing helical piles. Documentation must, at minimum, include project name, description, dates, number and type of helical piles, project location, and client contact information.

2. Submittals.

A. Qualifications. Submit manufacturer, Contractor, and designer qualifications in accordance to subsections c.1.A, c.1.B, and c.1.C.

Submit to the Engineer three copies of the project reference list and a personnel list at least 30 calendar days before the planned start of helical pile construction. Provide a summary of each individual's experience in the personnel list and be complete enough for the Engineer to determine whether each individual satisfies the required qualifications. The Engineer will approve or reject the Contractor's and manufacturer's qualifications within 15 calendar days after receipt of a complete submission. Additional time required due to incomplete or unacceptable submittals will not be justification for time extension or impact or delay claims. All such costs associated with incomplete or unacceptable submittals are to be borne by the Contractor.

Work is not to be started, nor materials ordered, until the Engineer's written approval of the Contractor's, manufacturer's and designer's experience and personnel qualifications is given. The Engineer may suspend the work if the Contractor uses non-approved personnel, manufacturer or designer. If work is suspended, the

Contractor is fully liable for all resulting costs, and no adjustment in contract time will accrue due to the suspension.

B. Shop Drawings. Prepare and submit to the Engineer shop drawings for the helical piles intended for use on the project at least 30 calendar days prior to start of installation. The shop drawings must include the following:

(1) Overall plan drawing showing helical pile location, number, and product identification number(s).
(2) Maximum allowable mechanical compression and tensile strength of the helical piles. Include the Torque Strength Rating.
(3) Helical piles respective design capacities from the drawings.
(4) Planned installation depth and cut-off elevation and the number and type of lead and extension sections.
(5) Designer's recommended allowable pile capacity to installation torque ratio and minimum final installation torque(s) for the helical test pile(s).
(6) Product identification numbers and designations for all the brackets and number and size of connection bolts or couplers. Details illustrating helical pile attachment to structure relative to grade beam, column pad, pile cap, etc.
(7) Corrosion protection coating on helical piles and bracket assemblies.

C. Design Calculations. The designer is to prepare and submit detailed design calculations to the Engineer for the helical piles intended for use on the project. Design must be in accordance with the AASHTO Standard Specifications for Highway Bridges and other published design methodologies as approved by the Engineer. All submittals must be sealed and stamped by the designer and submitted at least 30 calendar days prior to the start of installation. The analysis must take into account the notes and design details from the plans and must include, but is not limited to, the following items:

(1) Reduction in the dimensions of the structural elements based on anticipated corrosion loss over the design life for the subsurface and environmental conditions encountered at the project site.
(2) Ultimate and allowable pile capacities. Consider affects from downdrag, buckling, and expansive soils.
(3) Minimum installation depth to reach bearing stratum and to achieve pullout capacity, if applicable.
(4) One hand calculation for a typical helical anchor location, which illustrates conformance of the computer programs utilized to design the axial pile capacity.
(5) Lateral resistance of the shaft, if applicable.
(6) Estimated pile head movement at the allowable pile capacities.
(7) Design the helical pile attachment to distribute the loads to the substructure and/or superstructure does not exceed those in the AASHTO Standard Specifications for Highway Bridges.

D. Calibration Reports. Submit to the Engineer calibration information certified by an independent testing agency for the torque measurement device. Calibration information must have been tested within 30 days of the start of helical pile

installation. Calibration information must include, but is not limited to, the name of the testing agency, identification number or serial number of device calibrated, calibration data, and the date of calibration.

E. Installation Record. Submit to the Engineer a Daily Installation Log during helical pile installation. This log must contain the following information for each helical pile:

(1) Name of project and Contractor.
(2) Name of Contractor's supervisor during installation.
(3) Date and time of installation.
(4) Name and model of installation equipment and type of torque indicator used.
(5) Location of helical pile by grid location or assigned identification number.
(6) Type and configuration of Lead Section with length of shaft and number and size of helical bearing plates.
(7) Type and configuration of extension sections, with length and number and size of helical bearing plates, if any.
(8) Installation duration and observations.
(9) Total length installed.
(10) Final elevation of top of shaft and cut-off length, if any.
(11) Final plumbness or inclination of shaft.
(12) Installation torque at minimum 3-foot depth intervals.
(13) Final installation torque.
(14) Comments pertaining to interruptions, obstructions, or other relevant information.
(15) Verified allowable pile axial load capacity.

3. Subsurface Data. Review the available soil boring logs from the subsurface investigation(s). Upon request, a copy of the geotechnical data report outlining the subsurface exploration conducted during the design phase will be provided. If during construction, the Contractor determines the actual subsurface conditions differ substantially from those reported on the boring logs; notify the Engineer in writing within 48 hours of such determination.

   The data indicated on the available boring logs are not intended as representation or warranties of continuity of such conditions. It is expressly understood that the Department will not be responsible for interpretations or conclusions drawn therefrom by the Contractor. Additional soil test borings and other exploratory procedures may be performed by the Contractor at no additional cost to the Department.

4. Installation Equipment. The equipment must be capable of applying adequate down pressure (crowd) and torque simultaneously to ensure normal advancement of the helical piles to the ultimate pile capacities and the minimum pile penetration elevation(s) as shown on the plans. The equipment must be capable of continuous position adjustment to maintain proper alignment and position.

   A. Torque Motor. Helical piles are to be installed with high torque, low RPM torque motors, which allow the helical plates to advance with minimal soil disturbance. The torque motor must be hydraulically powered with clockwise

and counter-clockwise rotation capability. The torque motor must be adjustable with respect to revolutions per minute during installation. Percussion drilling equipment is prohibited. The torque motor must have a minimum torque capacity 15 percent greater than the torsional strength rating of the central steel shaft to be installed for the project. The connection between the torque motor and the installation rig must have no more than two pivot hinges oriented 90 degrees from each other.

B. Drive Tool. The connection between the torque motor and helical pile must be in-line, straight, and rigid, and must consist of a hexagonal, square, or round kelly bar adapter and helical shaft socket. To ensure proper fit, the drive tool must be manufactured by the helical pile manufacturer and used in accordance with the manufacturer's installation instructions.

C. Connection Pins. Attach the central shaft of the helical pile to the drive tool by smooth tapered pins matching the number and diameter of the specified shaft connection bolts. Maintain the connection pins in good condition allowing safe operations at all times. Inspect the pins regularly for wear and deformation. Replace pins with identical pins when worn or damaged.

D. Torque Indicator. Ensure the torque indicator is capable of providing continuous installation torque measurement during installation. Ensure the torque indicator is capable of torque measurements of 500 ft-lbs or less. Calibrate torque indicators that are mounted in-line with the installation tooling either on-site or at an appropriately equipped test facility. Re-calibrate indicators that measure torque as a function of hydraulic pressure following any maintenance performed on the torque motor. Re-calibrate torque indicators if, in the opinion of the Engineer, reasonable doubt exists as to the accuracy of the torque measurements. If recalibration is directed by the Engineer in writing and the calibration is off by less than 500 ft-lbs, the recalibration will be paid for as extra work. Otherwise recalibrations will be paid for by the Contractor at no cost to the Department.

5. Installation Procedures. The helical pile installation technique is to be determined by the Contractor such that it is consistent with the geotechnical, logistical, environmental, and load carrying conditions of the project.

A. Position the lead section at the location depicted on the working drawings. Battered helical piles can be positioned perpendicular to the ground to assist in initial advancement into the soil before the required batter angle is established. The equipment must be capable of continuous position adjustment to maintain proper helical pile alignment. Apply constant axial force (crowd) while rotating helical piles into the ground. Apply sufficient crowd to ensure the helical pile advances into the ground a distance equal to at least 80 percent of the blade pitch per revolution during normal advancement.

B. Advance the helical pile sections into the soil in a smooth, continuous manner at a rate of rotation between 5 RPM's and 40 RPM's. Adjust the rate of rotation and magnitude of down pressure for different soil conditions and depths.

C. Provide extension sections to obtain the required minimum overall length and installation torque as shown on the shop drawings. Use coupling bolt(s) and nuts

torqued in accordance to the manufacturer's guidelines to connect sections together.

D. Do not exceed the manufacturer's Torque Strength Rating of the helical pile during installation.

E. The Contractor must adjust the elevation of the top end of the shaft to the elevation shown on the shop drawings or as required. This adjustment may consist of cutting off the top of the shaft and drilling new holes to facilitate installation of brackets to the orientation shown on the shop drawings. Alternatively, installation may continue until the final elevation and orientation of the pre-drilled bolt holes are in alignment. Do not reverse the direction of torque and back-out the helical pile to obtain the final elevation.

F. Install brackets in accordance with helical pile manufacturer's details or as shown on the shop drawings.

G. Ensure all helical pile components, including the shaft and bracket, are isolated from making a direct electrical contact with any concrete reinforcing bars or other non-galvanized metal objects since these contacts may alter corrosion rates.

H. Obstructions. Terminate the installation and remove the pile if the helical pile encounters refusal or is deflected by a subsurface obstruction. Remove the obstruction if feasible, and reinstall the helical pile. Backfill and compact the resulting excavation before reinstalling the pile. Install the helical pile at an adjacent location, subject to review and approval by the Engineer, if the obstruction can't be removed. Removal of such obstructions will be paid using the pay item Obstruction Removal, Unexpected.

6. Helical Pile Testing. Perform verification testing of helical piles according to ASTM D 1143, except as modified herein. Perform the testing under the direction of a Professional Engineer licensed in the State of Michigan. Determine the site specific K factor based on load test results to correlate torque to allowable pile capacity. Summarize the test data in a report to be sealed by the Professional Engineer. Submit the report to the Engineer within 24 hours of each load test. Notify the Engineer in writing 3 working days prior to any load test. Do not perform load tests without a representative from the Department's Geotechnical Services Section being on site to witness the load test.

   Do not exceed 80 percent of the following helical pile structural elements during load testing: steel yield in tension, steel yield in compression, and steel buckling in compression. Costs associated with increasing the strength of the verification test pile structural elements above the strength required for production piles will be borne by the Contractor.

   A. Testing Equipment and Data Recording. Testing equipment includes, but is not limited to: dial gauges, dial gauge supports, jack and pressure gauges, electronic load cell, reaction piles, and a reaction frame. The load cell is required only for the creep test portion of the verification test. Submit a written description of the load test setup and jack, pressure gauge and load cell calibration reports according to subsection c.2 herein. Design the testing reaction frame to be sufficiently rigid and of adequate dimensions to prevent

excessive deformation of the testing equipment. Align the jack, bearing plates stressing anchorage such that unloading and repositioning of the equipment will not be required during the test. Apply the test load with a hydraulic jack and measure the load with a pressure gauge graduated in no more than 50 psi increments or less. Use a jack and gauge with a pressure range not more than twice the anticipated maximum test pressure. Select a jack with ram travel sufficient to allow the test to be performed without repositioning during the test. Monitor the creep test load hold during verification tests with both the pressure gauge and the electronic load cell. Use the load cell to accurately maintain a constant load hold during the creep test load hold increment of the verification test. Measure the pile top movement with a dial gauge capable of measuring to 0.001 inch and a travel sufficient to allow the test to be performed without having to reset the gauge. Align the gauge to be parallel to the axis of the helical pile. Support the gauge independent from the jack, pile or reaction frame. Use a minimum of four dial gauges evenly distributed around the test pile. Record the load test data.

B. Verification Load Testing. Perform a pre-production verification load test to verify the design of the helical pile and the construction methods used to install the helical pile meet specifications. Do not use production piles as reaction piles during load tests. Unless otherwise specified on the plans, install one sacrificial verification test pile per structure. Install verification test piles at locations approved by the Engineer. The verification helical pile must be identical to those used in production and installed using the same methods to be used for installing production piles.

Do not locate reaction piles closer than 5 feet to the verification pile. Reaction piles must meet the approval of the Engineer. Perform verification load tests by incrementally loading the helical pile in compression according to Table 1. Depending on performance, the Engineer will determine whether a 10 minute or a 60 minute creep load hold is appropriate. If the pile top movement measured between 1 and 10 minutes exceeds 0.04 inches, maintain an additional 50 minutes of load hold during the creep test. Record pile top movements during each hold period at time intervals of 1, 2, 3, 4, 5, 6, 10, 20, 30, 50, and 60 minutes. Reset dial gauges to zero after the initial alignment load (AL) is applied. The acceptance criteria for helical pile verification load tests are:

(1) Failure of the test pile does not occur before the maximum test load is applied. Failure is defined as the lesser of:
    (i) The slope of the load versus deflection curve (at the end of the load increment) exceeds 0.025 inch/kip, or
    (ii) Where attempts to further increase the test load simply results in continued pile movement.
(2) Test pile supports the allowable pile capacity with not more than 1.00 inch of total vertical movement at the top of the pile from its position prior to testing.
(3) At the end of the creep test load period, a creep rate not greater than 0.04 inch/log cycle time (1 to 10 minutes) and not greater than 0.08 inch/log cycle time (6 to 60 minutes or the last log cycle if held longer) and linear or decreasing creep rate.

The Engineer will provide written approval or rejection of the helical pile design and construction techniques within 7 working days of the completion of the verification load test.

If site conditions vary across the project limits additional load tests may be necessary as determined by the Engineer.

Verification piles constructed using methods different from the methods submitted for production piles will be rejected and additional verification test pile(s) will be required at no additional cost to the Department. If the verification pile fails to meet the acceptance criteria, the Engineer may modify the design of the production piles, or require the Contractor to make modifications to the construction methods, or both. Modifications may include, but not be limited to, modifying the installation methods, or changing the helical pile materials. Any modification to the construction procedure that necessitates changes to the structure requires the Engineer's review and approval.

Do not install production piles until the verification load test results have been reviewed and accepted by the Engineer. At the completion of verification testing, remove testing equipment and remove test piles and reaction piles or cut off piles to an elevation directed by the Engineer.

Table 1: Verification Load Test Schedule

Step	Load	Hold Time,	Step	Load	Hold Time,
1	AL	-	19	AL	1
2	0.10 Rn	3	20	0.10 Rn	1
3	0.20 Rn	3	21	0.20 Rn	1
4	0.30 Rn	3	22	0.30 Rn	1
5	AL	1	23	0.40 Rn	1
6	0.10 Rn	1	24	0.50 Rn	1
7	0.20 Rn	1	25	0.60 Rn	1
8	0.30 Rn	1	26	0.70 Rn	1
9	0.40 Rn	3	27	0.80 Rn	3
10	0.50 Rn	10 or 60 (creep	28	0.90 Rn	3
11	AL	1	29	1.00 Rn	10
12	0.10 Rn	1	30	0.75 Rn	5
13	0.20 Rn	1	31	0.50 Rn	5
14	0.30 Rn	1	32	0.25 Rn	5
15	0.40 Rn	1	33	AL	5
16	0.50 Rn	1			
17	0.60 Rn	3			
18	0.70 Rn	3			

a. Rn denote nominal resistance (ultimate pile capacity).
b. AL denotes alignment load. AL is equal to 0.025 Rn.

7. Production Helical Piles.

A. Advance production helical piles until all of the following criteria are satisfied:

(1) Allowable pile capacity is verified by achieving the required Installation Torque. The required Installation Torque must be determined from the site specific K factor based on the verification load test results. The required Installation Torque is defined as the average of the last three readings recorded at 1 foot intervals, unless a more stringent specification is noted on the designer's shop drawings. The maximum rotational speed must not exceed 12 RPM when torque is monitored.
(2) Minimum depth as depicted on the plans is obtained.

B. If the manufacturer's Torque Strength Rating of the helical pile is obtained during installation and the minimum pile depth has not been reached, the Contractor and designer must submit revised shop drawings and design calculations for review and approval by the Engineer.

If the Contractor chooses to reinstall a pile in the same location, the topmost helix of the new lead section of the helical pile must be terminated at least 3 feet beyond the terminating depth of the original helical pile.

C. If the final Installation Torque is not achieved at the estimated length shown on the shop drawings, the Contractor has the following options:

(1) Install the helical pile deeper using additional extension sections until the required Installation Torque is obtained.
(2) Remove the helical pile and install a new one with additional and/or larger diameter helical bearing plates. This option may require an additional pile load test to determine the new K factor, as determined by the Engineer. No additional compensation for any additional pile load tests will be provided for in this option.
(3) Submit other options to the Engineer in writing for review and approval.
(4) Additional materials and work necessary to reach the required helical pile capacity, including engineering analysis and redesign, is to be furnished without cost to the Department and without an extension of the completion dates for the project.

D. The helical pile must be sized to reach the allowable pile capacity and the minimum helical pile penetration elevation . No additional compensation for changes in the helical pile will be allowed unless differing site conditions are determined by the Engineer.

8. Construction Tolerances.

A. Horizontal Alignment. Ensure the helical pile actual centerlines are within 2 inches of plan centerlines at the plan elevation for the top of the shaft. Tolerances for bracket assembly placement are ±1 inch in both directions perpendicular to the shaft and ±1/4 inch in a direction parallel with the shaft, unless otherwise specified.

B. Plumb. Tolerance for departure from the design orientation angles is ±5 degrees.

C. Top of Pile Elevation. Ensure helical pile is cut off at the design cut-off elevation.

D. Submit a plan for remedial action to the Engineer for approval, for helical piles not constructed within the required tolerances which are considered unacceptable. The Contractor is responsible for correcting all unacceptable piles to the satisfaction of the Engineer. Materials and work necessary to complete corrections for out-of-tolerance helical piles, including engineering analysis and redesign, must be furnished without cost to the Department and without an extension of the completion dates for the project. Do not begin repair operations until receiving the Engineer's approval of the remedial action plan.

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

Pay Item	Pay Unit
Helical Pile Equipment, Furn	Lump Sum
Helical Pile	Each
Obstruction Rem, Unexpected	Dollars
Helical Pile, Load Test	Each

1. Helical Pile Equipment, Furn includes furnishing and removing equipment for constructing and installation of the helical pile.

2. Helical Pile includes all labor, operating the equipment, fabrication, designing, shop drawings, and materials to install the helical pile and associated brackets as shown on the plans and in this special provision.

3. Obstruction Rem, Unexpected will be paid in accordance with subsection 103.02 of the Standard Specification for Construction. After designation as an obstruction by the Engineer, the Contractor is required to remove the obstruction and resume installation. A budget amount has been established for payment for the removal of obstructions.

4. Helical Pile, Load Test will be measured per each helical pile tested and accepted. Helical Pile, Load Test includes the testing apparatus, data collection and reports, the sacrificial helical piles serving as reaction piles, the sacrificial helical pile on which the verification load test is being performed, and obtaining acceptance from the Engineer.

IRON BELLE TRAIL SECTION D

SPECIAL PROVISION
FOR
PREFABRICATED STEEL TRUSS PEDESTRIAN BRIDGE

a. Description. This work consists of designing, fabricating, delivering, and erection of the prefabricated steel truss bridges to be used for a shared path.

This special provision is for a fully engineered clear span bridge of steel construction and is regarded as minimum standards for design and construction. The work must be done in accordance with the Standard Specifications for Construction.

1. Qualified Suppliers Experience Clause. Proposed suppliers must have at least 5 years' experience in the design and fabrication of these structure types and a minimum of 5 successful bridge projects, of similar construction, each of which has been in service at least 3 years. List the location, bridge size, Owner, and a contact for reference for each project.

   Fabricators must be currently certified by the American Institute of Steel Construction (AISC) to have the personnel, organization, experience, capability, and commitment to produce fabricated structural steel for the AISC Major Steel Bridges certification and Fracture Critical Endorsement. Quality control must be in accordance with procedures outlined for AISC certification.

2. Design Requirements. Structural design of the bridge structure(s) will be performed by or under the direct supervision of a Professional Engineer licensed in the State of Michigan and done in accordance with recognized engineering practices and principles, current AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges and using LRFD Bridge Design Specifications following MDOT Road and Bridge Design Manual Standards.

   All welding must be in accordance with section 707 of the Standard Specifications for Construction and AASHTO/AWS D1.5 Bridge Welding Code. Gas metal arc welding is not permitted on fracture critical members.

3. Design Criteria.

   A. Uniform Live Load. All structural members of the superstructure will be designed for a uniform pedestrian live load of 90 psf. The pedestrian live load will be applied to those areas of the walkway so as to produce maximum stress in the member being designed.

   B. Vehicle Load.Design for AASHTO H-10 loading.

   C. Wind Loads. The superstructure will be designed for a wind load of 35 psf on the full vertical surface area of the front elevation. In addition, a vertical uplift line load caused by a pressure of 0.020 ksf over the full deck width will be applied at the windward quarter point of the deck.

Wind loads are to be considered fatigue live loading. The fatigue loading used for the fatigue and fracture limit state (Fatigue I) will be as specified in section 11 of the current AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. The natural wind gust of that specification need only be considered.

D. Dead loads will include 6-inch concrete deck with stay in place steel forms.

E. Top Chord Loads. The top chord, truss verticals, and floor beams will be designed for the lateral wind loads above. In no case will the load be less than 50 plf or 200 lbs point load, whichever produces greater stresses, applied in any direction at any point along the top chord.

F. Stability. The vertical truss members and the floor beams and their connections in half through-truss spans will be proportioned to resist a lateral force of not less than 0.30 klf applied at the top panel points of each truss, considered as a permanent load for the Strength I Load Combination and factored accordingly. The top chord will be considered as a column with elastic lateral supports at the panel points.

G. Combinations of Loads. The truss will be designed for the load combinations and load factors specified in AASHTO LRFD Table 3.4.1-1. The load combinations to be examined are: Strength Limit States I & III, Service Limit States I & II, and Fatigue Limit State I. The load factor for Fatigue I load combination must be taken as 1.0.

H. Deflection. Deflections are to be investigated at the service limit state using load combination Service I in Table 3.4.1-1 of AASHTO LRFD. The deflection of the superstructure due to unfactored pedestrian live loading will not exceed 1/360 of the span length. Horizontal deflections under unfactored wind loading will not exceed 1/360 of the span length.

I. Minimum Thickness of Metal. The minimum thickness of all structural steel members will be 1/4-inch nominal and be in accordance with the AISC Manual of Steel Constructions "Standard Mill Practice Guidelines". For ASTM A 588 tubing, the section properties used for the design will be per the Steel Tube Institute of North America's Hollow Structural Sections "Dimensions and Section Properties".

J. Permanent Metal Deck Forms. The design must follow subsection 706.03.D.4 of the Standard Specifications for Construction.

b. Materials.

1. Hardware. Hardware will meet the requirements of the Standard Specifications for Construction sections 906 and 908 and as stated herein. Provide all hardware and accessories required to properly and completely execute the carpentry for this project, including, but not limited to: screws, hangers, bolts, nuts, washers, anchors, and similar items, whether specifically mentioned herein or not.

2. High Strength Bolts and Anchor Bolts. High strength bolts must be ASTM A 325 or equal. High strength bolts, anchor bolts, nuts, washers, and deck screws are to be hot dipped galvanized in accordance with ASTM A 153.

3. Steel. Steel will meet the requirements of the Standard Specifications for Construction sections 707, 906 and 908. All steel must be unpainted high strength, low alloy, atmospheric corrosion resistant ASTM A 847 cold-formed welded square and rectangular tubing (Fy = 50,000 psi) and/or ASTM A 588, ASTM A 242 and ASTM A606 (Fy = 50,000psi).

4. Permanent Metal Deck Forms. Use materials in accordance with subsection 706.03.D.4.a of the Standard Specifications for Construction.

5. Fabrication. The work must be done in accordance with sections 707 and 709 of the Standard Specifications for Construction, except as specifically noted, and the details shown on the plans. Furnish and install all carpentry work plumb, level and true to line and grade in a good quality workmanlike manner.

c. Construction. Construct the pedestrian bridge in accordance with subsection 707.03.D of the Standard Specifications for Construction and with the approved erection working plan. The Contractor is responsible for the proper handling, lifting, storage, transporting and erection of all elements so that they may be placed without damage.

1. Shop plans. Submit shop plans of the prefabricated bridge, foundations layout, and installation sequence for MDOT review and approval prior to the start of fabrication of the pedestrian bridge. MDOT will have 14 days to perform each review and multiple review cycles may be necessary. MDOT approval of all shop plans is a prerequisite to bridge fabrication, installation, and acceptance.

2. Structural Calculations. Structural calculations for the bridge superstructure must be submitted by the bridge manufacturer and reviewed and approved by the Engineer. All calculations must be signed and sealed by a Professional Engineer licensed in the State of Michigan.

   The calculations must include all design information necessary to determine the structural adequacy of the bridge to conform to AASHTO specifications using LRFD methodology. The calculations must include the following:

   A. All limit state checks for axial, bending, and shear forces in the critical member of each.

   B. Checks for the critical connection failure modes for each truss member type (i.e. vertical, diagonal, floor beam, etc.). Special attention must be given to all welded tube on tube connections.

   C. All bolted splice connections.

   D. Main truss deflection checks.

   E. U-Frame stiffness checks (used to determine K factors for out-of-plane buckling of the top chord) for all half through or "pony" truss bridges.

   F. Deck design.

3. Shop Welder Qualifications. Welder qualification testing is required in accordance with subsection 707.03.C.9 of the Standard Specifications for Construction. Notify the Engineer, in writing, requesting welder qualification testing a minimum of 3 weeks prior to the start of fabrication. The Engineer will contact the Operations Field Services Division, Structural Fabrication Engineer at (517) 322-5709, to schedule the testing.

    A. All weld testing shall be done by a person qualified in accordance with ASNT SNT-TC-1A. All full penetration welds in the chords are to be ultrasonically tested in accordance with AWS specifications. All fillet and partial penetration groove welds shall be 100 percent visually inspected with 10 percent also being magnetic particle tested in accordance with AWS specifications. A written testing report shall be submitted upon completion.

    B. All structural welds shall be visually inspected during the fabrication process. The bridge manufacturer shall employ two (2) Certified Weld Inspectors (CWI's) at the manufacturing facility to insure continuity of this quality assurance requirement.

    C. The Principal Design Engineer (PDE) of record for the bridge(s) shall make daily fabrication inspections during fit up, tacking, weld out, and finishing of each structure under their design purview. An inspection report signed and sealed by the PDE shall be available to the owner upon request.

4. Bearing Devices. Bridge bearings must consist of a steel setting or slide plate placed on the abutment or grout pad. The bridge bearing plate which is welded to the bridge structure must bear on this setting plate.

    One end of the bridge will be fixed by fully tightening the nuts on the anchor bolts at that end. The opposite end will have finger tight only nuts to allow movement under thermal expansion or contraction.

    The bridge bearings must sit in a recessed pocket on the concrete abutment. The bearing seat will be a minimum of 14 inches wide. The step height (from bottom of bearing to top-of- deck) must be determined by the bridge manufacturer and clearly shown on the shop drawings.

    The bridges must have teflon on teflon or stainless steel on teflon slide bearings placed between the bridge bearing plate and the setting plate in lieu of grease. The top slide plate must be large enough to cover the lower teflon slide surface at both temperature extremes.

5. Foundations and Anchor Bolts. Unless specified otherwise, the bridge manufacturer must determine the number, size, and minimum grade of all anchor bolts. The anchor bolts will be designed to resist all horizontal and vertical forces to be transferred by the superstructure to the supporting foundations and must be hot-dipped galvanized.

    The Contractor must provide all materials for (including anchor bolts) and construction of the bridge supporting foundations. The Contractor must install the anchor bolts in accordance with the manufacturer's anchor bolt spacing dimensions. Information

as to bridge support reactions and anchor bolt locations will be furnished by the bridge manufacturer after receipt of order and after the bridge design is complete.

6. Storage. Store, lift and/or move elements in a manner to prevent torsion and other undue stress. Apply equal loads to all lifting devices. Support elements in a manner that will minimize warping.

7. Repair. Inspect each element visually for evidence of damage or defect before, during and after critical operations and as often as necessary to ensure adequate quality control. Immediately bring all such evidence of damage or defect to the attention of the Engineer. The extent and frequency of inspection by the Engineer for quality assurance is the Engineer's prerogative. Elements may be inspected at any time during construction as deemed necessary by the Engineer to monitor compliance with this special provision. Ensure prior to shipment and upon arrival at the erection site, each element is inspected for damage. During transport, ensure the elements are fully secured against shifting. Upon arrival at the erection site, ensure each element is again inspected.

   If any damage has occurred during shipment, immediately notify the Engineer. Erection of such damaged elements into the structure cannot proceed without authorization from the Engineer.

   Make shop and field repairs to the coating in accordance with subsection 716.03.D of the Standard Specifications for Construction. Repair damaged galvanized surfaces in accordance with subsection 716.03.E of the Standard Specifications for Construction.

8. Erection Plan. Develop a method of construction that is also consistent with the overall design. The Contractor is solely responsible for design, fabrication, assembly, and operation of all equipment to be used.

d. Measurement and Payment. The completed work, as described, will be measured as a lump sum and paid for at the contract price using the following pay items:

Pay Item	Pay Unit
Steel Pedestrian Bridge, Furn	Lump Sum
Steel Pedestrian Bridge, Erect	Lump Sum

1. Steel Pedestrian Bridge, Furn includes all equipment and labor to design, fabricate, and obtain the prefabricated bridge from the supplier and deliver it to the project location complete and ready for erection.

2. Steel Pedestrian Bridge, Erect includes all equipment, temporary structures and labor necessary for erecting, placing, repairing, and securing the prefabricated bridge onto its abutments. Abutments and construction of the bridge deck will be paid for separately.

IRON BELLE TRAIL SECTION D

SPECIAL PROVISION
FOR
SIGNS, PERMANENT, COMPLETE

a. Description. This work consists of providing, fabricating, and erecting traffic signs and supports in accordance with the Michigan Manual on Uniform Traffic Control Devices (MMUTCD), the Michigan Standard Highway Signs Manual, and the Department Sign Support Standards. Work shall be completed according to the MDOT Standard Specifications for Construction (Section 810) and the Contract working drawings.

b. Materials. All materials shall be per section 912 and 919.

1. Hike/Bike Trail - All posts shall be 4"x4" (nominal) wood posts. Posts shall have an one inch (1") 45 degree bevel cut on all side at the top of the post. The size of hike/bike trail signs shall be from the Shared-Use Path column from table 9B-1 Bicycle Facility Sign and Plaque Minimum Sizes of the MMUTCD.

2. Roadways and Parking Lots - All posts shall be galvanized, 3 lbs per foot or 2 inch square posts per MDOT Standard Plan Sign-200-C. Splices and sleeves are only allowed for installations requiring post to be greater than 16 foot in length. The size of roadway signs shall be from the Typical column from table 5A-1 Signs and Plaques Sizes on Low-Volume Roads of the MMUTCD or as directed by Wayne County.

c. Construction Methods. The Contractor shall place signs and post per Section 810 and construction shall conform to Section 810 of the MDOT Standard Specifications for Construction.

1. Hike/Bike Trail - Edge of signs shall be a minimum of 3' off the edge of pavement and the lower edge of the parent sign a minimum of 4' above the nearest edge of pavement.

2. Roadways and Parking Lots - Edge of signs shall be a minimum of 6' off the edge of pavement and the lower edge of the parent sign a minimum of 6' above the nearest edge of pavement. In areas where pedestrian movement is likely, lower edge of parent sign shall be 7' minimum.

d. Measurement and Payment. The completed work will be measured as a lump sum and will be paid for at the contract price for the following Contract Item (pay item):

Contract Item (Pay Item)	**Pay Unit**
Signs, Permanent, Complete	Lump Sum (LS)

Signs, Permanent, Complete shall include all materials, labor and equipment necessary to perform the completed work herein as described.

END OF SECTION

IRON BELLE TRAIL SECTION D

SPECIAL PROVISION
FOR
PERMANENT PAVEMENT MARKINGS

a. Description. This work consists of providing and applying reflective and non-reflective permanent pavement markings in accordance with the Michigan Manual on Uniform Traffic Control Devices (MMUTCD). Provide markings, shapes, spacing, and dimensions that conform to the MDOT Pavement Marking Standard Plans.

b. Materials. Provide materials in accordance with Section 920 of the MDOT Standard Specifications for Construction and as modified herein.

1. Glass Beads (not required for Parking Spaces)

2. Waterborne Pavement Marking Material

3. Low Temperature Waterborne Pavement Marking Material

c. Construction Methods. Per Section 811 of the MDOT Standard Specifications for Construction modified as follows:

1. Layout: The Contractor will be responsible for staking, marking or otherwise indicating the beginning and ending of pavement markings as directed by Wayne County's Engineer, all other layout work necessary will be the responsibility of the Contractor.

2. Single Line: Single line of the color specified shall be applied as a solid 6 inch minimum width line, the paint shall be applied at an approximate rate of 15 gallons per mile of single line.

3. Broken Line: Broken line of the color specified shall be applied as a 6 inch minimum width line, on a cycle of 10 feet of line and 30 feet of gap, unless otherwise directed by the Engineer, The paint shall be applied uniformly at an approximate rate of 4 gallons of paint per mile of Broken Line or 15 gallons per mile of actual cumulative painted line.

4. Double Line: Double Line of the color specified shall be applies as two solid 6-inch minimum width lines separated by a discernable space (approximately 6 inches). The paint shall be applied uniformly at an approximate rate of 30 gallons per mile of Double Line, or 15 gallons per mile measured along each individual 4-inch line comprising the Double Line.

5. Single Line and Broken Line: No passing zones and other areas as shown or directed shall be marked with a 6-inch minimum width solid yellow line and an adjacent broken yellow line as indicated in figures 3-2, 3-3, 3-7, and 3-8 of the Michigan Manual of Uniform Traffic Control Devices.

6. Pavement Edge Lines: Pavement Edge Lines of the color specified shall be applied as a solid 6-inch minimum width line. The paint shall be applied uniformly at an approximate rate of 15 gallons per mile of Edge line.

7. Wide Line: Wide Line of the color specified shall be applied as a solid 12-inch minimum width line. The paint shall be applied at an approximate rate of 30 gallons per mile or wide Line, or 15 gallons per mile measured along each individual 4-inch line comprising the wide Line.

8. Legends and Arrows and Symbols: Paint color and legend shall be as specified on the plans and directed by Wayne County Engineer.

9. Cross Walks: Markings shall be 12-inch wide solid white lines with 36-inch wide spacing per the 'Detail of Special Emphasis Crosswalk Marking' from MDOT Detail Pave-945-B.

a. Measurement and Payment. The completed work will be measured as a lump sum and will be paid for at the contract price for the following Contract Item (pay item):

d.

Contract Item (Pay Item)	**Pay Unit**
Permanent Pavement Markings	Lump Sum (LS)

The Contract Unit price for pavement marking includes all labor, equipment and materials necessary to complete the work as shown on the plans and directed by the Engineer. Color changes shall be incidental to this pay item.

END OF SECTION

IRON BELLE TRAIL SECTION D

SPECIAL PROVISION
FOR
TURF ESTABLISHMENT

a. Description. This work consists of conducting soil tests, preparing the soil, and placing sod or seed and mulch to permanently stabilize disturbed areas as shown on the plans. Establish turf in accordance with this section, the MDOT Standard Specifications for Construction, the Soil Erosion and Sedimentation Control (SESC) Manual, and as directed by the Engineer.

b. Materials.
Per Section 816, 911, and 917 of the MDOT Standard Specifications for Construction except:

1. Seed

    a. Shall be Fresh, clean and new crop seed mixture. Mixed by approved methods and composed of the following varieties, mixed to the specified proportion by weight and tested to minimum percentages of purity and germination. Supply seed in durable cloth bags. All seed shall be certified "Blue Tag" seed and the Contractor shall not break the seal from the bag until the Owner has inspected each delivery. Tags listing the vendor's name, seed mix, lot number, net weight of contents, purity and germination, and shall be attached to each bag.

Type 1: Blue Grass Blend for Irrigated Turf Areas
(Fine Turf for Golf Courses, Beaches, and Around Buildings in Full Sun. Almost interchangeable with Type 2)

	Proportion	Purity	Germination
"Parade" Blue Grass	33%	98%	90%
"Goldrush" Blue Grass	33%	98%	90%
"Midnight" Blue Grass	33%	98%	90%

Spread at a rate of 4 lbs./1000 sf.

Type 2: Blue Grass Blend with Rye for Irrigated Turf Areas
(Fine Turf for Golf Courses, Beaches, Around Buildings, and Athletic Fields in Full Sun. Has a little more tolerance to wear then Blue Grass Blend)

	Proportion	Purity	Germination
"Goldrush" Blue Grass	50%	98%	90%
"Midnight" Blue Grass	30%	98%	85%
"Manhatten III Rye Grass	20%	98%	90%

Spread at a rate of 4 lbs./1000 sf.

Type 3: Blend for Non-Irrigated Sun / Shade Turf Areas
(Picnic Areas and Golf Course Rough Mix. Almost interchangeable with Type 4)

	Proportion	Purity	Germination
"Pennlawn" Red Fescue	40%	97%	90%
"Parade" Blue Grass	40%	98%	90%
"Manhatten III" Perennial Rye Grass	20%	98%	90%

Spread at a rate of 4 lbs./1000 sf.

Type 4: Blend for Non-Irrigated Sun / Shade Turf Areas
(Picnic Areas and Golf Course Rough needing higher wear tolerance)

	Proportion	Purity	Germination
"Victory" Chewings Fescue	30%	97%	90%
"Pennlawn" Red Fescue	30%	97%	90%
"Parade" Blue Grass	20%	98%	90%
"Manhatten III" Perennial Ryegrass	20%	98%	90%

Spread at a rate of 4 lbs./1000 sf.

Type 5: Athletic Field Mix for Non-Irrigated Turf Areas

	Proportion	Purity	Germination
"Wrangler" Tall Fescue	50%	97%	90%
"Parade" Blue Grass	35%	98%	90%
"Manhattan III" Perennial Rye	15%	98%	90%

Spread at a rate of 4 lbs./1000 sf.

Type 6: Roadway / Bike Trail Shoulder Mixes for Non-Irrigated Turf Areas

	Proportion	Purity	Germination K
"Pennlawn" Red Fescue	30%	97%	90%
"Parade" Blue Grass	30%	98%	90%
"Manhatten III" Perennial Ryegrass	20%	98%	90%
"Astor" Annual Rye	20%	95%	90%

Spread at a rate of 4 lbs./1000 sf.

Note:

1. Add .5 lbs./1000 sf. of Annual Rye to above mix(s) if seeding after October 1st.
2. Add 1 lbs./1000 sf. of Annual Rye to above mix(s) if seeding areas susceptible to erosion.

2. Fertilizer
    a. A balanced 12-12-12 shall be used unless otherwise directed or approved by the Engineer. Apply at a rate equal to 1 lb of actual nitrogen per 1,000 sq.ft. (43 lbs/acre). Omit if applied with hydroseeding or hydromulching.
3. Mulch
    a. Straw mulch, used in crimping process only. Clean oat or wheat straw well seasoned before bailing, free from mature seed-bearing stalks or roots of prohibited or noxious weeds.Hay or marsh hay will not be acceptable. Asphalt Emulsion Adhesives shall not be acceptable. Loose straw and hay mulch will not be allowed.
    b. Hydromulch:
        i. Wood Cellulose Fiber Mulch: Degradable green dyed wood cellulose fiber or 100% recycled long fiber pulp, free from weeds or other foreign matter toxic to seed germination and suitable to hydromulching.
        ii. Paper Mulch: Degradable paper mulch, free of foreign debris. Do not use on slopes over 30%.
        iii. Tackifier: Liquid concentrate diluted with water forming a transparent 3-dimensional film like crust permeable to water and air and containing not agents toxic to seed germination.

c. Construction Methods. Per Section 816 of the MDOT Standard Specifications for Construction. Clean all areas where overspray has occurred from hydro-seeding operations.

d. Measurement and Payment. The completed work will be measured and paid for at the contract unit price for the following Contract Item (pay item):

Contract Item (Pay Item)	**Pay Unit**
Topsoil, 3”	Square Yard (SYD)
Seeding Mixture Type _	Square Yard (SYD)
Sodding	Square Yard (SYD)
Mulch Blanket	Square Yard (SYD)
Mulch Blanket, High Velocity	Square Yard (SYD)

The Contract Unit price for turf establishment items includes all cost to furnish, install, and ensure proper establishment, including watering and re-seeding as required. Compost, fertilizer, chemical nutrients, watering, and weed control are incidental to the items of work.

END OF SECTION

SPECIAL PROVISION
FOR
Exploratory
Investigation

Description. The existing 2" sanitary sewer force main is within the influence of the bridge walls, foundation and piles. It is necessary to field locate the force main to verify horizontal and vertical alignments to determine if the conflicts may be resolved with sleeving the force main through the wall, relocating piles or the sanitary sewer force main. The contractor is to include the cost of coordinating with the engineer, and township. This work may include staking the location of the bridge abutment, piles, etc to observe the conflicts. This work is to take place during the fall/winter while the force main is shut down for the season. This work is to be performed prior to ordering any materials as it is necessary to verify the work may proceed as designed and budgeted. This special provision is used to compensate the Contractor to locate and expose underground infrastructure and obstructions, such as culverts, sewers and utilities. Perform this work only when conflicts are found in the planned work location. This special provision is not to compensate for the Contractor's responsibilities in subsection 107.12 of the Standard Specifications for Construction.

a. Materials. Use Granular Material Class III in accordance with section 902 of the Standard Specifications for Construction for backfill. Use material removed during exploratory investigation for backfill only if approved by the Engineer.

b. Construction. The owner of any sewer or utility to be exposed will take the facilities out of service during the fall / winter season for exploratory investigation. Bypass pumping is considered incidental to this special provision if work is performed in season. Contact utility owners in accordance with subsection 107.12 of the Standard Specifications for Construction.

Advance the exploratory excavation using vacuum excavation, hand digging, conventional machine excavation, or a combination thereof subject to approval of the Engineer. Allow the Engineer access to document the necessary information. If the technique used to advance the excavation causes any damage to the existing facilities, immediately contact the utility owner and cease all work until an alternate method is approved by the Engineer. Any damage that results will be the contractors responsibility to repair.

Take care to protect the exposed sewer or utility from damage during construction. The Contractor is responsible for all costs associated with the repair work and out of service time of all broken or damaged existing sewers or utilities as a result of any action by the Contractor. If the exploratory investigation results in damage to utilities, contact the owner of such utility to coordinate the repair. Repair or replace culvert, sewer or utility, damaged during exploratory excavation, in accordance with the standard specifications and as approved by the Engineer.

Obtain the Engineer's approval before backfilling the excavation. Complete backfilling no later than 24 hours after approval has been given. Backfill in accordance with subsection 204.03.C of the Standard Specifications for Construction. Dispose of excess material in accordance with the standard specifications.

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:

Pay Item	Pay Unit
Exploratory Investigation, Vertical	Vertical Foot

Exploratory Investigation, Vertical will be measured by the foot from top of existing grade vertically to the bottom of the excavation .

Exploratory Investigation, Vertical includes all costs associated with the coordination, repair or replacement resulting from the Contractor's activities. Providing necessary lane/path barricades for path closures and restoration work will be incidental to this pay item.

Supplemental Specifications

Note: The following articles form an integral part of these bidding/contract documents. The Bidder/Contractor shall be responsible for inclusion of all detailed information described herein when deriving contract price.

The Michigan Department of Transportation Specifications for Construction (2020) shall be referenced for work not detailed or absent in the supplemental specification.

IRON BELLE TRAIL SECTION D

SUPPLEMENTAL SPECIFICATION
FOR
SAFETY RAILING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
   1. Safety Railing.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
      a. Railing, posts, and fittings.
      b. Rail reinforcements and attachments.

B. Shop Drawings: For each type of rail assembly.
   1. Include plans, elevations, sections, details, and attachments to other work.

C. Samples for Initial Selection: For each type of factory-applied finish.

D. Delegated-Design Submittal: For structural performance of safety railing frameworks, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.04 FIELD CONDITIONS

A. Field Measurements: Verify layout information for safety railing shown on drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.05 WARRANTY

A. Special Warranty: Installer agrees to repair or replace components of safety railing that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Failure to comply with performance requirements.
      b. Deterioration of materials beyond normal weathering.
   2. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Structural Performance: Safety railing and frameworks shall withstand the design wind loads and stresses for fence the fence height and under exposure conditions indicated according to ASCE/SEI 7.

2.02 SAFETY RAILING FRAMEWORK

A. Posts and Rails: ASTM F1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F1043 based on the following:
   1. Fence Height: 42" max.
      a. Posts: 4" x 4" posts spaced 6' o.c.
   2. Horizontal Framework Members: 2 x 8" handrail (1), and 2 x 6" rail (5) per 6' section. Bottom rail is to be 3.5" higher than grade, remaining rails are to have a max. 3.5" space between.
      a. Natural wood finish.
   3. All wood shall be kiln dried, pressure treated southern yellow pine. Posts into ground shall be NO. 2 grade 0.6 PCF, rails shall be NO. 1Grade 0.25 PCF.

B. Hardware: Handrail shall be attached with stainless steel screws. 2x8 rails and 2 x6 rails shall be attached with ½" Carriage bolts, galvanized.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for a certified survey of property lines and legal boundaries**,** site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.
   1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
   2. Locate and protect all underground utilities prior to work.
   3. Locate and protect retaining wall drainage pipe.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Stake locations of safety railing and terminal posts. Do not exceed intervals of 500 feet (152 m) or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.03 SAFETY RAILING INSTALLATION

A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

B. Post Setting: Set posts on top of 4” compacted MDOT 21AA stone base at indicated spacing and depth.
   1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during backfilling process.
   2. Compacted Backfill: Place 8” diameter of compacted MDOT 21AA stone backfill around post to dimensions indicated and vibrate or tamp for consolidation.

C. Line Posts: Space line posts uniformly at 6’ o.c.

3.04 Measurement and Payment. The completed work will be measured as linear foot and will be paid for at the contract price for the following Contract Item (pay item):

Contract Pay Item	Pay Unit
Safety Fence	LFT

END OF SECTION

IRON BELLE TRAIL SECTION D

SUPPLEMENTAL SPECIFICATION
FOR
EARTH MOVING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Supplementary Specification's and MDOT Standard Specifications for Construction current edition.

1.02 SUMMARY

A. Work shall include furnishing of labor, materials, tools, equipment, accessories, and services necessary for completing the earth balancing, excavation and backfilling and fine grading prior to topsoil placement for the items as shown on the contract drawings and/or as herein required. This also includes trenching, trench or subgrade undercutting, pathway earthwork, ditching both temporary and permanent, complete and continual drainage of excavation, sheeting, bracing, and shoring of sides of the excavation, backfilling around structures and over pipelines, and the disposal of excess excavated material.

B. Section Includes:
1. Preparing subgrades for slabs-on-grade, walks, pavements, turf, grasses and plants.
2. Excavating and backfilling for structures.
3. Subbase course for concrete walks and pavements.
4. Subbase course and base course for asphalt paving.
5. Subsurface drainage backfills for walls and trenches.
6. Excavating and backfilling trenches for utilities and pits for buried utility structures.
7. Dewatering.

C. Related Divisions:
1. Division 2 - Earthwork
2. Division 4 – Drainage Features
3. Division 8 – Incidental Construction

1.03 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Aggregate layer placed between the subbase course and paving.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Drainage Course: Includes ditch sections, natural channels, existing drainage courses as called for on the plan.

F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
   1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
   2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
   3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

I. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

J. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

K. Utilities: On-site underground pipes, drainage structures, conduits, ducts, and cables, as well as underground services within buildings.

1.04 SUBMITTALS

A. Product Data: For each type of the following manufactured products required:
   1. Geotextiles.
   2. Controlled low-strength material, including design mixture.
   3. Warning tapes.

B. Samples for Verification: For the following products, in sizes indicated below:
   1. Geotextile: 12-inch by 12-inch.
   2. Warning tape: 12 inches long; of each color.

C. Qualification Data: For qualified testing agency.

D. Material Test Reports: For each borrow soil material proposed for fill and backfill as follows:
   1. Classification according to ASTM D 2487.
   2. Laboratory compaction curve according to ASTM D 698 and ASTM D 1557.

E. Pre-excavation Photographs or Video Recording: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth moving operations. Submit before earth moving begins.

1.05 QUALITY ASSURANCE

A. References to Michigan Department of Transportation (MDOT) Specifications shall pertain to the current edition of the Standard Specifications for Construction.

1.06 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Utility Locator Service: Notify MISS DIG for area where Project is located before beginning earth moving operations. Provide a minimum of three full working days advance notification.

C. Do not commence earth-moving operations until temporary erosion- and sedimentation-control measures are in place.

D. Do not commence earth-moving operations until plant-protection measures are in place as indicated on the plan.

E. The following practices are prohibited within protection zones, 100-year floodplain and wetlands:
   1. Storage of construction materials, debris, or excavated material.
   2. Parking vehicles or equipment.
   3. Impoundment of water.
   4. Excavation or other digging unless otherwise indicated.
   5. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

F. Do not direct vehicle or equipment exhaust towards protection zones, 100-year floodplain and wetlands.

G. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones, 100-year floodplain and wetlands.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS - GENERAL

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

2.02 BEDDING

A. Sand shall be a sharp, clean sand free of lumps of clay or debris with 100 percent passing a 3/8-inch sieve and less than 10 percent loss by wash.

B. Granular material shall meet the requirements of Section 902.07 of the MDOT Standard Specifications for Construction for Granular Material Class II and Class III as noted on the plans.

C. Pea gravel shall be unwashed and shall be from ¼ inch to 5/8 inch in size.

D. Bedding material shall be provided from offsite unless the trench passes through a well-defined stratum of sand or gravel. Bedding material shall be subject to the approval of the Engineer.

E. Stone material shall meet the requirements of Section 902.03 of the MDOT Standard Specifications for Construction for 6A crushed Coarse Aggregate or approved equal.

2.03 BACKFILL

A. Job Excavated Backfill: Job excavated backfill shall be defined as material excavated from the site that is free from frozen earth, boulders, rocks, stones larger than 3 inch in size, debris, blue and gray clay, and organic material.

B. Granular Backfill: Granular backfill shall be defined as sharp sand, gravel, or crushed stone that is free from lumps of clay and soft or flaky material and shall conform to the latest MDOT Standard Specification for Granular Material Class II of III. Granular backfill shall be used for fill work located under or within the influence of roadway surfaces. The Owner's standard details shall dictate which type of granular material (Class II or III) is required for the project.

   Material excavated from the trench may be used as granular backfill when, in the opinion of the Engineer, it meets the granular backfill grading requirements.

C. Stone Refill
   1. Stone refill shall consist of natural gravel, slag, or crushed gravel that is equivalent in gradation to MDOT 6A unless otherwise called for in the plan details.

D. Embankment
   1. Embankment material shall consist of sound earth as described in Section 205.03H of the MDOT Standard Specifications for Construction.

2.04 ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:
   1. Red: Electric.
   2. Yellow: Gas, oil, steam, and dangerous materials.
   3. Orange: Telephone and other communications.
   4. Blue: Water systems.

5. Green: Sewer systems.

PART 3 - EXECUTION

3.01 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, protection zones, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.

B. Protect and maintain erosion and sedimentation controls during earth moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.02 PAVEMENT CUTS

A. Where a trench must be cut through pavement, driveway, or sidewalk, particular care shall be taken to avoid unnecessary damage to adjoining areas of the pavement, driveway, or sidewalk. All cuts through existing surfaces shall be made full depth with a concrete saw. Cuts in concrete pavement shall be made parallel with longitudinal and transverse construction or contraction joints.

B. Saw cuts in concrete pavement shall not be nearer than five feet (5’-0”) to a transverse joint, to the centerline of pavement, or to the edge of pavement or curb, i.e., no existing or replacement pavement shall be less than five feet (5’-0”) in width. If the damaged pavement or surfacing is nearer than five feet (5’-0”) to a joint or centerline of pavement, or to edge of pavement, surfacing or curb, removal and replacement shall be extended to said joint, centerline, edge of pavement, surfacing, or curb. These same requirements shall apply to the saw cutting and replacement of concrete driveways.

C. If a square or block of sidewalk is cut, broken, or cracked, the entire square or block shall be removed and replaced.

3.03 EXCAVATION AND TRENCH DEWATERING

A. The Contactor shall maintain any excavation or trench free of water during construction of any structures and/or pipelines. Water accumulated due to rainfall or runoff and minor groundwater inflow that can be controlled through the use of portable trash, submersible or positive displacement pumps shall be considered normally expected and anticipated conditions associated with underground construction. This effort will be considered as included in the cost of construction. For contracts with a unit price for dewatering, the work described herein will not be reimbursable at the unit price bid for dewatering in the bid form.

B. The required use of deep wells and/or well points to lower and maintain a reduction in the groundwater elevation below the trench bottom shall be subject to approval of the Engineer and shall constitute a reimbursable expense for trench or excavation dewatering. If a pay item for dewatering is included in the bid form, then the Contractor would receive payment for this work based upon the unit bid price. If there are no provisions in the

contract for payment for dewatering (i.e., bid item or included in other pay items), then the Contractor shall submit a detailed estimate of the additional cost. Upon acceptance of the Contractor's estimate, the Engineer shall issue a change order. The Contractor must demonstrate that a continuous effort is required to control hydrostatic pressure in the construction area to claim compensation for dewatering.

C. The Contractor shall take adequate precautions to control the discharge of dewatering pumps to prevent soil erosion or sedimentation of drainage ditches, structures, storm sewers, culverts, natural drainage courses, ponds, lakes, or wetlands.

D. The Contractor shall insure that discharge from any dewatering operations has a suitable outlet and that it will not cause any damage to adjacent dwellings or property. Water and discharge hoses shall be placed and/or controlled to prevent a hazard to pedestrians or motor vehicles passing in the vicinity of the construction site.

E. Electric pumps shall have suitable power supply and appurtenances meeting NEC requirements and properly fused and grounded to prevent electrical shock hazards to on-site personnel.

F. Internal combustion engine driven pumps, if operated 24 hours per day, shall have adequate exhaust silencers in good repair to muffle engine noise to an acceptable level for the area where located.

3.04 CLASSIFICATION OF EXCAVATION

A. Earth, as a name for excavated material, shall include all glacial deposits whether cemented or not, except solid boulders one-half cubic yard or more in volume. It shall also include all alluvial deposits and material of every kind that can be excavated with equal facility by the equipment and means typically used for earth excavation.

B. Peat, as a name for excavated material, shall include all unstable organic soils such as peat, muck, marl, and underlying very soft clay.

C. Rock, as a name for excavated material, shall include pre-glacial solid ledge rock that can be removed most practically by blasting, barring, or wedging, or by some other standard method of quarrying solid rock. It shall also include solid boulders of one-half cubic yard or more in volume as well as existing concrete, masonry with mortar joints, or other existing structural work that can be excavated practically only by methods of quarrying solid rock. It shall not include fragile, friable, or disintegrated materials of any kind that can be excavated by equipment and means used for earth excavation.

3.05 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
   1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
   2. Remove rock to lines and grades indicated to permit installation of permanent construction.

3.06 METHODS OF EXCAVATION IN EARTH

A. All excavation shall be by open cut from the surface, except in special cases where boring/jacking under pavement or structures may be required, or where boring/jacking under the root system will be required for tree root protection. All excavation shall be made in such a manner and to such depth, length, and width as will give ample room for building the structures, bracing, sheeting, and supporting the sides of the excavation, pumping and drainage of ground water and sewage which may be encountered, and removal of all materials excavated. Special care shall be taken so that the soil below the bottom of structures to be built shall be left undisturbed so that a firm bed will be provided for construction. Any voids shall be backfilled with suitable granular material and shall be properly compacted.

3.07 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
   1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing engineered fill.

3.08 EXCAVATION FOR WALKS, PAVEMENTS AND ROADWAYS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

B. Pathway/Roadway earthwork shall be performed in accordance with the construction methods that are described in Section 205 Roadway Earthwork of the MDOT Standard Specifications for Construction unless otherwise called for in the plan notes, details, or supplemental specifications.

3.09 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

B. General
   1. Excavation shall be of sufficient width and depth to provide adequate room for construction and installation of the work to the lines, grades and dimensions called for on the plans. Unless otherwise called for on the Owner's standard details, the width of a trench from the invert to a height twelve (12) inches above the top of the pipe barrel shall be indicated as follows:
      a. Pipe size 4" through 12": Maximum trench width = 30"
      b. Pipe size larger than 12": Maximum trench width = outside diameter plus 24"

      If the maximum trench width as specified above is exceeded, unless otherwise shown on the drawings, the Contractor shall install, at his own expense, such concrete cradling or other bedding as is approved by the Engineer, to support the added load of the backfill.
   2. Where trench excavation is in granular material, the last six (6) inches of trench depth shall be carefully excavated and trimmed by hand to the exact elevation and contour of pipe. Where trench excavation is in rock or clay soil, the trench bottom shall be

undercut a minimum of four (4) inches below the final elevation of pipe. The bedding material as hereinafter specified shall be placed and compacted to the underside of the pipe.

3. Excavation for structures shall be made to the outside lines and surfaces of such structures wherever it is practicable to build directly against the sides and bottoms of excavations. In such cases, care shall be taken not to disturb the original foundation or backing. Final trimming shall be done by hand just before construction of the structure. If excess excavation is made, or the material becomes disturbed to require removal beyond the prescribed limits, the resulting space shall be refilled with bedding, as specified hereinafter, and solidly machine tamped into place to 95 percent of maximum unit weight before the construction work proceeds.
4. Excavation for structures shall be extended sufficiently beyond the limits of the structure to provide ample room for form construction and other construction methods to be followed, wherever necessary.

C. Bedding

1. Where the subgrade below the bottom of the pipe is disturbed during the construction, the space shall be refilled with sand or pea gravel bedding material solidly tamped to form a firm foundation for the pipe. Sand or pea gravel bedding material shall be extended to one (1) foot above the pipe, except that the bedding shall be exclusively pea gravel to the springline for pipe 36-inch and greater in diameter.

D. Amount of Trench Opening

1. Not more than 50 feet of trench shall be open at one time in advance of the pipe unless permitted by the Engineer. The length of street that may be occupied by the construction work at any one time shall be subject to the direction of the Engineer and will be based on requirements of the use of the street by the public. No more than 600 consecutive feet of street length shall be occupied at one time, and vehicle traffic through the street shall not be entirely stopped without permission of the Engineer. After placement of the utility line, the Contractor shall backfill the trench promptly to minimize the length of open trench and avoid any unsafe conditions.

3.10 SUBGRADE INSPECTION

A. Notify Engineer when excavations have reached required subgrade.

B. If Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.

3.11 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavations under the pathway, roadway or construction pipe as directed by the Engineer.

3.12 STORAGE OF SOIL MATERIALS

A. Stockpiles borrow soil materials and excavate satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
   2. Do not store in protection zones, 100-year floodplain, or wetlands, as identified on the plans.

3.13 TRANSPORT OF NATIVE MATERIALS OFFSITE

A. If the Contractor encounters good materials (sand, gravel, topsoil, etc.) during construction, he shall not be allowed to transport these materials offsite without the written approval of the Engineer. Wherever possible, suitable native sands and gravels shall be used as backfill rather than transporting them offsite and replacing them with non-native materials of a lesser quality.

3.14 STONE REFILL FOR TRENCH UNDERCUT

A. In locations where soil at the bottom trench is unstable, the Contractor shall excavate (undercut) below the trench bottom and place stone refill.

3.15 DIVERTING EXISTING SEWERS AND ROAD DRAINAGE (DITCHES)

A. Where existing sewers, ditches or drains are encountered in the work, adequate provision shall be made for diverting flow in the existing sewers, ditches or drains so that the excavation will be kept dry during the progress of the construction work. Upon completion of the construction work, the existing sewers, ditches, or drains shall be restored, reconstructed, or otherwise provided with an adequate outlet as directed by the Engineer.

3.16 SHEETING, BRACING, SHORING

A. Where required to properly support the surfaces of excavations to protect the construction work, adjacent work or workers, sheeting, bracing, and shoring shall be provided. If the Engineer is of the opinion that at any point sufficient or proper supports have not been provided, he may order such additional supports at the expense of the Contractor, but neither the placing of such additional supports by the order of the Engineer nor failure of the Engineer to order such additional supports placed shall release the Contractor from his responsibility for the sufficiency of such supports and the integrity of the work. In removing the sheeting and bracing after the construction has been completed, special care shall be taken to prevent any caving of the sides of the excavation and injury to the completed work or to the adjacent property.

3.17 SHEETING LEFT IN PLACE

A. Sheeting, bracing, and shoring shall not be left in place after completion of the work except as required by the Engineer. Where sheeting, bracing, and shoring must be left in place to protect the work, adjacent structures, or property, it shall be cut off or left not less than two (2) feet below the established surface grade. If sheeting, shoring, or bracing must be left in place, then it shall be paid for at the contract unit bid price that is shown on the

Bid Form. If a pay item was not included on the Bid Form, then a work order shall be negotiated.

3.18 CROSSING EXISTING STRUCTURES AND PIPES

A. During construction, it may be necessary to cross under certain sewers, drains, culverts, water lines, gas lines, electric conduits, and other underground structures. Every effort shall be made to prevent damage to such structures. Wherever such structures are disturbed or broken, they shall be restored to good condition. Specified granular backfill shall be placed as described in the section pertaining to backfilling. MDOT Grade S3 concrete shall be utilized where directed by the Engineer at no additional cost to the project. Either granular backfill or concrete shall be brought to the spring line of the higher utility.

3.19 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:
   1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
   2. Surveying locations of underground utilities for Record Documents.
   3. Testing and inspecting underground utilities.
   4. Removing concrete formwork.
   5. Removing trash and debris.
   6. Removing temporary shoring and bracing, and sheeting.

B. Places backfill on subgrades free of mud, frost, snow, or ice.

C. Where called for on the plans, the Contractor shall backfill trenches and/or other excavations with suitable excavated material (not including gray or blue clay) replaced into the trench or excavation and compacted to not less than 95 percent of maximum unit weight as determined at existing moisture content during backfilling. Compaction shall be provided by means of suitable mechanical compaction equipment.

   If the moisture content of cohesive backfill material exceeds the optimum moisture content for maximum density by more than three percent (3%), the Contractor shall dry the material to meet the foregoing moisture content limitation or provide, at his own expense, MDOT Granular Material Class III. No sloppy or wet backfill will be allowed.

   Maximum unit weight will be determined by current methods of Test for Compaction and Density of Soil, AASHTO Designation T-180 or by the Cone Density Method developed by MDOT, as the material may require.

   The Engineer shall make compaction tests at all locations requiring granular backfill.

   Any depression resulting from settlement of any backfill prior to the date of final payment for all work under this contract shall be brought to the proper grade and surface and made to match the adjacent surface.

D. Compaction

Backfill material shall be placed in layers not to exceed 12 inches in thickness unless the Contractor can demonstrate to the satisfaction of the Engineer that he can consistently attain the specified density on thicker lifts.

Specified compaction shall be obtained with the use of a bulldozer, sheepsfoot roller, mechanical tamper, or other similar and effective equipment. Specified compaction means not less than 95 percent (not average 95 percent) of maximum unit weight when tested in accordance with current MDOT Specifications.

If excavated material is not suitable to obtain 95 percent minimum compaction, the Contractor shall, at his expense, remove unsuitable materials or add granular materials, or both, to obtain ninety-five percent (95%) minimum compaction as specified.

Compaction tests will be made by a representative of the Owner and paid for by the Owner, unless otherwise specified in the Contract Documents.

E. Backfilling Trenches

1. Bedding
   The type of bedding required is shown on the detail drawings.
   Bedding shall be worked under the haunches of the pipe to provide firm continuous support.
   Bedding placed on the sides of and above the pipe shall be compacted by machine tamping to not less than ninety-five percent (95%) of maximum unit weight in layers not exceeding 12 inches in depth.
2. Trench or Excavated Area
   All trenches in paved streets, shoulders, traveled roadways, parking areas and driveways shall be backfilled with suitable excavated backfill or granular backfill, as shown on the drawings from one (1) foot above top of pipe up to the required subgrade elevation which will allow for placement of the required gravel base and/or pavement surface. The approved excavated backfill or granular backfill shall be placed and thoroughly and uniformly compacted by machine tamping to the specified compaction. With the approval of the Engineer, water jetting may be accepted in lieu of tamping for granular backfill only.

   Specified compaction shall be required of the entire trench when the edge of trench is within three (3) feet of edge of pavement. On road crossings, specified compaction shall extend ten (10) feet beyond the edge of pavement for paved roadways with gravel shoulders or shall extend three (3) feet beyond the back of curb for roadways with curb.

   Trenches under concrete sidewalks and bike paths shall be backfilled from one foot above top of pipe to a level four (4) inches below finished grade of the sidewalk with approved suitable excavated backfill or granular backfill and compacted to ninety-five percent (95%) maximum density.

   Trenches not in paved streets, shoulders, traveled roadways, parking areas, driveways or under sidewalks, shall be backfilled from one (1) foot above the top of the pipe up to the ground surface with suitable excavated backfill and shall require compaction equal to adjacent undisturbed earth.

Wherever gas mains, water mains, sewers, or other utilities are in the trench area, granular backfill shall be used for backfilling from bottom of the trench up to the springline of the pipes. Granular backfill shall be placed across the full trench width and extend far enough either side of the existing pipe to allow specified compaction to thoroughly support the pipe within the trench area.

F. Backfilling Around Structures
As soon as practicable after concrete structures have set, forms and debris shall be removed, and the surface of the concrete pointed. After the structure has been checked and approved, the excavated area around the structure shall be backfilled up to specified subgrade with granular material or suitable excavated material as called for on the drawings for the adjacent trench. The fill shall be thoroughly compacted by machine tamping. No large boulders or masonry shall be placed in backfill. No backfill will be placed against manhole walls within 48 hours after the plaster coat has been applied to the outside of the walls nor shall backfill be placed about concrete structures until concrete has attained at least 75 percent of its design strength and approval of the Engineer has been obtained.

3.20 PLACING AND COMPACTING EMBANKMENT

A. Embankment material for fill work shall be in accordance with Section 2.05.03 of the MDOT Standard Specifications for Construction.

3.21 DISPOSAL OF EXCAVATED MATERIAL

A. After all suitable excavated material has been used on site, the Contractor shall be responsible for properly removing and disposing of the excess.

The Contractor shall also be responsible for disposing of all other excavated materials that are unsuitable for use as fill or backfill. Unsuitable materials may include, but are not limited to, broken concrete, asphalt, rock, stone, and other related debris. The Contractor shall be required to obtain his own disposal areas and permits and shall receive no additional compensation for this disposal work.

Surplus or unsuitable material shall not be disposed of either temporarily or permanently beyond the plan grading limit line or across any wetland or flood plain unless the plans provide for such placement.

Any agreements that the Contractor makes with residents concerning the placement of fill on private property shall be the sole responsibility of the Contractor. The Owner will not become involved with any such agreements and will not be liable for damages that the Contractor may cause to private property.

Placement of fill on private property may require that the resident or Contractor obtain a grading permit or fill permit from the Owner.

3.22 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
1. Provide a smooth transition between adjacent existing grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
   1. Unpaved Areas: Plus, or minus 1 inch.
   2. Walks: Plus, or minus 1 inch.
   3. Pavements : Plus or minus 1/2 inch.

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

D. Final Cleanup and Grading: Upon completion of the construction, and before final payment is made, the Contractor shall restore his working area to as clean a condition as existed before his operations were started. He shall go over the entire line and refill any place that may have settled. He shall then re-grade and put in shape all backfilled trenches, all fills he may have made from excess excavated materials, and all other areas that may have been disturbed through all operations.

3.23 SUBSURFACE DRAINAGE

A. Subdrainage Pipe: As specified on drawings or per Owner standard.

B. Subsurface Drain: Place subsurface drainage geotextile around perimeter of subdrainage trench. Place a 6-inch course of filter material on subsurface drainage geotextile to support subdrainage pipe. Encase subdrainage pipe in a minimum of 12 inches of filter material, placed in compacted layers 6 inches thick, and wrap in subsurface drainage geotextile, overlapping sides and ends at least 6 inches.

C. Drainage Backfill: Place subsurface drainage geotextile around perimeter of subdrainage trench. Place a course of filter material on subsurface drainage geotextile equal to half the pipe diameter to support subdrainage pipe. Encase subdrainage pipe in a minimum of 12 inches of filter material, placed in compacted layers 6 inches thick, and extend in subsurface drainage geotextile, as noted on the plans.
   1. Compact each filter material layer to 85 percent of maximum dry unit weight according to ASTM D 698.

3.24 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

A. Place subbase course and base course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place subbase course and base course under pavements and walks as follows:
   1. Place base course material over subbase course under hot-mix asphalt pavement.
   2. Shape subbase course and base course to required crown elevations and cross-slope grades.
   3. Place base course 6 inches or less in compacted thickness in a single layer.
   4. Place base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.

5. Compact subbase course and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698 and ASTM D 1557.

3.25 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
   1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
   2. Determine that fill material and maximum lift thickness comply with requirements.
   3. Determine, at the required frequency, that in-place density of compacted fill complies with requirements.

B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.

C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.26 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances were completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
   1. Scarify or remove and replace soil material to depth as directed by Engineer; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
   1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.27 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

3.28 CONTACTOR SAFETY REQUIREMENTS

The excavation and trenching operations shall be conducted by the Contractor in a manner that will provide safe working conditions for all persons on the site who may be affected by the

Work. The Contractor shall also conduct his operations in a manner that will protect adjacent property from damage.

Trench sides shall be either cut back to the slope as necessitated by soil and ground water conditions which will provide stable sides or supporting systems shall be installed that can restrain the earth sides from movement. A qualified employee of the Contractor shall design the trench supporting systems.

The Contractor shall employ, always at the site of the work, a qualified person who will be responsible for the safety of both the work and workmen, and who will make all the decisions relevant to the stability of trenches, the adequacy of all protective devices, proper operation of equipment, and all other matters related to safety.

The Contractor shall not store, along and adjacent to the trench, excavated material, heavy equipment, backfill materials, sewer pipe, or other construction materials which may impose too great a load on the earth and cause displacement or caving of the earth. The Contractor shall, always, provide a safe means of emergency exit from all trench excavations.

3.29 MEASUREMENT AND PAYMENT. The completed work shall be paid for with the pay unit lump sum price and shall be paid for in the following Contract Item (pay item).

Contract Pay Item	Pay Unit
Earth Moving	LSUM

END OF SECTION

IRON BELLE TRAIL SECTION D

SUPPLEMENTAL SPECIFICATION
FOR
BOULDER RETAINING WALLS

a. Description. This WORK shall consist of all labor, material, and equipment necessary to install boulder retaining walls. This work will include the signed and sealed design of the boulder retaining wall by a registered engineer in the state of Michigan if wall exceeds 4'. All detail components provided for in the design, including but not limited to items such as drainage pipes, sock filters, tie backs, aggregate, CLII sand, excavation, compaction etc. The Boulder Retaining Walls shall be constructed at the location(s) shown on the DRAWINGS.

b. Related Sections. Michigan Department Standard Specifications for Construction (MDOT) current edition

1. Divisions 1,2, 3,4,8,9

c. References. The following is a list of standards which may be referenced:

1. Michigan Department of Standard Specifications for Construction (current Edition)

2. American Association of State Highway and Transportation Officials (AASHTO):
    a. T85, Standard Method of Test for Specific Gravity and Absorption of Coarse Aggregate.
    b. T103, Standard Method of Test for Soundness of Aggregates by Freezing and Thawing.
    c. T104, Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.

3. ASTM International (ASTM):
    a. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft^3 (600 kN-m/m^3)).

d. Definitions. Terms "boulders" and "rock" may be used interchangeably in this section.

e. Submittals

1. Contractor shall submit photos of boulders to Engineer prior to placement.

2. Contractor shall cooperate with Engineer in obtaining and providing samples of all specified materials.

f. Quality Assurance. Mock-up: Prior to the construction of any grouted rock walls, Contractor or Subcontractor who is constructing the walls for Contractor, shall show Engineer an example of similar rock walls that they had constructed previously.

g. Materials

1. Boulders
    a. 75% of boulders shall be 18 inch (18") diameter or larger.
    b. The maximum ratio of largest to smallest rock dimension shall be 1:2 or as shown on the drawings.
    c. Control of gradation will be by visual inspection.
        i. In the event the Engineer determines the boulders to be unacceptable, Engineer will pick two random truckloads to be dumped and checked for gradation.
        ii. Mechanical equipment and labor needed to assist in checking gradation shall be provided by Contractor at no additional cost to Owner if the boulders do not meet the specified gradation.
        iii. If the boulders do meet the gradation specified, Owner will pay for the equipment and labor required for checking.
    d. Color:
        i. Michigan boulders.

h. Execution

1. Boulders shall be placed at the locations as shown on the drawings and installed with the following requirements:
    a. Subgrade
        i. The subgrade to receive each boulder shall be excavated and any unstable material shall be removed.
        ii. Material approved by Engineer shall be placed and compacted in a maximum of four-inch (4") lifts to ninety-five percent (95%) of Maximum Standard Proctor Density (ASTM D698) to reestablish the subgrade of each boulder. Filter Fabric (MIRAFI 140N or equal) shall be utilized per detail.
        iii. Unstable material shall be removed from the project site and disposed of by Contractor. Removal and replacement of unstable material shall only be completed at the direction of Engineer and is incidental to boulder wall pay item.
        iv. Subgrade shall be excavated a minimum of 6" to a maximum of 12" behind boulders.
        v. Backfill behind boulders shall be compacted to ninety-five percent (95%) Maximum Standard Proctor Density (ASTM D698). Fill material shall be MDOT CL II sand or 21AA aggregate. Care shall be taken during compaction to avoid disturbing and/or damaging the integrity of the boulder channel edge.
        vi. Finished grades and subgrade for boulders shall be determined from the height of each boulder used.
    b. Filter Fabric
        i. MIRAFI 140 N or Engineer Approved Equal.

2. Boulders
    a. The top of all boulders shall be as indicated on the drawings.
    b. The boulders shall be carefully picked and arranged so that adjacent rock surfaces match within two inches (2") in top elevation and two inches (2") along the vertical exposed face or channel side of rock.

c. Boulders shall be placed such that adjacent boulders “touch” each other and voids do not exceed four inches (4”). It is the intent of construction to minimize voids.
d. Contractor shall, if deemed necessary, support the boulders from falling over before and during the placement of backfill, and completing compaction work on either side of the boulder.
e. Smaller rocks shall be “chinked in” to fill all voids behind the boulders. Smaller rocks shall also be used to "chink in gaps larger than four (4) inches. Placement shall be approved by ENGINEER prior to grouting.
f. Subsequent lifts of boulders should be battered no more than four (4) to six (6) inches back from the lower boulder level face.
g. Boulders shall be installed a minimum of twelve (12) inches below the final channel invert elevation, unless specified differently.
h. Subsequent lifts of boulders may not be perched on riprap or chinking rock, however, one or two smaller pieces of riprap may be used to help level the edge of a boulder so that the top surface is relatively flat.

i. **Measurement and Payment**. The completed work will be measured SQUARE FOOT FACE FRONT (face front excludes bury depth of boulders, an dis from the finish grade to the top of wall) and will be paid for at the contract price for the following Contract Item (pay item):

Contract Pay Item	Pay Unit
Boulder Retaining Wall	SFT

IRON BELLE TRAIL SECTION D

SUPPLEMENTAL SPECIFICATION
FOR
SANITARY FORCE MAIN RELOCATION

PART 1 GENERAL

A Scope of Work

a. This section specifies the requirements for furnishing and installing by open cut or subsurface methods (directional drill or bore and jack) sanitary force main and appurtenances. The pipe shall be of the type and size existing on site as shown on the plans and constructed in accordance with these specifications as well as Van Buren Township's Engineering Standards. Excavation of the bore pits, casing pipes, grout, spacers, backfilling, dewatering, bypass pumping, air release valves, cleanouts, testing and any surface restoration considered incidental to this special provision and is to be included in the linear foot of 2" Sanitary Sewer Force (open cut) or 2" Sanitary Sewer Force Main (subsurface). 4-month delay may be possible if the existing force main has to be rerouted under the stream bed due to EGLE permitting. All attempts will be made to avoid this solution. Delay time shall be included in the cost provided for 2" Sanitary Sewer Force Main (subsurface). It is noted that the force main will be out of service in late fall/winter seasons, so if work is preformed during these times bypass pumping would not be required by the contractor and should be schedule accordingly after exploratory investigations have been completed and the contractor/Van Buren Township/ Engineer have agreed on a way to proceed with the project.

B. Related Work Specified Elsewhere

a. Van Buren Township Engineering Standards

b. Michigan Department of Transportation Standard Specifications for Construction, Current Edition

C. Applicable Applications

The following publications of the latest issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by reference thereto:

a. American National Standards Institute (ANSI)

1. A21.51 Ductile Iron Pipe Centrifugally cast in Metal Molds or Sand-Lined Molds, for Water and Other Liquids, Class 54 Minimum

2. A21.11 Rubber Gasket Joints for Cast-iron Pressure Pipe and Fittings

b. American Water Works Association (AWWA)

1. C900 Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 inch Through 60 inch

c. American Society for Testing and Materials Standards (ASTM)

1. D-395, Method B Fuel & Lubricant Polyurethane Tubing

2. D-2241 Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe

3. D-3139 Push-On Joints for PVC Pipe

4. D-3035 Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter

5. D-3350 Standard Specification for Polyethylene Plastics Pipe and Fittings Materials

6. D-2657 Standard Practice for Heat Fusion Joining of Polyolefin Pipe and Fittings

7. D-3261 Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing

D. Definitions

a. HDPE: High-density polyethylene.

b. DIP: Ductile Iron Pipe CL54.

c. PVC: Polyvinyl chloride plastic.

PART 2 PRODUCTS

A. Material

a. Force mains shall be provided with an automatic air release valves in wells at all main high points of the type approved by the township Engineer. Cleanouts shall be placed at locations designated by the township Engineer.

b. Force mains shall be ductile iron pipe (DIP), polyvinyl chloride (PVC), or high-density polyethylene (HDPE) piping systems

1. Ductile iron pipes

a. Shall conform to the current requirements of ANSI A21.51, class 54 minimum, Ductile Iron Pipe Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water and Other Liquids.

b. Mechanical type joints when specified shall conform to the current ANSI A21.11. Rubber Gasket Joints for Cast-iron Pressure Pipe and Pipe and Fittings. The bolts shall be high strength, low alloy steel type.

c. Push-on type joints, when specified, shall conform to the current ANSI A21.11, and shall be Tyton, Super Bell-Tite, or approved equal. The bulb or main body portion of the gasket shall have a maximum compression set of 20 percent after 22 hours at 158 degrees Fahrenheit as determined in accordance with ASTM D395, method B.

2. Polyvinyl Chloride (PVC)

a. Rigid polyvinyl chloride bell and spigot type pressure pipe and couplings conforming to AWWA C900, for four (4) inches and larger pipe, or ASTM D 2241 for pipe smaller than four (4) inches, of the types and pressure class indicated on the plans. Spigot end of pipe shall be marked to visually determine when the spigot is fully sealed in the bell of the adjoining pipe.

b. Joints shall be push or mechanical elastomeric gasket type, conforming to ASTM D3139.

3. High Density Polyethylene (HDPE)

a. Pipe: Polyethylene, Nominal IPS OD, SDR-11, Pressure Rating 160 psi, pipe less than 3-inch diameter shall be in accordance with ASTM D 3035, pipe three inches and larger shall be per ASTM F714.

b. Polyethylene Resin: PE 3408, minimum Cell Classification PE 345464C per ASTM D3350.

c. Joints: Butt Fusion Welded or Electrofusion Welded per ASTM D 2657.

d. Fittings in accordance with ASTM D3261 with a pressure rating equal to the pipe with an included 2:1 safety factor.

e. Flange Adapters – Stub Ends: Butt Fusion Welded.

4. Casing Pipes

a. Casing pipe shall be welded steel pipe ASTM A-252, GR2 unless otherwise specified with a minimum thickness of 3/8” or .375.

PART 3 - EXECUTION

A. Installation

a. The minimum depth of force mains shall be 4 feet with 6 feet preferred. Under waterways the force main shall be 7’ below stream bed.

b. Force mains shall be provided with automatic air release valves in wells at all main high points of the type approved by the township Engineer. Cleanouts shall be placed at locations designated by the township representative or Engineer.

B. Testing

a. No sanitary sewer pumping system shall be put into service until all pressure piping (force main) has undergone a satisfactory hydrostatic pressure test witnessed by the township Engineer.

b. Before applying the specified test pressure, all air shall be expelled from the pipe. The contractor shall furnish proper appliances and facilities for testing and draining the main without injury to the work and surrounding territory.

c. The Contractor shall be responsible for furnishing, and for the cost of, all water required for pressure testing. He shall test by filling the main with clean water under a minimum hydrostatic pressure of 100 pounds per square inch. In no case shall the leakage in any stretch of pipe being tested exceed the 11 U.S. gallons per inch diameter of main per mile of pipe per day (0.0001736 multiplied by diameter (inches) multiplied by pipe length (feet) in a two-hour period).

d. The Contractor shall pressure test sections of force main as directed by the township Engineer. Pressure testing shall be made in increments of 2,000 feet or less unless otherwise authorized by the township Engineer and then only the allowable leakage for 2,000 feet will be permitted.

PART 4 - MEASUREMENT AND PAYMENT

A. Measurement and Payment. The completed work will be measured linear foot and will be paid for at the contract price for the following Contract Items (pay item).

Contract Pay Item	Unit of Measurement
2” Sanitary Sewer Force Main (open cut)	LFT
2” Sanitary Sewer Force Main (subsurface)	LFT
Connect to Existing Force Main	EA
4” Steel Sleeve	LFT