

CITY OF ANN ARBOR  
INVITATION TO BID



Bird Road Retaining Wall

ITB No. 4611

Due Date: **Tuesday, February 18, 2020, 10:00AM (Local Time)**

Public Services  
Engineering

Issued By:

City of Ann Arbor  
Procurement Unit  
301 E. Huron Street  
Ann Arbor, MI 48104

# TABLE OF CONTENTS

TABLE OF CONTENTS.....	TC-1
NOTICE OF PRE-BID CONFERENCE.....	NP-1
INSTRUCTIONS TO BIDDERS.....	IB-1 to 5
INVITATION TO BID.....	ITB-1 to 3
BID FORMS.....	BF-1 to 5
CONTRACT.....	C-1 to 4
BOND FORMS.....	B-1 to 2
GENERAL CONDITIONS.....	GC-1 to 16
STANDARD SPECIFICATIONS.....	SS-17
DETAILED SPECIFICATION.....	DS-1 to 63
DS for Notice to Bidders.....	DS-1 to 2
DS for General Conditions.....	DS-3 to 4
DS for Project Supervision.....	DS-5 to 8
DS for Certified Payroll Compliance and Reporting.....	DS-9 to 10
DS for Materials and Supplies Certifications.....	DS-11
DS for Project Schedule.....	DS-12 to 13
DS for Removing Concrete Items.....	DS-14 to 15
DS for Subgrade Undercutting.....	DS-16
DS for Soil Erosion and Sedimentation Control.....	DS-17 to 18
DS for Subgrade Underdrain.....	DS-19 to 20
DS for Concrete Placement and Protection.....	DS-21 to 22
DS for Retaining Wall.....	DS-23 to 27
DS for Geotextile Retaining Wall.....	DS-28 to 29
DS for Platipus Anchors.....	DS-30 to 31
DS for Permanent Ground Anchors.....	DS-32 to 52
DS for Stone Wall Remove and Salvage.....	DS-53
DS for Concrete Curb and Gutter, and Driveway Openings.....	DS-54 to 55
DS for Protective Fencing.....	DS-56 to 57
DS for Traffic Control.....	DS-58 to 63
DS for Slope Restoration.....	DS-64 to 65

APPENDIX..... APDX-1

Notices to Bidders

- Michigan Department of Transportation (MDOT) Special Provisions
- MDOT Supplemental Specifications
- MDOT Standard Plans
- Special Details
- Soil Boring Logs

**ATTACHMENTS**

- City of Ann Arbor Prevailing Wage Declaration Form*
- City of Ann Arbor Living Wage Forms*
- City of Ann Arbor Vendor Conflict of Interest Disclosure Form*
- City of Ann Arbor Non-Discrimination Ordinance Notice and Declaration Form*

## **NOTICE OF PRE-BID CONFERENCE**

A pre-bid conference for this project will be held on **Monday, February 3, 2020, 2:00PM at Larcom Building, Basement, Conference Room A.**

Attendance at this conference is highly recommended. Administrative and technical questions regarding this project will be answered at this time. The pre-bid conference is for information only. Any answers furnished will not be official until verified in writing by the Financial Service Area, Procurement Unit. Answers that change or substantially clarify the bid will be affirmed in an addendum.

# INSTRUCTIONS TO BIDDERS

## General

Work to be done under this Contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents. All work to be done under this Contract is located in or near the City of Ann Arbor.

Any Bid which does not conform fully to these instructions may be rejected.

## Preparation of Bids

Bids should be prepared providing a straight-forward, concise description of the Bidder's ability to meet the requirements of the ITB. Bids shall be written in ink or typewritten. No erasures are permitted. Mistakes may be crossed out and corrected and must be initialed and dated in ink by the person signing the Bid.

Bids must be submitted on the "Bid Forms" provided with each blank properly filled in. If forms are not fully completed it may disqualify the bid. No alternative bid will be considered unless alternative bids are specifically requested. If alternatives are requested, any deviation from the specification must be fully described, in detail on the "Alternate" section of Bid form.

Each person signing the Bid certifies that he/she is the person in the Bidder's firm/organization responsible for the decision as to the fees being offered in the Bid and has not and will not participated in any action contrary to the terms of this provision.

## Questions or Clarifications / Designated City Contacts

All questions regarding this ITB shall be submitted via email. Emailed questions and inquires will be accepted from any and all prospective Bidders in accordance with the terms and conditions of the ITB.

All questions shall be due on or before **Wednesday, February 12, 2020** and should be addressed as follows:

Specification/Scope of Work questions emailed to [ccarson@a2gov.org](mailto:ccarson@a2gov.org)  
Bid Process and Compliance questions emailed to [cspencer@a2gov.org](mailto:cspencer@a2gov.org)

Any error, omissions or discrepancies in the specification discovered by a prospective contractor and/or service provider shall be brought to the attention of **Chris Carson** at [ccarson@a2gov.org](mailto:ccarson@a2gov.org) after discovery as possible. Further, the contractor and/or service provide shall not be allowed to take advantage of errors, omissions or discrepancies in the specifications.

## Addenda

If it becomes necessary to revise any part of the ITB, notice of the Addendum will be posted to Michigan Inter-governmental Trade Network (MITN) [www.mitn.info](http://www.mitn.info) and/or City of Ann Arbor web site [www.A2gov.org](http://www.A2gov.org) for all parties to download.

Each Bidder must in its Bid, to avoid any miscommunications, acknowledge all addenda which it has received, but the failure of a Bidder to receive, or acknowledge receipt of; any addenda shall not relieve the Bidder of the responsibility for complying with the terms thereof.

The City will not be bound by oral responses to inquiries or written responses other than written

addenda.

## Bid Submission

All Bids are due and must be delivered to the City of Ann Arbor Procurement Unit on or before **Tuesday, February 18, 2020, 10:00AM (Local Time) EST**. Bids submitted late or via oral, telephonic, telegraphic, electronic mail or facsimile **will not** be considered or accepted.

Each Bidder must submit one (1) original Bid and **one (1)** Bid copies in a sealed envelope clearly marked: **ITB No. 4611, Bird Road Retaining Wall**.

### **Bids must be addressed and delivered to:**

City of Ann Arbor  
Procurement Unit,  
c/o Customer Services, 1<sup>st</sup> Floor  
301 East Huron Street  
Ann Arbor, MI 48107

All Bids received on or before the Due Date will be publicly opened and recorded immediately. No immediate decisions are rendered.

**The following forms provided within this ITB Document must be included in submitted bids.**

- **City of Ann Arbor Prevailing Wage Declaration of Compliance**
- **City of Ann Arbor Living Wage Ordinance Declaration of Compliance**
- **Vendor Conflict of Interest Disclosure Form**
- **City of Ann Arbor Non-Discrimination Ordinance Declaration of Compliance**

**Bids that fail to provide these forms listed above upon bid opening will be rejected as non-responsive and will not be considered for award.**

Hand delivered bids will be date/time stamped/signed by the Procurement Unit at the address above in order to be considered. Normal business hours are 9:00 a.m. to 3:00 p.m. Monday through Friday, excluding Holidays. The City will not be liable to any Bidder for any unforeseen circumstances, delivery or postal delays. Postmarking to the Due Date will not substitute for receipt of the Bid. Each Bidder is responsible for submission of their Bid.

Additional time for submission of bids past the stated due date and time will not be granted to a single Bidder; however, additional time may be granted to all Bidders when the City determines in its sole discretion that circumstances warrant it.

## Award

The City intends to award a Contract(s) to the lowest responsible Bidder(s). On multi-divisional contracts, separate divisions may be awarded to separate Bidders. The City may also utilize alternatives offered in the Bid Forms, if any, to determine the lowest responsible Bidder on each division, and award multiple divisions to a single Bidder, so that the lowest total cost is achieved for the City. For unit price bids, the Contract will be awarded based upon the unit prices and the lump sum prices stated by the bidder for the work items specified in the bid documents, with consideration given to any alternates selected by the City. If the City determines that the unit price for any item is materially different for the work item bid than either other bidders or the general market, the City, in its sole discretion, in addition to any other right it may have, may reject the bid as not responsible or non-conforming.

The acceptability of major subcontractors will be considered in determining if a Bidder is responsible. In comparing Bids, the City will give consideration to alternate Bids for items listed in the bid forms. All key staff and subcontractors are subject to the approval by the City.

## Official Documents

The City of Ann Arbor officially distributes bid documents from the Procurement Unit or through the Michigan Intergovernmental Trade Network (MITN). Copies of the bid documents obtained from any other source are not Official copies. Addenda and other bid information will only be posted to these official distribution sites. If you obtained City of Ann Arbor Bid documents from other sources, it is recommended that you register on [www.MITN.info](http://www.MITN.info) and obtain an official Bid. Bidders do not need to be shown on the plan holders list provided by MITN to be considered an official plan holder.

## Bid Security

Each bid must be accompanied by a certified check or Bid Bond by a surety licensed and authorized to do business within the State of Michigan, in the amount of 5% of the total of the bid price.

## Withdrawal of Bids

After the time of opening, no Bid may be withdrawn for the period of \_\_\_\_\_ (\_\_) days

## Contract Time

Time is of the essence in the performance of the work under this Contract. The available time for work under this Contract is indicated on page C-1, Article III of the Contract. If these time requirements cannot be met, the Bidder must stipulate on Bid Form Section 3 - Time Alternate its schedule for performance of the work. Consideration will be given to time in evaluating bids.

## Liquidated Damages

A liquidated damages clause, as given on page C-2, Article III of the Contract, provides that the Contractor shall pay the City as liquidated damages, and not as a penalty, a sum certain per day for each and every day that the Contractor may be in default of completion of the specified work, within the time(s) stated in the Contract, or written extensions.

Liquidated damages clauses, as given in the General Conditions, provide further that the City shall be entitled to impose and recover liquidated damages for breach of the obligations under Chapter 112 of the City Code.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

## Human Rights Information

All contractors proposing to do business with the City shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the Section 9:158 of the Ann Arbor City Code. Breach of the obligation not to discriminate as outlined in Section 5, beginning at page GC-2 shall be a material breach of the contract. Contractors are required to post a copy of Ann Arbor's Non-Discrimination Ordinance attached at all work locations where its employees provide services under a contract with the City.

## Wage Requirements

Section 4, beginning at page GC-1, outlines the requirements for payment of prevailing wages and for payment of a “living wage” to employees providing service to the City under this contract. The successful bidder and its subcontractors must comply with all applicable requirements and provide proof of compliance.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. Use of the Prevailing Wage Form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

For laborers whose wage level are subject to federal, state and/or local prevailing wage law the appropriate Davis-Bacon wage rate classification is identified based upon the work including within this contract. **The wage determination(s) current on the date 10 days before bids are due shall apply to this contract.** The U.S. Department of Labor (DOL) has provided explanations to assist with classification in the following resource link: [www.wdol.gov](http://www.wdol.gov).

For the purposes of this ITB the Construction Type of **Heavy and Highway** will apply.

## Conflict Of Interest Disclosure

The City of Ann Arbor Purchasing Policy requires that prospective Vendors complete a Conflict of Interest Disclosure form. A contract may not be awarded to the selected Vendor unless and until the Procurement Unit and the City Administrator have reviewed the Disclosure form and determined that no conflict exists under applicable federal, state, or local law or administrative regulation. Not every relationship or situation disclosed on the Disclosure Form may be a disqualifying conflict. Depending on applicable law and regulations, some contracts may awarded on the recommendation of the City Administrator after full disclosure, where such action is allowed by law, if demonstrated competitive pricing exists and/or it is determined the award is in the best interest of the City. A copy of the Vendor Conflict of Interest Disclosure Form is attached.

## Major Subcontractors

The Bidder shall identify on Bid Form Section 4 each major subcontractor it expects to engage for this Contract if the work to be subcontracted is 15% or more of the bid sum or over \$50,000, whichever is less. The Bidder also shall identify the work to be subcontracted to each major subcontractor. The Bidder shall not change or replace a subcontractor without approval by the City.

## Debarment

Submission of a Bid in response to this ITB is certification that the Bidder is not currently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal departments or agency. Submission is also agreement that the City will be notified of any changes in this status.

## Disclosures

After bids are opened, all information in a submitter’s bid is subjected to disclosure under the provisions of Michigan Public Act No. 442 of 1976, as amended (MCL 15.231 et seq.) known as the “Freedom of Information Act.” The Freedom of Information Act also provides for the complete disclosure of contracts and attachments thereto except where specifically exempted.

## Bid Protest

All Bid protests must be in writing and filed with the Purchasing Agent within five (5) business days of the award action. The bidder must clearly state the reasons for the protest. If a bidder contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/Unit shall refer the bidder to the Purchasing Agent. The Purchasing Agent will provide the bidder with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee whose decision shall be final.

*Any inquiries or requests regarding this procurement should be only submitted in writing to the Designated City Contacts provided herein. Attempts by any prospective bidder to initiate contact with anyone other than the Designated City Contacts provided herein that the bidder believes can influence the procurement decision, e.g., Elected Officials, City Administrator, Selection Committee Members, Appointed Committee Members, etc., may lead to immediate elimination from further consideration.*

## Cost Liability

The City of Ann Arbor assumes no responsibility or liability for costs incurred by the Bidder prior to the execution of a contract with the City. By submitting a bid, a bidder agrees to bear all costs incurred or related to the preparation, submission and selection process for the bid.

## Reservation of Rights

The City of Ann Arbor reserves the right to accept any bid or alternative bid proposed in whole or in part, to reject any or all bids or alternatives bids in whole or in part and to waive irregularity and/or informalities in any bid and to make the award in any manner deemed in the best interest of the City.

## Idlefree Ordinance

The City of Ann Arbor adopted an idling reduction Ordinance that goes into effect July 1, 2017. The full text of the ordinance (including exemptions) can be found at: [www.a2gov.org/idlefree](http://www.a2gov.org/idlefree).

Under the ordinance, No Operator of a Commercial Vehicle shall cause or permit the Commercial Vehicle to Idle:

- (a) For any period of time while the Commercial Vehicle is unoccupied; or
- (b) For more than 5 minutes in any 60-minute period while the Commercial Vehicle is occupied.

In addition, generators and other internal combustion engines are covered

(1) Excluding Motor Vehicle engines, no internal combustion engine shall be operated except when it is providing power or electrical energy to equipment or a tool that is actively in use.

## Environmental Commitment

The City of Ann Arbor recognizes its responsibility to minimize negative impacts on human health and the environment while supporting a vibrant community and economy. The City further recognizes that the products and services the City buys have inherent environmental and economic impacts and that the City should make procurement decisions that embody, promote, and encourage the City's commitment to the environment.

The City encourages potential vendors to bring forward emerging and progressive products and services that are best suited to the City's environmental principles.



# INVITATION TO BID

City of Ann Arbor  
Guy C. Larcom Municipal Building  
Ann Arbor, Michigan 48107

Ladies and Gentlemen:

The undersigned, as Bidder, declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that this Bidder has carefully read and examined the bid documents, including City Nondiscrimination requirements and Declaration of Compliance Form, Living Wage requirements and Declaration of Compliance Form, Prevailing Wage requirements and Declaration of Compliance Form, Vendor Conflict of Interest Form, Notice of Pre-Bid Conference, Instructions to Bidders, Bid, Bid Forms, Contract, Bond Forms, General Conditions, Standard Specifications, Detailed Specifications, all Addenda, and the Plans (if applicable) and understands them. The Bidder declares that it conducted a full investigation at the site and of the work proposed and is fully informed as to the nature of the work and the conditions relating to the work's performance. The Bidder also declares that it has extensive experience in successfully completing projects similar to this one.

The Bidder acknowledges that it has not received or relied upon any representations or warrants of any nature whatsoever from the City of Ann Arbor, its agents or employees, and that this Bid is based solely upon the Bidder's own independent business judgment.

The undersigned proposes to perform all work shown on the plans or described in the bid documents, including any addenda issued, and to furnish all necessary machinery, tools, apparatus, and other means of construction to do all the work, furnish all the materials, and complete the work in strict accordance with all terms of the Contract of which this Bid is one part.

In accordance with these bid documents, and Addenda numbered \_\_\_\_\_, the undersigned, as Bidder, proposes to perform at the sites in and/or around Ann Arbor, Michigan, all the work included herein for the amounts set forth in the Bid Forms.

The Bidder declares that it has become fully familiar with the liquidated damage clauses for completion times and for compliance with City Code Chapter 112, understands and agrees that the liquidated damages are for the non-quantifiable aspects of non-compliance and do not cover actual damages that may be shown and agrees that if awarded the Contract, all liquidated damage clauses form part of the Contract.

The Bidder declares that it has become fully familiar with the provisions of Chapter 14, Section 1:320 (Prevailing wages) and Chapter 23 (Living Wage) of the Code of the City of Ann Arbor and that it understands and agrees to comply, to the extent applicable to employees providing services to the City under this Contract, with the wage and reporting requirements stated in the City Code provisions cited. Bidder certifies that the statements contained in the City Prevailing Wage and Living Wage Declaration of Compliance Forms are true and correct. Bidder further agrees that the cited provisions of Chapter 14 and Chapter 23 form a part of this Contract.

The Bidder declares that it has become familiar with the City Conflict of Interest Disclosure Form and certifies that the statement contained therein is true and correct.

The Bidder encloses a certified check or Bid Bond in the amount of 5% of the total of the Bid Price. The Bidder agrees both to contract for the work and to furnish the necessary Bonds and insurance documentation within 10 days after being notified of the acceptance of the Bid.

If this Bid is accepted by the City and the Bidder fails to contract and furnish the required Bonds and insurance documentation within 10 days after being notified of the acceptance of this Bid, then the Bidder shall be considered to have abandoned the Contract and the certified check or Bid Bond accompanying this Bid shall become due and payable to the City.

If the Bidder enters into the Contract in accordance with this Bid, or if this Bid is rejected, then the accompanying check or Bid Bond shall be returned to the Bidder.

In submitting this Bid, it is understood that the right is reserved by the City to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

SIGNED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 201\_.

\_\_\_\_\_  
Bidder's Name

\_\_\_\_\_  
Authorized Signature of Bidder

\_\_\_\_\_  
Official Address

\_\_\_\_\_  
(Print Name of Signer Above)

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
Email Address for Award Notice

**LEGAL STATUS OF BIDDER**

(The Bidder shall fill out the appropriate form and strike out the other three.)

Bidder declares that it is:

\* A corporation organized and doing business under the laws of the State of \_\_\_\_\_, for whom \_\_\_\_\_, bearing the office title of \_\_\_\_\_, whose signature is affixed to this Bid, is authorized to execute contracts.

**NOTE: If not incorporated in Michigan, please attach the corporation's Certificate of Authority**

• A limited liability company doing business under the laws of the State of \_\_\_\_\_, whom \_\_\_\_\_ bearing the title of \_\_\_\_\_ whose signature is affixed to this proposal, is authorized to execute contract on behalf of the LLC.

\* A partnership, organized under the laws of the state of \_\_\_\_\_ and filed in the county of \_\_\_\_\_, whose members are (list all members and the street and mailing address of each) (attach separate sheet if necessary):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\* An individual, whose signature with address, is affixed to this Bid: \_\_\_\_\_ (initial here)

**Authorized Official**

\_\_\_\_\_ **Date** \_\_\_\_\_, 201\_\_

(Print) Name \_\_\_\_\_ Title \_\_\_\_\_

Company: \_\_\_\_\_

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

Contact Phone ( ) \_\_\_\_\_ Fax ( ) \_\_\_\_\_

Email \_\_\_\_\_

# BID FORM

## Section 1 – Schedule of Prices

Company: \_\_\_\_\_

Project: **Bird Road Retaining Wall**

Item Description	Units	Estimated Quantity	Unit Price	Total Price
General Conditions, Max \$10,000	LS	1	\$ _____	\$ _____
Project Supervision, Max \$10,000	LS	1	\$ _____	\$ _____
Certified Payroll Compliance and Reporting	LS	1	\$ _____	\$ _____
Stone Wall, Rem, Salv, and Reuse	Sft	1300	\$ _____	\$ _____
Subgrade Undercutting, Type II	Cyd	10	\$ _____	\$ _____
Granular Material, Class II	Cyd	20	\$ _____	\$ _____
Crushed Aggregate, MDOT 6A	Cyd	40	\$ _____	\$ _____
Underdrain, Subgrade, 4 inch	Ft	210	\$ _____	\$ _____
Retaining Wall, Sierrascape, Plantable Face	Sft	1360	\$ _____	\$ _____
Crushed Limestone Leveling Pad, 6 inch, 21-AA, Modified	Syd	90	\$ _____	\$ _____
Platipus Anchors, Complete	Ea	90	\$ _____	\$ _____
HMA Curb, Rem and Replace	Ft	210	\$ _____	\$ _____
Fence, Protective, Modified	Ft	280	\$ _____	\$ _____
Traffic Control, Max \$5,000	LS	1	\$ _____	\$ _____
Slope Restoration, Native Pollinator Seed Mix	Sft	220	\$ _____	\$ _____
Topsoil Surface, 4 inch	Syd	140	\$ _____	\$ _____
Planting Mix, 12-inch deep	Cyd	80	\$ _____	\$ _____
			<b>Subtotal</b>	
			<b>Retaining Wall</b>	
			<b>Construction</b>	
			<b>Costs</b>	\$ _____

# BID FORM

## Section 2 – Material, Equipment and Environmental Alternates

The Base 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 City, 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.

If an environmental alternative is bid the City strongly encourages bidders to provide recent examples of product testing and previous successful use for the City to properly evaluate the environmental alternative. Testing data from independent accredited organizations are strongly preferred.

<u>Item Number</u>	<u>Description</u>	<u>Add/Deduct Amount</u>
--------------------	--------------------	--------------------------

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 \_\_\_\_\_ Date \_\_\_\_\_

# BID FORM

## Section 3 - Time Alternate

If the Bidder takes exception to the time stipulated in Article III of the Contract, Time of Completion, page C-2, 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 \_\_\_\_\_ Date \_\_\_\_\_

# BID FORM

## Section 4 - Major Subcontractors

For purposes of this Contract, a 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.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision to Section 4 of the General Conditions covering subcontractor's employees who perform work on this contract.

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

<u>Subcontractor (Name and Address)</u>	<u>Work</u>	<u>Amount</u>
---	-------------	---------------

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 \_\_\_\_\_ Date \_\_\_\_\_





# SAMPLE STANDARD CONTRACT

*If a contract is awarded, the selected contractor will be required to adhere to a set of general contract provisions which will become a part of any formal agreement. These provisions are general principles which apply to all contractors of service to the City of Ann Arbor such as the following:*

## CONTRACT

THIS AGREEMENT is made on the \_\_\_\_\_ day of \_\_\_\_\_, 201\_, between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 East Huron Street, Ann Arbor, Michigan 48104 ("City") and \_\_\_\_\_ ("Contractor")

\_\_\_\_\_  
(An individual/partnership/corporation, include state of incorporation)

\_\_\_\_\_  
(Address)

Based upon the mutual promises below, the Contractor and the City agree as follows:

### ARTICLE I - Scope of Work

The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the project titled [Insert Title of Bid and Bid Number] in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, which are incorporated as part of this Contract:

Non-discrimination and Living Wage Declaration of Compliance Forms (if applicable)  
Vendor Conflict of Interest Form  
Prevailing Wage Declaration of Compliance Form (if applicable)  
Bid Forms  
Contract and Exhibits  
Bonds

General Conditions  
Standard Specifications  
Detailed Specifications  
Plans  
Addenda

### ARTICLE II - Definitions

Administering Service Area/Unit means [Insert Name of Administering Service Unit]

Project means [Insert Title of Bid and Bid Number]

### ARTICLE III - Time of Completion

- (A) The work to be completed under this Contract shall begin immediately on the date specified in the Notice to Proceed issued by the City.
- (B) The entire work for this Contract shall be completed within \_\_\_\_\_ ( ) consecutive calendar days.
- (C) Failure to complete all the work within the time specified above, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the City, as liquidated damages and not as a penalty, an amount equal to \$\_\_\_\_\_ for each calendar day of delay in the completion of all the work.

If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

**ARTICLE IV - The Contract Sum**

*Choose one only.*

- (A) The City shall pay to the Contractor for the performance of the Contract, the lump sum price as given in the Bid Form in the amount of:

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

*Or*

- (A) The City shall pay to the Contractor for the performance of the Contract, the unit prices as given in the Bid Form for the estimated bid total of:

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

- (B) The amount paid shall be equitably adjusted to cover changes in the work ordered by the Supervising Professional but not required by the Contract Documents. Increases or decreases shall be determined only by written agreement between the City and Contractor.

**ARTICLE V - Assignment**

This Contract may not be assigned or subcontracted any portion of any right or obligation under this contract without the written consent of the City. Notwithstanding any consent by the City to any assignment, Contractor shall at all times remain bound to all warranties, certifications, indemnifications, promises and performances, however described, as are required of it under this contract unless specifically released from the requirement, in writing, by the City.

**ARTICLE VI - Choice of Law**

This Contract shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this agreement, the Contractor and the City agree to venue in a court of appropriate jurisdiction sitting within Washtenaw County for purposes of any action arising under this Contract. The parties stipulate that the venue referenced in this Contract is for convenience and waive any claim of non-convenience.

Whenever possible, each provision of the Contract will be interpreted in a manner as to be effective and valid under applicable law. The prohibition or invalidity, under applicable law, of any provision will not invalidate the remainder of the Contract.

**ARTICLE VII - Relationship of the Parties**

The parties of the Contract agree that it is not a Contract of employment but is a Contract to accomplish a specific result. Contractor is an independent Contractor performing services for the City. Nothing contained in this Contract shall be deemed to constitute any other relationship between the City and the Contractor.

Contractor certifies that it has no personal or financial interest in the project other than the compensation it is to receive under the Contract. Contractor certifies that it is not, and shall not become, overdue or in default to the City for any Contract, debt, or any other obligation to the City including real or personal property taxes. City shall have the right to set off any such debt against compensation awarded for services under this agreement.

**ARTICLE VIII - Notice**

All notices given under this Contract shall be in writing, and shall be by personal delivery or by certified mail with return receipt requested to the parties at their respective addresses as specified in the Contract Documents or other address the Contractor may specify in writing. Notice will be deemed given on the date when one of the following first occur: (1) the date of actual receipt; or (2) three days after mailing certified U.S. mail.

**ARTICLE IX - Indemnification**

To the fullest extent permitted by law, Contractor shall indemnify, defend and hold the City, its officers, employees and agents harmless from all suits, claims, judgments and expenses including attorney's fees resulting or alleged to result, in whole or in part, from any act or omission, which is in any way connected or associated with this Contract, by the Contractor or anyone acting on the Contractor's behalf under this Contract. Contractor shall not be responsible to indemnify the City for losses or damages caused by or resulting from the City's sole negligence. The provisions of this Article shall survive the expiration or earlier termination of this contract for any reason.

**ARTICLE X - Entire Agreement**

This Contract represents the entire understanding between the City and the Contractor and it supersedes all prior representations, negotiations, agreements, or understandings whether written or oral. Neither party has relied on any prior representations in entering into this Contract. No terms or conditions of either party's invoice, purchase order or other administrative document shall modify the terms and conditions of this Contract, regardless of the other party's failure to object to such form. This Contract shall be binding on and shall inure to the benefit of the parties to this Contract and their permitted successors and permitted assigns and nothing in this Contract, express or implied, is intended to or shall confer on any other person or entity any legal or equitable right, benefit, or remedy of any nature whatsoever under or by reason of this Contract. This Contract may be altered, amended or modified only by written amendment signed by the City and the Contractor.

**FOR CONTRACTOR**

By \_\_\_\_\_

Its: \_\_\_\_\_

**FOR THE CITY OF ANN ARBOR**

By \_\_\_\_\_  
Christopher Taylor, Mayor

[signatures continue on next page]  
By \_\_\_\_\_  
Jacqueline Beaudry, City Clerk

**Approved as to substance**

By \_\_\_\_\_

City Administrator

By \_\_\_\_\_

Services Area Administrator

**Approved as to form and content**

\_\_\_\_\_  
Stephen K. Postema, City Attorney

**PERFORMANCE BOND**

(1) \_\_\_\_\_ of \_\_\_\_\_ (referred to as "Principal"), and \_\_\_\_\_, a corporation duly authorized to do business in the State of Michigan (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for

\$ \_\_\_\_\_, the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written Contract with the City dated \_\_\_\_\_, 201\_, for: \_\_\_\_\_ and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq.

(3) Whenever the Principal is declared by the City to be in default under the Contract, the Surety may promptly remedy the default or shall promptly:

(a) complete the Contract in accordance with its terms and conditions; or

(b) obtain a bid or bids for submission to the City for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a Contract between such bidder and the City, and make available, as work progresses, sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth in paragraph 1.

(4) Surety shall have no obligation to the City if the Principal fully and promptly performs under the Contract.

(5) Surety agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder, or the specifications accompanying it shall in any way affect its obligations on this bond, and waives notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work, or to the specifications.

**SIGNED AND SEALED** this \_\_\_\_\_ day of \_\_\_\_\_, 201\_.

\_\_\_\_\_  
(Name of Surety Company)

By \_\_\_\_\_  
(Signature)

Its \_\_\_\_\_  
(Title of Office)

Approved as to form:

\_\_\_\_\_  
Stephen K. Postema, City Attorney

\_\_\_\_\_  
(Name of Principal)

By \_\_\_\_\_  
(Signature)

Its \_\_\_\_\_  
(Title of Office)

Name and address of agent:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## LABOR AND MATERIAL BOND

- (1) \_\_\_\_\_  
of \_\_\_\_\_ (referred to as "Principal"), and \_\_\_\_\_, a corporation duly authorized to do business in the State of Michigan, (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for the use and benefit of claimants as defined in Act 213 of Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq., in the amount of \$ \_\_\_\_\_, for the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.
- (2) The Principal has entered a written Contract with the City, dated \_\_\_\_\_, 201\_, for \_\_\_\_\_; and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963 as amended;
- (3) If the Principal fails to promptly and fully repay claimants for labor and material reasonably required under the Contract, the Surety shall pay those claimants.
- (4) Surety's obligations shall not exceed the amount stated in paragraph 1, and Surety shall have no obligation if the Principal promptly and fully pays the claimants.

**SIGNED AND SEALED** this \_\_\_\_\_ day of \_\_\_\_\_, 201\_

\_\_\_\_\_  
(Name of Surety Company)

By \_\_\_\_\_  
(Signature)

Its \_\_\_\_\_  
(Title of Office)

Approved as to form:

\_\_\_\_\_  
Stephen K. Postema, City Attorney

\_\_\_\_\_  
(Name of Principal)

By \_\_\_\_\_  
(Signature)

Its \_\_\_\_\_  
(Title of Office)

Name and address of agent:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# **GENERAL CONDITIONS**

## **Section 1 - Execution, Correlation and Intent of Documents**

The contract documents shall be signed in 2 copies by the City and the Contractor.

The contract documents are complementary and what is called for by any one shall be binding. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work. Materials or work described in words which so applied have a well-known technical or trade meaning have the meaning of those recognized standards.

In case of a conflict among the contract documents listed below in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

(1) Addenda in reverse chronological order; (2) Detailed Specifications; (3) Standard Specifications; (4) Plans; (5) General Conditions; (6) Contract; (7) Bid Forms; (8) Bond Forms; (9) Bid.

## **Section 2 - Order of Completion**

The Contractor shall submit with each invoice, and at other times reasonably requested by the Supervising Professional, schedules showing the order in which the Contractor proposes to carry on the work. They shall include the dates at which the Contractor will start the several parts of the work, the estimated dates of completion of the several parts, and important milestones within the several parts.

## **Section 3 - Familiarity with Work**

The Bidder or its representative shall make personal investigations of the site of the work and of existing structures and shall determine to its own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved, and all other factors affecting the work proposed under this Contract. The Bidder to whom this Contract is awarded will not be entitled to any additional compensation unless conditions are clearly different from those which could reasonably have been anticipated by a person making diligent and thorough investigation of the site.

The Bidder shall immediately notify the City upon discovery, and in every case prior to submitting its Bid, of every error or omission in the bidding documents that would be identified by a reasonably competent, diligent Bidder. In no case will a Bidder be allowed the benefit of extra compensation or time to complete the work under this Contract for extra expenses or time spent as a result of the error or omission.

## **Section 4 - Wage Requirements**

Under this Contract, the Contractor shall conform to Chapter 14 of Title I of the Code of the City of Ann Arbor as amended; which in part states "...that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen,

mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. At the request of the City, any contractor or subcontractor shall provide satisfactory proof of compliance with the contract provisions required by the Section.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. A sample Prevailing Wage Form is provided in the Appendix herein for reference as to what will be expected from contractors. Use of the Prevailing Wage Form provided in the Appendix section or a City-approved equivalent will be required along with wage rate interviews.

Where the Contract and the Ann Arbor City Ordinance are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used.

If the Contractor is a "covered employer" as defined in Chapter 23 of the Ann Arbor City Code, the Contractor agrees to comply with the living wage provisions of Chapter 23 of the Ann Arbor City Code. The Contractor agrees to pay those employees providing Services to the City under this Agreement a "living wage," as defined in Section 1:815 of the Ann Arbor City Code, as adjusted in accordance with Section 1:815(3); to post a notice approved by the City of the applicability of Chapter 23 in every location in which regular or contract employees providing services under this Agreement are working; to maintain records of compliance; if requested by the City, to provide documentation to verify compliance; to take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee or person contracted for employment in order to pay the living wage required by Section 1:815; and otherwise to comply with the requirements of Chapter 23.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision covering subcontractor's employees who perform work on this contract.

## **Section 5 - Non-Discrimination**

The Contractor agrees to comply, and to require its subcontractor(s) to comply, with the nondiscrimination provisions of MCL 37.2209. The Contractor further agrees to comply with the provisions of Section 9:158 of Chapter 112 of Title IX of the Ann Arbor City Code, and to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity.

## **Section 6 - Materials, Appliances, Employees**

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary or used for the execution and completion of the work. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and materials shall be of the highest quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The Contractor shall at all times enforce strict discipline and good order among its employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned.

Adequate sanitary facilities shall be provided by the Contractor.



## **Section 7 - Qualifications for Employment**

The Contractor shall employ competent laborers and mechanics for the work under this Contract. For work performed under this Contract, employment preference shall be given to qualified local residents.

## **Section 8 - Royalties and Patents**

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringements of any patent rights and shall hold the City harmless from loss on account of infringement except that the City shall be responsible for all infringement loss when a particular process or the product of a particular manufacturer or manufacturers is specified, unless the City has notified the Contractor prior to the signing of the Contract that the particular process or product is patented or is believed to be patented.

## **Section 9 - Permits and Regulations**

The Contractor must secure and pay for all permits, permit or plan review fees and licenses necessary for the prosecution of the work. These include but are not limited to City building permits, right-of-way permits, lane closure permits, right-of-way occupancy permits, and the like. The City shall secure and pay for easements shown on the plans unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the contract documents are at variance with those requirements, it shall promptly notify the Supervising Professional in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work.

## **Section 10 - Protection of the Public and of Work and Property**

The Contractor is responsible for the means, methods, sequences, techniques and procedures of construction and safety programs associated with the work contemplated by this contract. The Contractor, its agents or sub-contractors, shall comply with the "General Rules and Regulations for the Construction Industry" as published by the Construction Safety Commission of the State of Michigan and to all other local, State and National laws, ordinances, rules and regulations pertaining to safety of persons and property.

The Contractor shall take all necessary and reasonable precautions to protect the safety of the public. It shall continuously maintain adequate protection of all work from damage, and shall take all necessary and reasonable precautions to adequately protect all public and private property from injury or loss arising in connection with this Contract. It shall make good any damage, injury or loss to its work and to public and private property resulting from lack of reasonable protective precautions, except as may be due to errors in the contract documents, or caused by agents or employees of the City. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

In an emergency affecting the safety of life, or the work, or of adjoining property, the Contractor is, without special instructions or authorization from the Supervising Professional, permitted to act at its discretion to prevent the threatened loss or injury. It shall also so act, without appeal, if authorized or instructed by the Supervising Professional.

Any compensation claimed by the Contractor for emergency work shall be determined by agreement or in accordance with the terms of Claims for Extra Cost - Section 15.

## **Section 11 - Inspection of Work**

The City shall provide sufficient competent personnel for the inspection of the work.

The Supervising Professional shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection.

If the specifications, the Supervising Professional's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Supervising Professional timely notice of its readiness for inspection, and if the inspection is by an authority other than the Supervising Professional, of the date fixed for the inspection. Inspections by the Supervising Professional shall be made promptly, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Supervising Professional, it must, if required by the Supervising Professional, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Supervising Professional, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to be in accordance with the contract documents, the City shall pay the cost of re-examination and replacement. If the work is not in accordance with the contract documents, the Contractor shall pay the cost.

## **Section 12 - Superintendence**

The Contractor shall keep on the work site, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Supervising Professional. The superintendent will be responsible to perform all on-site project management for the Contractor. The superintendent shall be experienced in the work required for this Contract. The superintendent shall represent the Contractor and all direction given to the superintendent shall be binding as if given to the Contractor. Important directions shall immediately be confirmed in writing to the Contractor. Other directions will be confirmed on written request. The Contractor shall give efficient superintendence to the work, using its best skill and attention.

## **Section 13 - Changes in the Work**

The City may make changes to the quantities of work within the general scope of the Contract at any time by a written order and without notice to the sureties. If the changes add to or deduct from the extent of the work, the Contract Sum shall be adjusted accordingly. All the changes shall be executed under the conditions of the original Contract except that any claim for extension of time caused by the change shall be adjusted at the time of ordering the change.

In giving instructions, the Supervising Professional shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Supervising Professional, and no claim for an addition to the Contract Sum shall be valid unless the additional work was ordered in writing.

The Contractor shall proceed with the work as changed and the value of the work shall be determined as provided in Claims for Extra Cost - Section 15.

## **Section 14 - Extension of Time**

Extension of time stipulated in the Contract for completion of the work will be made if and as the

Supervising Professional may deem proper under any of the following circumstances:

- (1) When work under an extra work order is added to the work under this Contract;
- (2) When the work is suspended as provided in Section 20;
- (3) When the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, and which were not the result of its fault or negligence;
- (4) Delays in the progress of the work caused by any act or neglect of the City or of its employees or by other Contractors employed by the City;
- (5) Delay due to an act of Government;
- (6) Delay by the Supervising Professional in the furnishing of plans and necessary information;
- (7) Other cause which in the opinion of the Supervising Professional entitles the Contractor to an extension of time.

The Contractor shall notify the Supervising Professional within 7 days of an occurrence or conditions which, in the Contractor's opinion, entitle it to an extension of time. The notice shall be in writing and submitted in ample time to permit full investigation and evaluation of the Contractor's claim. The Supervising Professional shall acknowledge receipt of the Contractor's notice within 7 days of its receipt. Failure to timely provide the written notice shall constitute a waiver by the Contractor of any claim.

In situations where an extension of time in contract completion is appropriate under this or any other section of the contract, the Contractor understands and agrees that the only available adjustment for events that cause any delays in contract completion shall be extension of the required time for contract completion and that there shall be no adjustments in the money due the Contractor on account of the delay.

## **Section 15 - Claims for Extra Cost**

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section 13. No claim shall be valid unless so made.

If the Supervising Professional orders, in writing, the performance of any work not covered by the contract documents, and for which no item of work is provided in the Contract, and for which no unit price or lump sum basis can be agreed upon, then the extra work shall be done on a Cost-Plus-Percentage basis of payment as follows:

- (1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;
- (2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same;

the cost of all material and supplies required of either temporary or permanent character; rental of all power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;

- (3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility;
- (4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;
- (5) Payments of all charges for work under this Section in any one month shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.

No additional compensation will be provided for additional equipment, materials, personnel, overtime or special charges required to perform the work within the time requirements of the Contract.

When extra work is required and no suitable price for machinery and equipment can be determined in accordance with this Section, the hourly rate paid shall be 1/40 of the basic weekly rate listed in the Rental Rate Blue Book published by Dataquest Incorporated and applicable to the time period the equipment was first used for the extra work. The hourly rate will be deemed to include all costs of operation such as bucket or blade, fuel, maintenance, "regional factors", insurance, taxes, and the like, but not the costs of the operator.

## **Section 16 - Progress Payments**

The Contractor shall submit each month, or at longer intervals, if it so desires, an invoice covering work performed for which it believes payment, under the Contract terms, is due. The submission shall be to the City's Finance Department - Accounting Division. The Supervising Professional will, within 10 days following submission of the invoice, prepare a certificate for payment for the work in an amount to be determined by the Supervising Professional as fairly representing the acceptable work performed during the period covered by the Contractor's invoice. To insure the proper performance of this Contract, the City will retain a percentage of the estimate in accordance with Act 524, Public Acts of 1980. The City will then, following the receipt of the Supervising Professional's Certificate, make payment to the Contractor as soon as feasible, which is anticipated will be within 15 days.

An allowance may be made in progress payments if substantial quantities of permanent material have been delivered to the site but not incorporated in the completed work if the Contractor, in the opinion of the Supervising Professional, is diligently pursuing the work under this Contract. Such materials shall be properly stored and adequately protected. Allowance in the estimate shall be at the invoice price value of the items. Notwithstanding any payment of any allowance, all risk of loss due to vandalism or any damages to the stored materials remains with the Contractor.

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract

Sum upon completion of erection of all equipment furnished, but not later than 60 days after the date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than 180 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

With each invoice for periodic payment, the Contractor shall enclose a Contractor's Declaration - Section 43, and an updated project schedule per Order of Completion - Section 2.

### **Section 17 - Deductions for Uncorrected Work**

If the Supervising Professional decides it is inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made.

### **Section 18 - Correction of Work Before Final Payment**

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

If the Contractor does not remove the condemned work and materials within 10 days after written notice, the City may remove them and, if the removed material has value, may store the material at the expense of the Contractor. If the Contractor does not pay the expense of the removal within 10 days thereafter, the City may, upon 10 days written notice, sell the removed materials at auction or private sale and shall pay to the Contractor the net proceeds, after deducting all costs and expenses that should have been borne by the Contractor. If the removed material has no value, the Contractor must pay the City the expenses for disposal within 10 days of invoice for the disposal costs.

The inspection or lack of inspection of any material or work pertaining to this Contract shall not relieve the Contractor of its obligation to fulfill this Contract and defective work shall be made good. Unsuitable materials may be rejected by the Supervising Professional notwithstanding that the work and materials have been previously overlooked by the Supervising Professional and accepted or estimated for payment or paid for. If the work or any part shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good the defect in a manner satisfactory to the Supervising Professional. The judgment and the decision of the Supervising Professional as to whether the materials supplied and the work done under this Contract comply with the requirements of the Contract shall be conclusive and final.

### **Section 19 - Acceptance and Final Payment**

Upon receipt of written notice that the work is ready for final inspection and acceptance, the Supervising Professional will promptly make the inspection. When the Supervising Professional finds the work acceptable under the Contract and the Contract fully performed, the Supervising Professional will promptly sign and issue a final certificate stating that the work required by this Contract has been completed and is accepted by the City under the terms and conditions of the Contract. The entire balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor by the City within 30 days after the date of the final certificate.

Before issuance of final certificates, the Contractor shall file with the City:

- (1) The consent of the surety to payment of the final estimate;
- (2) The Contractor's Affidavit in the form required by Section 44.

In case the Affidavit or consent is not furnished, the City may retain out of any amount due the Contractor, sums sufficient to cover all lienable claims.

The making and acceptance of the final payment shall constitute a waiver of all claims by the City except those arising from:

- (1) unsettled liens;
- (2) faulty work appearing within 12 months after final payment;
- (3) hidden defects in meeting the requirements of the plans and specifications;
- (4) manufacturer's guarantees.

It shall also constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

## **Section 20 - Suspension of Work**

The City may at any time suspend the work, or any part by giving 5 days notice to the Contractor in writing. The work shall be resumed by the Contractor within 10 days after the date fixed in the written notice from the City to the Contractor to do so. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of the suspension.

If the work, or any part, shall be stopped by the notice in writing, and if the City does not give notice in writing to the Contractor to resume work at a date within 90 days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work suspended and will be entitled to the estimates and payments for all work done on the portions abandoned, if any, plus 10% of the value of the work abandoned, to compensate for loss of overhead, plant expense, and anticipated profit.

## **Section 21 - Delays and the City's Right to Terminate Contract**

If the Contractor refuses or fails to prosecute the work, or any separate part of it, with the diligence required to insure completion, ready for operation, within the allowable number of consecutive calendar days specified plus extensions, or fails to complete the work within the required time, the City may, by written notice to the Contractor, terminate its right to proceed with the work or any part of the work as to which there has been delay. After providing the notice the City may take over the work and prosecute it to completion, by contract or otherwise, and the Contractor and its sureties shall be liable to the City for any excess cost to the City. If the Contractor's right to proceed is terminated, the City may take possession of and utilize in completing the work, any materials, appliances and plant as may be on the site of the work and useful for completing the work. The right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages where an extension of time is granted under Extension of Time - Section 14.

If the Contractor is adjudged a bankrupt, or if it makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it fails to make prompt payments to subcontractors or for material or labor, or persistently disregards laws, ordinances or the instructions of the Supervising Professional, or otherwise is guilty of a substantial violation of any provision of the Contract, then the City, upon the certificate of the Supervising Professional that sufficient cause exists to justify

such action, may, without prejudice to any other right or remedy and after giving the Contractor 3 days written notice, terminate this Contract. The City may then take possession of the premises and of all materials, tools and appliances thereon and without prejudice to any other remedy it may have, make good the deficiencies or finish the work by whatever method it may deem expedient, and deduct the cost from the payment due the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of finishing the work, including compensation for additional managerial and administrative services exceeds the unpaid balance of the Contract Sum, the Contractor and its surety are liable to the City for any excess cost incurred. The expense incurred by the City, and the damage incurred through the Contractor's default, shall be certified by the Supervising Professional.

## **Section 22 - Contractor's Right to Terminate Contract**

If the work should be stopped under an order of any court, or other public authority, for a period of 3 months, through no act or fault of the Contractor or of anyone employed by it, then the Contractor may, upon 7 days written notice to the City, terminate this Contract and recover from the City payment for all acceptable work executed plus reasonable profit.

## **Section 23 - City's Right To Do Work**

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the City, 3 days after giving written notice to the Contractor and its surety may, without prejudice to any other remedy the City may have, make good the deficiencies and may deduct the cost from the payment due to the Contractor.

## **Section 24 - Removal of Equipment and Supplies**

In case of termination of this Contract before completion, from any or no cause, the Contractor, if notified to do so by the City, shall promptly remove any part or all of its equipment and supplies from the property of the City, failing which the City shall have the right to remove the equipment and supplies at the expense of the Contractor.

The removed equipment and supplies may be stored by the City and, if all costs of removal and storage are not paid by the Contractor within 10 days of invoicing, the City upon 10 days written notice may sell the equipment and supplies at auction or private sale, and shall pay the Contractor the net proceeds after deducting all costs and expenses that should have been borne by the Contractor and after deducting all amounts claimed due by any lien holder of the equipment or supplies.

## **Section 25 - Responsibility for Work and Warranties**

The Contractor assumes full responsibility for any and all materials and equipment used in the construction of the work and may not make claims against the City for damages to materials and equipment from any cause except negligence or willful act of the City. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the project (except for any part covered by Partial Completion and Acceptance - Section 26). The Contractor shall make good all work damaged or destroyed before acceptance. All risk of loss remains with the Contractor until final acceptance of the work (Section 19) or partial acceptance (Section 26). The Contractor is advised to investigate obtaining its own builders risk insurance.

The Contractor shall guarantee the quality of the work for a period of one year. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of one year. At the end of one year after the Contractor's receipt of final payment, the complete work, including equipment and materials

furnished and installed under the contract, shall be inspected by the Contractor and the Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. The Contractor shall assign all manufacturer or material supplier warranties to the City prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

## **Section 26 - Partial Completion and Acceptance**

If at any time prior to the issuance of the final certificate referred to in Acceptance and Final Payment - Section 19, any portion of the permanent construction has been satisfactorily completed, and if the Supervising Professional determines that portion of the permanent construction is not required for the operations of the Contractor but is needed by the City, the Supervising Professional shall issue to the Contractor a certificate of partial completion, and immediately the City may take over and use the portion of the permanent construction described in the certificate, and exclude the Contractor from that portion.

The issuance of a certificate of partial completion shall not constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates if the Contractor has failed to complete it in accordance with the terms of this Contract. The issuance of the certificate shall not release the Contractor or its sureties from any obligations under this Contract including bonds.

If prior use increases the cost of, or delays the work, the Contractor shall be entitled to extra compensation, or extension of time, or both, as the Supervising Professional may determine.

## **Section 27 - Payments Withheld Prior to Final Acceptance of Work**

The City may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to the extent reasonably appropriate to protect the City from loss on account of:

- (1) Defective work not remedied;
- (2) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor;
- (3) Failure of the Contractor to make payments properly to subcontractors or for material or labor;
- (4) Damage to another Contractor.

When the above grounds are removed or the Contractor provides a Surety Bond satisfactory to the City which will protect the City in the amount withheld, payment shall be made for amounts withheld under this section.

## **Section 28 - Contractor's Insurance**

- (1) The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself and the City from all claims for bodily injuries, death or



property damage that may arise under this Contract; whether the act(s) or omission(s) giving rise to the claim were made by the Contractor, any subcontractor, or anyone employed by them directly or indirectly. Prior to commencement of any work under this contract, Contractor shall provide to the City documentation satisfactory to the City, through City-approved means (currently myCOI), demonstrating it has obtained the required policies and endorsements. The certificates of insurance endorsements and/or copies of policy language shall document that the Contractor satisfies the following minimum requirements. Contractor shall add registration@mycoitracking.com to its safe sender's list so that it will receive necessary communication from myCOI. When requested, Contractor shall provide the same documentation for its subcontractor(s) (if any).

Required insurance policies include:

- (a) Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

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 equivalent to, as a minimum, Insurance Services Office form CG 00 01 04 13 or current equivalent. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements specifically for the following coverages: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further there shall be no added exclusions or limiting endorsements that diminish the City's protections as an additional insured under the policy. The following minimum limits of liability are required:

\$1,000,000	Each occurrence as respect Bodily Injury Liability or Property Damage Liability, or both combined.
\$2,000,000	Per Project General Aggregate
\$1,000,000	Personal and Advertising Injury
\$2,000,000	Products and Completed Operations Aggregate

- (c) Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 10 13 or current equivalent. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements that diminish the City's protections as an additional insured under the policy. Further, the limits of liability shall be \$1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

- (d) Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of \$1,000,000.

- (2) Insurance required under subsection (1)(b) and (1)(c) above shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its

insurer against the City for any insurance listed herein.

- (3) Insurance companies and policy forms are subject to approval of the City Attorney, which approval shall not be unreasonably withheld. Documentation must provide and demonstrate an unconditional and un-qualified 30-day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number(s); name of insurance company(s); name and address of the agent(s) or authorized representative(s); name(s), email address(es), and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which may be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified Contractor shall furnish the City with satisfactory certificates of insurance and endorsements prior to commencement of any work. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) and all required endorsements to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies and endorsements to the Administering Service Area/Unit at least ten days prior to the expiration date.
- (4) Any Insurance provider of Contractor shall be authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-authorized insurance companies are not acceptable unless approved in writing by the City.
- (5) City reserves the right to require additional coverage and/or coverage amounts as may be included from time to time in the Detailed Specifications for the Project.
- (6) The provisions of General Condition 28 shall survive the expiration or earlier termination of this contract for any reason.

## **Section 29 - Surety Bonds**

Bonds will be required from the successful bidder as follows:

- (1) A Performance Bond to the City of Ann Arbor for the amount of the bid(s) accepted;
- (2) A Labor and Material Bond to the City of Ann Arbor for the amount of the bid(s) accepted.

Bonds shall be executed on forms supplied by the City in a manner and by a Surety Company authorized to transact business in Michigan and satisfactory to the City Attorney.

## **Section 30 - Damage Claims**

The Contractor shall be held responsible for all damages to property of the City or others, caused by or resulting from the negligence of the Contractor, its employees, or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. The Contractor must restore all property injured including sidewalks, curbing, sodding, pipes, conduit, sewers or other public or private property to not less than its original condition with new work.

## **Section 31 - Refusal to Obey Instructions**

If the Contractor refuses to obey the instructions of the Supervising Professional, the Supervising Professional shall withdraw inspection from the work, and no payments will be made for work performed thereafter nor may work be performed thereafter until the Supervising Professional shall have again authorized the work to proceed.

## **Section 32 - Assignment**

Neither party to the Contract shall assign the Contract without the written consent of the other. The Contractor may assign any monies due to it to a third party acceptable to the City.

## **Section 33 - Rights of Various Interests**

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Supervising Professional, to secure the completion of the various portions of the work in general harmony.

The Contractor is responsible to coordinate all aspects of the work, including coordination of, and with, utility companies and other contractors whose work impacts this project.

## **Section 34 - Subcontracts**

The Contractor shall not award any work to any subcontractor without prior written approval of the City. The approval will not be given until the Contractor submits to the City a written statement concerning the proposed award to the subcontractor. The statement shall contain all information the City may require.

The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and all other contract documents applicable to the work of the subcontractors and to give the Contractor the same power to terminate any subcontract that the City may exercise over the Contractor under any provision of the contract documents.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the City.

## **Section 35 - Supervising Professional's Status**

The Supervising Professional has the right to inspect any or all work. The Supervising Professional has authority to stop the work whenever stoppage may be appropriate to insure the proper execution of the Contract. The Supervising Professional has the authority to reject all work and materials which do not conform to the Contract and to decide questions which arise in the execution of the work.

The Supervising Professional shall make all measurements and determinations of quantities. Those measurements and determinations are final and conclusive between the parties.

## **Section 36 - Supervising Professional's Decisions**

The Supervising Professional shall, within a reasonable time after their presentation to the Supervising Professional, make decisions in writing on all claims of the City or the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the contract documents.

## **Section 37 - Storing Materials and Supplies**

Materials and supplies may be stored at the site of the work at locations agreeable to the City unless specific exception is listed elsewhere in these documents. Ample way for foot traffic and drainage must be provided, and gutters must, at all times, be kept free from obstruction. Traffic on streets shall be interfered with as little as possible. The Contractor may not enter or occupy with agents, employees, tools, or material any private property without first obtaining written permission from its owner. A copy of the permission shall be furnished to the Supervising Professional.

## **Section 38 - Lands for Work**

The Contractor shall provide, at its own expense and without liability to the City, any additional land and access that may be required for temporary construction facilities or for storage of materials.

## **Section 39 - Cleaning Up**

The Contractor shall, as directed by the Supervising Professional, remove at its own expense from the City's property and from all public and private property all temporary structures, rubbish and waste materials resulting from its operations unless otherwise specifically approved, in writing, by the Supervising Professional.

## **Section 40 - Salvage**

The Supervising Professional may designate for salvage any materials from existing structures or underground services. Materials so designated remain City property and shall be transported or stored at a location as the Supervising Professional may direct.

## **Section 41 - Night, Saturday or Sunday Work**

No night or Sunday work (without prior written City approval) will be permitted except in the case of an emergency and then only to the extent absolutely necessary. The City may allow night work which, in the opinion of the Supervising Professional, can be satisfactorily performed at night. Night work is any work between 8:00 p.m. and 7:00 a.m. No Saturday work will be permitted unless the Contractor gives the Supervising Professional at least 48 hours but not more than 5 days notice of the Contractor's intention to work the upcoming Saturday.

## **Section 42 - Sales Taxes**

Under State law the City is exempt from the assessment of State Sales Tax on its direct purchases. Contractors who acquire materials, equipment, supplies, etc. for incorporation in City projects are not likewise exempt. State Law shall prevail. The Bidder shall familiarize itself with the State Law and prepare its Bid accordingly. No extra payment will be allowed under this Contract for failure of the Contractor to make proper allowance in this bid for taxes it must pay.

## Section 43

### CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period \_\_\_\_\_, 20\_\_, to \_\_\_\_\_, 20\_\_, performed any work, furnished any materials, sustained any loss, damage or delay, or otherwise done anything in addition to the regular items (or executed change orders) set forth in the Contract titled \_\_\_\_\_, for which I shall ask, demand, sue for, or claim compensation or extension of time from the City, except as I hereby make claim for additional compensation or extension of time as set forth on the attached itemized statement. I further declare that I have paid all payroll obligations related to this Contract that have become due during the above period and that all invoices related to this Contract received more than 30 days prior to this declaration have been paid in full except as listed below.

There is/is not (Contractor please circle one and strike one as appropriate) an itemized statement attached regarding a request for additional compensation or extension of time.

\_\_\_\_\_  
Contractor

\_\_\_\_\_  
Date

By \_\_\_\_\_  
(Signature)

Its \_\_\_\_\_  
(Title of Office)

Past due invoices, if any, are listed below.



## **STANDARD SPECIFICATIONS**

All work under this contract shall be performed in accordance with the Public Services Department Standard Specifications in effect at the date of availability of the contract documents stipulated in the Bid. All work under this Contract which is not included in these Standard Specifications, or which is performed using modifications to these Standard Specifications, shall be performed in accordance with the Detailed Specifications included in these contract documents.

Standard Specifications are available online:

<http://www.a2gov.org/departments/engineering/Pages/Engineering-and-Contractor-Resources.aspx>

**DETAILED SPECIFICATIONS**



CITY OF ANN ARBOR

NOTICE TO BIDDERS

AA:CC

1 of 2

10/31/19

**a. Utilities Coordination.** The Contractor shall cooperate and coordinate construction activities with the owners of utilities in accordance with the City of Ann Arbor Standard Specifications, and as stated in subsection 104.08 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, and as described herein. In addition, for the protection of underground utilities, the Contractor shall follow the requirements in subsection 107.12 of the Standard Specifications for Construction. Contractor delay claims resulting from a utility will be determined based upon subsection 108.09 of the Standard Specifications for Construction.

The following Utility Owners, together with others, may have facilities located within the Right-of-Way:

<u>Utility</u>	<u>Type of Service</u>
City of Ann Arbor W.R. Wheeler Service Center 4251 Stone School Road Ann Arbor, MI 48108 734 794-6351	Sanitary Sewer (Pat Maino - ext. 43817) Water (Daniel Wooden - ext. 43324) Storm Sewer (Matthew Waldsmith - ext. 43321) Communications/Signs/Signals/Street Lighting (Chuck Fojtik - ext. 43322)
AT&T 550 South Maple Ann Arbor, MI 48103 Attn: Debora Renner 734-996-5485 debora.a.renner@att.com	Telephone/Fiber Optic
Comcast 27800 Franklin Road Southfield, MI 48034 Attn: Ron Southerland 248-359-6544 ronald_southerland@cable.comcast.com	Cable/Fiber Optic
DTE Energy 2000 2 <sup>nd</sup> Ave, Room 518 S.B. Detroit, MI 48226 Attn: Julie Gottardi 734-884-0585 gottardij@dteenergy.com	Electric
DTE Energy (Michcon) 17150 Allen Road Melvindale, MI 48122 Attn: Laurie Forrester 313-389-7261 forresterl@dteenergy.com	Gas

UtilityType of Service

MCI/Verizon  
5688 W Grand River Avenue  
Lansing, MI 48906  
Attn: Rick Chalmers  
517-318-8064  
rick.chalmers@verizonbusiness.com

Telephone/Fiber Optic

For protection of underground utilities, the Contractor shall call "MISS DIG" toll free at 1-800-482-7171 or call 811 a minimum of three (3) working days prior to excavation within the project limits. The Contractor must also notify utility owners who may not be part of the "MISS DIG" system.

The Contractor shall notify the City of Ann Arbor a minimum of three (3) days prior to beginning construction.

The Owners of public or private utilities which will not interfere with the completed project and which do not present a hazard to the public or an extraordinary hazard to the Contractor's operations will not be required to move their facilities on or from the street right-of-way.

The Contractor shall verify the location and depth of all utilities through Miss Dig and coordinate with the utilities to ensure that all utilities are protected during the project.

Protection of existing utility facilities is necessary during the project. Protection may include: holding utility poles, supporting underground facilities, temporary sheeting, bracing, poles, cables, sand fill or other means to complete the work. The Contractor is responsible for furnishing all labor, equipment and materials required to protect existing facilities during construction. Costs associated with protecting existing utilities will not be paid for separately.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**GENERAL CONDITIONS**

AA:CC

1 of 2

10/31/19

**a. Description.** This item shall include all work described and required by the Plans and Specifications at each location for which no item of work is listed in the Bid Form, including but not limited to:

- Scheduling, coordination, and organization of all work, subcontractors, suppliers, testing, inspection, surveying, and staking.
- Coordination of, and cooperation with, other contractors, agencies, departments, and utilities.
- Protection and maintenance of utilities.
- Maintaining drainage.
- Maintaining driveways drive openings, sidewalks, bike paths, mail deliveries, and solid waste/recycle pick-ups. This includes the placement and maintenance of gravel in driveway openings as directed by the Engineer.
- Storing all materials and equipment off lawn areas.
- Temporary relocation and final replacement/re-setting of mailboxes.
- Coordination efforts to furnish various HMA mixtures as directed by the Engineer
- Coordination efforts to furnish and operate various-size vehicles/equipment as directed by the Engineer
- Furnishing and operating vacuum-type street cleaning equipment a minimum of once per week or more frequently as directed by the Engineer
- Furnishing and operating vacuum-type utility structure cleaning equipment
- Furnishing and operating both vibratory plate and pneumatic-type (“pogo-stick”) compactors
- Furnishing and operating a backhoe during all work activities
- Furnishing and operating a jackhammer and air compressor during all work activities
- Noise and dust control
- Mobilization(s) and demobilization(s).
- Furnishing submittals and certifications for materials and supplies
- All miscellaneous and incidental items such as overhead, insurance, and permits.
- Meeting all requirements relating to Debarment Certification, Davis Bacon Act, and Disadvantaged Business Enterprise, and providing the necessary documentation.

Data pertaining to existing soil borings and pavement sections, which are included in the Appendix of these Contract Documents, are provided to help the Engineer and Contractor determine the soil conditions existing within the construction area. The City in no way

guarantees existing conditions to be the same as shown in the data. The Contractor is solely responsible for any and all conclusions he/she may draw from the data.

Quantities as given are approximate and are estimated for bidding purposes. Quantities are not guaranteed and may vary by any amount. While it is the City's intent to complete the project substantially as drawn and specified herein, quantities may be changed or reduced to zero for cost savings or other reasons. **The City reserves the right to change the quantities, and no adjustment in unit price will be made for any change in any quantity.**

**b. Materials.** None Specified.

**c. Construction.** Not specified.

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

<u>Pay Item</u>	<u>Pay Unit</u>
General Conditions, Max \$10,000 .....	Lump Sum

This item of work will be paid for on a pro rata basis at the time of each progress payment. Measurement will be based on the ratio between work completed during the payment period and the total contract amount. When all of the work of this Contract has been completed, the measurement of this item shall be 1.0 Lump Sum, minus any deductions incurred for inadequate performance as described herein. This amount will not be increased for any reason, including extensions of time, extras, and/or additional work.

The unit price for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**PROJECT SUPERVISION**

AA:CC

1 of 4

10/31/19

**a. Description.** The Contractor shall provide supervision in accordance with the City of Ann Arbor Standard Specifications, subsections 104.07 and 107.15 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, and as described herein.

The Contractor shall designate a full-time Project Supervisor to act as the Contractor's agent/representative, and to be responsible for scheduling and coordination of all subcontractors, suppliers, other governmental agencies, and all public and private utility companies.

The Project Supervisor shall not be an active crew member of the Contractor, shall not be an active member or employee of any subcontractor's work force, and shall not perform general or specialized labor tasks. The Project Supervisor shall be a full-time employee of the General Contractor and shall have all needed authority to make binding decisions on behalf of the Contractor in all matters pertaining to performance and execution of the work of the project.

The Project Supervisor shall work exclusively on this project and shall put forth his/her full effort into the organization and coordination of the work of this project.

One week prior to the pre-construction meeting, the Contractor shall designate a proposed Project Supervisor by name, and shall furnish the Engineer with a current, thorough, detailed summary of the proposed Project Supervisor's work history, outlining all previous supervisory experience on projects of a similar size and nature. The detailed work history shall include personal and professional references (names and phone numbers) of persons (previous owners or agents) who can attest to the qualifications and work history of the proposed Project Supervisor. Proposed candidates for Project Supervisor shall have a demonstrated ability to work harmoniously with the Engineer, the City, the public, subcontractors, and all other parties typically involved with work of this nature. The Engineer will have the authority to reject a proposed Project Supervisor whom he/she considers unqualified.

The Project Supervisor shall be available 24 hours-per-day to provide proper supervision, coordination and scheduling of the project for the duration of the Contract. The Contractor shall furnish the City with telephone numbers of the Project Supervisor in order to provide 24 hour-per-day access during business and non-business hours, including weekends and holidays.

The Project Supervisor shall be equipped by the Contractor with a "smart" mobile telephone with "data" and "text" capabilities to provide the City with 24 hour-per-day access to him/her during daily construction activities, during transit to and from the construction site, and during all non-business hours including weekends and holidays.

The Project Supervisor shall be equipped with assistants as necessary to provide project supervision as specified herein, and in accordance with the Contract.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**PROJECT SUPERVISION**

AA:CC

2 of 4

10/31/19

1. Duties and Responsibilities. The Project Supervisor shall work harmoniously with the Engineer, the City, the public, subcontractors, and all other parties typically involved with work of this nature.

The Project Supervisor shall have a thorough, detailed understanding and working knowledge of all construction practices and methods specified elsewhere herein, as well as the handling, placement, testing and inspection of aggregates, aggregate products, bituminous concrete, Portland cement concrete materials, and other such materials and products related to the work of this project.

The Project Supervisor shall be responsible for all the work of all of the Contractor's, subcontractors' and suppliers' work forces.

The Project Supervisor shall be responsible for proper and adequate maintenance (emissions, safety, and general operation) of all of the Contractor's, subcontractors' and suppliers' equipment and vehicles. The Project Supervisor shall make all needed diligent and good-faith efforts to ensure that all equipment utilized in the performance of the work is properly maintained, safe, and complies with all legal and environmental requirements of the work as set forth in section 107.15 of the MDOT 2012 Standard Specifications for Construction.

The Project Supervisor shall be responsible for the legal, proper and safe parking/storage of all the Contractor's, subcontractors' and suppliers' equipment, work vehicles, and employee's vehicles.

The Project Supervisor shall schedule and coordinate the work of all parties involved in the project, including utility companies, testing agencies, governmental agencies, all City departments (such as Utilities and Transportation), and City inspectors.

The Project Supervisor shall coordinate and schedule the work of any independent survey crews that may be retained by the Engineer or City to witness and reset existing and new geographic/benchmark monuments. Failure to have existing monuments witnessed and reset may result in delays to the Contractor's work. Costs for such delays will be the Contractor's sole responsibility. The Project Supervisor shall also schedule and complete all needed survey request forms that are needed in order to schedule the services of survey personnel to properly layout all elements of the project work in accordance with the City of Ann Arbor Public Services Area Standard Specifications and the MDOT 2012 Standard Specifications for Construction.

The Project Supervisor shall coordinate, and schedule inspection performed by the City and Consultants (including material testing firms) in a timely manner, to assure proper and timely testing and inspection of the work.

The Project Supervisor shall submit to the Engineer, an updated, detailed schedule of the proposed work on a weekly basis, and an update of all proposed changes daily.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**PROJECT SUPERVISION**

AA:CC

3 of 4

10/31/19

The Project Supervisor and all subcontractors shall attend a weekly progress meeting chaired by the Engineer to discuss the work. Upon the completion of each meeting, the Engineer shall prepare and distribute, to all present, a written summary of the meeting's minutes. Those in attendance shall review the minutes and, if necessary, comment on any deficiencies or errors prior to or at the next scheduled progress meeting.

2. Additional Performance Requirements. If, in the sole opinion of the Engineer, the Project Supervisor is not adequately performing the duties as outlined in this Special Provision, the following system of notices will be given to the contractor with the associated penalties:

First Notice – A warning will be issued in writing to the Contractor detailing the deficiencies in the Project Supervision. The Contractor must respond within 7 calendar days in writing with a plan to correct the stated deficiencies. Failure to respond within 7 calendar days will result in the issuing of a second notice.

Second Notice – A second warning will be issued in writing to the contractor further detailing the deficiencies in the Project Supervision. A deduction of 10%, or \$10,000, whichever is greater, will be made from the original Project Supervision contract amount. The Contractor must respond within 7 calendar days in writing with a plan to correct the stated deficiencies. Failure to respond within 7 calendar days will result in the issuing of a third notice. Currently, the Engineer reserves the right to meet with personnel with the necessary authority within the Contractor's organization to discuss the deficiencies in the Project Supervision.

Third Notice – A third notice will be issued in writing to the Contractor further detailing the deficiencies in the Project Supervision. An additional deduction of 25%, or \$25,000, whichever is greater, will be made from the original Project Supervision contract amount, and the Project Supervisor shall be removed from the project, and replaced immediately with another individual to be approved by the Engineer.

Should, in the sole opinion of the Engineer, the Project Supervisor fail to perform his/her duties and responsibilities as described herein to such a degree that the successful completion of the project is put in jeopardy, the above system of notices may be foregone, and the Contractor shall immediately replace the Project Supervisor upon receipt of written notice. Failure to provide adequate project supervision, as determined by the Engineer, shall be considered basis for the Engineer to suspend work without extension of contract time or additional compensation.

If the original Project Supervision contract amount is insufficient to cover said deductions, the Project Supervision contract amount will be reduced to zero and a contract modification will be written to assess a penalty to cover the difference between the Project Supervision contract amount and the total amount of the deduction(s). It is fully expected however that the Project Supervision contract amount will be enough to cover any deductions.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**PROJECT SUPERVISION**

AA:CC

4 of 4

10/31/19

**b. Materials.** None Specified.

**c. Construction.** Not specified.

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

<u>Pay Item</u>	<u>Pay Unit</u>
Project Supervision, Max \$10,000 .....	Lump Sum

The unit price for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications, and as modified by this Detailed Specification.

Payment for this work will be made with each progress payment, on a pro rata basis, based on the percentage of construction completed. When all the work of this Contract has been completed, the measurement of this item shall be 1.0 times the Lump Sum bid amount, minus any deductions incurred for inadequate performance as described herein. This amount will not be increased for any reason, including extensions of time, extras, adjustments and/or additional work.



CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**CERTIFIED PAYROLL COMPLIANCE AND REPORTING**

AA:CC

1 of 2

10/31/19

**a. Description.** This specification covers all administrative requirements, payroll reporting procedures to be followed by Contractors performing work on City-sponsored public improvements projects, and all other miscellaneous and incidental costs associated with complying with the applicable sections of the City of Ann Arbor Code of Ordinances with regard to payment of prevailing wages and its Prevailing Wage Compliance policy.

This specification is **not** intended to include the actual labor costs associated with the payment of prevailing wages as required. Those costs should be properly incorporated in all other items of work bid.

**b. General.** The Contractor is expected to comply with all applicable sections of Federal and State prevailing wage laws, duly promulgated regulations, the City of Ann Arbor Code of Ordinances, and its Prevailing Wage Compliance Policy as defined within the contract documents. The Contractor shall provide the required certified payrolls, city-required declarations, and reports requested elsewhere in the contract documents within the timeline(s) stipulated therein.

The Contractor shall also provide corrected copies of any submitted documents that are found to contain errors, omissions, inconsistencies, or other defects that render the report invalid. The corrected copies shall be provided when requested by the Supervising Professional.

The Contractor shall also attend any required meetings as needed to fully discuss and ensure compliance with the contract requirements regarding prevailing wage compliance. The Contractor shall require all employees engaged in on-site work to participate in, provide the requested information to the extent practicable, and cooperate in the interview process. The City of Ann Arbor will provide the needed language interpreters in order to perform wage rate interviews or other field investigations as needed.

Certified Payrolls may be submitted on City-provided forms or forms used by the Contractor, as long as the Contractor's forms contain all required payroll information. If the Contractor elects to provide their own forms, the forms shall be approved by the Supervising Professional prior to the beginning of on-site work.

**c. Unbalanced Bidding.** The City of Ann Arbor will examine the submitted cost for this item of work prior to contract award. If the City determines, in its sole discretion, that the costs bid by the Contractor for complying with the contract requirements are not reasonable, accurately reported, or may contain discrepancies, the City reserves the right to request additional documentation that fully supports and justifies the price as bid. Should the submitted information not be determined to be reasonable or justify the costs, the City reserves the right to pursue award of the contract to the second low bidder without penalty or prejudice to any other remedies that it may have or may elect to exercise with respect to the original low-bidder.

The Contract Completion date will not be extended as a result of the City's investigation of the as-bid amount for this item of work, even if the anticipated contract award date must be adjusted.

The only exception will be if the Contractor adequately demonstrates that their costs were appropriate and justifiable. If so, the City will adjust the contract completion date by the number of calendar days commensurate with the length of the investigation, if the published Notice to Proceed date of the work cannot be met. The contract unit prices for all other items of work will not be adjusted regardless of an adjustment of the contract completion date being made.

**d. Measurement and Payment.** The completed work as measured for this item of work will be paid for at the Contract Unit Price for the following Contract (Pay) Item:

<u><b>Contract Item (Pay Item)</b></u>	<u><b>Pay Unit</b></u>
Certified Payroll Compliance and Reporting .....	Lump Sum

The unit price for this item of work shall include all supervisory, accounting, administrative, and equipment costs needed to monitor and perform all work related to maintaining compliance with the tasks specified in this Detailed Specification, the City of Ann Arbor Code of Ordinances, its Prevailing Wage Compliance policy and the applicable Federal and State laws.

Payment for this work will be made with each progress payment, on a pro-rata basis, based on the percentage of construction completed. When all of the work of this contract has been completed, the measurement of this item shall be 1.0 times the Lump Sum bid amount. This amount will not be increased for any reason, including extensions of time, extra work, and/or adjustments to existing items of work.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**MATERIAL AND SUPPLIES CERTIFICATIONS**

AA:CC

1 of 1

10/31/19

**a. Description.** This work includes furnishing certifications to the Engineer for review and approval a minimum of three business days prior to any scheduled delivery, installation, and/or construction of same. The following materials and supplies shall be certified by the manufacturer or supplier as having been tested for compliance with the Specifications:

- HMA materials
- Hot-poured Joint Sealants
- Cements, coatings, admixtures and curing materials
- Sands and Aggregates
- Steel and Fabricated metal
- Portland Cement Concrete Mixtures
- Reinforcing Steel for Concrete
- Reinforcing Fibers for Concrete
- Pre-cast Concrete products
- High Density Polyethylene Pipe
- Modular Concrete Block for retaining walls
- Edge Drain and Underdrain Pipe
- Geotextile Filter Fabric and Stabilization Fabric/Grids
- Platipus Earth Anchors

**b. Materials.** None specified.

**c. Construction.** Not specified.

**d. Measurement and Payment.** Costs for this work will not be paid for separately, but shall be included in the Contract pay Item "General Conditions, Max \$\_\_\_".

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**PROJECT SCHEDULE**

AA:CC

1 of 2

10/31/19

Complete the entirety of work under this Contract in accordance with, and subject to, the scheduling requirements as outlined below, and all other requirements of the Contract Documents.

By no later than **Pre-Construction Meeting** the Contractor shall submit a detailed schedule of work for the Engineer's review and approval. The proposed schedule must fully comply with the scheduling requirements contained in this Detailed Specification. The Contractor shall update the approved work schedule each week and present it to the Engineer at the weekly progress meeting.

The Contractor will receive two (2) copies of the Contract, for his/her execution, on or before **February 25, 2020**. The Contractor shall properly execute both copies of the Contract and return them, with the required Bonds and Insurance Certificate, to the City **no later than March 3, 2020**.

The Contractor may begin construction on only after receiving the copy of executed contract documents and the Notice to Proceed from the City. Appropriate time extensions shall be granted if the Notice to Proceed is delayed due to the circumstances controlled by the City.

All contract work must be complete and open to traffic by **June 30, 2020** or within **Sixty (60)** calendar days from the date specified in the Notice to Proceed.

Failure to complete all work as specified herein within the times specified herein, including time extensions granted thereto as determined by the Engineer, shall entitle the City to deduct from the payments due the Contractor, **\$500** in "Liquidated Damages", and not as a penalty, for each and every calendar day beyond the allowed number of calendar days to complete the above specified work.

The Contractor may propose to adjust the limits or sequencing of construction in order to complete the work more efficiently. Changes to the recommended construction sequence must be approved in writing by the Engineer prior to construction and must assure all required coordination with other projects and time lines.

The Engineer may delay or stop the work due to threatening weather conditions. No compensation shall be due the Contractor for unused materials or downtime due to rain, or the threat of rain. The Contractor is solely responsible for repairing all damages to the work and to the site, including road infrastructures, road subgrades, and any adjacent properties resulting from its decision to work in the rain.

The Contractor shall not work in the dark except as approved by the Engineer and shall provide lighting for night work as detailed elsewhere in this contract. The Engineer may stop the work, or may require the Contractor to defer certain work to another day, if, in the Engineer's opinion, the Contractor cannot be complete the work within the remaining daylight hours, or if inadequate daylight is present to properly perform or inspect the work. No compensation shall be due to the Contractor for unused materials or downtime, when the Engineer directs work stoppage for reasons due to darkness and/or inadequate remaining daylight. The Contractor is solely responsible for repairing all damages to the work and to the site, including road infrastructures, road subgrades, and any adjacent properties, which result from working in the dark.

Assessment of Liquidated Damages will occur until the required work is complete in the current construction season. If, with the Engineer's approval, work extends beyond seasonal limitations, the assessment of Liquidated Damages will discontinue until the work resumes in the following construction season.

If the construction contract is not complete within the specified period(s) including any extensions of time granted thereto, at the sole discretion of the City of Ann Arbor, this Contract may be terminated. Should this occur no additional compensation will be due to the Contractor, and the Contractor may be forbidden to bid on future City of Ann Arbor projects for a period of at least three (3) years. If the Engineer elects to terminate the Contract, payment for contract items with a Lump Sum unit price will be up to a maximum amount equal to the percentage of the contract work that is complete at the time of termination.

Time is of the essence in the performance of the work of this contract. The Contractor is expected to mobilize sufficient personnel and equipment and work throughout all authorized hours to complete the project by the intermediate (location specific) and final completion dates. Should the Contractor demonstrate that they must work on some Sundays in order to maintain the project schedule, they may do so between the hours of 9:00 a.m. and 5:00 p.m. with prior approval from the City. There will be no additional compensation due to the Contractor for work performed on Sundays.

Costs for the Contractor to organize, coordinate, and schedule all of the project work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions, Max \$\_\_\_\_"

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**STONE WALL, REM AND SALV**

AA:CC

1 of 1

10-31-19

**a. Description.** This work consists of removing entire sections of stone wall as shown on the plans. This work also includes cleaning, salvaging and palletizing at least 80 percent of the removed stone for reinstallation.

**b. Materials.** None specified.

**c. Construction.** If the removal will extend below grade, if there is an existing footing, excavate to expose the top of the footing on both sides of the wall, up to a maximum of 1 foot below the top of the footing. Remove stone to limits of removal shown on the plans. Carefully remove stones, brush loose material and debris from the exposed stone edges. Clean mortar, sealant material, flashing, backer rod, saw cut slurry residue, etc. from remaining wall area.

Salvage for re-use only Stones that are free of adhered mortar or other material, cracks, chips, or broken edges. Do not attempt to salvage stones which any mortar or other material is firmly adhered to due to the potential for damage. Clean salvaged stone of all loose mortar or other material that can be removed by means of a wire brush and hammer. Do not attempt to remove mortar or other material that can not be removed by means of a wire brush and hammer. Neatly stack cleaned, salvaged stone on wooden pallets at the job site, organized by size, color and texture for ease of re-use. Secure stones on pallets as necessary to allow for movement around the jobsite.

Dispose of Stones not suitable for salvage and construction debris in accordance with subsection 205.03.P of the Standard Specifications for Construction.

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

<b>Pay Item</b>	<b>Pay Unit</b>
Stone Wall, Rem and Salv.....	Square Foot

1. The Engineer will measure the area of **Stone Wall, Rem and Salv** on one side of the wall or each side of exposed Stone wall on the pier without overlapping the wall removal. **Stone Wall, Rem and Salv** includes all labor and equipment required to complete the work as described including saw cutting required to remove Stone panels, removal of slurry residue from the face of wall, and disposal of Stones not suitable for salvage and construction debris.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**REMOVING CONCRETE ITEMS**

AA:CC

1 of 2

10/31/19

**a. Description.** This work shall consist of removing concrete curb, gutter, curb and gutter, integral curb, sidewalk, sidewalk ramps, drive openings, and drive approach pavements as shown on the plans, in accordance with section 204 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, except as specified herein, and as directed by the Engineer.

**b. Materials.** Materials shall be in accordance with those specified in section 204 of the MDOT Standard Specifications for Construction.

**c. Construction.** Construction methods shall be as described in section 204 of the MDOT 2012 Standard Specifications for Construction, as described below, and as directed by the Engineer.

Curb, gutter, curb and gutter, sidewalk, sidewalk ramps, drive openings, and drives shall be replaced within 24 hours of their removal.

Prior to the start of work, the Engineer and Contractor together shall identify, and field measure all items to be removed. The Engineer shall approve of all removal limits prior to any removals being performed by the Contractor.

The Contractor shall perform full-depth saw cutting at removal limits, including those necessary to construct 2-foot wide MDOT Type M drive openings, and including those necessary to provide for the partial removal of existing drive approaches as shown on the Plans, as directed by the Engineer, and as marked for removal. The Contractor shall cut steel reinforcement bars as directed by the Engineer at all areas of removal. All saw cutting shall be performed under wet conditions to prevent excessive airborne dust. All resulting slurry and debris shall be cleaned up to the satisfaction of the Engineer.

The Contractor shall excavate, cut, remove stumps, remove brush, grade, and trim as needed and as directed, and shall import, furnish, fill, place, grade, and compact granular material as needed to complete the following: construct new concrete items; to repair or replace existing concrete items; to relocate existing concrete items to their new specified/directed elevations/locations, including all necessary grading at elevation changes of curb and gutter, sidewalks and ramps; and at locations where existing concrete items are to be removed and turf is to be established in its place.

**The Contractor shall coordinate with the City Forester prior to the removal of any tree roots.**

At various times throughout the work, the Engineer may direct the Contractor to use smaller and/or lighter equipment, and to defer certain work tasks, in order to protect the grade and/or adjacent areas. The Contractor shall not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

The Contractor shall shape, grade, and compact the existing roadbed materials to the cross-section(s) as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer.

The Contractor shall use blade graders, maintainers, vibratory rollers, and/or other equipment as necessary, and as directed by the Engineer. The use of each specific piece of equipment is subject to the approval of the Engineer.

Where existing concrete curb or curb and gutter is to be replaced on a street with a concrete (or brick) base, the Engineer may direct the Contractor to remove a 1-to-2-foot wide, full-depth section of pavement and pavement base from immediately in front of the curb and gutter. As part of this pavement/base removal, the Contractor shall perform additional (double) full-depth saw-cutting along the entire removal limits and shall take enough care so as not to damage and/or disturb any adjacent pavement, pavement base, and/or any other site feature, all as directed by the Engineer. The removals shall be to a sufficient width and depth to allow for the placement and removal of the curb and gutter formwork. After the removal of the formwork, the Contractor shall replace the concrete base to its original thickness and elevation(s).

Excavated/removal areas shall always be adequately protected with barricades and/or fencing.

Removed or excavated materials which are not incorporated into the work shall become the property of the Contractor and shall be immediately removed and properly disposed of off-site. Removed or excavated materials may not be stockpiled overnight on, or adjacent to, the site.

Base, subbase, or subgrade materials removed without authorization by the Engineer shall be replaced and compacted by the Contractor at the Contractor's expense, with materials specified by the Engineer.

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

<u>Pay Item</u>	<u>Pay Unit</u>
Curb, Gutter, and Curb and Gutter, Any Type, Rem .....	Foot

Basis of payment shall be as described in subsection 205.04 of the Standard Specifications for Construction.

All sawcutting required for removals shall be included in the appropriate item of work and will not be paid for separately. Payment for saw cutting to create or modify Type M openings and to allow for the partial removal of existing drives shall be included in the price of the item of work, "Sidewalk, Sidewalk Ramp, and Driveway Approach, Any Thickness, Rem".



CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**SUBGRADE UNDERCUTTING**

AA:CC

1 of 1

10/31/19

**a. Description.** This work shall include the removal of unsuitable subgrade material(s) which may be susceptible to frost heaving or differential frost action in the areas and limits identified by the Engineer and backfilling to replace these material(s) and remedy unstable soil conditions. This work shall be done in accordance with section 205 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, as directed by the Engineer, and as modified herein.

**b. Materials.** Provide materials in accordance with Granular Material Class II and 21AA dense-graded aggregate as specified in section 902 of the MDOT 2012 Standard Specifications for Construction.

**c. Construction.** Construction methods shall be as described in subsection 205.03.E of the Standard Specifications for Construction, and as directed by the Engineer.

After the pavement has been removed, and/or after rough/finish grading, and/or at the time of proof rolling, the Engineer may inspect the grade to determine the need for, and the limits of, undercuts. After undercut areas are excavated to the depths as directed by the Engineer, the areas shall be trimmed, shaped, evenly graded and re-compacted to not less than 95% of the soils maximum unit weight as determined by the AASHTO T-180 test. The Contractor shall properly dispose of all excess materials.

Backfill areas of Subgrade Undercutting, Type IIA with 21AA dense-graded aggregate, and areas of Subgrade Undercutting, Type IIB with Granular Material Class II, as directed by the Engineer.

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

<u>Pay Item</u>	<u>Pay Unit</u>
Subgrade Undercutting, Type II .....	Cyd

Basis of payment shall be as described in subsection 205.04 of the Standard Specifications for Construction.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**SOIL EROSION AND SEDIMENTATION CONTROL**

AA:CC

1 of 2

10/31/19

General Notes

All soil erosion and sedimentation control (SESC) measures shall be in accordance with the Michigan Department of Transportation 2012 Standard Specifications for Highway Construction. The Contractor shall follow local rules and regulations for soil erosion and sedimentation control for all materials that are disposed of off the project site.

1. The Contractor shall conduct his operations in such a manner as to minimize the areas left barren during construction and to disturb only those areas absolutely required for the construction of the project.
2. Erosion control items shall be installed and maintained according to the detail shown on the plans and shall be removed when no longer effective as determined by the engineer. No separate payment shall be allowed for either maintenance or removal of the erosion control items.
3. The Contractor shall remove sediment collected in culverts and sumps of all drainage structures constructed with the project when such sediment exceeds  $\frac{1}{2}$  of the sump depth or culvert diameter. The Engineer will inspect culverts, sumps, and all SESC measures after storms and direct the Contractor to clean out culverts, sumps, and maintain all SESC measures. Cleaning culverts and sumps for sedimentation control shall not be paid for separately.
4. The Engineer and Contractor shall check all SESC measures for maintenance needs within 24 hours of precipitation.
5. The Contractor shall cover and stabilize stockpiles at all times. This will not be paid for separately. The Contractor shall also provide silt fence around the perimeter of stockpiles to contain sedimentation. This silt fence shall not be paid for separately.

Restoration

1. Slopes in established lawns shall be finished as Class A slopes.
2. Water required for seeding shall be included in Hydroseeding and shall be paid for at the contract unit price. Water required for compaction shall be included in the cost of earthwork items.
3. All areas disturbed by the Contractor and/or his subcontractor beyond the normal construction limits of this project shall be sodded or seeded as specified or directed by the Engineer. No additional payment or compensation will be allowed for this activity.
4. The Contractor shall place fertilizer, seed, topsoil and mulch blankets as directed by the engineer or as needed as temporary soil erosion control measures.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**SOIL EROSION AND SEDIMENTATION CONTROL**

AA:CC

2 of 2

10/31/19

Sequence of Construction for Soil Erosion Control

1. Prior to starting any pavement removal, utility installation or earthwork, all SESC items must be in place as shown on the plans. Actual construction may vary to reflect materials used and to control site problems, subject to the approval of the Engineer.
2. Install Platipus earth anchors.
3. Construct retaining walls, install underdrain and connect underdrain to storm sewer, where available.
4. Grade the remainder of the project and place aggregate base.
5. Complete any remaining fine grading.
6. Place mulch blankets over all disturbed soil.
7. Collected silt and sediment shall be removed periodically and within 24 hours after rain events, to maintain the effectiveness of control measures.
8. Clear all accumulated sediment from sewers, catch basins and pavement areas with frequency, included in SESC pay items, as directed by the Engineer.
9. Restore all disturbed areas with 4" topsoil and hydroseed or plantings, as called for in the plans within five (5) days of final grading.
10. Place mulch blankets over all disturbed soil, as called for in the plans
11. Remove temporary erosion and sedimentation control items after permanent vegetation is established.
12. Contractor to maintain and repair, as directed by the Engineer, permanent vegetation items until fully established.
13. Project clean-up shall be performed as directed by the Engineer, in accordance with the project timeline.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
SUBGRADE UNDERDRAIN

AA:CC

1 of 2

10/31/19

**a. Description.** The work shall include installing 6-inch geotextile-wrapped perforated or slotted underdrain in accordance with attached detail, as shown on the plans, as described herein, and as directed by the Engineer.

**b. Material.** The materials shall meet the requirements specified in section 404 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, and as specified herein:

Fine Aggregate, 2NS .....	902
Underdrain Pipe, Perforated or Slotted .....	909.07.B

Geotextile (Filter Fabric) - The geotextile fabric for encasing the pipe shall be an approved material such as nylon, polypropylene, fiberglass, or polyester and shall be either woven, heat bonded, knitted or of continuous fibers. The geotextile shall completely cover and be secured to the pipe. In an unstretched condition, knitted polyester fabrics shall weigh at least 3.0 ounces per square yard and all other geotextiles shall weigh at least 3.5 ounces per square yard. The fabric shall be strong and tough and have porosity such that the fabric will retain soil particles larger than 0.106 mm (No. 140 sieve) and shall pass aggregate particles finer than 0.025 mm. Geotextiles shall be stored and handled carefully and in accordance with the manufacturer's recommendations and shall not be exposed to heat or direct sunlight to such extent as to significantly affect its strength or toughness. Torn or punctured geotextiles shall not be used.

**c. Construction Methods.** Geotextile-wrapped underdrain for subgrade drainage shall be installed as shown on the plans and as specified in section 404 of the 2012 MDOT Standard Specifications for Construction, with the following exceptions and additions:

1. The trench shall be constructed to have a minimum width of 18 inches and the underdrain shall be installed at the line grade and depth as indicated on the plans. The contractor shall maintain line and grade by means of a laser. The Engineer will not set line, grade or provide staking.
2. The trench shall then be backfilled with 2NS Fine Aggregate compacted to 95% of its maximum unit weight. The first lift of backfill material shall be placed at a maximum thickness of 6 inches. The second and subsequent lifts, or portions thereof, shall be placed at a maximum thickness of 12 inches up to an elevation level with the bottom of the existing aggregate base course, or as directed by the Engineer.
3. Upgrade ends of the pipe shall be closed with suitable plugs to prevent entrance of any material. All couplings, tees and other fitting shall be manufactured and installed so as to prevent infiltration of any material. If during the course of construction, existing edge drains are encountered; their ends shall be plugged to the satisfaction of the Engineer such that material can not enter the pipe(s).

4. Downgrade ends of the pipe shall generally be tapped into existing or new drainage structures. However, it may be necessary to tap underdrain into either existing or new storm sewer, or into existing or new inlet leads as directed by the Engineer.

5. The trench bottom and edge drain shall be constructed to the percent of grade indicated on the plans or as determined by the Engineer, with the minimum percent of grade being 0.5%. In addition, the underdrain shall be constructed to have a minimum cover, from top of pipe to finished pavement grade, of 36 inches.

6. During the construction of underdrain runs, it may be necessary to terminate construction due to conflicts with buried obstructions or at such time when the minimum cover is reached. The Engineer will review conflicts on a case by case basis and make a decision on whether to continue installing pipe or terminate runs prematurely. The Contract unit price will not be adjusted, or additional payments made, for changes in the contract quantity due to Engineer ordered field changes associated when buried obstructions are encountered.

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

<u>Pay Item</u>	<u>Pay Unit</u>
Underdrain, Subgrade, 4-inch.....	Foot

**Underdrain, Subgrade, 4-inch** will be measured in length by feet and will be paid for at the contract unit price, which price shall be payment in full for all labor, equipment and material needed to accomplish this work.

The unit price shall include the cost of the 6-inch perforated or slotted pipe, geotextile wrap, pipe fittings and/or plugs, 2NS granular bedding material, compaction and trench backfill, taps to new and existing drainage structures and storm sewers or inlet leads, all excavation, final trimming required to meet the dimensions of the typical and specific cross-sections, and the disposal of all surplus excavated materials.

CITY OF ANN ARBOR  
SPECIAL PROVISION  
FOR  
**CONCRETE PLACEMENT AND PROTECTION**

AA:CC

1 of 2

10/31/19

**a. Description.** This work shall consist of furnishing all labor, material, and equipment needed to furnish, place, and protect all concrete material in accordance with the requirements of this special provision. These requirements shall not apply to concrete bridge decks, unless otherwise noted.

**b. Materials.** The concrete shall meet the requirements of sections 601 and 701 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction.

The Contractor shall propose specific concrete mix designs for the intended project purpose in accordance with the requirements of this special provision and other applicable special provisions and/or project requirements. The Engineer's acceptance of a mix design shall not relieve the Contractor of their responsibility for the manufacture of the concrete mixture(s), its placement, or performance.

**c. Construction.** The Contractor shall perform all concrete placement operations in weather that is suitable for the successful placement and curing of the concrete materials. Concrete shall not be placed during periods of active precipitation.

The Contractor shall complete all needed formwork, base and/or sub-base preparation, and any other related items that are deemed necessary for the proper completion of the work. The Contractor shall not commence the placement of concrete until they receive all needed approvals from the Engineer for placement. The Engineer's approval of the Contractor to place concrete shall not relieve the Contractor of their responsibility for the proper placement and protection of the concrete materials or its long-term performance.

During periods when precipitation is threatening, provide durable, plastic sheeting, approved by the Engineer, in sufficient quantity to cover and protect all freshly placed concrete such that precipitation does not come into contact with the concrete. The Contractor shall arrange the placement of the plastic sheeting such that the surface of any freshly placed concrete is not marred by contact with the plastic; any seams in the plastic sheeting shall be water tight. The Contractor shall place adequate supports along and over the freshly placed concrete to prevent contact of the plastic and concrete. The Contractor shall ensure that sufficient dams or barriers are placed along the edges of the freshly placed concrete to prevent erosion of the underlying materials or damage to the edges of the freshly placed concrete. All measures shall be effective.

Any concrete damaged by precipitation shall be removed and replaced at the Contractor's expense. The Engineer shall decide if the concrete has been damaged and the limits of removal and replacement.

Concrete shall only be placed when the rate of surface evaporation at the site is less than 0.20 pounds per square foot per hour, according to figure 706-1 of the MDOT 2012 Standard Specifications for Construction. The Contractor shall provide approved equipment for determining the relative humidity and wind velocity at the site.

Water shall not be added to the placed concrete in order to aid finishing. Any water added to the concrete for slump adjustments shall be done by adding water to the mixing unit and thoroughly re-mixing the concrete for 30 revolutions of the mixing unit at mixing speed. Water shall not be added such that the design water-to-cement ratio of the concrete mixture or the design slump of the concrete mix is exceeded.

Concrete curing shall be performed in accordance with subsection 602.03.M of the MDOT 2012 Standard Specifications for Construction. Curing operations shall take precedence over texturing operations and continued concrete placement. All curing compound applied shall provide uniform coverage over the entire surface being protected. The placement of curing compound shall be free of spots, blotches, or uncovered or non-uniformly covered areas. Should any areas be determined to exist by the Engineer, the curing compound shall be immediately re-applied by the Contractor at no additional cost to the project.

The Contractor shall take all precautions when placing concrete to protect it from damage due to the elements. Concrete shall not be placed during precipitation events.

Concrete shall be protected from weather and temperature according to the requirements of subsection 602.03.T MDOT 2012 Standard Specifications for Construction. Concrete shall not be placed when the temperature of the plastic concrete mixture itself is greater than 90° F. In conditions where low temperature protection is required, the Contractor shall cover the concrete with insulated blankets, or other means as approved by the Engineer, to protect the concrete from damage. The concrete shall remain protected until it has reached a compressive strength of at least 1000 psi, or as directed by the Engineer.

**d. Measurement and Payment.** All costs associated with the conformance to the requirements of this Special Provision will not be paid for separately but shall be considered to be included in the respective items of work.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**RETAINING WALL, SIERRASCAPE PLANTABLE WALL SYSTEM**

AA:CC

1 of 5

10/31/19

**a. Description.** This work shall consist of installing a complete Sierrascape Plantable Face Wall System, or Engineer approved equal, in accordance with all the manufacturer's specifications and recommendations, and the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction; excavation for leveling pad, providing, placing, and compacting 21AA Aggregate leveling pad; providing, placing, and compacting 6A Aggregate and Class II granular backfill material; furnishing soil reinforcing geogrid, if required by the manufacturer; and constructing the wall true to the lines and grades as shown on the Plans, or as directed by the Engineer.

**b. Materials.** Use structure backfill meeting the requirements for granular material Class II in accordance with Table 902-3 of the Standard Specifications for Construction.

Furnish woven polyester or polypropylene geotextile reinforcement in accordance with the Manufacturers requirements and in accordance with section 910 of the MDOT 2012 Standard Specifications for Construction. Provide Test Data Certification prior to starting the work, documenting the specified properties as Minimum Average Roll Values.

**c. Submittals.** The Contractor shall submit for review and approval by the Engineer, a complete set of shop plans in accordance with Section 104.02 of the 2012 MDOT Standard Specifications for Construction and this Detailed Specification. The shop plans shall include all elevations and dimensions necessary for construction; detail the length, locations, type of connections to the wall system for the geogrid reinforcing to be placed, if required; detail quantities of materials to be provided (retaining wall items only) and detail the sequence and method of installation and construction.

The Contractor should expect that the City will require 21 calendar days for each plan review cycle needed to develop approved plans, and that revisions may be required after each review.

No extension of time or additional compensation will be granted to the Contractor due to delays in preparing the final plans and specifications or securing acceptance from the City.

The shop plans shall also provide for detailed calculations of the proposed retaining wall system. The calculations shall include, but not be limited to the following:

1. External stability of the soil reinforced mass as calculated by the Rankine or Coulomb earth pressure theories. Only the weight of the mass vertically over the plane of sliding shall be included in the resisting forces for sliding and overturning.
2. Internal stability of the soil reinforced mass including:
  - i. Tension loads in geosynthetic layers.



- ii. Pullout capacity of resisting geosynthetic layers from the zone outside of the failure wedge.
  - iii. Connection load and capacity of each geosynthetic/unit connection.
  - iv. Shear resistance at each geosynthetic/unit interface.
  - v. Bending calculation of the face units between each layer of geosynthetic reinforcing.
  - vi. Over-turning stability calculations for the units above the top layer of soil reinforcing.
  - vii. Local stability of the face during construction
3. Design methodology shall be in accordance with FHWA publication Demo82 or the NCMA Design manual, 2<sup>nd</sup> edition with the following additions:
- i. Maximum spacing between vertically adjacent reinforcing layers shall not exceed twice the depth of the concrete unit (as measured from face to tail).<sup>1</sup>
  - ii. Maximum allowable load at the connection shall be the peak connection load as determined in accordance with SRWU-1, reduce by a factor of safety of 1.5.
  - iii. AASHTO Demo82 suggests maximum spacing of twice the depth of the unit. For construction, spacing of greater than twice the depth does not provide sufficient stability to allow for compaction behind the units.
  - iv. All primary<sup>2</sup> reinforcing layers shall be of equal or greater length to the base layer.
  - v. Intermediate<sup>3</sup> reinforcing layers are shorter, lower strength layers installed for stability at the face. Intermediate strengths shall not be considered in internal stability analyses.
  - vi. All layers shall be designed for 100 percent coverage.
  - vii. The vertical component of soil friction shall be ignored in calculations of face stability.<sup>4</sup>
  - viii. The maximum design height as a gravity structure shall be limited to 2.5 times the width of the unit, or a calculated factor of safety of 1.5 on overturning, whichever is less.
  - ix. Minimum soil reinforcing lengths shall be 0.6 times the design height of the structure or as required to maintain a factor of safety of 1.5 on sliding at the base or on geosynthetic reinforcing layers, whichever is greater.
  - x. If designing in accordance with Demo82, the dead load calculated for a sloping fill shall be limited to the area of soil within the theoretical Rankine or Coulomb failure plane  $(0.7H)^5$ .
4. Detailed hand calculations and verification of any computer programs used for design provided by a professional engineer.
5. Samples of all products used in the work of this section.
6. Manufacturer's specifications (latest edition) for proposed materials, method of installation and list of materials proposed for use.

---

<sup>1</sup>AASHTO Demo82 suggests maximum spacing of twice the depth of the unit. For construction, spacing of greater than twice the depth does not provide sufficient stability to allow for compaction behind the units.

<sup>2</sup>Primary reinforcing layers are full-length reinforcing layers used for internal stability calculations.

<sup>3</sup>Intermediate (or secondary) reinforcing layers are installed for facial stability during

construction.

<sup>4</sup>To increase calculated design heights for small units, the vertical component of friction has been used for over-turning calculations. Since earth pressure calculations do not account for seasonal variations (frost heave at the face, shrinkage or expansion, hydrostatic effects, etc.), and small units are very sensitive to over-turning stability, this calculation should be conservative.

<sup>5</sup>Demo82 illustrates the area of surcharge as the total length of reinforcing. To be consistent with theory, only the forces with the failure zone should be included.

The calculations and descriptions shall be sealed by a Professional Engineer registered in the State of Michigan.

**d. Construction.** Any wall system supplied shall be capable of being constructed within the available right(s)-of-way as currently established for the project. Any wall system which cannot be constructed within the existing right(s)-of-way, including all necessary excavation to install the wall system and geogrid, if required, will be considered as a cause for rejection of the proposed wall system.

A MDOT 21AA limestone base, and a sand leveling course if required, shall be placed true to line and grade as shown on the Plans, as directed by the Engineer or as required by the Manufacturer. The limestone base shall be inspected and approved by the Engineer prior to construction of the retaining wall system.

The retaining wall system shall be backfilled in accordance with the Manufacturers requirements. Remaining excavated area shall be backfilled with MDOT Class II Granular material compacted to 95% of its maximum unit weight, or as specified by the Manufacturer. Backfill shall be placed and compacted in 6-inch lifts.

All areas immediately beneath the installation area for the geogrid shall be properly prepared true to the lines and grades as detailed on the plans, specified elsewhere with the specifications, or directed by the Engineer.

In general, the geogrid shall be installed in accordance with the manufacturer's recommendations. The geogrid shall be placed with the layers of the compacted soil as shown on the plans, or as directed by the Engineer.

The geogrid shall be placed in continuous longitudinal strips in the direction of main reinforcement and adjacent strips do not need to be overlapped. However, if the Contractor is unable to complete a required length with a single continuous length of geogrid a joint may be made for the full width of the strip by interlacing over and under the main reinforcing strands using a solid rod or hollow pipe of similar material and strength. No end joints will be allowed in any two adjacent strips or within 10 feet of the face of the embankment or, in the case of a spill through slope, in front of the abutment. If the required length of geogrid reinforcement is greater than the roll length, then end joints will be allowed in adjacent strips, but they cannot be with 65 feet of one another as measured along the length of the strip. Every effort should be made to keep the number of end joints to a minimum and widely spaced throughout the placement area.

After a layer of geogrid has been placed, suitable means, such as pins or small piles of soil, shall be used to hold the geogrid in position until the subsequent soil layer can be placed. Under no circumstance shall a track-type vehicle be allowed on the geogrid before at least six inches of soil has been placed on the geogrid.

Only that amount of geogrid required for immediately pending work shall be placed to prevent undue damage to the geogrid. After a layer of geogrid has been placed, the next succeeding layer of soil shall be placed and compacted as appropriate. After the specified soil layer has been placed, the next geogrid layer shall be installed. The process shall be repeated for each subsequent layer of geogrid and soil.

The overlapping of the geogrid shall be permitted as required by the plans, the manufacturer's recommendations, and these specifications.

When the roll width is greater than the width of geogrid required, the geogrid may be cut with a razor, knife, abrasion saw, or similar tool.

The retaining wall systems shall be constructed according to manufacturer's recommendations. In case of conflict between this Detailed Specification and the manufacturer's specifications, the Engineer shall determine which specification shall govern.

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

<u>Pay Item</u>	<u>Pay Unit</u>
Geotextile Retaining Wall, Sierrascape	Square Foot

The Contractor will be paid per square foot of wall as installed and will be measured along all finished faces. In areas where the wall is double-faced, both faces will be measured and paid separately.

This item of work shall include all labor, materials, and equipment necessary to provide a complete installation of the retaining wall(s) as detailed on the plan sheets and the approved shop drawings. It shall also include, but not be limited to; all required excavation necessary to construct the proposed retaining wall; the furnishing, placement, and compaction of the aggregate and sand base; the furnishing and placement of all needed retaining wall materials; the furnishing, placement, and compaction of all backfill materials as indicated on the plan sheets, details, and the approved shop drawings; the furnishing and installation of soil reinforcement geogrid and wrapped underdrain; constructing the wall true to lines and grades as shown on the plans, or as directed by the Engineer; and, the clean-up and removal of all spoils at the completion of the retaining wall installation.

The quantities presented on the plan sheets and bid forms represent estimated quantities. The actual retaining wall to be constructed may vary in height or length by any amount. If the constructed wall varies from the approved construction plan(s), it shall not be a basis of a claim

and the terms of Section 103.02 of the 2012 MDOT Standard Specifications for Construction shall not apply to this work. Any change to the actual quantity constructed will not be a basis for changes or adjustments to the contract unit price.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**GEOTEXTILE RETAINING WALL**

AA:CC

1 of 2

10-31-19

**a. Description.** This work consists of constructing geotextile reinforced retaining wall(s). Complete this work according to the plans, standard specifications and this special provision. This special provision is for use in constructing retaining walls up to 8 feet high, with no sloping backfill.

**b. Materials.** Use structure backfill meeting the requirements for granular material Class IIIA in accordance with Table 902-3 of the Standard Specifications for Construction.

Furnish woven polyester or polypropylene geotextile reinforcement with 950 lb/ft Allowable Tensile Strength (ASTM D 4595) at 5 percent or less strain. Fabric must also have a minimum Ultimate Tensile Strength (ASTM D 4595) of 4,800 lb/ft in the machine direction, and permittivity not less than  $0.1 \text{ sec}^{-1}$  (ASTM D 4491). Provide Test Data Certification prior to starting the work, documenting the specified properties as Minimum Average Roll Values.

**c. Construction.** Construct the retaining wall in wrapped layers not exceeding 18 inches; with individual compacted lift thickness not exceeding 9 inches (See Figure 1 below). The first lift in each layer (placed directly on the geotextile) must be at least 4 inches thick to minimize damage to the geotextile. Repair or replace damaged geotextile as directed by the Engineer.

Place the first layer of geotextile reinforcement on the prepared grade so the strength specified previously acts perpendicular to the wall and as shown on the plans. Space geotextile reinforcement equally (vertically), as shown on the plans. Completely install each layer of geotextile reinforcement and backfill before beginning installation of the succeeding layer of reinforcement. The elevation of each geotextile layer must be within  $\pm 1.25$  inches of the elevation shown on the plans. Do not exceed 8 feet maximum wall height.

Place each geotextile layer as shown on the plans, without wrinkles. No seams or overlaps are permitted parallel to the wall face; 24-inch minimum overlaps are allowed perpendicular to the wall face. Place seams, where permitted, facing upward for inspection purposes.

Place backfill according to the construction sequence, to prevent wrinkles and folds from developing in the geotextile. Do not end-dump backfill directly on the geotextile. Compact each backfill layer to at least 95 percent of the maximum unit weight. Do not use vibratory rollers, sheepsfoot or other rollers with protrusions.

Use a temporary form (or other suitable means) to maintain a uniform vertical wall face. Use pins, pegs or the geotextile manufacturer's recommended method in addition to the temporary form as needed to anchor the geotextile until the specified cover material is in place.

For the top layer of geotextile reinforcement, maintain a minimum of 3 inches of structure backfill over the geotextile reinforcement. Do not pave directly on or allow loose HMA to contact the geotextile reinforcement.

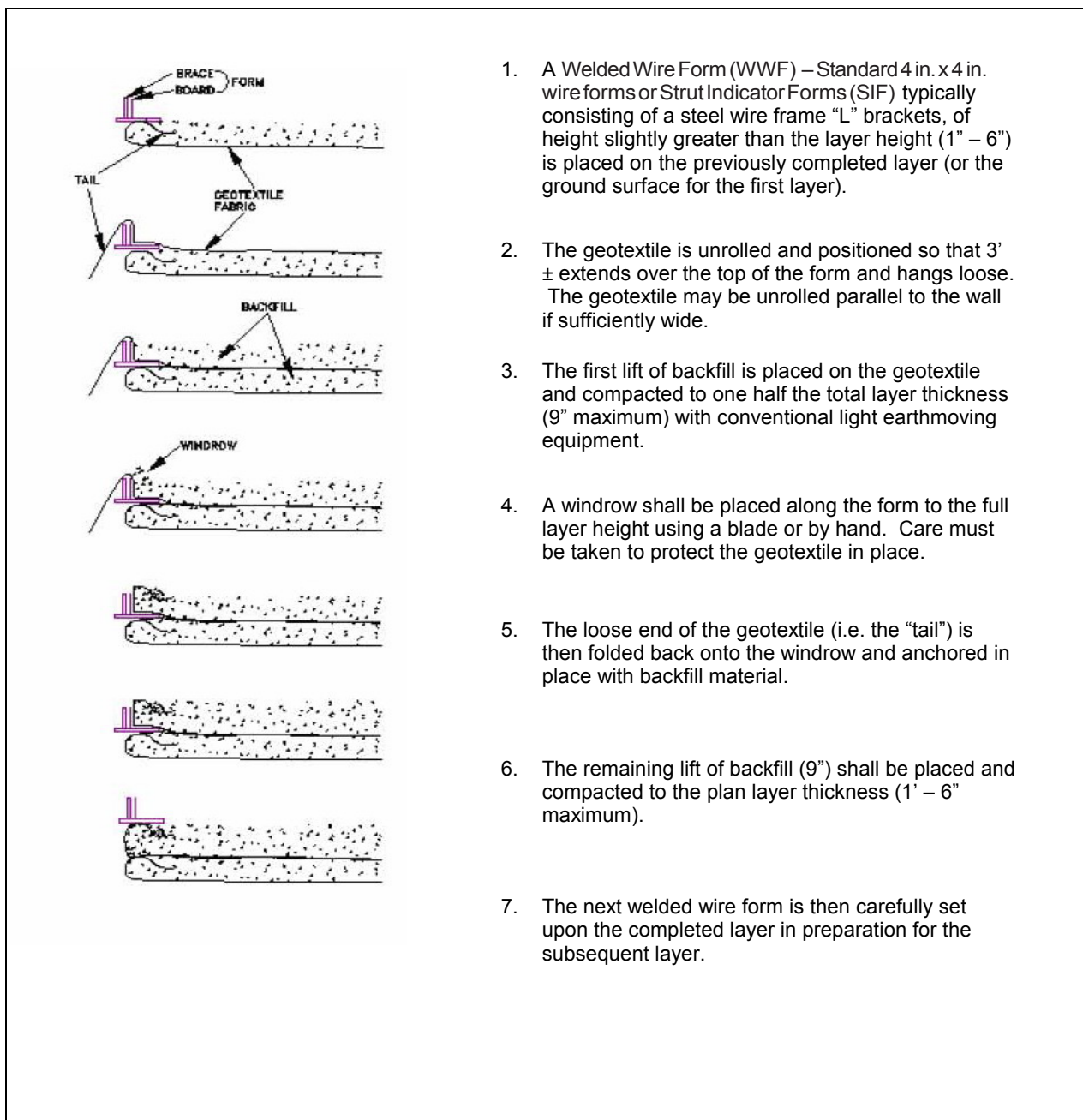
**d. Measurement and Payment.** The completed work, as described, will be measured and

paid for at the contract unit price using the following pay item:

Pay Item	Pay Unit
Geotextile Retaining Wall, Sierrascape .....	Square Foot

**Geotextile Retaining Wall** will be measured in place. The length and vertical height will be measured and the projected area of wall face in square feet will be calculated. No allowance will be made for batter or undulation of wall surface or for allowable overlap. Payment includes furnishing, placing and compacting retaining wall backfill; furnishing and placing geotextile and temporary forms; any work necessary to establish grades; repair or replacement of damaged geotextiles; and complete removal and disposal as necessary.

**Figure 1 Construction Sequence for Geotextile Wall(s)**



CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**PLATIPUS EARTH ANCHORS**

AA:CC

1 of 2

10/31/19

**a. Description.** This work consists of installation of Platipus Anchors, Inc. percussive driven earth anchors at the locations, elevations and lengths shown on the Contract Drawings. The work shall include, but not be limited to mobilization, surveying, drilling, inserting, stressing, load testing, and lock-off of earth anchors at the appropriate locations. The Contractor shall be responsible for installing earth anchors that will develop the load-carrying capacity indicated on the Contract Drawings.

**b. Materials.** The Platipus Anchors, Inc. (Platipus) anchors shall consist of Cast Iron SG S8 anchors' percussion anchors made of hot dipped galvanized gravity die cast spheroidal graphite iron, 8mm stainless steel tendons, and WG8 stainless steel wedge grip with 6-inch square. 1/4" minimum thickness Galvanized Steel plate. All anchor components to be verified by a Platipus representative prior to construction. Anchor assemblies shall be manufactured in accordance with ISO 9001 Standards. Anchors shall be of the type, size, and drive length specified in the Platipus Anchor Schedule as shown on the Contract Drawings.

PLATIPUS EARTH ANCHOR

A Platipus S8 cast iron anchor system including 8mm stainless steel tensioned tendon with a stainless-steel wedge grip.

ANCHOR

S8C Hot Dipped Galvanized Cast Iron Anchor (ASTM - A123)

LOWER TERMINATION

Stainless Steel Soft Eye including Copper Ferrule

WIRE TENDON

16.4' (5M) of 8mm Diameter Marine Grade 316 Stainless Steel Wire

TOP TERMINATION

8mm Stainless Steel Wedge Grip and 6"x6" Galvanized Steel Plate (1/4" Thick minimum)

**c. Submittals.** The Contractor shall submit for review and approval by the Engineer, a complete set of shop plans in accordance with Section 104.02 of the 2012 MDOT Standard Specifications for Construction and this Detailed Specification. The shop plans shall include all elevations and dimensions necessary for construction; detail the length, locations, type of connections to the wall system for the Platipus earth anchors to be placed. Anchor holding capacity must be verified at each location by Platipus. A detailed report from Platipus for the holding capacity shall be provided by the Contractor for the proposed earth anchor system. The field load testing results design calculations and descriptions shall be sealed by a Professional Engineer registered in the State of Michigan.

The Contractor should expect that the City will require 21 calendar days for each plan review cycle needed to develop approved plans, and that revisions may be required after each review.

No extension of time or additional compensation will be granted to the Contractor due to delays in preparing the final plans and specifications or securing acceptance from the City.

No soil borings were available at the specific anchor placement areas. Anchor lengths shown on Contract Drawings are estimated minimum, driven lengths. Anchor holding capacities are estimated values based on estimated soil parameters. Field load testing shall be performed for each anchor to verify minimum required holding capacity is achieved. Contractor to provide temporary shoring as needed.

**d. Construction.** Field load testing to be performed by Platipus Anchors, Inc. Representative at the start of construction to verify design holding capacity. Platipus anchors will be installed at the locations and elevations shown on the Contract Drawings.

Anchor installation and loadlocking shall be in accordance with Platipus detailed recommendations using the equipment recommended by Platipus. All Platipus anchors to be installed at an angle of 13 degrees from perpendicular to the face of the exposed soil behind the existing stacked stone wall as shown on the plan sheets and loadlocked at a minimum holding capacity indicated on the Platipus Anchor Schedule as shown on the Contract Drawings.

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

<u>Pay Item</u>	<u>Pay Unit</u>
Platipus Anchors, Complete .....	Each

This item of work shall include all labor, materials, and equipment necessary to provide a complete installation of the Earth Anchors as detailed on the plan sheets and the approved shop drawings. The quantity as determined above will be paid for at the contract price per unit of measurement for the pay item listed and shown in the bid schedule, which price and payment will be full compensation for the cost of furnishing all labor, equipment and material required to complete the work described in this section. The quantity of earth anchors to be paid for will be the number of earth anchors installed and accepted. No change in the number of earth anchors to be paid for will be made because of the use by the Contractor of an alternative number of earth anchors.



MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**PERMANENT GROUND ANCHORS**

BRG:KCK

1 of 21

APPR:MJF:RWS:10-15-18

**a. Description.** This work consists of furnishing, installing, testing and stressing permanent cement-grouted ground anchors that will develop the load-carrying capacity specified on the plans. This work also consists of designing the grout mix and designing, furnishing, installing and removing the load testing apparatuses. Complete all work in accordance with the standard specifications, except as modified herein.

Examine the plans and visit the site prior to bidding the work to assess the site geometry, equipment access conditions, subsurface conditions, location of the existing retaining wall, overhead restrictions, and any other factors that may influence the bid.

1. Ground Anchor Contractor Qualifications. The Ground Anchor Contractor is the contractor performing the work described in this special provision. The Ground Anchor Contractor must submit their qualifications to the Engineer for review and approval no more than 14 calendar days after the preconstruction meeting. Submit qualifications that meet all of the requirements indicated below. The Engineer will determine if the Ground Anchor Contractor meets the requirements indicated below. The Engineer will approve or reject the Ground Anchor Contractor's qualifications within 7 calendar days after receiving the submission. One resubmittal of the qualifications will be allowed. The requirements indicated below must be met as of the letting date of the contract. Projects completed or personnel hired after the letting date of the contract will not be considered. No additional time or costs will be allowed if a Ground Anchor Contractor is rejected.

A. Provide a list containing at least 5 projects completed in the last 5 years on which the Ground Anchor Contractor installed ground anchors. Projects listed must have been performed by the Ground Anchor Contractor. Projects performed by personnel at other companies will not be considered. Provide a short narrative for each project. Provide the names and contact information of owner's representatives who can verify the Ground Anchor Contractor's participation on the listed projects. Each project listed must show experience with permanent ground anchors with the following requirements:

(1) Free stressing lengths of the same length or larger than what is required for this project;

(2) The cross-sectional area (Aps) of the anchor was the same or larger than what is required for this project;

(3) The factored design loads (FDL) was the same or larger than what is required for this project;

B. Provide a list containing at least 2 projects completed in the last 5 years on which the Ground Anchor Contractor installed permanent ground anchors from an elevated work

platform at least 10 feet above the ground. Provide a short narrative for each project. Provide the names and contact information of owner's representatives who can verify the Ground Anchor Contractor's participation on the listed projects. Projects listed must have been performed by the Ground Anchor Contractor. Projects performed by personnel at other companies will not be considered.

C. Provide the names and experience records of the Ground Anchor Contractor's personnel assigned to the project indicating a minimum of 3 years of experience installing permanent ground anchors. Experience at other contractors installing permanent ground anchors will be allowed. The personnel listed must be the onsite superintendent and the drill rig operator.

Do not substitute any of the proposed personnel without the written approval of the Engineer. Do not start work or order materials until the Engineer approves the qualifications submittal. The Engineer may suspend the work if the Ground Anchor Contractor substitutes unqualified personnel for the approved personnel during construction. If work is suspended due to the substitution of unqualified personnel, no additional costs or time will be allowed resulting from the suspension of work.

2. Definitions. The definitions given in section 2.0 of the *Recommendations for Prestressed Rock and Soil Anchors*, published by the *Post-Tensioning Institute (PTI)* apply throughout this special provision. In addition, the following definition(s) apply throughout this special provision:

**Alignment Load (AL).** A small load applied to an anchor during testing to keep the testing equipment correctly positioned.

**Anchor.** A system, used to transfer tensile load to the ground (soil or rock), which includes the prestressing steel, anchorage, corrosion protection, sheathings, spacers, centralizers, and grout.

**Anchor Head.** The means by which the prestressing force is permanently transmitted from the prestressing steel to the bearing plate. The anchor head includes an anchor nut for bar tendons.

**Anchor Nut.** The threaded device that transfers the prestressing force in a bar to a bearing plate.

**Anchorage.** The combined system of anchor head, bearing plate, trumpet, and corrosion protection that is capable of transmitting the prestressing force from the prestressing steel to the surface of the ground or the supported structure.

**Anchorage Cover.** A cover to protect the anchorage from corrosion and physical damage.

**Apparent Free Tendon Length.** The length of the anchor that is not bonded to the surrounding ground, as calculated from the elastic load extension data during testing.

**Bearing Plate.** A steel plate under the anchor head that distributes the prestressing force to the anchored structure.

**Bond Breaker.** A sleeve or coating placed around the anchor prestressing steel to prevent load transfer.

**Bond Length.** The length of the anchor that is bonded to the surrounding ground and which is used to transfer the applied axial loads to the surrounding ground.

**Centralizer.** A device to support and position the prestressing steel in the drill hole so that a minimum grout cover is provided.

**Consolidation Grout.** Portland cement grout that is injected into the hole prior to inserting the prestressing steel to either reduce the permeability of the rock surrounding the hole or improve the ground conditions.

**Corrosion Inhibiting Compound.** Material used to protect against corrosion and/or lubricate the prestressing steel inside a bond breaker.

**Coupler.** The means by which the load can be transmitted from one partial length prestressing steel to another.

**Creep Movement.** The movement that occurs during a creep test of an anchor under a constant load.

**Design Load (DL).** The maximum unfactored load expected to be applied to the anchor during its service life.

**Elastic Movement.** The recoverable movement measured during an anchor test.

**Encapsulation.** A corrugated tube protecting the prestressing steel against corrosion.

**Factored Design Load (FDL).** The anticipated final maximum load in the anchor after allowance for time dependent losses or gains. The factored design load is based on factored loads in accordance with the *AASHTO LRFD Bridge Design Specifications*.

**Free Stressing (Unbonded) Length.** The designed length of the anchor that is not bonded to the surrounding ground or grout during testing.

**Lift-Off.** The load (lift-off load) in the tendon which can be checked at any specified time with the use of a hydraulic jack, by lifting the anchor head off the bearing plate.

**Lock-Off Load.** The prestressing force in an anchor immediately after transferring the load from the jack to the stressing anchorage.

**Permanent Anchor.** Any prestressed ground anchor that is intended to remain and function as part of a permanent structure. A permanent anchor has to fulfill its function for an extended period of time and thus requires special design, corrosion protection, and supervision during installation.

**Performance Test.** An anchor load test performed to verify the ground anchor design based on the construction methods proposed. This includes incremental cyclic test loading of a prestressed anchor in which the total movement of the anchor is recorded at each load

increment. Performance tests are performed on non-production anchors, prior to installation of production anchors, unless otherwise directed by the Engineer.

**Primary Grout.** Portland cement based grout that is injected into the anchor hole prior to or after the installation of the prestressing steel to provide the load transfer to the surrounding ground along the anchor and affords a degree of corrosion protection in compression.

**Proof Test.** Incremental loading of a production anchor, recording the total movement at each load increment.

**Pulling Head.** Temporary anchoring device behind the hydraulic jack during stressing.

**Relaxation.** The decrease of stress or load with time while the tendon is held under constant strain.

**Residual Movement.** The non-elastic (non-recoverable) movement of an anchor measurement during load testing.

**Restressable Anchor Head.** An anchor head that permits the anchor load, throughout the life of the structure, to be measured by lift-off checking and adjusted by shimming/unshimming or thread turning.

**Safety Factor.** The ratio of the ultimate capacity to the working load used for the design of any component or interface.

**Sheath.** A smooth or corrugated pipe or tube protecting the prestressing steel in the free stressing length against corrosion.

**Spacer.** A device to separate elements of multiple element reinforcement.

**Tendon.** The complete anchor assembly (excluding grout) consisting of prestressing steel, corrosion protection, sheathings, and coating when required, as well as spacers and centralizers.

**Trumpet.** Device to provide corrosion protection in the transition length from the anchorage to the free stressing length.

**Waler.** A structural steel member spanning between the vertical soldier piles which transfers the load from the wall to the permanent anchor.

#### **b. Materials.**

1. Structural Steel. Use structural steel in accordance with section 906 of the Standard Specifications for Construction. Provide structural steel of the minimum grade specified on the plans or as specified in this special provision.

2. Anchorage Devices.

A. Stressing Anchorages. Provide a steel bearing plate with a threaded anchor nut. Ensure anchorage devices are capable of developing at least 95 percent of the specified minimum ultimate tensile strength (SMTS) of the prestressing steel tendon. Ensure

anchorage devices meet the static strength requirements of section 3.1.6(1), 3.1.8(1), and 3.1.8(2) of the *PTI Post-Tensioning Manual*.

- B. Bearing Plate. Provide bearing plates fabricated from Grade 50 structural steel.
  - C. Trumpet. Provide trumpets fabricated either from a steel pipe in accordance with *ASTM A 53* or steel tube in accordance with *ASTM A 500*. Provide trumpets with a minimum wall thickness of 1/4 inches.
  - D. Anchorage Covers. Provide anchorage covers fabricated from Grade 36 structural steel with a minimum thickness of 1/8 inches. Ensure the joint between the cover and the bearing plate is watertight.
3. Bond breaker. Provide bond breaker fabricated from a smooth plastic tube or pipe having the following properties:
- A. Resistant to chemical attack from aggressive environments, grout, or corrosion inhibiting compound;
  - B. Resistant to aging by ultra-violet light;
  - C. Fabricated from material that is not detrimental to the tendon;
  - D. Capable of withstanding abrasion, impact, and bending during handling and installation;
  - E. Enables the tendon to elongate during testing and stressing; and
  - F. Allows the tendon to remain unbonded after lock-off.
4. Anchor Grout.
- A. Water. Use water in accordance with section 911 of the Standard Specifications for Construction.
  - B. Cement. Use Type I, Type II, Type III, or Type V Portland cement in accordance with *AASHTO M 85* from one manufacturer. Provide a grout with a minimum 28 day compressive strength of at least 5000 pounds per square inch (psi).
  - C. Fine Aggregate. If proposed, use natural sand in accordance with *AASHTO M 45*.
  - D. Admixtures. Use admixtures in accordance with *ASTM C 494*. Use admixtures from one manufacturer.
  - E. Grout Tubes. Use grout tubes with an adequate inside diameter to enable the grout to be pumped to the bottom of the drill hole. Ensure grout tubes are strong enough to withstand a minimum grouting pressure of 150 psi.
5. Centralizers. Use schedule 40 polyvinyl chloride (PVC) pipe or tube, or epoxy-coated steel in accordance with subsection 905.03.C of the Standard Specifications for Construction, or other materials that are not detrimental to the prestressing steel. Do not use wood. Ensure

centralizers and spacers are securely attached to the prestressing steel, and are sized to position the prestressing steel so that a minimum of 1/2 inch of grout cover is provided. Ensure that the centralizers will allow grout to flow freely around the prestressing steel and up the drill hole.

6. Corrosion Inhibiting Compound. For placement in the free stressing length and the trumpet area, provide an organic compound (i.e., grease or wax) with appropriate polar moisture displacing, corrosion inhibiting additives and self-healing properties. Ensure that the compound remains viscous and is chemically stable and nonreactive with the prestressing steel, the sheathing material, and the anchor grout. Use corrosion inhibiting compounds meeting section 3.2.5 of the *PTI Specification for Unbonded Single Strand Tendons*.

7. Heat Shrinkable Sleeves. Fabricate heat shrinkable sleeves from a radiation crosslinked polyolefin tube, with a minimum nominal wall thickness of 0.024 inch, internally coated with an adhesive sealant, having a minimum nominal thickness of 0.02 inch.

8. Prestressing Steel.

A. Tendons. Provide ground anchor tendons fabricated from a single element of one of the following prestressing steels as shown on the plans:

(1) Steel bars meeting *AASHTO M 275*.

(2) Epoxy coated reinforcing steel bars meeting *ASTM A 775*.

B. Centralizers. Provide centralizers at maximum intervals of 10 feet, with the deepest centralizer located 1 foot from the end of the anchor and the upper centralizer for the bond zone located no more than 5 feet from the top of the tendon bond length.

C. Prestressing Steel Couplers. Provide prestressing steel bar couplers that are capable of developing 100 percent of the minimum specified ultimate tensile strength of the prestressing steel bar.

9. Sheath. Use a sheath as part of the corrosion protection system for the unbonded length portion of the tendon. Fabricate the sheath from one of the materials specified in Table 1.

**Table 1: Sheath Materials**

Material	Reference	Minimum Wall Thickness
Polyethylene Tube	<i>ASTM D 1248, Type II, III or IV</i>	0.0625 inch
Hot-Melt Extruded Polypropylene Tube	<i>ASTM D 4101, cell classification B55542-11</i>	0.0625 inch
Hot-Melt Extruded Polyethylene Tube	<i>ASTM D 1248, Type III</i>	0.0625 inch
Steel Tubing	<i>ASTM A 500</i>	0.1875 inch
Steel Pipe	<i>ASTM A 53</i>	0.1875 inch
PVC Pipe or Tube	<i>ASTM D 1784, Class 13464-B</i>	Schedule 40

10. Tendon Bond Length Encapsulations. If the plans require the tendon bond length to be encapsulated to provide additional corrosion protection, fabricate the encapsulation from one of the materials specified in Table 2.

11. Steel Reinforcement. Use Grade 60 epoxy coated steel reinforcement in accordance with section 905 of the Standard Specifications for Construction for local reinforcement at ground anchor anchorages bearing on concrete.

**Table 2: Encapsulation for Tendons**

Material	Reference	Minimum Wall Thickness
High Density Corrugated Polyethylene Tubing	<i>AASHTO M 252</i>	0.0625 inches, except for pregrouted tendons, which may have a minimum wall thickness of 0.04 inches.
Deformed Steel Tubing or Pipes	<i>ASTM A 500</i>	0.1875 inch
Corrugated, Polyvinyl Chloride Tubes	<i>ASTM D 1784, Class 13464-B</i>	0.0625 inch
Fusion-Bonded Epoxy	<i>ASTM A 775</i>	0.015 inch film thickness

**c. Construction.**

1. Submittals. Ensure all submittals are electronically transferred as a portable document format (PDF) file. Submit items from subsections c.1.A through c.1.E to the Engineer not less than 21 calendar days prior to anchor construction. Submit items from subsections c.1.F through c.1.J to the Engineer not less than 21 calendar days prior to load testing or incorporation of the respective materials into the work. The Department requires 14 calendar days to review a submittal after it has been received. Additional review time necessary due to incomplete or unacceptable submittals is not cause for a claim for additional time or compensation. All costs and delays associated with incomplete or unacceptable submittals will be borne by the Contractor.

A. A working drawing of the ground anchor tendon and the corrosion protection system including details for the following:

- (1) Spacers and their location;
- (2) Centralizers and their location;
- (3) Unbonded length corrosion protection system;
- (4) Bond length corrosion protection system;
- (5) Anchorage and trumpet;
- (6) Anchorage corrosion protection system;
- (7) Drilled or formed hole size;
- (8) Level of each stage of grouting; and

(9) Any revision to structure details necessary to accommodate the ground anchor system intended for use.

B. Installation plan that includes a step-by-step description of the proposed anchor construction procedure (including access methods), including drilling equipment, drilling methods, casings, flushing medium, grouting methods, flush control and disposal, personnel, testing, and testing equipment to ensure quality control. In addition, if the anchors are an integral part of a retaining wall, the construction procedure must incorporate the steps in conjunction with the related foundation and wall construction step-by-step process. Include the step-by-step procedure on the working drawings in sufficient detail to allow the Engineer to monitor and validate the construction and quality of the anchors.

C. Proposed start date and anchor installation schedule.

D. Information on headroom and space requirements for installation equipment to verify that the proposed equipment can perform at the site. Where the anchors are installed adjacent to an existing structure, inspect the condition and site of the existing structure in the presence of the Engineer. Provide a copy of photographic documentation of the pre-construction conditions to the Engineer.

E. Mill Test Reports. Submit mill test reports for the prestressing steel and the bearing plate steel to the Engineer for review and approval. The Engineer may require samples of any ground anchor material intended for use on the project. The Engineer will approve or reject the prestressing steel and bearing plate steel within 5 working days after receipt of the test reports. Do not incorporate the prestressing steel and bearing plates in the work without the Engineer's approval.

F. Detailed description of proposed management procedures for the control and disposal of excess surface water, drill flush, grout, and any resultant product of the anchor installation. Do not excavate flush pits at or below the floodplain elevation in accordance with subsection 205.03.P of the Standard Specifications for Construction.

G. Grouting Plan. Provide complete descriptions, details and supporting calculations for:

(1) Grout mix design and type of materials to be used, including certified test data and trial batch reports.

(2) Specific gravity of the grout mix.

(3) Methods and equipment for accurately monitoring and recording the grout depth, grout volume, and grout pressure as the grout is being placed.

(4) Grouting rate calculations, if requested by the Engineer. Base the calculations on the initial pump pressures or static head on the grout and losses throughout the placing system, including anticipated head of drilling fluid (if applicable) to be displaced.

(5) Estimated curing time for grout to achieve the required strength. Submit previous test results for the proposed grout mix. The test results must have been



completed within 1 year of the start of grouting for initial verification load test. Test grout during production as specified herein.

(6) Procedure and equipment proposed for monitoring grout quality and consistency.

H. Detailed working drawings for the proposed anchor load testing. Include all drawings and details necessary to clearly describe the proposed test methods, reaction frame, reaction anchors, system test load capacity, equipment setup, types and accuracy of apparatus to be used for applying and measuring the test loads, and anchor top movements in accordance with the load test requirements specified herein. Submit structural design calculations for all structural components of the test apparatus.

I. Calibration reports and data prepared by an independent testing laboratory within 90 calendar days of the date submitted for each test jack, pressure gauge, master pressure gauge, and electronic load cell to be used. Do not perform load testing until the Engineer has reviewed and accepted the calibration reports and data.

J. General Certification in accordance with the *Materials Source Guide* for the following materials, if used, stating that the material or assemblies provided will comply fully with the requirements of the contract.

- (1) Prestressing steel bar;
- (2) Portland cement;
- (3) Prestressing hardware;
- (4) Bearing plates;
- (5) Corrosion protection system; and
- (6) Steel Reinforcement.

K. Reports and As-Built Drawings. Within 14 calendar days after completing the ground anchor work, submit a report to the Engineer containing the following information:

- (1) Grouting records indicating the cement type, quantity injected, and the grout pressures;
- (2) As-built drawings showing the location and orientation of each ground anchor, anchor capacity, tendon type, total anchor length, bond length, unbonded length, and tendon bond length as installed.

The costs for providing the information in subsection c.1.K is included in the pay item Ground Anchor, Equipment, Furn.

## 2. Existing Conditions.

A. Utilities. Field-verify the location of all utilities shown on the plans. Notify the Engineer of any utility locations different than what is shown on the plans that may require

anchor relocations or structure design modifications. Additional costs due to anchor relocation and/or structure design modifications resulting from utility locations different than what is shown on the plans will be paid for extra work.

B. Visually survey the condition of adjoining properties and record and photograph evidence of settlement or cracking of adjacent structures. Submit a visual survey report to the Engineer before beginning work.

3. Construction Quality Assurance. Assist the Department as necessary during inspection and any material testing. Account for inspection, testing and monitoring activities by the Department in the construction schedule. Correct deficiencies and nonconformities identified by the Engineer at no cost to the Department.

4. Corrosion Protection. Construct corrosion protection systems as shown on the plans to meet these requirements.

A. Anchorage Protection.

(1) Provide stressing anchorages that will be permanently exposed to the atmosphere with a grout-filled cover, except, for restressable anchorages, use a corrosion inhibiting compound. Stressing anchorages encased in concrete at least 2 inches thick do not require a cover.

(2) Seal the trumpet to the bearing plate. Ensure the trumpet overlaps the unbonded length corrosion protection by at least 6 inches. Provide a trumpet of adequate length to accommodate movements of the structure and the tendon during testing and stressing.

(3) Completely fill the trumpet with grout, except use corrosion inhibiting compounds for restressable anchorages. Compounds may be placed at any time during construction. Provide a permanent seal between compound-filled trumpets and the unbonded length corrosion protection. Place grout after the ground anchor has been tested and stressed to the lock-off load. For trumpets filled with grout, a temporary seal may be provided between the trumpet and the unbonded length corrosion protection. Alternatively, the trumpet may be tightly fit over the unbonded length corrosion protection for a minimum of 4 inches.

B. Unbonded Length Protection.

(1) Provide corrosion protection of the unbonded length using a combination of sheaths, sheath filled with a corrosion inhibiting compound or grout, or a heat shrinkable tube internally coated with a mastic compound, depending on the tendon class. Ensure the corrosion inhibiting compound completely coats the tendon elements and fills the void between them and the sheath. Ensure the compound remains within the sheath.

(2) Surround the unbonded length of the tendon with a corrosion protective sheath that is long enough to extend into the trumpet, but that does not come into contact with the stressing anchorage during testing. Trim off excessive protection length.

(3) For pregrouted encapsulations and all Class I tendons, provide a separate bondbreaker or common sheath for supplemental corrosion protection or to prevent the tendon from bonding to the grout surrounding the unbonded length.

C. Unbonded Length/Bond Length Transition. Fabricate a transition between the corrosion protection for the bonded and unbonded lengths to ensure continuous protection from corrosive attack.

D. Tendon Bond Length Protection for Encapsulated Tendons (Class I):

(1) Use a grout-filled, corrugated plastic encapsulation or a grout-filled, deformed steel tube. Grout the prestressing steel inside the encapsulation prior to inserting the tendon into the drill hole or after the tendon has been placed.

(2) Use centralizers or grouting techniques that ensure a minimum of 1/2 inches of grout cover over the encapsulation.

E. Epoxy (Class I). Fusion-bonded epoxy may be used to provide a layer of protection for the steel tendon in addition to the cement grout.

F. Coupler Protection. For encapsulated bar tendons (Class I), cover the coupler and any adjacent exposed bar sections with a corrosion-proof compound or wax-impregnated cloth tape. Cover the coupler area with a smooth plastic tube, meeting the requirements for sheaths specified herein, and overlap the adjacent sheathed tendon by at least 1 inch. Seal the two joints with a coated heat shrink sleeve of at least 6 inches in length, or an approved equal. Ensure the corrosion-proof compound completely fills the space inside the cover tube.

6. Storing and Handling Tendons.

A. Handle and store tendons in a manner that will prevent damage or corrosion. The Engineer will reject tendons with damage to the prestressing steel, corrosion protection, and/or the epoxy coating as a result of abrasions, cuts, nicks, welds and weld splatter. Protect the prestressing steel if welding is to be performed in the vicinity. Do not ground welding leads to the prestressing steel. Protect prestressing steel from dirt, rust, and other deleterious substances. The Engineer will consider a light coating of rust on the steel as being acceptable; however, if heavy corrosion or pitting is noted, the Engineer will reject the affected tendons.

B. Prior to inserting a tendon in the drill hole, examine, along with the Engineer, the tendon for damage to the encapsulation and the sheathing. If, in the opinion of the Engineer, the encapsulation is damaged, repair the encapsulation in accordance with the tendon supplier's recommendations. If, in the opinion of the Engineer, the smooth sheathing has been damaged, repair the sheathing with ultrahigh molecular weight polyethylene tape. Wind the tape in a spiral around the tendon to completely seal the damaged area. Ensure the pitch of the spiral provides a double thickness at all points.

C. Pad banding for fabricated tendons to avoid damage to the tendon corrosion protection. Upon delivery to the site, store and handle fabricated anchors, or the prestressing steel for fabrication of the tendons on site, and all hardware in a manner that

avoids mechanical damage, corrosion, and contamination with dirt or deleterious substances.

D. Lift pre-grouted tendons in a manner that does not cause excessive bending, which can debond the prestressing steel from the surrounding grout.

E. Do not expose prestressing steel to temperatures exceeding 450 degrees Fahrenheit (F).

#### 7. Fabricating Anchors.

A. Fabricate anchors either in the shop or in the field using materials that comply with this special provision and the approved working drawings and schedules.

B. Cut the prestressing steel with an abrasive saw.

C. Ensure that the entire tendon bond length is free of dirt, manufacturer's lubricants, corrosion-inhibitive coatings, or other deleterious substances that may significantly affect the grout-to-tendon bond or the service life of the tendon.

D. PregROUT encapsulated tendons on an inclined, rigid frame or bed by injecting the grout from the low end of the tendon.

E. Weld trumpet to the bearing plate. Ensure the inside diameter of the trumpet is at least 1/4 inches greater than the diameter of the tendon at the anchorage. Ensure the trumpet is long enough to accommodate movements of the structure during testing and stressing.

#### 8. Drilling.

A. Drilling Method. Use a drilling method that will establish a stable hole of adequate dimensions, within the tolerances specified. Drilling methods may involve rotary, percussion, rotary/percussive or auger drilling, or percussive or vibratory driven casing. Select a drilling method that does not damage and/or settle existing structures, pavement or utilities. Coordinate the work and excavations so that the permanent ground anchors are safely constructed.

B. Holes for Anchors. Drill holes for anchors at the locations and to the length, inclination, and minimum diameter shown on the plans or the approved working drawings. Depending on hole location at the structure, provide equipment to drill holes for either top-down construction or bottom-up construction. This may require equipment to access elevated hole locations.

Use a drill bit or casing crown that is not more than 0.125 inches smaller than the hole diameter specified in the approved working drawings. Locate the drill hole at the ground surface within 6 inches of the location shown on the plans or the approved working drawings. Locate the drill hole so the longitudinal axis of the drill hole and the longitudinal axis of the tendon are parallel. Do not drill ground anchor holes in a location that would require the tendon to be bent in order to connect the bearing plate to the supported structure. At the back side of the waler or pile, install the ground anchor within  $\pm 3$  degrees of the inclination from horizontal shown on the plans or the approved working drawings.

At the back side of the waler or pile, ensure that the horizontal angle made by the ground anchor and the structure is within  $\pm 3$  degrees of a line drawn perpendicular to the plane of the structure unless otherwise shown on the plans or approved working drawings. Ensure that the ground anchors do not extend beyond the right-of-way or easement limits shown on the plans.

C. Site Drainage Control. Control and properly dispose of excavated soil, drill flush, excess grout and any other construction related waste in accordance with the 1994 PA 451, Part 115 – Solid Waste Management and Part 31 – Water Resources Protection and all other applicable regulations. Repair damage caused by construction activity and waste at no additional cost to the Department. Immediately notify the Engineer if unanticipated existing subsurface drainage structures are discovered during excavation or drilling. Suspend work in these areas until remedial measures, meeting the approval of the Engineer, are implemented. The remedial measures or repair work resulting from encountering unanticipated subsurface drainage structures will be paid for as extra work.

#### 9. Inserting Tendons.

A. Place tendons in accordance with the plans and the recommendations of the tendon manufacturer or specialist anchor contractor. Insert the tendon into the drill hole to the desired depth without difficulty. If the tendon cannot be completely inserted, remove the tendon from the drill hole and clean or redrill the hole to allow insertion. Do not drive or force partially inserted tendons into the hole.

B. Inspect each anchor tendon during installation into the drill hole or casing. Repair damage to the corrosion protection system, or replace the tendon if not repairable. Reconnect loose spacers or centralizers to prevent shifting during insertion. Repair damaged fusion-bonded epoxy coatings in accordance with the manufacturer's recommendations. If the patch is not allowed to cure prior to inserting the tendon in the drill hole, protect the patched area using tape or other suitable means.

C. Control the rate of placement of the tendon into the hole to ensure that no damage occurs to the sheathing, coating, and grout tubes during installation of the tendon. Ensure anchor tendons are not subjected to sharp bends. A cap or bullnose may be fit to the bottom end of the tendon to aid its insertion into the hole, casing, or sheathing.

#### 10. Grouting.

A. Place grout the same day the bonded length is drilled. Use a neat cement grout or a sand-cement grout. Ensure grout contains no lumps or other indications of hydration. Mix admixtures, if used, in accordance with the manufacturer's recommendations.

B. Use grouting equipment that produces a grout free of lumps and undispersed cement. Use a positive displacement grout pump equipped with a pressure gauge to monitor grout pressures. Ensure the pressure gauge is capable of measuring pressures of at least 150 psi or twice the actual grout pressures to be used, whichever is greater. Size the grouting equipment so that the grout may be pumped in one continuous operation. Use a mixer capable of continuously agitating the grout.

C. Based on the subsurface conditions, select a grouting procedure that meets the project requirements. Inject the grout under pressure of at least 50 psi from the lowest

point of the drill hole. Grout may be pumped through grout tubes, casings, hollow-stem augers, or drill rods. Place the grout either before or after inserting the tendon. The tremie pipe or casing must always be immersed at least 10 feet in grout after beginning of grouting. Record the quantity of grout placed and the grout pressures. Control the grout pressures and grout takes to prevent excessive heave or fracturing.

D. After installing the tendon, the drill hole may be filled in one continuous grouting operation, except that pressure grouting must not be used in the free length zone. Ensure that the grout at the top of the drill hole does not contact the back of the structure or the bottom of the trumpet.

E. If the ground anchor is installed in a fine-grained soil using drill holes larger than 6 inches in diameter, place the grout above the top of the bond length after testing and stressing the ground anchor. Grouting the entire drill hole at the same time will be allowed if the Contractor can demonstrate that the particular ground anchor system does not derive a significant portion of its load carrying capacity from the soil above the bond length portion of the ground anchor.

F. If grout protected tendons are used for ground anchors anchored in rock, use pressure grouting techniques. Pressure grouting requires that the drill hole be sealed and that the grout be injected until a minimum 50 psi grout pressure (measured at the top of the drill hole) can be maintained on the grout for at least 5 minutes.

G. Do not load the tendon for a minimum of 3 calendar days after grouting and has attained the minimum compressive strength required for design.

During installation of anchors, make six 2 inch grout cubes from each plant each day of operation or per every 10 anchors, whichever occurs more frequently. Test three of the grout cubes in accordance with *AASHTO T 106* by an independent testing laboratory. The compressive strength will be determined from the average of the compressive strengths of the three grout cubes.

Immediately prior to pile grouting, measure grouting density in accordance with *AASHTO T 133* or *API RP-13B-1*. Conduct at least one grout density test per anchor.

Submit compressive strength and density test results to the Engineer within 24 hours of testing.

## 11. Installing Anchors.

A. Install the anchor bearing plate and the anchor head or nut perpendicular to the tendon, within  $\pm 3$  degrees and centered on the bearing plate, without bending or kinking of the prestressing steel elements. Ensure the wedge holes and wedges are free of rust, grout, and dirt.

B. Clean and protect the stressing tail from damage until final testing and lock-off. After the anchor has been accepted by the Engineer, cut the stress tail to its final length in accordance with the tendon manufacturer's recommendations. Flame cutting is prohibited.

C. Extend the corrosion protection surrounding the unbonded length of the tendon beyond the bottom seal of the trumpet or 6 inches into the trumpet if no trumpet seal is provided. If the protection does not extend beyond the seal or sufficiently far enough into the trumpet, extend the corrosion protection or lengthen the trumpet.

D. Ensure that the corrosion protection surrounding the unbonded length of the tendon does not contact the bearing plate or the anchor head during testing and stressing. If the protection is too long, trim the corrosion protection to prevent contact.

12. Stressing, Load Testing, and Acceptance. Test each ground anchor under the direction of a Professional Engineer licensed in the State of Michigan. Summarize 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 apply loads greater than 10 percent of the factored design load to the ground anchor prior to testing. Ensure that the maximum test load is at least 1.0 times the factored design load, but does not exceed 80 percent of the specified minimum ultimate tensile strength (SMTS) of the prestressing steel of the tendon. Apply the test load simultaneously to the entire tendon.

A. Testing Equipment. Provide testing equipment consisting of the following:

(1) Use a dial gauge or vernier scale capable of measuring to the nearest 0.001 inches to measure the ground anchor movement. Provide a movement-measuring device having a minimum travel equal to the theoretical elastic elongation of the total anchor length at the maximum test load. Ensure that the device has adequate travel so the ground anchor movement can be measured without resetting the device at an interim point.

(2) Use a hydraulic jack and pump to apply the test load. Measure the applied load using a jack and a calibrated primary pressure gauge. Engage an independent firm to calibrate the jack and primary pressure gauge as a unit. Ensure that the calibration was performed no longer than 90 calendar days prior to date on which the calibration submittals are provided to the Engineer. Do not begin testing until the Engineer has approved the calibration. Use a primary pressure gauge that is graduated in increments of 50 psi or less. Ensure that the ram travel is at least 6 inches and not less than the theoretical elongation of the tendon at the maximum test load.

(3) Keep a calibrated reference pressure gauge at the site to periodically check the production (i.e., primary pressure) gauge. Calibrate the reference gauge with the test jack and primary pressure gauge. Store the reference pressure gauge indoors and do not subject to rough treatment.

(4) Provide an electrical resistance load cell and readout to be used when performing an extended creep test.

(5) Place the stressing equipment over the ground anchor tendon in a manner that will ensure that the jack, bearing plates, load cells, and stressing anchorage are axially aligned with the tendon and that the tendon is centered within the equipment.

## B. General Stressing Procedures.

(1) Determine the stressing equipment, the sequence of stressing and the procedure to be used for each stressing operation during the planning stage of the project. Operate equipment in accordance with the manufacturer's instructions.

(2) Use stressing equipment capable of stressing the whole tendon in one stroke to the specified test load and of stressing the tendon to the maximum specified test load within 75 percent of the rated capacity. Use a pump capable of applying each load increment in less than 30 seconds.

(3) Ensure equipment allows stressing of the tendon in increments so that the load in the tendon can be raised or lowered in accordance with the test specifications, and allows the anchor to be lift-off tested to confirm the lock-off load.

(4) Ensure stressing equipment has been calibrated within an accuracy of  $\pm 2$  percent prior to use. Have the calibration certificate and graph available on site at all times. Ensure that the calibration is traceable to the *National Institute of Standards and Technology (NIST)*.

## C. Load Testing Setup.

(1) Place a dial gauge to bear on the pulling head of the jack, with their stems coaxial with the tendon direction. Support the gauge on an independent, fixed frame, such as a tripod, that will not move as a result of stressing or other construction activities during the operation.

(2) Prior to setting the dial gauge, place the Alignment Load (AL) accurately on the tendon. The magnitude of AL depends on the type and length of the tendon.

(3) Do not stress and test multiple element tendons with single element jacks.

(4) Do not begin stressing until the grout has reached adequate strength.

D. Performance Tests. Unless otherwise specified on the plans, perform a performance test on 5 percent of the ground anchors or a minimum of 3 ground anchors, whichever is greater. The performance tests are to verify the anchor design and the construction procedures used to install the ground anchor. Performance tests are to be performed on test anchors specified on the plans or as directed by the Engineer.

(1) Conduct the performance test by incrementally loading and unloading the ground anchor in accordance with the schedule provided in Table 3. Raise the load from one increment to another immediately after recording the ground anchor movement. Measure and record the ground anchor movement to the nearest 0.001 inches with respect to an independent fixed reference point at the alignment load and at each increment of load. Monitor the load with the primary pressure gauge. Place the reference pressure gauge in series with the primary pressure gauge during each performance test. If the load determined by the reference pressure gauge and the load determined by the primary pressure gauge differ by more than 10 percent, recalibrate the jack, primary pressure gauge, and reference pressure gauge at no cost



to the Department. At load increments other than the maximum test load, hold the load just long enough to obtain the movement reading.

(2) Hold the maximum test load in a performance test for 10 minutes. Use a load cell to monitor small changes in load during constant load-hold periods.

(3) Adjust the jack as necessary to maintain a constant load. Start the load-hold period as soon as the maximum test load is applied. Measure and record the ground anchor movement, with respect to a fixed reference, at 1, 2, 3, 4, 5, 6, and 10 minutes. If the ground anchor movement between 1 minute and 10 minutes exceeds 0.04 inches, hold the maximum test load for an additional 50 minutes. If the load hold is extended, record the ground anchor movement at 15, 20, 30, 40, 50, and 60 minutes.

**Table 3: Steps for the Performance Test**

Step	Loading	Applied Load	Record and Plot Total Movement ( $\delta_{ti}$ )	Record and Plot Residual Movement ( $\delta_{ri}$ )	Calculate Elastic Movement ( $\delta_{ei}$ )
1	Apply AL	AL			
2	Cycle 1	0.25FDL	$\delta_{t1}$		
		AL		$\delta_{r1}$	$\delta_{t1} - \delta_{r1} = \delta_{e1}$
3	Cycle 2	0.25FDL	$\delta_2$		
		0.50FDL	$\delta_{t2}$		
		AL		$\delta_{r2}$	$\delta_{t2} - \delta_{r2} = \delta_{e2}$
4	Cycle 3	0.25FDL	$\delta_3$		
		0.50FDL	$\delta_3$		
		0.75FDL	$\delta_{t3}$		
		AL		$\delta_{r3}$	$\delta_{t3} - \delta_{r3} = \delta_{e3}$
5	Cycle 4	0.25FDL	$\delta_4$		
		0.50FDL	$\delta_4$		
		0.75FDL	$\delta_4$		
		1.00FDL	$\delta_{t4}$		
		AL		$\delta_{r4}$	$\delta_{t4} - \delta_{r4} = \delta_{e4}$
8	Hold load for 10 minutes while recording movement at specified times. If the total movement measured during the load hold exceeds the specified maximum value, then extend the load hold to a total of 60 minutes.				
9	Cycle 4 (continued)	AL		$\delta_{r4}$	$\delta_{t4} - \delta_{r4} = \delta_{e4}$
Notes					
1. AL = Alignment Load					
2. FDL = Factored Design Load					
3. $\delta_i$ = total movement at a load other than maximum for cycle					
4. i = number identifying a specific load cycle.					

Performance anchors constructed using methods different from the methods submitted for production anchors will be rejected and additional performance anchor(s) will be required at no additional cost to the Department.

Do not install production anchors until the performance test results have been reviewed and accepted by the Engineer.

E. Proof Tests. Perform a proof load test on all ground anchors. Once the loading sequence is complete at 1.00 FDL, either reduce load to the designated lock-off load (top down construction sequence) or unload completely (bottom up construction sequence).

Jacking against the soldier pile members in areas of bottom up construction will not be allowed during the proof load tests. For bottom up construction methods, reload the anchor to the lock-off load denoted on the plans at a later time in the construction sequence or as approved on the shop drawings by the Engineer.

(1) Perform the proof test by incrementally loading the ground anchor in accordance with the schedule provided in Table 4. Raise the load from one increment to another immediately after recording the ground anchor movement. Measure and record the ground anchor movement to the nearest 0.001 inches with respect to an independent fixed reference point at the alignment load and at each increment of load. Monitor the load with the primary pressure gauge. At load increments other than the maximum test load, hold the load just long enough to obtain the movement reading.

**Table 4: Proof Test Schedule**

Step	Load
1	AL
2	0.25FDL
3	0.50FDL
4	0.75FDL
5	1.00FDL
6	Reduce to lock-off load (top down construction)
6A	AL (bottom up construction)
7	Adjust to lock-off load (at later point in bottom up construction sequence)
Notes	
1. FDL = Factored Design Load	
2. AL = Alignment Load	

(2) Hold the maximum test load in a proof test for 10 minutes. Adjust the jack as necessary to maintain a constant load. Start the load-hold period as soon as the maximum test load is applied. Measure and record the ground anchor movement with respect to a fixed reference at 1, 2, 3, 4, 5, 6, and 10 minutes. If the ground anchor movement between 1 minute and 10 minutes exceeds 0.04 inches, hold the maximum test load for an additional 50 minutes. If the load hold is extended, record the ground anchor movements at 15, 20, 30, 40, 50, and 60 minutes.

#### F. Extended Creep Test.

(1) Perform extended creep tests on anchors specified on the plans. If anchors are not specified, then the Engineer will select the ground anchors to be extended creep tested. Use stressing equipment capable of measuring and maintaining the hydraulic pressure within 50 psi.

(2) Conduct the extended creep test by incrementally loading and unloading the ground anchor in accordance with the performance test schedule provided herein. At the end of each loading cycle, maintain a constant load for the observation period indicated in the creep test schedule in Table 5. Read and record the ground anchor movement during each observation period at 1, 2, 3, 4, 5, 6, 10, 15, 20, 25, 30, 45, 60, 75, 90, 100, 120, 150, 180, 210, 240, 270, and 300 minutes, as appropriate for the load increment. Start each load-hold period as soon as the test load is applied. In a

creep test, use the primary pressure gauge and reference pressure gauge to measure the applied load, and use the load cell to monitor small changes in load during constant load-hold periods. Adjust the jack as necessary to maintain a constant load.

(3) Plot the ground anchor movement and the residual movement measured in an extended creep test. In addition, plot the creep movement for each load hold as a function of the logarithm of time.

**Table 5: Extended Creep Test Schedule**

Load	Observation Period, minutes
AL	1
0.15FDL	10
0.35FDL	30
0.50FDL	30
0.70FDL	45
0.80FDL	60
1.00FDL	300
Notes	
1. FDL = Factored Design Load	

G. Ground Anchor Test Acceptance Criteria.

(1) A performance-tested or proof-tested ground anchor with a 10 minute load hold is acceptable if:

(a) ground anchor resists the maximum test load with less than 0.04 inches of movement between 1 minute and 10 minutes; and

(b) total elastic movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length (apparent free length criteria).

(2) A performance-tested or proof-tested ground anchor with a 60 minute load hold is acceptable if:

(a) ground anchor resists the maximum test load with a creep rate that does not exceed 0.08 inches in the last log cycle of time; and

(b) total elastic movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length (apparent free length criteria).

(3) A ground anchor subjected to extended creep testing is acceptable if:

(a) ground anchor resists the maximum test load with a creep rate that does not exceed 0.08 inches in the last log cycle of time; and

(b) total elastic movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length (apparent free length criteria).

(4) Ensure the initial lift-off reading is within  $\pm 5$  percent of the designed lock-off load. If this criterion is not met, adjust the tendon load accordingly and repeat the initial lift-off reading.

#### H. Procedures for Anchors Failing Acceptance Criteria.

(1) Reject and replace anchors that do not satisfy the acceptance criteria at no additional cost to the Department. The Contractor must submit a replacement plan to the Engineer for approval. Rejected anchors may be locked off at not more than 50 percent of the maximum acceptable load attained.

(2) Regroutable anchors that satisfy the minimum apparent free length criteria but fail the extended creep test at the test load may be postgrouted and subjected to an enhanced creep criterion. This enhanced criterion requires a creep movement of not more than 0.04 inches between 1 and 60 minutes at the maximum test load. Lock off anchors that satisfy the enhanced creep criterion at the design lock-off load.

#### I. Anchor Lock-Off.

(1) After completing testing, load the tendon so that after seating losses (i.e., wedge seating), the lock-off load will have been applied to the anchor tendon.

(2) Ensure the lock-off load does not exceed 70 percent  $F_{pu}$ , the minimum tensile strength of the tendon.

(3) Seat the wedges at a minimum load of 50 percent  $F_{pu}$ . If the lock-off load is less than 50 percent  $F_{pu}$ , use shims under the wedge plate and the wedges seated at 50 percent  $F_{pu}$ . Then remove the shims to reduce the load in the tendon to the desired lock-off load. Bar tendons may be locked off at any load less than 70 percent  $F_{pu}$ .

J. Anchor Lift-Off Test. After transferring the load to the anchorage, and prior to removing the jack, conduct a lift-off test to confirm the magnitude of the load in the anchor tendon. If the lift-off test is not within 10 percent of the specified lock-off load, reset the anchorage and perform another lift-off test. Repeat this process until the desired lock-off load is obtained. Determine this load by reapplying load to the tendon to lift off the wedge plate (or anchor nut) without unseating the wedges (or turning the anchor nut).

K. Cutting Stressing Tails. Cut tendons using an abrasive disk. Leave not less than 1/2 inch and not more than 2 inches of tendon remaining beyond the wedges. Do not cut tendons until after testing, stressing and lift-off readings are complete. Do not cut tendons until the anchor is accepted by the Engineer.

**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:

<b>Pay Item</b>	<b>Pay Unit</b>
Ground Anchor Equipment, Furn (Structure No.).....	Lump Sum
Ground Anchor, Permanent.....	Each
Ground Anchor Test, Performance .....	Each
Ground Anchor Test, Proof.....	Each

Ground Anchor Test, Extended Creep.....Each

1. **Ground Anchor Equipment, Furn (Structure No.)** will be measured as a unit for each structure. **Ground Anchor Equipment, Furn (Structure No.)** includes furnishing and removing equipment for installing ground anchors, making submittals, obtaining approval or acceptance from the Engineer for submittals, and maintaining installation records.

2. **Ground Anchor, Permanent** will be measured per each anchor installed and accepted by the Engineer. **Ground Anchor, Permanent** includes furnishing all materials, equipment, casing, labor, incidentals, and disposing of excess materials and spoils for the work as specified herein. No additional compensation will be given for grout overruns.

3. **Ground Anchor Test, Performance** includes furnishing all materials, submittals, data collection and reports, equipment, labor and incidentals for the work as specified herein which meets the acceptance criteria.

4. **Ground Anchor Test, Proof** includes furnishing all materials, data collection and reports, equipment, labor and incidentals for the work as specified herein which meets the acceptance criteria. This includes loading the anchor to the factored design load specified, unloading, and then reloading to the specified lock-off load at a later time in the construction process. A lift off test for each anchor is also included with this pay item.

5. **Ground Anchor Test, Extended Creep** includes furnishing all materials, equipment, labor and incidentals for the work as specified herein which meets the acceptance criteria.

Steel reinforcement for local anchorage zone reinforcement for ground anchors bearing on concrete will not be paid for separately, but included in the pay item **Ground Anchor, Permanent**.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**CONCRETE CURB AND GUTTER, AND DRIVEWAY OPENINGS**

AA:CC

1 of 2

10/31/19

**a. Description.** This work shall consist of constructing concrete curb and gutter, and concrete driveway openings in accordance with attached details, section 802 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, as shown on the plans, and as specified herein.

**b. Materials.** The materials shall meet the requirements as specified in section 802 of the MDOT 2012 Standard Specifications for Construction and as specified herein:

The concrete mixture for Driveway Opening, Conc, Det M, Modified shall be Grade P-NC (658 lbs/cyd cement content) concrete with 6AA coarse aggregate.

All other concrete curb and gutter specified herein shall be Grade P1 with 6AA coarse aggregate. The Contractor may elect to add GGBFS to P1 mixtures in accordance with the requirements of the contract documents. No additional payment will be made for concrete mixtures containing GGBFS.

All concrete mixtures shall contain 6AA coarse aggregates which are either natural or limestone and meet the requirements of section 902 the MDOT 2012 Standard Specifications for Construction.

It shall be the Contractor's sole responsibility to propose specific concrete mix designs which meet the requirements of this Detailed Specification.

**c. Construction.** Construction methods shall be in accordance with section 802 of the MDOT 2012 Standard Specifications for Construction. Curb and Gutter, Conc shall be 2 feet wide barrier curb and gutter and constructed where shown in the plans.

Expansion joints of the thickness shown on the details shall be placed as directed by the Engineer.

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

<u>Pay Item</u>	<u>Pay Unit</u>
Curb and Gutter, Conc,.....	Foot

The pay items will be measured in length by the foot and will be payment in full for all labor, equipment and material needed to properly complete this work.

At curb openings for sidewalk ramps, the concrete curb and gutter (without the curb face) will be measured and paid for at the contact unit price for curb and gutter.

Where the Engineer directs the use of high early strength concrete for pay items that are not specifically designated to use Grade P-NC concrete, the additional cement shall be paid for separately. No additional payment will be made for cement for pay items that are designated to use Grade "P-NC." concrete.

CITY OF ANN ARBOR

DETAILED SPECIFICATION  
FOR  
**HMA CURB, REMOVE AND REPLACE**

AA:CC

1 of 1

10/31/19

**a. Description.** This work shall consist of removing and constructing bituminous curb, including condition and treating the surface on which the curb is to be laid, as shown on the Plans, as detailed in the Specifications, or as directed by the Engineer. This work shall meet the requirements of Sections 204 and 805 of the 2012 edition of the MDOT Standard Specifications, except as modified herein.

**b. Materials and Equipment.** Materials, equipment, and construction methods shall meet the requirements specified in Sections 204 and 805 of the MDOT Standard Specifications for Construction (2012 edition) except as modified herein.

Bond coat shall be applied to the adjacent surface.

Rolling is not required. The curbing machine shall thoroughly compact the mixture in the template form to the density required. The curb shall have a tight surface texture. Curb which shows segregation, slumping, or misalignment shall be removed and replaced at the Contractor's expense.

Where the area behind the curb is to be backfilled, the backfilling shall not commence until the mixture has been allowed to cure for at least 24 hours, unless otherwise approved by the Engineer. The backfill material shall be placed and thoroughly tamped and compacted to the satisfaction of the Engineer, without disturbing the curb, and shall be left in a neat and workmanlike condition.

**c. Measurement and Payment.** The completed work as measured for these items of work will be paid for at the Contract Unit Prices for the following Contract (Pay) Items:

<b>Pay Item</b>	<b><u>Pay Unit</u></b>
HMA Curb, Remove and Replace	Foot

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.



CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**PROTECTIVE FENCING**

AA:CC

1 of 2

10/31/19

**a. Description.** - This work shall consist of taking all reasonable measures to protect all existing trees and vegetation designated to remain and be protected within the project limits and the construction influence area, in accordance with Sections 201.03.A.2 and Section 808 of the Michigan Department of Transportation 2012 Standard Specifications for Construction, except as specified herein. The work shall also consist of installing protective fencing at the limits of the construction area as shown on the plans or in areas directed by the Engineer.

**b. Materials.** - Fabric shall be orange, vinyl, snow fence material, 4 feet tall. Posts shall be 6-foot-long, T-shaped, metal posts or 2-inch square hardwood stakes

**c. Means and Methods of Protection.** - Install protective fence at the limits of the construction area as shown on the plans or as directed by the Engineer.

The Contractor shall not operate equipment within the tree protection fence of any existing tree without the approval of the Engineer.

Construction material, supplies, or equipment shall not be stockpiled or stored within the limits of the tree protection fence.

Vehicles and personnel are not permitted within the limits of the tree protection fence.

The Contractor shall not attach chains, cables, ropes, nails, or other articles to any tree at any time.

Tree roots exposed during construction that are 1-1/2 inch or greater in diameter must be pruned. All pruning operations shall be reviewed and approved by the Engineer. All root pruning shall be performed with sharp tools and shall provide clean cuts that do not unnecessarily damage the remaining bark or root. The Contractor shall not perform any backfilling operations until all root maintenance has been performed.

Any damage to trees owned by the City of Ann Arbor or other trees designated to be protected due to the Contractor's activities or activities of the Contractor's subcontractors or suppliers shall be repaired under the direction of the City Forester by an approved forestry specialist. The costs of these repairs shall be the sole responsibility of the Contractor.

Should the Contractor's operations damage a plant's roots to the extent that it must be removed, the Contractor shall either replace the plant with a commensurate number of plants, 2½" caliper trees of the species as determined by the City, or compensate the City of Ann Arbor for the cash value of the plant or tree as determined by the City of Ann Arbor's Forester. The City of Ann Arbor shall be solely responsible for determining which compensation method is used.

The City Forester shall supervise the replacement of any trees at the sole expense of the Contractor.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**PROTECTIVE FENCING**

AA:CC

2 of 2

10/31/19

Remove tree protection fence when directed by the Engineer.

**d. Measurement and Payment.** - The completed work shall be paid for at the contract unit price for the following contract items (pay items):

<u><b>Contract Item (Pay Item)</b></u>	<u><b>Pay Unit</b></u>
Fence, Protective, Modified. ....	Foot

**Fence, Protective, modified** will be measured in length, by feet of protective fence used, and will be paid for at the contract unit price which shall be payment in full for all labor, materials, and equipment needed to accomplish this work. No additional payment will be made for maintenance or reinstallation of fence during the construction period. No additional payment will be made for repair or replacement of vegetation as noted above.

CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
TRAFFIC CONTROL

AA:CC

1 of 6

10/31/19

**a. Description.** This work shall consist of protecting and maintaining vehicular and pedestrian traffic, in accordance with the City of Ann Arbor Standard Specifications for Construction sections 104.11 and 812 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction; Part 6 of the 2011 Edition of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD); and, except as modified herein.

The work shall include, but is not limited to the following:

- The furnishing and operating of lighted plastic drums
- The furnishing and operating of Type III lighted barricades
- The furnishing and operating of all temporary "Type B" signs
- The furnishing and operating of arrow panels as required by the Engineer
- The furnishing and operating of signposts and installation of No Parking signs
- The furnishing and operating of miscellaneous signs, warning devices, flag-persons, and cones;
- The operation of additional signs furnished by the City;
- Maintaining pedestrian traffic;
- Temporarily covering traffic controls;
- Temporarily covering existing signs as directed;
- Any and all other miscellaneous and/or incidental items which are necessary to properly perform the work.

**b. Materials.** Materials and equipment shall meet the requirements specified in section 812 of the MDOT 2012 Standard Specifications for Construction.

**c. Construction.** The Contractor shall always maintain pedestrian traffic. For maintaining normal pedestrian traffic while performing sidewalk and driveway repair, Plastic Drum, High Intensity, Lighted shall be placed by the Contractor as directed by the Engineer. The Contractor, when directed by the Engineer, shall place "Sidewalk Closed" and/or "Cross Here" signs and the cost shall be included in this pay item and will not be paid for separately.

All temporary traffic/pedestrian control devices furnished by the Contractor shall remain the property of the Contractor. The City shall not be responsible for stolen or damaged signs, barricades, barricade lights or other traffic maintenance items. The Contractor shall replace missing traffic control devices immediately, at no additional cost to the Contractor or City. All existing signs, and signs erected by the City of Ann Arbor on this project shall be preserved, protected, and maintained by the Contractor. The City will repair any existing City owned signs, at the Contractor's expense, which are damaged by the Contractor during the work.

The Contractor shall temporarily cover conflicting traffic and/or parking signs when directed by the Engineer.

Parking violation citations issued to the Contractor, subcontractor, and material suppliers including each of their respective employees shall be enforced under appropriate City Code.

The work shall include: furnishing and operating of miscellaneous signs and warning devices; furnishing cones; operating additional signs furnished by the City throughout the life of the Contract; furnishing and operating pedestrian traffic control devices; maintaining a safe trench during all non-working hours; maintaining access to all drives; covering conflicting existing signs and removal of these covers; and any and all other miscellaneous and/or incidental items which are necessary to properly perform the work.

The Contractor shall replace missing or damaged traffic control devices, as directed by the Engineer. When traffic control devices have been damaged by, or due to, the negligence of the Contractor, his subcontractors or material suppliers, the traffic control devices shall be replaced at the Contractor's expense.

The Contractor shall furnish and operate all lighted arrow boards; lighted plastic drums; type III barricades; and Type B temporary signs as directed by the Engineer. Specifically:

- Lighted Arrow boards shall be type A or B as directed by the Engineer and shall be electric powered (either battery or solar). Motor generators using gasoline, diesel, LP gas, or other such fuel are not approved for use.
- Type III Barricades shall have standard orange-and-white stripes on both sides of the barricade.
- "Construction Ahead" warning signs shall be placed as directed by the Engineer prior to the start of work, regardless of the nature, magnitude, or duration of the work.

Enough signs shall be provided by the Contractor to insure the safety of the workers and the general public in accordance with the current MMUTCD.

Where there is metered parking, the Contractor shall either rent and install meter bags, or, with the Engineer's authorization, coordinate with the City Field Operation Services to have meter heads removed and reinstalled.

The Contractor shall maintain vehicular and pedestrian traffic during the work by the use of traffic regulators, channelizing devices and signs as necessary, as directed by the Engineer, and in accordance with 2011 Edition of the MMUTCD. Typical applications for maintaining pedestrian traffic in accordance with the 2011 Edition of the MMUTCD are included in this detailed specification.

In order to maintain areas of on-street parking available for residents, the Engineer may direct the contractor to cover and uncover temporary "No Parking" signs within the project limits multiple times throughout the course of the project. Such repeated covering and uncovering of signs shall be included in this item of work and shall not be paid for separately.

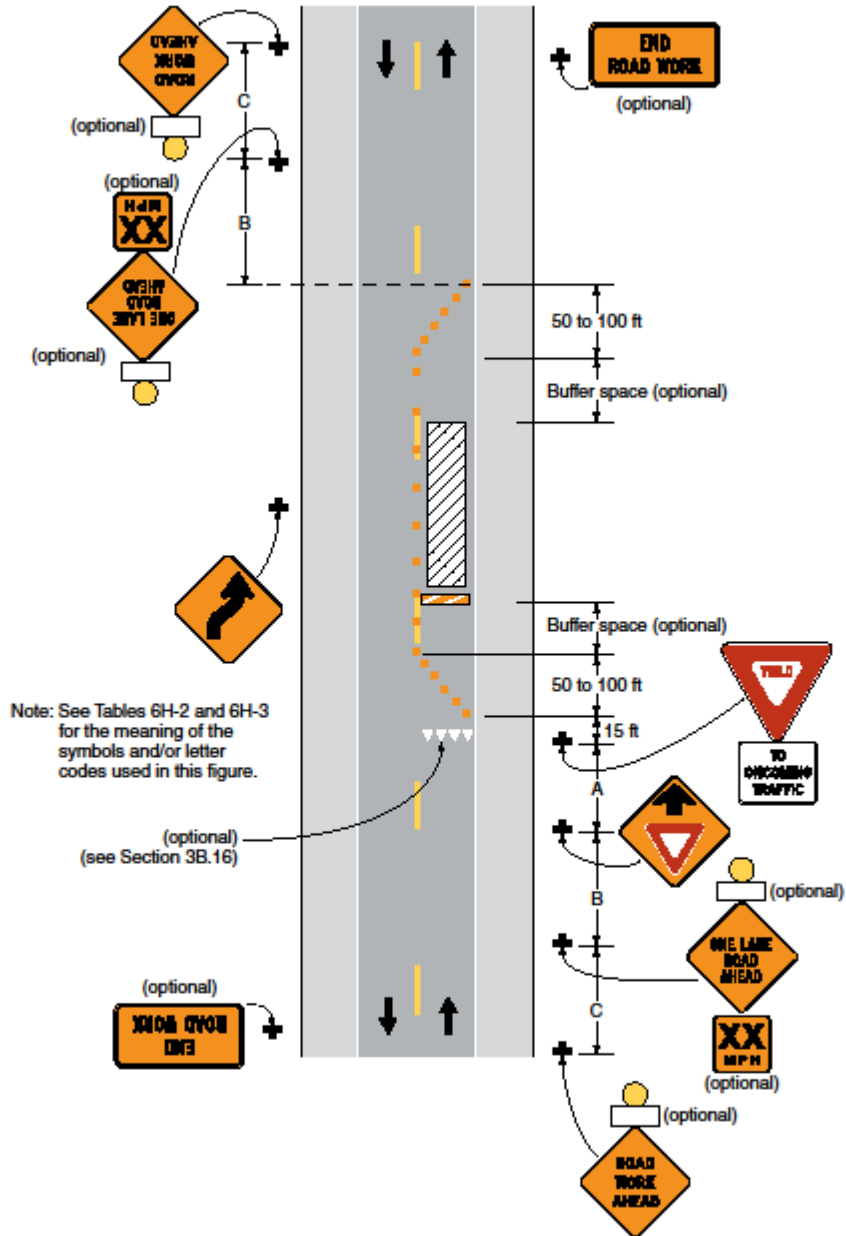
**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price for the following pay item:

<u>Pay Item</u>	<u>Pay Unit</u>
Traffic Control, Max \$_____	Lump Sum

The unit price for this item of work shall include all labor, material, and equipment costs to perform all the work described by this Detailed Specification.

This item will be paid for on a pro rata basis with each progress payment. Measurement will be based on the ratio between work completed during the payment period and the total contract amount. When all the work of this Contract has been completed, the measurement of this item shall be 1.0 Lump Sum minus any deductions incurred for inadequate performance as described herein. This amount will not be increased for any reason, including extensions of time, extras, and/or additional work.

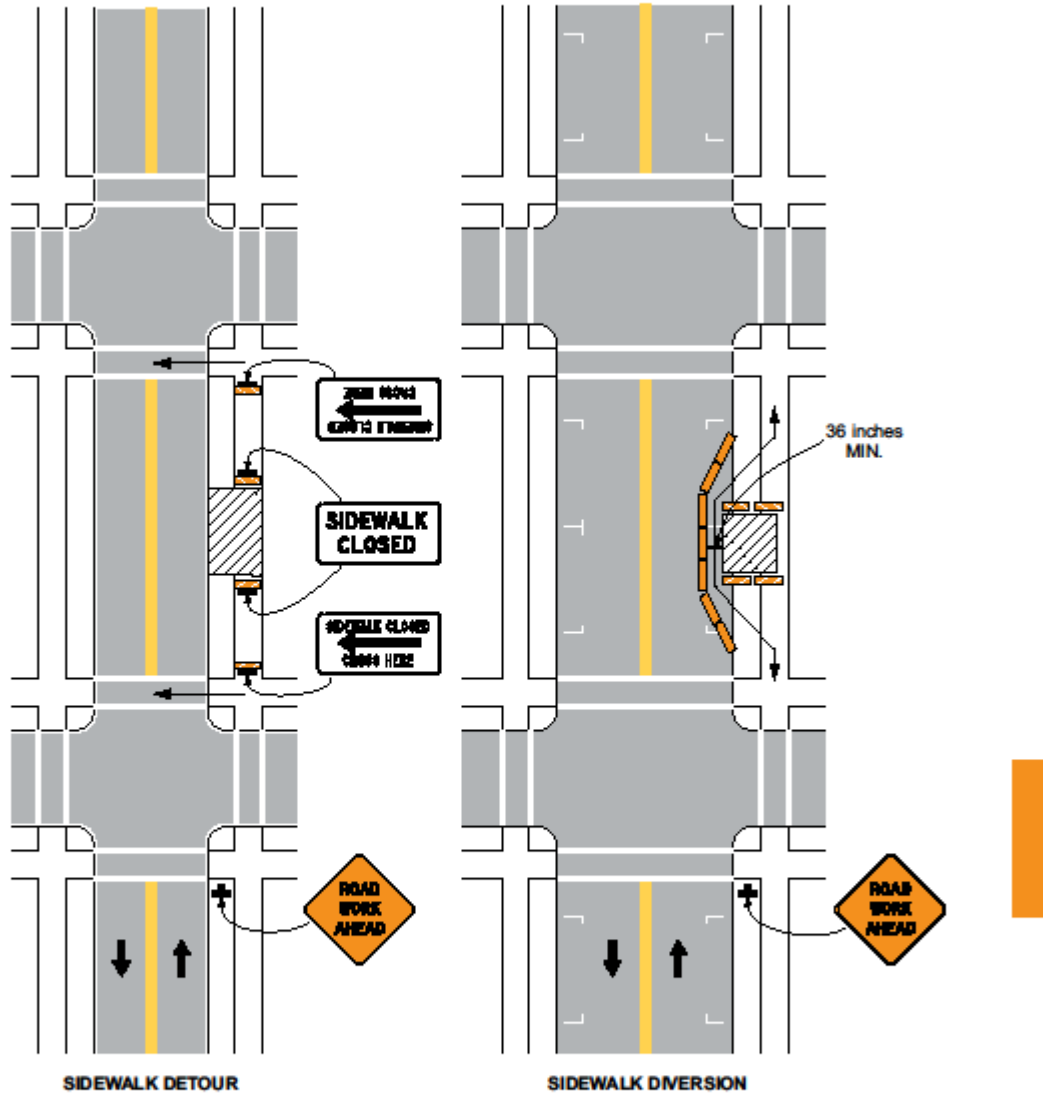
Figure 6H-11. Lane Closure on a Two-Lane Road with Low Traffic Volumes (TA-11)



Typical Application 11



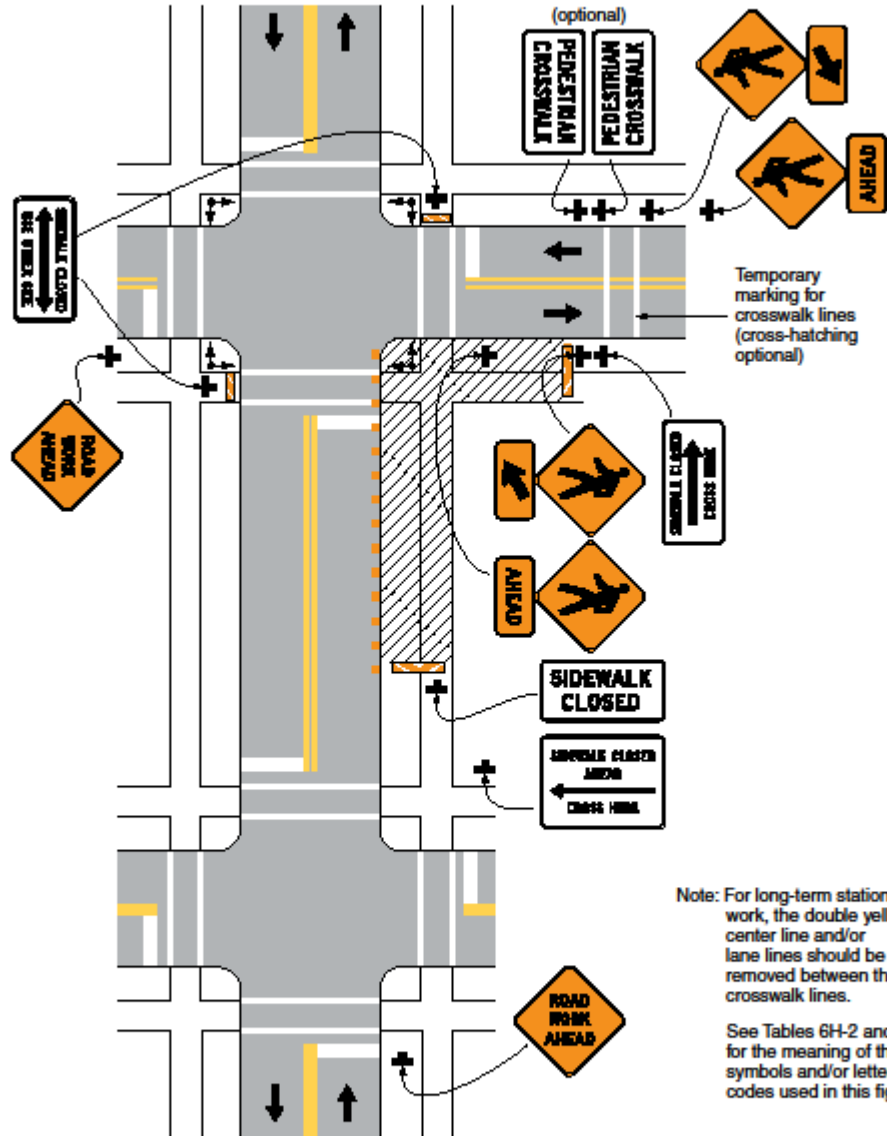
Figure 6H-28. Sidewalk Detour or Diversion (TA-28)



Typical Application 28

Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Figure 6H-29. Crosswalk Closures and Pedestrian Detours (TA-29)



Typical Application 29



CITY OF ANN ARBOR  
DETAILED SPECIFICATION  
FOR  
**SLOPE RESTORATION**

AA:CC

1 of 2

07/31/17

**a. Description.** This work consists of preparing all manicured lawns and slopes on non-freeway projects designated for slope restoration on the plans or by the Engineer, and applying topsoil, fertilizer, seed, and mulch to those areas. Turf establishment shall be in accordance with section 816 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction and Standard Plan Series R-100, except as modified herein or otherwise directed by the Engineer.

**b. Materials.** The materials and application rates specified in sections 816 and 917 of the MDOT 2012 Standard Specifications for Construction apply unless modified by this special provision or otherwise directed by the Engineer.

1. Topsoil Surface: Place **4 inches** of topsoil in area disturbed areas to be restored. Topsoil shall be free of all stones one inch in diameter or greater.
2. Turf Seed Mixture: Use seed mixture type THM (Turf Loamy to Heavy).
3. Chemical Fertilizer Nutrient: Use Class A fertilizer.
4. Use Mulch Blankets on all areas to be restored.

**c. Construction.** Construction methods shall be in accordance to subsection 816.03 of the MDOT 2012 Standard Specifications for Construction. Begin this work as soon as possible after final grading of the areas designated for slope restoration but no later than the maximum time frames stated in subsection 208.03 of the Standard Specifications for Construction. It may be necessary, as directed by the Engineer, to place materials by hand.

Prior to placing topsoil, shape, compact and assure all areas to be seeded **are weed free**. Place topsoil to the minimum depth indicated above, to meet proposed finished grade. Remove any stones greater than or equal to 1 inch in diameter. If the area being restored requires more than the minimum depth of topsoil to meet finished grade, this additional depth must be filled using topsoil. Furnishing and placing this additional material is included in this item of work.

Topsoil shall be **weed and weed seed free** and friable prior to placing seed. Remove all stones from the topsoil greater than 1 inch in diameter. Apply seed mixture and fertilizer to prepared soil surface. Seed shall be incorporated into top ½ inch of topsoil.

If an area washes out after this work has been properly completed and approved by the Engineer, make the required corrections to prevent future washouts and replace the topsoil, fertilizer, seed and mulch. This replacement will be paid for as additional work using the applicable contract items.

If an area washes out for reasons attributable to the Contractor's activity or failure to take proper precautions, replacement shall be at the Contractor's expense.

The Engineer will inspect the seeded turf to ensure the end product is well established, weed free, in a vigorous growing condition, and contains the species called for in the seeding mixture. **If areas do not promote growth, the Contractor shall apply new seed at its expense.**

If weeds are determined by the Engineer to cover more than ten percent of the total area of slope restoration, the Contractor shall provide weed control in accordance to subsection

816.03.J of the MDOT 2012 Standard Specifications for Construction. Weed control shall be at the Contractor's expense with no additional charges to the project for materials, labor or equipment.

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

<u>Pay Item</u>	<u>Pay Unit</u>
Slope Restoration .....	Square Yard

**Slope Restoration** shall be performed in all areas disturbed by the Contractor to construct the Project as shown on the plans and as directed by the Engineer. The Contractor will restore areas disturbed by its operations not required by the Project at its own expense.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**DEBRIS OR MATERIALS IN TRAFFIC LANES**

CFS:BRZ

1 of 1

APPR:EMB:DAJ:01-10-08  
FHWA:APPR:06-01-11

**Delete Subsection 104.07.B.2 on page 36 of the Standard Specifications for Construction, in its entirety and replace it with the following:**

2. **Construction Safety Program.** Before beginning work on the project, the Contractor must submit a written "Construction Safety Program" that outlines the plan and procedures for preventing and mitigating accidents and fires on the project and meeting all health and safety requirements of the contract. Also in the program include provisions for meeting the requirements of subsection 812.03 and details for the materials and equipment that will be used to prevent construction related debris or materials from entering the open lanes of traffic and what actions, including traffic control measures, will be taken to immediately and safely remove the debris or material from the roadway. The Contractor must meet with the Engineer to discuss the "Construction Safety Program" and to develop mutual understandings to govern the administration and enforcement of the program.

**Replace the second sentence in the first paragraph of Subsection 104.07.C.3 on page 37 of the Standard Specifications for Construction with the following:**

The Contractor is responsible, at the Contractor's expense, to provide the necessary materials and equipment to prevent construction related debris or materials from entering the open lanes of traffic. This includes protection of traffic controls, removal of spilled materials or debris from the roadbed or drainage courses, and repair of damaged facilities necessary for public travel and safety.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**HIGH VISIBILITY CLOTHING**

SSA:JDG

1 of 1

APPR:MWB:CRB:06-18-14  
FHWA:APPR:06-27-14

**Add the following, to the end, of subsection 104.07.B, Safety and Health Requirements, on page 36 of the Standard Specification for Construction:**

4. **Worker Visibility.** Effective November 24, 2008, all workers within the right-of-way who are exposed to traffic or to construction equipment within the work area, must wear high visibility clothing.

High visibility clothing or high visibility safety apparel is personal protective safety clothing that is intended to provide conspicuity during both daytime and nighttime usage. High Visibility safety apparel must meet the Performance Class 2 or 3 requirements of the American National Standards Institute/International Safety Equipment Association (ANSI/ISEA) 107-2004 for High-Visibility Safety Apparel and subsequent revisions thereof.

Costs incurred to comply with this requirement will be the responsibility of the Contractor.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**CONSTRUCTION STAGING AREAS**

DES:LFS

1 of 1

APPR:JJG:KAS:10-06-11  
FHWA:APPR:10-11-11

**Add the following subsection to section 107, on page 70 of the 2012 Standard Specifications for Construction:**

**107.22 Construction Staging Areas.** The contractor must not use any public recreation area as a staging area, marshalling yard, storage facility, or for any other construction support unless it is defined in the contract.

Public recreation areas include: parks, trails, game areas, wildlife and waterfowl refuges, playgrounds, golf courses, athletic fields or similar areas which are publically owned by public school districts, local, state, or federal governments.

Any agreements negotiated between the Contractor and the owner of the public recreation area, before or after the award of the contract will not be considered valid by the Department.

If the Engineer determines the Contractor is in non-compliance with this subsection, penalties up to and including termination of the contract, in accordance with subsection 108.12, may be enacted as well as the immediate restoration of the public recreation area at the Contractor's cost.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**NON-COMPLIANCE WITH SOIL EROSION AND SEDIMENTATION CONTROL  
REQUIREMENTS**

CFS:DMG

1 of 2

APPR:TWK:HZ:07-02-14  
FHWA:APPR:07-09-14

**a. Description.** This special provision establishes negative adjustments related to the failure to properly install and maintain soil erosion and sedimentation control (SESC) measures and the conditions under which these adjustments will be determined and applied. Nothing in this special provision modifies section 107 of the Standard Specifications for Construction.

Delays to the project as a result of the Contractor conducting corrective actions for SESC measures do not constitute a valid reason for an extension of time.

Ensure deficiencies with SESC measures are corrected in the time frame stated herein. For those deficiencies not corrected within the stated time frame, the Engineer will make a negative adjustment to the contract as stated herein.

**b. Materials.** None specified.

**c. Construction.** Install all temporary erosion control measures identified on the plans and as directed by the Engineer for an impacted area of the project prior to the start of any earth disturbance including, but not limited to, clearing, grading and excavation in that area. The Engineer will inspect these measures every 7 days and within 24 hours of precipitation events which result in off-site runoff. Deficiencies will be documented on the National Pollutant Discharge Elimination System and SESC Inspection Report (MDOT Form 1126).

If at any time during the project, including the time during the seasonal suspension, the Engineer documents deficient SESC measures, the Engineer will provide written notification with instructions for corrective action to the Contractor. The time frame for completion of these corrective actions will be specified in the notification and will be discussed with the Contractor as necessary.

Deficiencies are defined as one or more of the following:

1. Failure to install or construct SESC measures shown on the plans or as directed by the Engineer;
2. Failure to maintain the measures;
3. Failure to conduct earth change activities in a manner consistent with all applicable environmental permit requirements;
4. Failure to comply with the area limitations or the time limitations stated in subsections 208.03.A and 208.03.B, respectively, of the Standard Specifications for Construction.

SESC deficiencies are either emergency or non-emergency and the time frame for corrective action is determined accordingly. Sedimentation of a drainage structure or waters of the state or loss of support of the roadbed impacting public safety constitutes an emergency and corrective actions must be completed within 24 hours of notification. Non-emergency deficiencies must be corrected within 5 calendar days of notification.

For those emergency corrective actions not completed within 24 hours of notification, the Contractor will be assessed \$100.00 per hour for every hour the deficiency remains uncorrected after the initial 24 hours of notification. For those non-emergency corrective actions not completed within 5 calendar days, the Contractor will be assessed \$500.00 per day for every day, or part thereof, the deficiency remains uncorrected after the initial 5 days of notification.

If it is not practicable to complete the non-emergency corrective actions within 5 calendar days, the Contractor must document the reasons and propose a corrective action plan to the Engineer within 5 days of notification. The corrective action plan must contain the Contractor's course of action and a time frame for completion. If the reasons and the corrective action plan are acceptable to the Engineer, the Contractor will be allowed to proceed with the plan as proposed without incurring a negative adjustment. If the approved corrective action plan is not completed as proposed, the Contractor will be assessed \$1000.00 per calendar day for every day, or part thereof, the deficiency remains uncorrected after the time frame is exceeded in the approved corrective action plan.

Correct, in the timeframe stated herein, all other emergency or non-emergency SESC deficiencies documented anywhere else on the project during completion of the approved corrective action plan.

**d. Measurement and Payment.** The Engineer will make the necessary monetary adjustment to the contract amount based on the length of time the Contractor allows the deficiencies to remain uncorrected after the time allowance stated herein and as described to cover any costs incurred by the Department as a result of SESC violations.

All costs associated with corrective actions required due to the Contractor's failure to properly install or maintain SESC measures on this project will be borne by the Contractor.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

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

CFS:DMG

1 of 2

APPR:TWK:CP:08-29-16  
FHWA:APPR:08-30-16

**a. Description.** This work consists of furnishing and installing acceptable alternatives to inlet protection devices (devices) listed in the *Soil Erosion and Sedimentation Control Manual* when the pay item Erosion Control, Inlet Protection, Fabric Drop is included in the contract.

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

**b. Materials.** The following devices are approved for use as acceptable alternatives:

1. Siltsack Type B, Regular Flow, by ACF Environmental, Inc.
2. Inlet Pro Sediment Bag, Standard Flow, with optional foam deflector by Hanes Geo Components.
3. Dandy Curb Bag, Dandy Bag, Dandy Curb Sack, Dandy Sack, or Dandy Pop by Dandy Products, Inc.
4. Basin Bag, Regular Flow by CSI Geoturf.

Ensure provided devices are sized appropriately for the drainage structures in which they will be installed.

**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 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.

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

<b>Pay Item</b>	<b>Pay Unit</b>
Erosion Control, Inlet Protection, Fabric Drop.....	Each



**Erosion Control, Inlet Protection, Fabric Drop** will be paid for as one each for each time the alternate device listed herein is installed, maintained, and removed at a separate location within the project limits.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**AGGREGATE BASE COURSE**

CFS:JAR

1 of 1

APPR:JAR:ACR:06-26-03  
FHWA:APPR:04-19-11

**a. Description.** This provision modifies the layer thickness requirements for placing and compacting aggregate base course. Delete the 6-inch maximum layer restriction in section 302 of the Standard Specifications for Construction and replace with the following:

Construct a test strip at the start of base work. Compact all layers to a uniform depth of not more than 10 inches (+3/4 inch). If the total plan base thickness exceeds 10 inches, construct the base in layers of equal thickness. Secure the Engineer's approval for the method of placement and compaction before continuing.

If the accepted method is subsequently modified, the Engineer may require another test strip to confirm compliance with the specification. The Engineer may remove a portion of a layer when conducting density testing to assure the compaction requirements are being met full-depth.

**b. Measurement and Payment.** All additional costs associated with constructing aggregate base course according to this special provision will be included in the related Aggregate Base pay item.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**SUPPORTS FOR TEMPORARY SIGNS**

OPR:CRB

1 of 1

APPR:MWB:DBP:06-26-12  
FHWA:APPR:08-18-12

**Delete the last paragraph of subsection 812.03.D.3, on page 604 of the Standard Specifications for Construction in its entirety, and replace with the following.**

Mount construction signs on portable sign support standards only if signs are to remain in place for 14 days or less, or as allowed by the Engineer if fixed supports are not possible.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**SECURITY OF PORTABLE CHANGEABLE MESSAGE SIGNS**

OFS:CRB

1 of 1

APPR:LWB:DBP:10-09-13  
FHWA:APPR:10-09-13

**a. Description.** This work consists of making certain the portable changeable message sign (PCMS) is secure, and complies with the following:

1. Create unique usernames and passwords (not defaults) for access to the PCMS local controls.
2. Remove all literature (manuals, instructions, etc.) from the PCMS controller enclosure.
3. Use a padlock, keyed lock, etc to prevent access to the controller enclosure.
4. Provide the Engineer up to 3 keys, or the lock combination, as well as the usernames and passwords.
5. Provide at minimum, one classroom style training session of 2 hours, on PCMS field equipment, including but not limited to: posting and removal of messages, diagnosing field equipment malfunctions including messaging and communications errors. All training schedules, syllabus and materials are to be supplied by the Contractor and approved by the Engineer prior to delivery of training. Unless otherwise specified by the Engineer, the number of participants at each training session will be limited to a maximum of 20 individuals

MDOT reserves the right to take full messaging control of any PCMS at any time throughout the duration of the project. This includes posting any message determined to be appropriate by MDOT

MDOT may, at any time, inspect PCMS boards that are on site to verify that the security measures in this special provision are being followed.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**CRUSHED CONCRETE NEAR WATER**

CFS:JFS

1 of 1

APPR:KAS:DBP:02-24-12  
FHWA:APPR:02-24-12

**Add the following paragraph after the first paragraph of Subsection 902.05 on page 743 of the Standard Specifications for Construction:**

The use of crushed concrete is prohibited on the project within 100 feet of any water course (stream, river, county drain, etc.) and lake, regardless of the application or location of the water course or lake relative to the project limits.

**Add the following paragraph after the first paragraph of Subsection 902.06 on page 743 of the Standard Specifications for Construction:**

The use of crushed concrete is prohibited on the project within 100 feet of any water course (stream, river, county drain, etc.) and lake, regardless of the application or location of the water course or lake relative to the project limits.

**Add the following paragraph after the fourth paragraph of Subsection 902.07 on page 744 of the Standard Specifications for Construction:**

The use of crushed concrete is prohibited on the project within 100 feet of any water course (stream, river, county drain, etc.) and lake, regardless of the application or location of the water course or lake relative to the project limits.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**ALTERNATIVE GRANULAR MATERIALS FOR FILL AND SUBBASE**

CFS:SAB

1 of 1

APPR:JFS:DMG:04-03-12  
FHWA:APPR:04-09-12

**Delete subsection 902.07.A, on page 744, of the Standard Specifications for Construction, in its entirety and replace with the following:**

A. Class I, Class IIAA, or Dense-Graded Aggregate 21A, 21AA and 22A material for Class II material;

**Delete subsection 902.07.B, on page 744, of the Standard Specifications for Construction, in its entirety and replace with the following:**

B. Class I, Class II, Class IIA, Class IIAA, Class IIIA or Dense-Graded Aggregate 21A, 21AA and 22A material for Class III material;

**Delete subsection 902.07.C, on page 744, of the Standard Specifications for Construction, in its entirety and replace with the following:**

C. Class I material for Class IIAA material; and

**Add the following subsection to Section 902.07, on page 744, of the Standard Specifications for Construction.**

D. Dense-Graded Aggregate 21A, 21AA and 22A material for Class IIA.

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**SUPERPAVE FINAL AGGREGATE BLEND REQUIREMENTS**

CFS:KPK

1 of 2

APPR:JFS:CJB:04-03-15

FHWA:APPR:04-07-15

**a. Description.** This special provision establishes the Superpave final aggregate blend gradation requirements and the Superpave final aggregate blend physical requirements.

**b. Materials.** Replace Table 902-5 and Table 902-6 of the Standard Specifications for Construction with the following tables.

<b>Table 902-5</b>						
<b>Superpave Final Aggregate Blend Gradation Requirements</b>						
<b>Standard Sieve</b>	<b>Percent Passing Criteria (control points)</b>					
	<b>Mixture Number</b>					
	<b>5</b>	<b>4</b>	<b>3 Leveling Course</b>	<b>3 Base Course</b>	<b>2</b>	<b>LVSP (a)</b>
1½ inch	—	—	—	—	100	—
1 inch	—	—	100	100	90–100	—
¾ inch	—	100	90–100	90–100	≤90	100
½ inch	100	90–100	≤90	≤90	—	75–95
⅜ inch	90–100	≤90	—	—	—	60–90
No. 4	≤90	—	—	—	—	45–80
No. 8	47-67	39-58	35–49	23–49	19–45	30–65
No. 16	—	—	—	—	—	20–50
No. 30	—	—	—	—	—	15–40
No. 50	—	—	—	—	—	10–25
No. 100	—	—	—	—	—	5–15
No. 200	2.0–10.0	2.0–10.0	2.0–8.0	2.0–8.0	1.0–7.0	3–6

a. For LVSP, less than 50 percent of the material passing the No. 4 sieve may pass the No. 30 sieve.

Table 902-6 Superpave Final Aggregate Blend Physical Requirements													
Est. Traffic (million ESAL)	Mix Type	Percent Crushed Minimum Criteria		Fine Aggregate Angularity Minimum Criteria		% Sand Equivalent Minimum Criteria		Los Angeles Abrasion % Loss Maximum Criteria		% Soft Particles Maximum Criteria (a)		% Flat and Elongated Particles Maximum Criteria (b)	
		Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course
< 0.3	LVSP	55/—	—	—	—	40	40	45	45	10	10	—	—
< 0.3	E03	55/—	—	—	—	40	40	45	45	10	10	—	—
≥0.3 - <1.0	E1	65/—	—	40	—	40	40	40	45	10	10	—	—
≥1.0 - < 3	E3	75/—	50/—	43	40	40	40	35	40	5	5	10	10
≥3 - <10	E10	85/80	60/—	45	40	45	45	35	40	5	5	10	10
≥10 - <30	E30	95/90	80/75	45	40	45	45	35	35	3	4.5	10	10
≥30 - <100	E50	100/100	95/90	45	45	50	50	35	35	3	4.5	10	10

(a) Soft particles maximum is the sum of the shale, siltstone, ochre, coal, clay-ironstone and particles that are structurally weak or are non-durable in service.  
 (b) Maximum by weight with a 1 to 5 aspect ratio.

Note: "85/80" denotes that 85 percent of the coarse aggregate has one fractured face and 80 percent has at least two fractured faces.



MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**PHYSICAL REQUIREMENTS FOR GEOTEXTILES**

CFS:RBE

1 of 1

APPR:DMG:RWS:08-06-15

FHWA:APPR:08-11-15

**Delete Table 910-1 on page 813 of the Standard Specifications for Construction in its entirety and replace with the following:**

**Table 910-1: Physical Requirements for Geotextiles**

Geotextile Category	Property				
	Grab Tensile Strength (minimum) (pounds)	Trapezoid Tear Strength (minimum) (pounds)	CBR Puncture Strength (minimum) (pounds)	Permittivity per second (minimum)	Apparent Opening Size (maximum) (millimeters)
	Test Method				
	<i>ASTM D 4632</i>	<i>ASTM D 4533</i>	<i>ASTM D 6241</i>	<i>ASTM D 4491</i>	<i>ASTM D 4751</i>
Geotextile Blanket (a)	90	45	230	0.5	0.21
Geotextile Liner	200	75	440	0.5	0.21
Heavy Geotextile Liner	270	100	620	0.5	0.21
Woven Geotextile Separator (<50% elongation)	270	100	620	0.05	0.425
Non-Woven Geotextile Separator (>50% elongation)	200	75	440	0.05	0.425
Stabilization Geotextile	270	100	620	0.05	0.50
Silt Fence	100 (b)	45	---	0.1	0.60
Drainage Geocomposites	90	45	230	0.5	0.21
<p>a. For pipe wrap where backfill around the pipe meets granular material Class IIAA requirements; geotextiles, including knitted polyester sock, which meet the following minimum requirements in the applied condition are permitted: Mass/Unit Area: 3.0 oz/yd<sup>2</sup>; Mullen burst strength: 100 psi; maximum apparent opening size must be 0.30 mm for pavement and foundation underdrains, and 0.60 mm in other areas. The fluid displacement rate for the Mullen burst test equipment must be 170 mL/min ±5 mL/min. Subtract tare strength from the ultimate burst strength as specified in <i>ASTM D 3786</i>.</p> <p>b. Elongation at the specified grab tensile strength no greater than 40% for silt fence.</p>					

MICHIGAN  
DEPARTMENT OF TRANSPORTATION  
SUPPLEMENTAL SPECIFICATION  
FOR  
**ERRATA TO THE 2012 STANDARD SPECIFICATIONS**

1 of 30

03-04-19

Page	Subsection	Errata
N/A	N/A	In the very beginning of the book on the page where we list the MDOT publications included by reference delete the following manual. "Work Zone Safety and Mobility Manual"
N/A*	N/A	In the very beginning of the book on the page where we list the MDOT publications included by reference replace the Field Manual of Soil Engineering (out of Print) with the following manual. "Geotechnical Manual"
3	101.02	Modify the abbreviation reading "AIS" to read "AISI".
4*	101.02	Delete the following abbreviations and the long forms MDELEG MDNRE Add the following abbreviations and the long forms MDNR Michigan Department of Natural Resources <b>MDEGLE Michigan Department of Environmental Great Lakes, and Energy</b> MDLARA Michigan Department of Licensing and Regulatory Affairs NESC National Electrical Safety Code
27	103.02.B.2	Change the last sentence of the first paragraph to read "For decreases below 75 percent, the maximum allowable payment for work performed, including any adjustment, will not exceed an amount equal to 75 percent of the original contract quantity times the contract unit price."
34	104.05	The first sentence of this subsection should read "If the Contractor performs unauthorized work (work performed without the inspections required by the contract, extra work performed without Department approval, work performed contrary to the inspectors direction, or work performed while under suspension by the inspector), the Engineer may reject the unauthorized work."
46	104.12	Add the following to the end of the first paragraph "The use of right-of-way in wetlands and floodplains, or the crossing of water courses by construction equipment is prohibited."
53	105.09	Add the following to the end of the second paragraph "Any specifically produced material not purchased by the Department, will remain the

Page	Subsection	Errata		
		Contractors and must be removed from the project prior to final acceptance."		
56	107.02.B.2	This sentence should read "U.S.Army Corps of Engineers' Section 404, Dredge and Fill; and Section 10, Navigable Waterway."		
56*	107.02.B	Add the subsection reading as follows: "3. U.S. Coast Guard Section 9, Navigable Waterway."  Change "MDNRE" to "MDEGLE" in this subsection.		
64	107.12	Change the first sentence of the first paragraph to read: "For protection of underground utilities and in accordance with 2013 PA 174, the Contractor must notify Miss Dig at least 3 work days, excluding Saturdays, Sundays and holidays, before beginning each excavation in areas where public utilities have not been previously located."		
65*	107.15.A	Change "MDNRE" to "MDEGLE" in four instances in this subsection.		
66	107.15.A.3	Add the following to the end of the paragraph "Note that a burn permit from the MDNR is required for any open burning whenever the ground is not snow covered. Any individuals that allow a fire to escape will be in violation of the Natural Resources and Environmental Protection Act and will be required to reimburse the costs of suppressing the wild fire."		
67*	107.16	The third sentence should read "In State Forests, the Contractor must contact the local Unit Manager, Forest Management Division, MDNR, regarding the work to be performed within or adjacent to the forest land."  Delete the last sentence of the first paragraph of this subsection.		
80	108.08.F	Delete the second paragraph in its entirety.		
80	108.08.G	Add the following new subsection: "G. The Contractor may propose and the Engineer may approve another equitable method, supported by an acceptable rationale to determine time extensions for any of the excusable delays listed in subsection 108.08.		
83	108.10.C	Change the last sentence of the first paragraph to read: "The liquidated damages may contain one or more components of damages added together."		
83	108.10.C.1	In Table 108-1 delete the last row of the table and replace it with the following: <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: left;">≥50,000,000</td> <td style="text-align: right;">4,500</td> </tr> </table>	≥50,000,000	4,500
≥50,000,000	4,500			
102	109.05.E.1	Change the second sentence of the third paragraph to read: "Provide the content specified in subsection 109.05.D.11 for the applicable items in this statement and as follows:"		

Page	Subsection	Errata
107	150.04	Change the following pay item reading "Mobilization, Max ___" to read "Mobilization, Max (dollar)" at nine locations throughout the subsection.
112	201.03.A.3.b	Change "MDNRE" to "MDNR" in three instances in this subsection.
123	204.04	Change the following pay item reading "Structures, Rem" to read "Structures, Rem (Structure No.)"
123	204.04	Change the following pay item reading "Concrete Barrier, Rem" to read "Conc Barrier, Rem"
150*	208.01	Change "MDNRE" to "MDEGLE" in this subsection.
180	308.03.A	Change the first sentence of the second paragraph to read: "Do not operate equipment required to place backfill directly on geotextile products."
185	401.03.A	Change the first sentence of the second paragraph to read: Where unstable soil conditions, or obstructions other than rock, require excavation of the trench below the elevation detailed on the plans; undercut, backfill, and compact the trench as directed by the Engineer.
188	401.03.H	Change the second sentence of the paragraph to read "Jack steel pipes in place in accordance with subsection 401.03.G".
189	401.03.N	Add the following sentence to the end of the first paragraph "Where possible, maintain the stream flow thru a temporary channel or temporary culvert."  The second sentence of the second paragraph should read "Direct water from the dewatering operations through a filter bag before discharging to an existing drainage facility."
189	401.04	Change the fourth pay item from the end of the list to read as follows: "Culv, Reinf Conc Ellip, (shape) CI __, (rise) inch x (span) inch".
190	401.04	Change the fourth pay item from the end of the list to read as follows: "Steel Casing Pipe, __ inch, Tr Det __."
195	402.03.C	Change the third sentence of the first paragraph to read as follows: "Wrap pipe joints, with a diameter greater than 24 inches, using geotextile blanket."
200	402.04	Change the third pay item from the top of the list to read as follows: "Sewer, CI __, __ inch, Jacked in Place"
200	402.04.A	Change the last sentence of the subsection to read as follows: "The unit price for <b>Sewer</b> and <b>Sewer, Reinf Conc, Ellip</b> includes the cost of excavation, backfill, geotextile blanket and mandrel testing."

Page	Subsection	Errata
201*	402.04.H	Change the last sentence of the first paragraph to read "The Department will not make an adjustment in the pay items of <b>Minor Traf Devices</b> or <b>Traf Regulator Control.</b> "
208	403.04.D.3	Change the sentence to read: "Removing and replacing pavement adjacent to the adjusted cover per Standard Plan R-37 Series."
218	406.03.A.2	Change the first sentence of the first paragraph to read: "Design precast box culverts less than 10 feet in span length measured along the centerline of the roadway in accordance with current AASHTO LRFD Bridge Design Specifications and ASTM C 1577."  Add the following sentence to the end of the first paragraph: "Design precast box culverts greater than or equal to 10 feet in span length measured along the centerline of the roadway for HL-93 Modified live load."
219	406.03.B	Change the first sentence of the first paragraph to read: "Submit shop drawings for culverts greater than or equal to 10 feet in span length measured along the centerline of the roadway to the Engineer, for review and approval in accordance with subsection 104.02."
219	406.03.C.1	Change the second sentence of the first paragraph to read: "Before manufacture, perform load ratings on precast three-sided, arch or box culverts greater than or equal to 10 feet in span length measured along the centerline of the roadway, in accordance with the AASHTO Manual of Bridge Evaluation, Section 6, Part A, the Michigan Bridge Analysis Guide current at the time load rating is performed, and the Michigan Structure Inventory and Appraisal Guide."
223	406.03.G	Add the following after the first sentence of the second paragraph: "Where possible, maintain the stream flow thru the existing channel, temporary channel, or temporary culvert."
224	406.03.G	Replace the fifth paragraph of this subsection with the following: "The Contractor may use cast-in-place wing walls, headwalls, and aprons, as alternatives to precast wing walls, headwalls, and aprons. Attach cast-in-place wing walls or headwalls as shown on the shop drawings."
225	406.03.G.2	Change the third sentence of the first paragraph to read: "Before placing the open-graded aggregate 34R, compact the coarse aggregate 6A using at least three passes of a vibrating plate compactor."
226	406.03.G.2	Change the first sentence of the second paragraph of this subsection to read:

Page	Subsection	Errata
		"Fill the space between the box culvert joints during placement of box sections with closed-cell rubber extrusion type gaskets in accordance with ASTM C 990."
226	406.04.A.9	Change the sentence to read: "Providing plan modifications including design, additional plan quantities and pay items to accommodate any changes to the precast units as shown on the plans."
226*	406.04.A	Add the following paragraph after the last paragraph of the subsection: "The substructure design is specific to the three-sided or arch culvert detailed on the plans. The Contractor must use approved MDOT service vendors qualified in Hydraulics, Geotechnical Engineering Services, and Short and Medium Span Bridges to perform the required design and plan modifications, as directed by the Engineer, if the Contractor selects a culvert shape different than shown on the plans."
227	406.04.B	Add the following new item in the list of items in this subsection: 2. Headwalls, wingwalls, aprons, and curtain walls, precast or cast-in-place;  Renumber the exist items 2 through 4 in this list to read 3 through 5.  Delete existing item numbered 5 and replace with the following: 6. Inserts for bars and connection hardware; and  Renumber the existing item 6 in this list to read 7.
227	406.04.B	Delete the first and second paragraphs following the list of items in this subsection and replace with the following: "The Department will pay separately for cast-in-place concrete, other than for culvert segments, wing walls, and headwalls; excavation; protective coating; providing and placing backfill material; by plan quantity in accordance with subsection 109.01.A."
239	501.03.C.6	The first sentence of this subsection should read "Except as specified in subsection 501.03.C.4, removing HMA surface applies to removing HMA overlying a material designated for removal or that is required to remain in place."
247	501.03.O	Change footnote e in Table 501-5 to read: "Flushing severe enough to significantly affect surface friction (Friction Number <35)."
249	501.04.H	The first sentence of this subsection should read "The Engineer will measure, and the Department will pay for removing HMA surface, no greater than 12 inches thick, overlying a material designated for removal or that is required to remain in place, as <b>HMA Surface, Rem.</b> "

Page	Subsection	Errata
		The second paragraph of this subsection should read "The Engineer will measure, and the Department will pay for removing HMA surface, greater than 12 inches thick, overlying a material designated for removal or that is required to remain in place, as <b>Pavt, Rem</b> in accordance with subsection 204.04."
257	503.03.E	Delete this subsection in its entirety.
265	504.03.E.3	Delete this subsection in its entirety.
269	504.04.A	This subsection should read "The unit prices for <b>Micro-Surface</b> , regardless of the type required, include cleaning existing pavement; applying a bond coat; temporary pavement markings; stationing; corrective action; and traffic control to complete corrective action."
299	601.04	In table 601-2 delete the row for Grade P-NC concrete in its entirety.
300	601.04	In table 601-2, the first sentence of footnote b. should read: "Use coarse aggregate 6A, 6AA or 6AAA for Grades P1, P2 and M."  In table 601-2, footnote c. should read: "The mix design basis for bulk volume (dry, loose) of course aggregate per unit volume of concrete is 72% for Grade P1; 74% for Grade P2."
308	602.03.F	Note c. in Table 602-1 should read "Refer to Section D6 of the Materials Quality Assurance Procedures Manual for inspection procedure."
320	602.04.C.3	The last paragraph in this subsection should read "If the Engineer approves a substitution of a higher concrete grade for a lesser grade (e.g., P1 for P2), the Department will pay for the higher grade of concrete using the original bid and pay items of the lesser grade."
327	603.02	Change the second material in the list to read: "Concrete, Grade P-NC.....603"  Change the third material in the list to read: "Base Course Aggregate, 4G, 21AA, 22A.....902"
334	603.03.B.10	Change the last sentence of the second paragraph to read "Apply the required curing compound in two coats, at a rate of at least 1 gallon per 25 square yards for each coat."
342	603.04.G.3	Change "D1" to "W" in two instances in this subsection.
351	701.04	Replace Tables 701-1A and 701-1B with the Table 701-1 below.
362*	704.03.C	Change the last sentence in the first paragraph of this subsection to read: "The Engineer will consider approval after receiving applicable MDEGLE permits for the alternate method."

Page	Subsection	Errata
372	705.03.C.1	Add the following sentence after the first paragraph of this subsection: "Do not drive piles within a radius of 25 feet of newly placed concrete until the concrete attains at least 75 percent of its specified minimum strength."
374	705.03.C.2.c	Change the last sentence of the second paragraph to read "Drive test piles to the minimum pile length or practical refusal, whichever is greater".
379	705.04	Change the fifth item down the list to read: "Pile, Galv (Structure No.)"
380	705.04	Change the last item in the list to read: "Pile Driving Equipment, Furn (Structure No.)"
383	706.02	The fourth paragraph following the list of materials should read "Provide AASHTO M 270, Grade 36 steel, meeting the requirements of ASTM A 786, galvanized in accordance with section 707, for expansion joint cover plates. Provide plates at least 3/8 inch thick. Use plates with a slip resistance equal to or greater than those meeting the requirements of ASTM A 786 and must be approved by the Engineer. Provide ASTM F 593 (Type 304) stainless steel, 3/4-inch or 1/2-inch diameter, flathead countersunk screws with 3/4-inch or 1/2-inch diameter inserts for use in expansion joint cover plates."
389	706.03.D.4.b	Change the first sentence of the fourth paragraph to read "Design forms, form supports, and attachments to carry dead loads, and resultant horizontal loads due to forming of cantilever overhangs."
390	706.03.E.4	Change the fourth sentence of the first paragraph to read: "Use wire ties to secure all bar intersections for the top mat. Use wire ties to secure all bar intersections for other mats where the product of the length and width of bar intersection spacing exceeds 120 square inches."
391	706.03.E.8	Change the first sentence of the second paragraph of this subsection to read: "Patch sawed or sheared ends and visible defects in accordance with ASTM A 775."
392	706.03.E.8	Change the last sentence of the third paragraph of this subsection to read: "Coat mechanical splices after splice installation in accordance with ASTM A 775 for patching damaged epoxy coating."
394	706.03.H.1	Delete the last paragraph on page 394 and replace it with the following: "Do not cast sidewalk, curb, or barrier pours until the deck concrete attains at least the minimum specified 7-day flexural or compressive strength, and after completion of the 7-day continuous wet cure. The



Page	Subsection	Errata
		forming of succeeding portions may occur, provided the wet cure is maintained.”
406*	706.03.N.1.b	Add the following to the end of the last paragraph of the subsection: “Do not discontinue wet cure nor cast succeeding portions onto the bridge deck prior to completion of the 7-day two-phase continuous wet cure. Ensure excess or ponding cure water is removed prior to casting of succeeding structure portions.”
416	707.03.C.1	Change the title of the subsection from “Shop Plans to read “Shop Drawings”.  Change the second sentence of this subsection to read: “Do not use design drawings in lieu of shop drawings.”
426	707.03.C.17	Change the second sentence in the first paragraph of this subsection to read: "Tap oversized galvanized nuts in accordance with ASTM A 563 or AASHTO M 292 and meet Supplementary Requirement S1 of ASTM A 563 or AASHTO M 292."
430	707.03.D.7.b	Delete the first sentence of the last paragraph of this subsection.
430*	707.03.D.7.b	Change the title of the Table 707-4 to read: "Minimum Bolt Tension for ASTM F 3125 Grade A 325"
430	707.03.D.7.b	Change "104,000" to "103,000" in the last row under the column titled Minimum Bolt Tension.
431	707.03.D.7.c	Add the following sentence to the end of the first paragraph of this subsection: “If using impact wrenches, provide wrenches sufficient to tighten each bolt in approximately 10 seconds.”
431*	707.03.D.7.c	Change the first sentence of the second paragraph to read: "Do not reuse ASTM F 3125 Grade A 325 bolts and nuts.."
434	707.04.A	Change the first sentence of the first paragraph of this subsection to read: “The Engineer will measure structural steel by the calculated weight of metal in the finished structure, excluding filler metal in welding, as shown on the shop drawings or working drawings.”
438	708.03.A.2	Change the title of the subsection from “Shop Plans to read “Shop Drawings”.  Change the first sentence to read: “Submit shop drawings in accordance with subsection 104.02.”  Change the fourth sentence to read:

Page	Subsection	Errata
		"Do not start production until the Engineer approves the shop drawings."
441*	708.03.A.11	Change the last sentence of the first paragraph to read "Cure concrete at temperatures from 70 °F to 150 °F until concrete attains the release strength shown on the shop drawings".
441	708.03.A.11	Change the fourth sentence of the fourth paragraph to read "Do not exceed a maximum concrete temperature of 150 °F during the curing cycle."
458	711.03.A	Change the first sentence in the first paragraph to read: "Shop drawings for structural steel and pipe railings are not required."
460	711.04.A	Change the second sentence of the first paragraph to read: "The unit price for <b>Bridge Barrier Railing</b> includes the cost of placing steel reinforcement, providing and placing concrete, constructing joints, and forming, finishing, curing and protecting the concrete."
461	711.04.F	The title of this subsection should read " <b>Reflective Marker, Permanent Barrier.</b> "
467	712.03.C	Add the following to the end of the third paragraph of the subsection: "Notify the Engineer of any saw cuts in the top flange. Saw cuts equal to or less than 1/32 inch deep in steel beams must be repaired by grinding, to a surface roughness no greater than 125 micro-inches per inch rms, and tapering to the original surface using a 1:10 slope. Saw cuts in excess of 1/32 inch deep in steel beams require a welded repair to be submitted to the Engineer for approval. Weld in accordance with subsection 707.03.D.8 and provide adequate notice to allow the Engineer to witness the repair work. Inspect and test all saw cut repairs (including grinding repairs) using ultrasonic testing in accordance with 707.03.D.8.c at no additional cost to the Department."
471	712.03.J	Add the following to the end of the second paragraph of the subsection: "Select adhesive anchor systems from the Qualified Products List."
471	712.03.J.1	Delete the first paragraph in this subsection and replace it with the following: "Propose complete details of drilling, cleaning, and bonding systems for anchoring reinforcement and submit for the Engineer's approval before use. The minimum embedment depth must be nine times the anchor diameter for threaded rod or bolt and twelve times the anchor diameter for reinforcing bar. Propose a drilling method that does not cut or damage existing reinforcing steel. Prepare at least three proof tests per anchor diameter and type in the same orientation in which they will be installed on the existing structure, on a separate concrete block, in the presence of the Engineer. The Engineer will proof test the proposed systems. The Engineer will base approval of the anchoring system on the following criteria:"
471	712.03.J.2	Change the third sentence of the first paragraph to read:

Page	Subsection	Errata
		"Use a tension testing device for unconfined testing, in accordance with ASTM E 488."
473	712.03.L.2	Change the first sentence in the second paragraph of this subsection to read: "If using epoxy coated steel reinforcement, epoxy coat mechanical reinforcement splices in accordance with ASTM A 775."
473	712.03.L.3	Delete the existing first sentence in the first paragraph.
473	712.03.L.3	Change the third sentence of the first paragraph to read "Provide two test splices on the largest bar size."
473*	712.03.L.3	Change the sentence beginning "Demonstrate to the.... to read: "Demonstrate to the Engineer that splices have a tensile strength of 125 percent of the bar yield strength and high strength splices have a tensile strength of 150 percent of the bar yield strength."
488	713.02	Add the following as subsection 713.02.C: "C. <b>Structural Steel for Retrofitting and Welded Repairs.</b> Structural steel material used for retrofitting and welded repairs of primary members as defined in subsection 707.01.B must meet longitudinal Charpy V-Notch impact test requirements."
501	715.02	Add the following material reference above the two existing items: "Sealant for Perimeter of Beam Plates.....713"
508	715.03.D.1	Add the following sentence after the second paragraph of the subsection: "Apply sealant for perimeter of beam plates in accordance with subsection 713.03.F."
515	716.03.A	Delete the second paragraph of this subsection in its entirety.  Change the last sentence of the last paragraph of this subsection to read: "Provide a primer dry film thickness for the top flange between 4 mils and 10 mils."
519	716.04	Change the second sentence of the first paragraph of this subsection to read: "The unit price for <b>Field Repair of Damaged Coating (Structure No.)</b> includes the costs of making field repairs to the shop applied coating system; prime coat surfaces and exposed surfaces of bolts, nuts, and washers; and repairing stenciling."
521	717.04.B	This subsection should read "The unit price for <b>Drain Casting Assembly</b> includes the cost of providing and installing the downspout and, if necessary, the lower bracket to the drain casting."

Page	Subsection	Errata
522	718.02	Change the section number "906" in the third material in the list to read "919."
533	718.04	Delete the following pay item from the list: Temp Casing.....Foot
533	718.04.B.2	Delete this subsection in its entirety.
533	718.04.B.3	Renumber this subsection as follows: "2. <b>Permanent Casing.</b> "
540	802.04	Change "Non reinf" in the last pay item of the list with "Nonreinf".
545*	803.04.E	Change the second sentence of the second paragraph to read: "The unit price for <b>Railing for Steps</b> includes the cost of providing, fabricating, installing, and grouting the railing."
560	807.04	Delete the following pay item from the list: Guardrail Buffered End .....Each
560	807.04.B	Change the fifth paragraph of this subsection to read: "The Engineer will measure <b>Guardrail Salv</b> and <b>Guardrail, Mult, Salv</b> along the face of the rail (one face for multiple beams), including terminals and end shoes."
567	808.04.C	Change the first paragraph of this subsection to read: "The Department will not pay separately for protective fence required in accordance with subsection 104.07."
569	809.04.A	Change the first sentence to read: "The unit price for <b>Field Office, CI</b> __ includes the cost of setup, providing access, grading, maintaining, plowing snow, and utility hook-up charges."
570	809.04.B	Delete the existing second and third sentences in the first paragraph and replace them with the following: "The unit price for <b>Field Office, Utility Fees</b> includes the cost of monthly usage fees for electricity, gas, telephone service and charges, fuel for the stove, monthly water and sanitary service."
570	809.04.B	Change the existing fourth sentence in the first paragraph to read: "The Department will reimburse the Contractor for monthly usage fees for electricity, gas, telephone, water and sanitary charges incurred by the Department."
575	810.03.K	Change the subsection to read "K. <b>Drilled Piles for Cantilever and Truss Foundations.</b> Construct drilled piles for cantilever and truss foundations in accordance with section 718."

Page	Subsection	Errata
578	810.03.N.2	Add the following sentence after the first sentence of the second paragraph on this page: "Mark each nut and bolt to reference the required rotation."
584	810.04	Delete the last pay item in the list: Truss Fdn Anchor Bolts, Replace.....Each
585	810.04.B.1	Change the second paragraph to read: "The unit prices for <b>Fdn, Truss Sign Structure Type</b> __, __ inch Dia, <b>Cased</b> and <b>Fdn, Cantilever Sign Structure Type</b> __, __ inch Dia, <b>Cased</b> include the cost of concrete, slurry, steel reinforcement, permanent casings, anchor bolts, excavation, and disposal of excavated material."
585	810.04.B.2	Change the second sentence of the first paragraph to read: "The unit prices for <b>Fdn, Truss Sign Structure Type</b> __, __ inch Dia, <b>Uncased</b> and <b>Fdn, Cantilever Sign Structure Type</b> __, __ inch Dia, <b>Uncased</b> include the cost of concrete, slurry, steel reinforcement, temporary casings, anchor bolts, excavation, and disposal of excavated material."
596	811.03.G	Delete this subsection in its entirety.
597*	811.03.H	Rename this subsection as follows: "G. <b>Raised Pavement Marker (RPM) Removal.</b> "
597*	811.04	Change "Crosshatching" in the last pay item of the list on this page to "Cross Hatching".
598*	811.04	Delete the following pay items from the list: Pavt Mrkg, (material), 4 inch, SRSM, (color).....Foot Pavt Mrkg, (material), 4 inch, SRSM, 2 <sup>nd</sup> Application, (color).....Foot  Add the following pay items to the list: "Pavt Mrkg, Polyurea, (legend).....Each Pavt Mrkg, Polyurea, (symbol).....Each"  Change the sixth item down the list to read: "Pavt Mrkg, Polyurea, __ inch, Cross Hatching, (color)"  Change the eleventh item down the list to read: "Rem Curing Compound, for Longit Mrkg, __ inch.....Foot"
599	811.04.B	Delete this subsection in its entirety.
599	811.04	Rename the following subsections as follows: "B. <b>Call Back.</b> C. <b>Pavement Marking Removal.</b> D. <b>Material Deficiency.</b> "

<b>Page</b>	<b>Subsection</b>	<b>Errata</b>
602	812.03.D	Change the first sentence to read "Provide and maintain traffic control devices meeting the requirements in the ATSSA Quality Guidelines for Work Zone Traffic Control Devices and Features."
603	812.03.D.1	The last sentence on this page should read "Lay the sign behind the guardrail, with the uprights pointing downstream from the traffic, and place the support stands and ballasts close to the guardrail."
604	812.03.D.2	The first sentence of the fourth paragraph should read "Do not use burlap or similar material to cover Department or Local Government owned signs."
604	812.03.D.5	The fifth sentence of the first paragraph should read "Do not mix drums and cones within a traffic channeling sequence."
605	812.03.D.6.b	Change the first sentence of the first paragraph to read: "The Department will allow the nighttime use of 42-inch channelizing devices, in the tangent area only, on CPM and pavement marking of any duration where the use of plastic drums restricts proposed lane widths to less than 11 feet, including shy distance."
605	812.03.D.7	Add the following sentence after the first sentence of the first paragraph: "Place a shoulder closure taper in advance of the lighted arrows placed on the shoulders."
607	812.03.D.9	Delete the second paragraph of this subsection and replace with the following: "Link sections together to fully engage the connection between sections. Maintain the barrier with end-attachments engaged and within 2 inches of the alignment shown on the plans."
608	812.03.D.10.b	Delete the second sentence of the second paragraph of this subsection beginning with "Install sand module attenuators..."
608	812.03.D.10.b	Add the following sentence after the second paragraph of this subsection: "Install impact attenuation devices as shown on the plans, as directed by the Engineer, or both."
609	812.03.D.10.e	Delete the second paragraph of this subsection.
612	812.03.D.13	Delete the third paragraph of this subsection and replace it with the following: "Perform work on signals in accordance with the contract and to the requirements of NEMA TS-5 standard for those items not identified in the contract."
613*	812.03.D.14.a.iii	Change the sentence in this subsection to read "Place a terminal end shoe, in accordance with Standard Plan R-66-Series, and of appropriate type based on existing guardrail, on both blunt guardrail ends."

Page	Subsection	Errata
615	812.03.F	The second sentence of the second paragraph of this subsection should read: "The Contractor may use a Type R temporary pavement marking cover, per subsection 812.03.D.12 when authorized by the Engineer."
616	812.03.F.2	The last sentence of the first paragraph should read: "If the removal equipment cannot collect all removal debris, operate a self-propelled sweeper capable of continuously vacuuming up the removal debris immediately behind the removal equipment."
617	812.03.G.3	The first sentence of the second paragraph should read: "Sweep the shoulder and remove debris prior to placing traffic on the shoulder and throughout the time the shoulder is used to maintain traffic."
617	812.03.G.4.a	Delete "48 inch by 48 inch" from the first sentence of this subsection.
618*	812.03.G.7	The first sentence of the first paragraph should read: "Clean barrier reflectors, plastic drums, 42 inch channelizing devices, tubular markers, signs, barricades, and attached lights in operation on the project to ensure they meet required luminosity."
619	812.03.G.8	The second sentence of the third paragraph from the end of the subsection should read: "Illuminate traffic regulator stations at night per subsection 812.03.H."
621	812.03.I.6	Delete "48 inch by 48 inch" from the second sentence of this subsection.
622*	812.03.J	The second paragraph should read "Apply one 2-inch wide horizontal stripe of red and white conspicuity tape along at least 50 percent of each side of, and across the full width of the rear of the vehicle or equipment."
622	812.04	Change the second item down the list to read: "Traf Regulator Control"  Change the sixth item down the list to read: "Sign Cover, Type I"
626	812.04.I	Change the reference "812.04.E" in the first sentence to "812.04.D".
628	812.04.M.4	Add the following as the first sentence of this subsection: "The Engineer will not measure a temporary barrier ending move as <b>Conc Barrier Ending, Temp, Relocated</b> if it involves work defined in subsection 812.04.M.3."
629	812.04.N.1	Change the reference "811.04.D" in the second paragraph of this subsection to read "811.04.C".
630	812.04.S	Change the first sentence to read: "The Department will not make additional payments for traffic regulating, signing, arrow boards, and lighting systems for traffic regulator stations operated at night due to a temporary PTS system failure."

Page	Subsection	Errata
634	813.03.C.3	Change the reference "903.07.A" in the paragraph of this subsection to read "907.07.B".
638	814.03.D	Change the second sentence to read: "Place the HMA mixture on the prepared base to a thickness of at least 2 inches, and to at least 220 pounds per square yard."
646	815.04	Change the first, third and fourth pay items in the list to read: "Site Preparation, Max (dollar) ..... Lump Sum Watering and Cultivating, First Season, Min (dollar)..... Lump Sum Watering and Cultivating, Second Season, Min (dollar) ..... Lump Sum"
646	815.04.C.1	Change the following pay item reading: "Watering and Cultivating, First Season, Min. (dollar)" to read "Watering and Cultivating, First Season, Min (dollar)" at two locations throughout the subsection.
646	815.04.C.1.b	Delete this subsection in its entirety.
646	815.04.C.1.c	Rename this subsection to read: "b. Removal and disposal of unacceptable plants."
646	815.04.C.2	Change the following pay item reading: "Watering and Cultivating, Second Season, Min. (dollar)" to read "Watering and Cultivating, Second Season, Min (dollar)" at three locations throughout the subsection.
647	815.04.C.2	Change the last paragraph of this subsection to read: "For each unacceptable plant identified, the Engineer will calculate a 50 percent reduction in the unit price for the relevant ( <b>Botanical Name</b> ) pay item, and will process a negative assessment for each unacceptable plant for that amount."
650	816.03.B	Delete the first paragraph of this subsection and replace with the following: "Conduct soil tests when called for in the contract or when directed by the Engineer. Provide soils tests results to the Engineer when testing is required. Provide and place fertilizer as indicated below and as indicated in the soils tests, if required."
650	816.03.B.1	Change the sentence to read: "For Class A fertilizer, evenly apply 176 pounds of chemical fertilizer nutrient per acre on a prepared seed bed."
650	816.03.B.2	Change the sentence to read: "For Class B fertilizer, evenly apply 120 pounds of chemical fertilizer nutrient per acre on a prepared seed bed."
650*	816.03.B.3	Change the sentence to read: "For Class C fertilizer, evenly apply 80 pounds of chemical fertilizer nutrient per acre on established turf."



Page	Subsection	Errata
663*	819.01	<p>Delete the first paragraph in the subsection and replace it with the following:            “This work consists of providing operating electrical and lighting units; removing, salvaging, or disposing of existing electrical and lighting components; excavating, backfilling, restoring the site in accordance with section 816; and disposing of waste excavated materials. Complete this work in accordance with this section, section 820, and the contract and to the requirements of the NEC, the National Electrical Safety Code, and the MDLARA for those items not identified in the contract.”</p> <p>Change the third sentence of the second paragraph in this subsection to read:            “Contact the MDLARA for electrical service inspection and pay the applicable fees.”</p>
671	819.03.F.1	<p>Change the paragraph to read:            “Install light standard foundations as shown on the plans and the standard plans, as applicable.”</p>
673	819.03.G.4.b	<p>Change the last sentence of the first paragraph to read:            "Tighten the anchor bolts to a snug tight condition as described in the third paragraph of subsection 810.03.N.2 ensuring the lock washer is completely compressed."</p>
673	819.03.G.4.b	<p>Delete the first two sentences of the second paragraph and replace with the following:            "Tighten bolts connecting the pole to the frangible base to a snug tight condition. Snug tight is the tightness attained by a few impacts of an impact wrench, or the full effort of a person using an ordinary spud wrench. The lock washers must be fully compressed."</p>
678	819.04	<p>Change the ninth pay item in the list to read:            “DB Cable, 600V, 1/C# (size)..... Foot”</p>
678*	819.04	<p>Delete the last item in the list on this page reading:            “DB Cable, in Conduit, 600 Volt, (number) 1/C# (size) ..... Foot”</p>
679	819.04	<p>Change the first pay item in the list to read:            “DB Cable, in Conduit, 600V, 1/C# (size)..... Foot”</p>
679	819.04	<p>Change the sixth pay item in the list to read:            “Cable, P.J., 600V, 1, (size) ..... Foot”</p>
679	819.04	<p>Change the second pay item from the bottom of the list to read:            “Conc Pole, Fit Up, (type) ..... Each”</p>
680	819.04	<p>Change the first paragraph to read:            “Unless otherwise required, the unit prices for the pay items listed in this subsection include the cost of excavation, granular material, backfill,</p>

Page	Subsection	Errata
		and disposal of waste excavated material. If the contract does not include pay items for restoring the site in kind in accordance with section 816, the Department will consider the cost of restoration included in the pay items listed in this subsection."
680	819.04.A	Add the following paragraph after the first paragraph of the subsection. "The unit prices for <b>Conduit, Rem</b> include the cost of removing the type, number, and size of conduit shown on the plans."  Change the third paragraph of the subsection to read: "The unit prices for <b>Conduit, (type), __ inch</b> and <b>Conduit, DB, (number), __ inch</b> include the cost of installing the type, number, and size of conduit shown on the plans, and installing marking tape."
681	819.04.B	Change the last paragraph of the subsection to read: "The unit price for <b>DB Cable, in Conduit, Rem</b> includes the cost of removing all cables from the existing conduit measured per lineal foot of conduit."
681	819.04.C	Change the first paragraph of the subsection to read: "The unit prices for <b>Cable, Rem</b> and <b>Cable, (type), Rem</b> include the cost of dead ending, circuit cutting, installing guying, work required to leave circuits operable, and disposing of the removed cables, wire, hardware, and other appurtenances."
681	819.04.D	Change the first paragraph of the subsection to read: "The unit price for <b>Cable, Pole, (type), Disman</b> includes the cost of dismantling and off-site disposal of the following:"
685	820.01.D	Change the sentence to read: "Excavate, backfill, restore the site in kind in accordance with section 816, and dispose of excess or unsuitable material;"
688	820.03.C	Change the seventh paragraph of this subsection to read: "Tighten top anchor bolt nuts, snug, in accordance with the first four paragraphs of subsection 810.03.N.2, except beeswax will not be required."
696	820.04	Add the following pay items to the list: "Pedestal, Pushbutton, Alum.....Each Pedestal, Pushbutton, Rem.....Each"
697	820.04.A.2	Change the sentence to read: "If the contract does not include pay items for restoring the site in kind in accordance with section 816, the Department will consider the cost of restoration included in the pay items listed in this subsection."
698	820.04.B	Delete the second paragraph of this subsection found on this page.
698	820.04.C	Change " <b>Fdns</b> " to read " <b>Fdn</b> " in four instances in this subsection.

Page	Subsection	Errata
701	820.04.J.3	Change the sentence to read: "Installing wires in the saw slots and to the handholes;"
701.	820.04.J	Add the following as a new subsection: "7. A 3/4 inch minimum flexible conduit (non-metallic and rated for underground use) from the pavement to the handhole."
706	821.01.B	Change the website address listed after the second paragraph on this page to read: <u>"<a href="http://www.ngs.noaa.gov/heightmod/GuidelinesPublications.shtml">http://www.ngs.noaa.gov/heightmod/GuidelinesPublications.shtml</a>"</u>
711	822.03.B	Change the second paragraph to read: "If corrugations are required on concrete shoulders and the method of installation is not shown on the plans or directed by the Engineer, construct corrugations by grinding, or cutting."
718*	823.03.U	<b>Change "MDNRE" to "MDEGLE" in four instances in this subsection.</b>
720	823.04	Change the pay item seventh from the bottom of the list to read: "Water Shutoff, Adj, Temp, Case ___"
730	824.03.Q	Change the third sentence of the fourth paragraph to read: "Ensure placement of monumentation in accordance with section 821."
730	824.03.Q	Change the first sentence of the last paragraph to read: "The Department will not pay for work dependent on lost or destroyed stakes until the Contractor replaces the stakes."
732	824.04	Change the first sentence of the first paragraph following the list of pay items to read: "If the Engineer determines the Contractor will perform staking as extra work, the Department will pay for staking in accordance with section 103."
733	824.04	Change the left column header in Table 824-2 to read: <b>"Percent of Original Contract Amount Earned"</b>
739	902.02	Change the last aggregate testing description to read: "Determining Specific Gravity and Absorption of Fine Aggregates.....MTM 321"
742	902.03.C.1.a	Change the sentence to read: "Coarse aggregate includes all aggregate particles greater than or retained on the 3/4-inch sieve."
742	902.03.C.2.a	Change the sentence to read: "Intermediate aggregate includes all aggregate particles passing the 3/4-inch sieve through those retained on the No. 4 sieve."

<b>Page</b>	<b>Subsection</b>	<b>Errata</b>
742	902.03.C.2.b.iii	Change the sentence to read as follows: "Maximum Loss by Washing per MTM 108 of 3.0 percent".
744	902.07	Delete the fourth paragraph of the subsection and replace it with the following: "The Engineer will only allow the use of granular material produced from crushed portland cement concrete for embankment and as trench backfill for non-metallic culvert and sewer pipes without associated underdrains. However, granular material produced from crushed portland cement concrete is not permitted as swamp backfill, nor within the top 3 feet below subgrade regardless of the application.
746*	902.11	Change the Item of Work by Section Number column in Table 902-1 for the 6AA row to read: "406, 601, 602, 706, 708, 806".  Change the Item of Work by Section Number column in Table 902-1 for the 6A row to read: "206, 401, 402, 406, 601, 602, 603, 706, 806".  Change the Item of Work by Section Number column in Table 902-1 for the 34R row to read: "401, 404, 406".
751*	902.11	Replace Table 902-6 with the Table 902-6 below.
751	Table 902-7	Under the Material column in the fourth row change the "FA2" to read "2FA".
751	Table 902-7	Under the Material column in the fifth row change the "FA3" to read "3FA".
752	Table 902-8	Under the Material column in the fourth row change the "FA2" to read "2FA".
752	Table 902-8	Under the Material column in the fifth row change the "FA3" to read "3FA".
761	Table 904-2	Delete the footnote f and any other reference to footnote f from the table.
767	905.03	Change the first sentence of the first paragraph to read: "Deformed bars, must meet the requirements of ASTM A 706, ASTM A 615, or ASTM A 996 (Type R or Type A only) for Grade 60 steel bars, unless otherwise required".
767*	905.03	Change the first sentence of the second paragraph to read: "Unless otherwise specified, spiral reinforcement must meet the requirements of plain or deformed Grade 40 steel bars of ASTM A 615, ASTM A 996 (Type A), or the requirements of cold-drawn wire of ASTM A 1064".
767	905.03	Change the first sentence of the third paragraph to read: "Bar reinforcement for prestressed concrete beams must meet the requirements of ASTM A 996 (Type R) for Grade 60 steel bars, except

Page	Subsection	Errata
		the Engineer will allow bar reinforcement that meets the requirements of ASTM A 615 or ASTM A 996 (Type A) for Grade 40 steel bars for stirrups in prestressed concrete beams”.
768	905.03.C	Change the first sentence in the subsection to read: "Epoxy coated steel reinforcement, if required, must be coated in accordance with ASTM A 775, with the following exceptions and additions."
768	905.03.C.3	Change the first sentence of this subsection to read: "Include written certification that the coated reinforcing bars were cleaned, coated, and tested in accordance with ASTM A 775 with the coating applicator."
768	905.05	Change the first sentence of the first paragraph to read: "Deformed steel bars must meet the requirements of ASTM A 706 or the requirements for Grade 40, Grade 50, or Grade 60 of ASTM A 615 or ASTM A 996 (Type R or Type A only)".
768	905.06	Delete this subsection in its entirety and replace it with the following: "Deformed wire fabric for prestressed concrete and fabric for concrete pavement reinforcement must meet the requirements of ASTM A 1064 and fabricated as required."
772*	906.07	Change the first paragraph to read: "High-strength bolt fasteners for structural joints must meet the requirements of ASTM F 3125 Grade A 325 Type 1 bolts. High-strength nuts for structural joints must meet the requirements of ASTM A 563 Grade DH or AASHTO M 292 Grade 2H. High-strength washers for structural joints must meet the requirements of ASTM F 436 Type 1 for circular, beveled, clipped circular, and clipped beveled washers."  Change the second sentence of the second paragraph of this subsection to read: "Galvanized nuts must be tapped oversize in accordance with ASTM A 563 and meet Supplementary Requirements S1, Lubricant and Rotational Capacity Test for Coated Nuts and S2, Lubricant Dye."
777*	907.03.D.2.a	Change the first sentence of the second paragraph to read: "Angle sections must be nominal 2½ inch by 2½ inch by ¼ inch."
777*	907.03.D.2.b	Change the first sentence of the first paragraph to read: "Angle section braces must be nominal 1¾ inch by 1¾ inch by ¼ inch or nominal 2 inch by 2 inch <sup>3</sup> / <sub>16</sub> inch."
782	908.04	Change the first sentence of the first paragraph of this subsection to read: "Steel castings for steel construction must meet the requirements of ASTM A 148 for Grade 60/90 carbon steel castings, as shown on the plans, unless the Engineer approves an alternate in writing."

Page	Subsection	Errata
784*	908.09.C	<p>Change this subsection to read:            "C. <b>Hardware.</b> Railing anchor studs must meet the requirements of ASTM A 449 Type 1. Heavy hex nuts must meet the requirements of ASTM A 563. Bolts, used as rail fasteners, must meet the requirements of ASTM F 3125 Grade A 325, Type 1. Where called for, round head bolts must meet the requirements of ASTM A 449 Type 1. The material for the railing hand hole screws must meet the requirements of ASTM A 276, Type 304. All nuts must meet the requirements of ASTM A 563 Grade DH or AASHTO M 292 Grade 2H. All flat washers must meet the requirements of ASTM F 436. Lock washers must be steel, regular, helical spring washers meeting the requirements of ANSI B18.21.1 - 1972. Bolts, nuts, washers and other hardware must be hot-dip galvanized in accordance with AASHTO M 232. Galvanized nuts must be tapped oversize in accordance with ASTM A 563, and meet Supplementary Requirements S1, Lubricant and Rotational Capacity Test for Coated Nuts, and S2, Lubricant Dye."</p>
784	908.11.A	<p>Change the first sentence of the first paragraph to read:            "Steel beam sections, backup elements, terminal end shoes, and special end shoes must meet the requirements of AASHTO M 180, for Class A guardrail."</p>
785*	908.11.B	<p>Change the second paragraph to read:            "Bolts, nuts, and round washers for guardrail, other than at bridge barrier railings, must meet the requirements of ASTM A 307 (Grade A), ASTM A 563 (Grade A with Supplementary Requirements S1 of ASTM A 563), and ASTM F 436, respectively."</p> <p>Change the third paragraph to read:            "Washers, other than round washers, for guardrail must meet the requirements for circular washers in ASTM F 436 except that the dimensions must be as shown on the plans."</p> <p>Change the fifth paragraph to read:            "Bolts, nuts, and washers for connections at bridge barrier railings must conform to ASTM F 3125 Grade A 325 Type 1 galvanized high-strength structural bolts with suitable nuts and hardened washers."</p>
787	908.14.B	<p>Add the following sentence to the end of the third paragraph of this subsection:            "Exposed threaded ends of anchor bolts must be galvanized a minimum of 20 inches."</p> <p>Change the sixth paragraph in this subsection to read:            "Provide washers meeting the requirements of ASTM F 436 for circular washers."</p>
787	908.14.B	<p>Change the second sentence of the fourth paragraph to read "After coating, the maximum limit of pitch and major diameter for bolts with a</p>

Page	Subsection	Errata
		diameter no greater than 1 inch may exceed the Class 2A limit by no greater than 0.021 inch, and by no greater than 0.031 inch for bolts greater than 1 inch in diameter”.
787*	908.14.C	Change the first paragraph to read "Provide either four or six high strength anchor bolts per the contract plans, meeting the mechanical requirements of ASTM F 1554, for Grade 105, with each standard. Anchor bolts for traffic signal strain poles must meet the requirements of subsection 908.14.B with the following exceptions and additions:"
789	909.03	Change the second sentence of the second paragraph to read: "As an alternative to the AASHTO M 36 requirements for metal pipe, the Contractor may use gasket material meeting the low temperature flexibility and elevated temperature flow test requirements of ASTM C 990, excluding the requirements for softening point, flashpoint and fire point."
793	909.06	Change the first sentence of the second paragraph of this subsection to read: "Provide Corrugated Polyvinyl Chloride Pipe (CPV) and required fittings meeting the requirements of AASHTO M 304."
793*	909.05.D	Change the second sentence of the paragraph to read "Provide a continuous welded joint to create a watertight casing that is capable of withstanding handling and installation stresses. Perform field welding by the SMAW process using E7018 electrodes."
794*	909.08.A	Change the first sentence to read: "Provide bridge deck downspouts of PE pipe meeting the requirements of ASTM F 714, PE 4710, DR 26."
804	Table 909-9	In the note area at the bottom of the table change the designation of the second note from "c." to "b."
811	910.04	Add the following sentence to the end of this subsection: "Fabricate silt fence according to subsection 916.02."
814	Table 911-1	In the 4 <sup>th</sup> row of the 5 rows in the table change the Property listed as "Total Organic Content (TOC)" to read "Total Organic Carbon (TOC)".
829*	912.08.K	Replace Table 912-10 with the Table 912-10 below.
833*	913.03.B	Change the first sentence of the first paragraph to read: "Clay brick, to construct manholes, catch basins, and similar structures, must meet the requirements of ASTM C 32, for Grade MS."
837*	914.04	Add the following as subsection 914.04.C: "C. <b>Lubricant-Adhesive for Neoprene Joint Seals.</b> The lubricant-adhesive must be a single-component moisture-curing polyurethane and aromatic hydrocarbon solvent mixture meeting ASTM D 2835, Type

Page	Subsection	Errata
		I. Ship in containers plainly marked with the lot or batch number of the material and date of manufacture. Store at temperatures between 58 and 80°F. Do not exceed 12 months shelf-life prior to use."
840	914.08	Change the first sentence of the second paragraph to read: "Straight tie bars for end-of-pour joints must consist of bars of the diameter and length shown on the plans meeting the requirements of ASTM A 615, ASTM A 706, or ASTM A 996 (Type R or Type A only)".
840*	914.09.A	Change the first sentence of the first paragraph to read: "Straight tie bars for longitudinal pavement joints must consist of bars of the diameter and length shown on the plans meeting the requirements of ASTM A 615, ASTM A 706, or ASTM A 996 (Type R or Type A only)".
840	914.09.B	Change the first sentence of the first paragraph to read: "Bent tie bars for bulkhead joints must consist of bars of the diameter and length shown on the plans."
841*	914.13	In the first sentence of this subsection change "ASTM D 1248, for Type III, Class B" to read "ASTM D 4976, Group 2, Class 4, Grade 4".
844	916.01.A	Change the first sentence to read: "Cobblestone must consist of rounded or semi-rounded rock fragments with an average dimension from 3 inches to 10 inches."
845	916.01.D.1	Change the second sentence to read: "Checkdams for ditch grades 2 percent or greater must be constructed using cobblestone or broken concrete ranging from 3 inches to 10 inches in size."
851*	917.10.B.1	Delete the paragraph and replace it with the following: "1. <b>Class A.</b> Provide and apply Class A chemical nutrient fertilizer either according to MSU Soil Testing Lab Recommendations for Phosphorus Applications to Turfgrass, except the maximum single application rate of nutrient will be 48 pounds per acre, when soil tests are required or as indicated in subsections 917.10.B.1.a and 917.10.B.1.b."
851	917.10.B.1	Add the MSU Soil Testing Lab Recommendations for Phosphorus Applications to Turfgrass, found below, after the first paragraph of this subsection.
853	917.15.B.1	Change the second sentence of the subsection to read: "The net must meet the requirements of subsection 917.15.D and be capable of reinforcing the blanket to prevent damage during shipping, handling, and installation."
857	918.01	Add the following two paragraphs following the first paragraph of this subsection: "Wall thickness and outside diameter dimensions must conform to ASTM D 1785 for smooth-wall schedule 40 and 80 PVC conduit



Page	Subsection	Errata
		material. The Department will allow no more than 3 percent deviation from the minimum wall thickness specified.
		Wall thickness range must be within 12 percent in accordance with ASTM D 3035 for smooth-wall coilable schedule 40 and 80 PE conduit.”
858	918.01.E	Delete the first three sentences of the second paragraph shown on page 858.
863	918.06.F.1	Delete the third paragraph in this subsection in its entirety and replace it with the following: "Provide smooth or deformed welded wire fabric in accordance with ASTM A 1064."
864	918.07.C	Change the first sentence of the first paragraph to read: "Provide anchor bolts, nuts, and washers meeting the requirements of subsection 908.14.A and subsection 908.14.B."
864	918.07.C	Delete the second sentence of the second paragraph.
864	918.07.C	Change the third sentence to read: "Provide anchor bolts threaded 4 inches beyond the anchor bolt projection shown on the plans."
867	918.08.C	Change the last sentence of the first paragraph on this page to read: "Galvanize bolts, nuts, washers, and lock washers as specified in subsection 908.14.B."
867	918.08.C	Change the last sentence of the subsection to read: "Provide each frangible base with manufacturer access covers as shown on the plans."
867*	918.08.D	Delete this subsection in its entirety and replace with the following: "Provide galvanized anchor bolts, studs, nuts, couplings, and washers in accordance with subsection 908.14."
879	918.10.J	Change the third sentence of the second paragraph of this subsection to read: "Provide anchor bolts and associated nuts, washers, and hardware meeting the requirements of subsection 908.14."
887	919.06	Change the second paragraph to read: "Shims must be fabricated from brass shim stock or brass strip meeting the requirements of ASTM B 36, for copper alloy UNS No. C26000, half-hard rolled temper, or fabricated from galvanized sheeting meeting the requirements of ASTM A 653, for Coating Designation G 90."
887	919.07.C	Change the sentence to read:

Page	Subsection	Errata						
		“Galvanized high-strength steel bolts, nuts, and washers for connecting arm connection flanges must meet the requirements of subsection 906.07.”						
903	921.03.D	Delete the last three sentences of the first paragraph of this subsection.						
914	921.05.D	Change the first sentence of this subsection to read: "Provide anchor bolts meeting the requirements of subsection 908.14.C, including elongation and reduction of area requirements."						
916	921.07	Change the first sentence of the first paragraph to read: "Provide LED case signs internally illuminated by LEDs and changeable message case signs internally illuminated with LED light sources."						
936	922.04.B	In the first sentence of the first paragraph change the "R-52" to "R-126".						
936	922.04.B	Add the following to the end of the first paragraph: “Hardware used to connect the end section to the barrier must meet the requirements of NCHRP 350 or MASH (Test Level 3 or higher).”						
936	922.04.B	In the first sentence of the second paragraph delete "R-52".						
936	922.04.B	Change the fourth paragraph of this subsection to read as follows: For all endings requiring impact attenuators provide a NCHRP-350 Test Level 3 or MASH Test Level 3 approved impact attenuation system, unless otherwise approved by the Engineer.						
952	Pay Item Index	Change the following pay items to read: <table border="0"> <tr> <td>“Conc Barrier, Rem .....</td> <td>123</td> <td>204”</td> </tr> <tr> <td>“Conc Pole, Fit Up, (type) .....</td> <td>679</td> <td>819”</td> </tr> </table>	“Conc Barrier, Rem .....	123	204”	“Conc Pole, Fit Up, (type) .....	679	819”
“Conc Barrier, Rem .....	123	204”						
“Conc Pole, Fit Up, (type) .....	679	819”						
953*	Pay Item Index	Delete the following pay item reading: “DB Cable, in Conduit, 600 Volt, (number) 1/C# (size) .....678 819”						
957	Pay Item Index	Delete the following pay item from the list: Guardrail Buffered End .....560 807						
960	Pay Item Index	Change the following pay item to read: “Mobilization, Max (dollar) .....107 150”						
961	Pay item Index	Delete the following pay items from the list: <table border="0"> <tr> <td>Pavt Mrkg, (material), 4 inch, SRSM, (color).....</td> <td>598.....</td> <td>811</td> </tr> <tr> <td>Pavt Mrkg, (material), 4 inch, SRSM, 2<sup>nd</sup> Application, (color).....</td> <td>598.....</td> <td>811</td> </tr> </table>	Pavt Mrkg, (material), 4 inch, SRSM, (color).....	598.....	811	Pavt Mrkg, (material), 4 inch, SRSM, 2 <sup>nd</sup> Application, (color).....	598.....	811
Pavt Mrkg, (material), 4 inch, SRSM, (color).....	598.....	811						
Pavt Mrkg, (material), 4 inch, SRSM, 2 <sup>nd</sup> Application, (color).....	598.....	811						
961	Pay Item Index	Change the following pay items in the list to read: Pavt Mrkg, Ovly Cold Plastic, 12 inch, Cross Hatching, (color) Pavt Mrkg, Polyurea, __ inch, Cross Hatching, (color)  Add the following pay items to the list:						

Page	Subsection	Errata		
		"Pavt Mrkg, Polyurea, (legend).....	598.....	811
		Pavt Mrkg, Polyurea, (symbol).....	598.....	811
		Pedestal, Pushbutton, Alum.....	696.....	820
		Pedestal, Pushbutton, Rem.....	696.....	820"
962	Pay Item Index	Change the following pay items in the list to read: "Pile Driving Equipment, Furn (Structure No.) Pile, Galv (Structure No.)"		
963	Pay Item Index	Change the following pay item to read: "Rem Curing Compound, for Longit Mrkg, __ inch .....	598	811"
964	Pay Item Index	Change the following pay item to read: "Sewer, CI __, __ inch, Jacked in Place .....	200	402"
		"Sign Cover, Type I.....	622	812"
965*	Pay Item Index	Change the following pay item in the list to read: "Steel Casing Pipe, __ inch, Tr Det __ Site Preparation, Max (dollar) .....	646	815"
966	Pay Item Index	Change the following pay item to read: "Structures, Rem (Structure No.).....	123	204"
966	Pay Item Index	Delete the following pay item form the list; Temp Casing.....	533.....	718
967*	Pay Item Index	Delete the following pay item from the list; Truss Fdn Anchor Bolts, Replace.....	584.....	810
967	Pay Item Index	Change the following pay item in the list to read: "Traf Regulator Control"		
968*	Pay item Index	Change the following pay item in the list to read: "Water Shutoff, Adj, Temp, Case __ Watering and Cultivating, First Season, Min (dollar).....	646	815
		Watering and Cultivating, Second Season, Min (dollar) .....	646	815"
993	General Index	Change "Shop Plans (see Plans and Working Drawings)" to read "Shop Drawings (see Plans and Working Drawings)".		

Table 701-1 Concrete Structure Mixtures													
		Slump (inches)				Minimum Strength of Concrete (f)							
Concrete Grade (e,h)	Section Number Reference (i)	Cement Content per cyd (b,c)		Type A, D or no Admixture	Type MR, F, or G Admixtures (g)			Flexural (psi)			Compressive (psi)		
		lb	sack		Before Admixture	After Admixture (Type MR)	After Admixture (Type F or G)	7 Day	14 Day	28 Day (Class Design Strength)	7 Day	14 Day	28 Day (Class Design Strength)
D (a)	706, 711, 712	658 (d)	7.0	0 - 3	0 - 3	0 - 6	0 - 7	625	700	725	3,200	4,000	4,500
S1	705	611	6.5	3 - 5	0 - 3	3 - 6	3 - 7	600	650	700	3,000	3,500	4,000
T	705, 706	611	6.5	3 - 7	0 - 4	3 - 7	3 - 8	550	600	650	2,600	3,000	3,500
S2 (a)	401, 705, 706, 712, 713, 801, 802, 803, 810	564	6.0	0 - 3	0 - 3	0 - 6	0 - 7	550	600	650	2,600	3,000	3,500
		526 (d)	5.6										
S3	402, 403, 803, 804, 806	517	5.5	0 - 3	0 - 3	0 - 6	0 - 7	500	550	600	2,200	2,600	3,000
		489 (d)	5.2										

a. Unless otherwise required, use Coarse Aggregate 6AA or 17A for exposed structural concrete in bridges, retaining walls, and pump stations.

b. Do not place concrete mixtures containing supplemental cementitious materials unless the local average minimum temperature for the next 10 consecutive days is forecast to be above 40 °F. Adjustments to the time required for opening to construction or vehicular traffic may be necessary. Cold weather protection may be required, as described in the quality control plan. The restriction does not apply to Grade S1 concrete in foundation piling below ground level or Grade T concrete in tremie construction.

c. Type III cement is not permitted

d. Use admixture quantities specified by the Qualified Products Lists to reduce mixing water. Admixture use is required for Grade D, Grade S2, and Grade S3, concrete with a reduced cement content. Use a water-reducing retarding admixture at the required dosage for Grade D concrete to provide the setting retardation required. When the maximum air temperature is not forecast to exceed 60 °F for the day, the Contractor may use a water-reducing admixture or a water-reducing retarding admixture. Ensure Grade D concrete in concrete diaphragms contains a water-reducing admixture, or a water-reducing retarding admixture. For night casting, the Contractor may use a water-reducing admixture in lieu of water-reducing retarding admixture, provided that the concrete can be placed and finished prior to initial set.

e. The mix design basis for bulk volume (dry, loose) of coarse aggregate per unit volume of concrete is 68% for Grade S1, and 70% for Grade D, Grade S2, Grade T, and Grade S3.

f. The Contractor may use flexural strength to determine form removal. Use compressive strength for acceptance in other situations.

g. MR = Mid-range.

h. The Engineer will allow the use of an optimized aggregate gradation as specified in section 604.

i. Section Number Reference:

401	Culverts	711	Bridge Railings	803	Concrete Sidewalk, Sidewalk Ramps, and Steps
402	Storm Sewers	712	Bridge Rehabilitation-Concrete	804	Concrete Barriers and Glare Screens
403	Drainage Structures	713	Bridge Rehabilitation-Steel	806	Bicycle Paths
705	Foundation Piling	801	Concrete Driveways	810	Permanent Traffic Signs and Supports
706	Structural Concrete Construction	802	Concrete Curb, Gutter and Dividers		

An asterisk (\*) indicates an entry which has been revised from an earlier version of this Supplemental Specification.

**Table 902-6  
Superpave Final Aggregate Blend Physical Requirements**

Est. Traffic (million ESAL)	Mix Type	Percent Crushed Minimum Criteria		Fine Aggregate Angularity Minimum Criteria		% Sand Equivalent Minimum Criteria		Los Angeles Abrasion % Loss Maximum Criteria		% Soft Particles Maximum Criteria (b)		% Flat and Elongated Particles Maximum Criteria (c)	
		Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course	Top & Leveling Courses	Base Course
< 0.3	LVSP	55/—	—	—	—	40	40	45	45	10	10	—	—
< 0.3	E03	55/—	—	—	—	40	40	45	45	10	10	—	—
≥0.3 -<1.0	E1	65/—	—	40	—	40	40	40	45	10	10	—	—
≥1.0 - < 3	E3	75/—	50/—	40(a)	40(a)	40	40	35	40	5	5	10	10
≥3 - <10	E10	85/80	60/—	45	40	45	45	35	40	5	5	10	10
≥10 - <30	E30	95/90	80/75	45	40	45	45	35	35	3	4.5	10	10
≥30 - <100	E50	100/10 0	95/90	45	45	50	50	35	35	3	4.5	10	10

- (a) For an E3 mixture type that enters the restricted zone as defined in Table 902-5, the minimum is 43. If these criteria are satisfied, acceptance criteria and associated incentive/disincentive or pay adjustment tied to this gradation restricted zone requirement included in contract, do not apply. Otherwise, final gradation blend must be outside of the restricted zone.
- (b) Soft particles maximum is the sum of the shale, siltstone, ochre, coal, clay-ironstone and particles that are structurally weak or are non-durable in service.
- (c) Maximum by weight with a 1 to 5 aspect ratio.

Note: "85/80" denotes that 85 percent of the coarse aggregate has one fractured face and 80 percent has at least two fractured faces.

An asterisk (\*) indicates an entry which has been revised from an earlier version of this Supplemental Specification.

<b>Table 912-10 Minimum Retention Requirements</b>				
<b>Preservative</b>	<b>Minimum Retention, (pcf)</b>			<b>AWPA Standard</b>
	<b>Guardrail Posts</b>	<b>Sign Posts</b>	<b>Blocks</b>	
Pentachlorophenol	0.60	0.50	0.40	A6
CCA, ACZA	0.60	0.50	0.40	A11
ACQ (a)	0.60	Not Allowed	0.40	A11
CA-B (a)	0.31	Not Allowed	0.21	A11
CA-A (a)	0.31	Not Allowed	0.15	A11
Other Waterborne preservatives	AWPA Commodity Specification A, Table 3.0, Use Category 4B	Not Allowed	AWPA Commodity Specification A, Table 3.0, Use Category 4A	A11
a. Non-Metallic washers or spacers are required for timber and lumber treated with ACQ or CA placed in direct contact with aluminum. Do not use with sign posts.				

MSU Soil Testing Lab Recommendations for Phosphorus Applications to Turfgrass  
3/8/2012

		Sand based rootzone establishment	Golf greens and tees est. or mature; Kentucky bluegrass or perennial ryegrass athletic fields est. or mature; sand based rootzone mature	Lawns, golf course fairways; establishment or mature	Establishment without soil test
Bray P1, Mehlich 3 Soil Test Value (ppm): pH<7.4	Olsen Soil Test Value (ppm) pH>7.4	Recommendation (lbs. P <sub>2</sub> O <sub>5</sub> /1000 ft. <sup>2</sup> )	Recommendation (lbs. P <sub>2</sub> O <sub>5</sub> /1000 ft. <sup>2</sup> )	Recommendation (lbs. P <sub>2</sub> O <sub>5</sub> /1000 ft. <sup>2</sup> )	Recommendation (lbs. P <sub>2</sub> O <sub>5</sub> /1000 ft. <sup>2</sup> )
0	0	4.4	3.4	2.5	2.5 lbs. year (Maximum single application of 1.5 lbs.)
2	1.3	4.1	3.1	2.2	
4	2.7	3.9	2.7	1.9	
6	4	3.6	2.4	1.6	
8	5.3	3.4	2.0	1.3	
10	6.7	3.1	1.7	1.0	
12	8	2.8	1.4	0.7	
14	9.3	2.6	1.0	0.4	
16	10.7	2.3	0.7	0.1	
18	12	2.1	0.3	0.0	
20	13.3	1.8	0.0		109 lbs/acre year (maximum single application of 65 lbs/acre)
22	14.7	1.5			
24	16	1.3			
26	17.3	1.0			
28	18.7	0.8			
30	20	0.5			
32	21.3	0.2			
34	22.7	0.0			

Web resources: [www.turf.msu.edu](http://www.turf.msu.edu) or [www.bephosphorusmart.msu.edu](http://www.bephosphorusmart.msu.edu)

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**HIGH PERFORMANCE UNIAXIAL GEOGRID AND STABILIZATION GEOTEXTILE**

GND:SR

1 of 2

APPR:DMG:RWS:10-19-12

**a. Description.** This work consists of constructing a reinforced soil slope using high performance uniaxial geogrid (geogrid), stabilization geotextile (geotextile), and granular material class II as shown on the plans and detailed herein.

**b. Materials.** Provide geotextile in accordance with section 910 of the Standard Specifications for Construction.

Provide geogrid with a regular grid structure, aperture geometry, and rib and junction cross-section sufficient to permit significant mechanical interlock with the material being reinforced. The geogrid must have significant dimensional stability through all ribs and junctions of the grid structure. The geogrid must maintain its reinforcement and interlock capabilities under repeated dynamic loads while in service. The geogrid must also be resistant to ultraviolet degradation, to damage under normal construction practices, and to all forms of biological or chemical degradation normally encountered in highway construction.

At the time of installation, the geogrid will be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation or storage.

Geogrid must be composed of polypropylene, high-density polyethylene, or polyester virgin resins. The protective coatings of polyester geogrid must contain less than five percent filler content. Repair damaged coating prior to backfilling. The geogrid must meet the physical property requirements in Table 1 below.

**c. Construction.** Construct the geogrid, geotextile, and embankment in accordance with section 205 of the Standard Specifications for Construction and the details shown on the plans. Install the geogrid in accordance with the manufacturer's published recommendations.

Place only the amount of geogrid and geotextile required for immediately pending work. After a layer of geogrid or geotextile has been placed, the succeeding layer of backfill must be placed and compacted in accordance with section 205 of the Standard Specifications for Construction and as detailed on the plans. Do not allow direct exposure of geogrid and geotextile between placement and cover to exceed 5 calendar days.

Place geogrid with the strong tensile strength direction perpendicular to the top of slope line. Place geogrid in continuous strips with no overlapping or mechanical interlocking of geogrid in the strong direction. Place geogrid and geotextile taut prior to backfill placement. After a layer of geogrid or geotextile has been placed, anchor in position until the subsequent backfill layer can be placed. Overlap adjacent rolls of geogrid and geotextile by a minimum of 1 foot. Backfill from the centerline of the embankment out to assist in tensioning the geogrids. Do not operate construction vehicles on the geogrid or geotextile until at least 6 inches of backfill cover has been placed. Damage to the geogrid or geotextile caused by the Contractor's operation will be repaired or replaced at no cost to the Department.



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

<b>Pay Item</b>	<b>Pay Unit</b>
High Performance Uniaxial Geogrid .....	Square Yard

**High Performance Uniaxial Geogrid** will be measured in place with no allowance for overlaps, splices or material cut off or wasted and constitutes full compensation for completing the work as described.

Stabilization Geotextile will be measured and paid for according to section 308 of the Standard Specifications for Construction.

Backfill material will be measured and paid for separately as Embankment, CIP, Special.

Slope restoration will be measured and paid for according to the Special Provision for Slope Restoration, Freeway, Type D.

**Table 1: Physical Properties for High Performance Uniaxial Geogrid**

Property	Test Method	Minimum Value
Tensile Strength at 5% Strain	ASTM D 6637(1)	1570 lb/ft
Ultimate Tensile Strength	ASTM D 6637(1)	3150 lb/ft
Junction Strength	GRI GG2-05	2950 lb/ft
<p>1. Ultimate strength and tensile Modulus at 5 percent elongation measured by means of ASTM D 6637 <i>Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method</i>. Do not make offset allowances or specimen pretensioning in calculating tensile modulus.</p> <p>2. Acceptance of geogrid will be based on testing by the Department for conformance to the physical properties. The Department will require up to 30 calendar days to sample and test the geogrid. At least one material sample will be selected at random for each lot of material delivered. A lot is defined as all geogrid material of the same product name in a single shipment (truckload). The minimum sample size required is 6 feet wide with a 4 square yard minimum area and shipped rolled, not folded.</p>		

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**NATIVE POLLINATOR SEEDING AND ESTABLISHMENT**

RSD:JLB

1 of 6

APPR:DMG:LML:06-02-15

**a. Description.** This work consists of preparing the site, planting and maintaining native pollinator plantings at locations shown on the plans or as directed by the Engineer. Ensure all work is done in accordance with the standard specifications, except as noted in this special provision and when directed by the Engineer.

At least 10 calendar days prior to starting work, the Contractor performing the native pollinator seeding work must provide the Engineer with documentation that they meet one or both of the following requirements.

1. At least one person employed by the Contractor and assigned to the job site must have a degree or certificate in Turf Management, Horticulture or related field.
2. At least one person employed by the Contractor and assigned to the job site must have a least 5 years of experience in native perennial plant establishment.

**b. Materials.**

1. Product delivery, storage, and handling. Ensure all seeds are packaged and kept dry to ensure adequate protection against damage and maintain dormancy while in transit, storage or during planting operations.

Ensure all seed is delivered to the site in sealed containers and labeled in compliance with the *Federal Seed Act* and *1965 PA 329, Michigan Seed Law*.

When applicable, the seed supplier must provide seed that has been treated to overcome dormancy mechanisms during the first growing season.

A. Submittals.

(1) At the preconstruction meeting, submit for approval to the Engineer a written description of the proposed seed mixes indicating the following:

- (a) Name and location of seed supplier(s).
- (b) Geographic origins of each species.
- (c) Proposed substitutions of species due to lack of availability. Ensure all substitutions are approved by the Engineer prior to seeding.
- (d) Within 30 days after award, submit copies of all seed labels to Engineer.

(2) At the preconstruction meeting, submit a project work schedule to the Engineer indicating the dates of each of the following events:

- (a) Seed installation.
- (b) Substantial completion of work.

B. Seed Testing Requirements. The seed weights noted indicate weight per acre in pure live seed (PLS) and must mean the total amount of fresh new crop seed per acre for all species listed. In the event that the seed supplier is unable to verify the percentage of PLS prior to installation, the supplier must submit germination reports that identify the actual germination rate of each species.

C. Seeding Mixture. Ensure the seed mixture, as detailed in Table 1, is composed of the species listed by weight, and is individually packaged according to species. The Engineer will inspect seed before individual packages are opened. Obtain native seed from sources within the same EPA Level III Ecoregion, or the next adjacent Ecoregion, to the west or east. For more information, see the EPA website at:

[http://www.epa.gov/wed/pages/ecoregions/level\\_iii.htm](http://www.epa.gov/wed/pages/ecoregions/level_iii.htm).

Ensure seed is less than 1 year old and from the previous harvest season. Ensure seeds are stored as recommended by supplier. The following seed companies or approved equal are suitable seed suppliers:

Cardno Native Plant Nursery  
128 Sunset Drive  
Walkerton, IN 46574  
(574) 586-2412

Michigan Wildflower Farm  
11770 Cutler Road  
Portland, MI 48875  
(517) 647-6010

Native Connections  
17080 Hoshel Road  
Three Rivers, MI 49093  
(269) 580-4765

Shooting Star Native Seeds  
20740 County Road 33  
Spring Grove, MN 55974  
(507) 498-3944

2. Herbicides. Use glyphosate, a non-selective herbicide to eradicate existing vegetation. Use it in accordance with the manufacturer's label.

3. Topsoil. Provide compost and/or topsoil in accordance with the standard specifications and place at a depth of 4 inches where shown on plans.

4. Fertilizer. No fertilization is required.

5. Mulch. Use straw mulch or approved equal on this project.

**c. Construction.** This method entails killing the existing vegetation with herbicide and using an interseeder drill or broadcast spreader to install the seed, then applying the mulch.

1. Seeding Method 1 - Drill Seeding. Prepare the site by mowing existing vegetation to a height of 4 to 6 inches if necessary prior to spraying. The existing vegetation will be allowed to re-grow or "flush" before herbicide application with glyphosate, this may take 1 to 3 weeks

depending on weather conditions. The work of vegetation control is required to eliminate the existing vegetation from the site. It will be sprayed with approval of the Engineer with glyphosate and according to the manufacturer's directions. Spray will be applied on dry vegetation that will remain dry for no less than 24 hours. The Engineer will inspect vegetation and the results of the vegetation control.

All vegetation uncontrolled by the initial herbicide treatment will be re-sprayed as directed by the Engineer within 14 calendar days after first herbicide treatment date and will be considered as part of the initial herbicide treatment. The Contractor must possess a valid Michigan Department of Agriculture commercial pesticide applicator's certificate for Right of Way Category 6. Perform seeding 7 to 10 calendar days after the final herbicide application.

Incorporate topsoil into the existing soil to a depth of 4 to 6 inches.

Ensure the grass and forb seed is planted from April 15 to June 15 or October 1 to freeze up. If uncontrolled grasses or weeds are present they must be sprayed before seeding. The seed mixture will be installed with a seed drill that will accurately meter the types of seed to be planted and keep all seeds uniformly mixed during the drilling (Rangeland no till drill, Truax, Tye, or approved equal). Ensure the seed drill is calibrated to uniformly apply the seed at the specified rates and contains a minimum of two seed boxes; a fine seed box and a box for large/fluffy seeds, and it will be equipped with disc furrow openers and packer assembly to compact the soil directly over the drill rows. Ensure maximum row spacing is 8 inches. Ensure the interseeder drill is outfitted with trash rippers which will slice through the vegetative mat and make a furrow into the underlying soil approximately 1 inch wide by 1/4 to 1/2 inch deep. Ensure these furrows are directly in line with the drill seed disc openers. Ensure fine seed is drop-seeded onto the ground surface from the fine seed box, and ensure large/fluffy seed is placed to obtain a final planting depth of 1/4 to 1/2 inch. Ensure all drill seeding is done at a right angle to surface drainage.

Uniformly apply straw mulch at a rate of 3/4 ton per acre immediately following seed installation. Apply mulch as directed by Engineer.

2. Seeding Method 2 - Broadcast Seeding. Ensure the site is prepared by spraying existing vegetation. The work of vegetation control is required to eliminate the existing vegetation from the site. Ensure it is sprayed with approval by the Engineer with glyphosate, and according to the manufacturer's directions. Ensure spray is applied on dry vegetation that will remain dry for no less than 24 hours. The Engineer will inspect vegetation and the results of the vegetation control.

All vegetation uncontrolled by the initial herbicide treatment will be re-sprayed as directed by the Engineer within 14 calendar days after first herbicide treatment date and will be considered as part of the initial herbicide treatment. The Contractor must possess a valid Michigan Department of Agriculture commercial pesticide applicator's certificate for Right of Way Category 6. Perform seeding 7 to 10 calendar days after the final herbicide application.

Incorporate topsoil into the existing soil to a depth of 4 to 6 inches.

Ensure the grass and forb seed is planted from April 15 to June 15 or October 1 to freeze up. If uncontrolled grasses or weeds are present they must be sprayed before seeding. The site must be mowed/scalped and then willow tilled (1/4 to 1/2 inch) using a drag or garden rake.

Ensure mowing and tilling are done just prior to planting. Apply the seed mixture uniformly over the surface using a tractor-mounted combination seeder/cultipacker unit (Brillion, Truax Trillion, or approved equal). Calibrate the seeder to uniformly apply seed at the specified rate. A cone seeder or other similar broadcasting equipment may also be used. Plant seed at a depth of 1/8 to 1/4 inch deep. Lightly roll or rake the area to set the seed.

Uniformly apply straw mulch at a rate of 3/4 ton per acre immediately following seed installation. Apply mulch as directed by Engineer.

**d. Maintenance Requirements.** Ensure maintenance is conducted during the first and second year of the contract.

1. First Year Maintenance - Spring Planting. Maintenance will consist of mowing the areas every 30 days after planting or when the weeds are flowering until September 30. Ensure a flail-type mower is used to chop up the vegetation and prevent the clippings from smothering the native seedlings. The areas will be mowed to a height of 4 to 6 inches.

Use spot spray throughout this period for noxious weeds not controlled by mowing to the satisfaction of the Engineer and/or Region Resource Specialist.

2. First Year Maintenance - Fall Planting. Maintenance will consist of mowing the area every 30 days the following year after planting. Mowing will begin May 1st, and continue until September 30. Ensure a flail-type mower is used to chop up the weeds and prevent the clippings from smothering the native seedlings. The areas will be mowed to a height of 4 to 6 inches.

Use spot spray throughout this period for noxious weeds not controlled by mowing to the satisfaction of the Engineer and/or Region Resource Specialist.

3. Second Year Maintenance. Maintenance will consist of mowing to a height of 2 inches at the end of April through the first week in May. If weeds are present a second mowing will be required around June 7. This mowing should be at the 12 inch height. A third mowing may be required if the biennial noxious weeds are present. This mowing must be done when the plants are in full bloom which will usually occur in late June. This mowing should be at a 12 inch height.

Use spot spray throughout this period for noxious weeds not controlled by mowing to the satisfaction of the Engineer and/or Region Resource Specialist.

4. Acceptance. The Region Resource Specialist will inspect for a dense cover of specified plants accurate to the genus, species and variety, along with erosion and bare areas at the end of the first and second growing seasons.

A. Repair and reseed areas larger than 100 square feet using the appropriate seed mix at no cost to the Department within acceptable planting dates as directed by Engineer.

B. Seeded areas will require 90 percent vegetative cover and 80 percent of species planted are present. Coverage must be sufficient to prevent erosion to be acceptable.

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

<b>Pay Item</b>	<b>Pay Unit</b>
Native Pollinator Seeding .....	Square Yard
Maintenance, First Season .....	Dollar
Maintenance, Second Season .....	Dollar

1. **Native Pollinator Seeding** will be measured in place by area in square yards and includes all labor, equipment and materials required for vegetation control (herbicide and mowing) and seed establishment including grasses, forbs, topsoil and/or compost, installation of seed and mulch.

The following schedule of payment applies to work performed according to this special provision. Upon completion of the mulching stage, 75 percent of the authorized amount for **Native Pollinator Seeding** will be paid. The remaining authorized amount will be paid upon completion of all other work necessary to comply with this special provision and to meet all final acceptance parameters for native pollinator seeding.

2. **Maintenance, First Season** at the completion of each of the five weed control periods for work satisfactorily completed twenty percent of the applicable budgeted dollar amount will be paid.

3. **Maintenance, Second Season** at the completion of each of the three weed control periods for work satisfactorily completed thirty-three percent of the applicable budgeted dollar amount will be paid.

**Table 1: Native Pollinator Seed Mix**

Kinds of Seeds	Quantity of PLS in ounces/acre
<b>Grasses</b>	
Bouteloua curtipendula - SIDEOATS GRAMA	8.0
Elymus canadensis – CANADA WILD RYE	8.0
Schizachyrium scoparius - LITTLE BLUESTEM	16.0
Sorghastrum nutans - INDIAN GRASS	<u>16.0</u>
Total	48.0
Kinds of Seeds	Quantity of PLS in ounces/acre
<b>Forbs</b>	
Aquilegia Canadensis – WILD COLUMBINE	8.0
Asclepias syriaca – COMMON MILKWEED	6.5
Asclepias tuberosa – BUTTERFLYWEED	6.5
Aster laevis - SMOOTH ASTER(a)	6.5
Coreopsis lanceolata - SAND TICKSEED	6.5
Echinacea purpurea – PURPLE CONEFLOWER	8.0
Kuhnia eupatoroides – FALSE BONESET	8.0
Liatris aspera - ROUGH BLAZING STAR	6.5
Monarda fistulosa – BERGAMOT	8.0
Monarda punctata – HORSEMINT	5.0
Penstemon digitalis – FOXGLOVE BEARDSTONGUE	6.5
Pycnanthemum virginianum – MOUNTAIN MINT	1.5
Rudbeckia hirta - BLACK-EYED SUSAN	12.0
Solidago rigida – STIFF GOLDENROD	8.0
Tradescantia ohiensis - SPIDERWORT	6.5
Verbena stricta - HOARY VERVAIN	<u>8.0</u>
Total	112.0
a. The seed must be debarbed and free of awns.	

MICHIGAN  
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION  
FOR  
**PLANTING MIX**

OAK:LLS

1 of 1

C&T:APPR:LML:JLB:09-22-11

**a. Description.** This work consists of furnishing and installing planting mix as detailed on the plans, in accordance with section 815 of the Standard Specifications for Construction, this special provision, and as directed by the Engineer.

**b. Materials.** All materials must be as specified and detailed in the Enhancement Landscape Plans, except that the planting mix must consist of three parts imported well-drained, screened organic topsoil, to one part imported clean sand, to one part peat moss, to one part natural compost (weed-free).

Provide compost, peat moss and topsoil in accordance with section 917 of the Standard Specifications for Construction.

**c. Construction Methods.** Install planting mix to a 12 inch minimum depth in all perennial, groundcover, annual and shrub beds. Complete the work in accordance with section 815 of the Standard Specifications of Construction and the Landscape Drawings.

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

<b>Pay Item</b>	<b>Pay Unit</b>
Planting Mix, 12 inch deep.....	Cubic yard





# APPENDIX

**City of Ann Arbor  
Ann Arbor, Michigan**

**Geotechnical Subsurface Exploration  
Proposed Retaining Wall  
1274 Bird Road  
Ann Arbor, Michigan**

**April 2019**





1915 North 12<sup>th</sup> Street  
Toledo, OH 43604-5305  
T 419-324-2222  
F 419-241-1808  
www.ttlassoc.com

April 26, 2019

**TTL Project No. 1504703**

Ms. Anne Warrow, P.E.  
City of Ann Arbor  
c/o Customer Service Desk  
301 East Huron Street  
P.O. Box 8647  
Ann Arbor, Michigan 48107

**Geotechnical Subsurface Exploration  
Proposed Retaining Wall  
1274 Bird Road  
Ann Arbor, Michigan**

Dear Ms. Warrow:

Following is the report of our geotechnical subsurface investigation for the referenced project. The soil borings were performed in general accordance with a Professional Services Agreement, dated March 6, 2017, and Geotechnical Bundle #2 project award via email from you on October 26, 2018. The retaining wall analysis was performed in general accordance with a Purchase Order dated April 3, 2019, and authorized by you via email on April 23, 2018.

Boring logs and a memo report were provided to you via email on March 25, 2019.

This final report describes the investigative procedures, presents a summary of the findings, discusses our evaluations and conclusions, and provides our engineering design recommendations for retaining wall foundations.

**PROJECT DESCRIPTION**

It is our understanding that the proposed project consists of the replacement of a retaining wall at 1274 Bird Road in Ann Arbor, Michigan. We further understand that the new retaining wall structure is anticipated to have a maximum of 7 feet of exposed wall in height above existing roadway grades. The new retaining wall is planned to be buried to a depth of approximately 1½ feet below the existing roadway grade. At the time of preparing this report, the wall type had not been decided, but is planned to incorporate driven anchors to minimize disturbance behind the wall due to existing utilities and vegetation.

Final grades are anticipated to approximate the existing grades.

## **INVESTIGATIVE PROCEDURES**

### Field Procedures

This investigation included two (2) test borings, designated as Borings Bird B-1 and Bird B-2, performed by TTL Associates, Inc. (TTL) on March 11, 2019. The borings were located in the field by TTL based on information provided by the City of Ann Arbor. Due to overhead wires, the borings were relocated approximately 20 feet north of their requested locations, and the offset was approved by the City of Ann Arbor via email on February 5, 2019.

The borings were extended to the planned termination depth of 25 feet below existing grade. The test borings were performed in general accordance with geotechnical investigative procedures outlined in ASTM Standards D 1452 and D 5434. The borings were advanced with an ATV-mounted drill rig utilizing 2¼-inch hollow-stem augers.

During auger advancement in the test borings, soil samples were continuously collected using an 18-inch sample drives to a depth of 3 feet below grade, at 2½-foot intervals to the termination depth. Split-spoon (SS) samples were obtained by the Standard Penetration Test (SPT) Method (ASTM D 1586), which consists of driving a 2-inch outside diameter split-barrel sampler into the soil with a 140-pound weight falling freely through a distance of 30 inches. The sampler was driven in three successive 6-inch increments with the number of blows per increment being recorded. The sum of the number of blows required to advance the sampler the second and third 6-inch increments is termed the Standard Penetration Resistance (N-value) and is presented on the Logs of Test Borings attached to this report. The samples were sealed in jars and transported to our laboratory for further classification and testing.

Soil conditions encountered in the test borings are presented in the Logs of Test Borings, along with information related to sample data, SPT results, water conditions observed in the borings, and laboratory test data. It should be noted that these logs have been prepared on the basis of laboratory classification and testing as well as field logs of the encountered soils.

This investigation did not include an environmental assessment of the surface or subsurface materials at the site.

### Laboratory Testing

All recovered soil samples were visually or manually classified in our laboratory using designations per the Unified Soil Classification System (USCS), in general accordance with ASTM Standards D 2487 and D 2488. Cohesive soil samples were also tested for moisture content (ASTM D 2216). Unconfined compressive strength estimates were obtained for the intact cohesive samples using a calibrated hand penetrometer. Atterberg limits tests (ASTM D 4318) and particle size analyses (ASTM D 422) were performed on representative soil samples from each of the borings to determine soil classification and index properties. The results of

these tests are presented on the Logs of Test Borings and Grain Size Distribution sheet attached to this report.

Experience indicates that the actual subsoil conditions at a site could vary from those generalized on the basis of test borings made at specific locations. Therefore, it is essential that a geotechnical engineer be retained to provide soil engineering services during the site preparation and excavation phases of the proposed project. This is to observe compliance with the design concepts, specifications, and recommendations, and to allow design changes in the event subsurface conditions differ from those anticipated prior to the start of construction.

## **ENCOUNTERED CONDITIONS**

Encountered surface materials in Borings Bird B-1 and Bird B-2 consisted of topsoil on the order of 3 inches in thickness.

Based the results of the subsurface investigation, a layer of cohesive soils was encountered, underlain by predominantly granular soils with occasional zones of cohesive soils.

Underlying the topsoil, predominantly medium stiff to stiff cohesive soils were encountered to depths of approximately 4 feet below existing grade. These cohesive soils consisted of silty clay (CL/ML) with varying amounts of sand and gravel. SPT N-values generally ranged from 6 to 13 blows per foot (bpf). An unconfined compressive strength of 2,000 pounds per square foot (psf) was determined for the uppermost sample from Boring B-2, with relatively higher strengths from Boring B-1 likely indicative of desiccation. Moisture contents varied from approximately 15 to 19 percent.

Underlying the cohesive soils, dense to very dense granular soils were encountered to a depth of 21 feet in Boring Bird B-2, and to boring termination at a depth of 25 feet in Boring Bird B-1. The granular soils consisted of poorly graded sand (SP) with gravel and trace silt, silty sand (SM) with varying amounts of gravel, as well as clayey sand (SC) with gravel. SPT N-values exceeded 41 bpf, and resulted in split-spoon refusal (SSR, 50 or more blows over 6 inches or less penetration) in approximately half of the samples.

Zones of cohesive soils were encountered within the granular soils from 8 to 9.8 feet in Boring Bird B-2, from 18 to 21 feet in Boring Bird B-1, and from 21 to 25 feet in Boring Bird B-2. The cohesive soils consisted of sandy silt (ML) with trace gravel, as well as lean clay (CL) with varying amounts of sand and trace gravel. An SPT N-value of 19 bpf and an unconfined compressive strength of 5,000 psf was determined for the uppermost cohesive zone in Boring Bird B-2, indicating very stiff consistency. The SPT resulted in SSR and unconfined compressive strengths exceeded 9,000 psf (the highest obtainable reading using a calibrated hand penetrometer) for the lower zones of cohesive soils, indicating hard consistency. Moisture contents varied from 7 to 10 percent.

Groundwater was not encountered during drilling in or observed at the completion of drilling in any of the borings. The test borings were backfilled upon completion of drilling, and stabilized water levels may not have occurred in the completed borings.

Based on soil characteristics and moisture conditions encountered in the borings, it is our opinion that the long-term groundwater levels at the site will generally be encountered at depths below the termination depths of the borings. Based on the proximity of the Barton Pond to the site, the “normal” groundwater level at the site is anticipated at or slightly higher than the water level of the pond. However, it should be noted that groundwater elevations can fluctuate with seasonal and climatic influences. In particular, “perched” water may be encountered in granular soils that are underlain by relatively impermeable native cohesive soils. Therefore, the groundwater conditions may vary at different times of the year from those encountered during this investigation.

## **EVALUATIONS AND CONCLUSIONS**

### Retaining Walls

We understand that the new retaining wall structure is anticipated to have a maximum of 7 feet of exposed wall in height above existing roadway grades, and is planned to be buried to a depth of approximately 1½ feet below the existing roadway grade. At the time of preparing this report, the wall type had not been decided, but is planned to incorporate driven anchors to minimize disturbance behind the wall due to existing utilities and vegetation.

Based on the conditions encountered in the borings, we anticipate that foundations will bear in very dense granular soils, as well as very stiff cohesive soils, which are considered generally suitable for support of the proposed foundations.

Strip footings should be at least 18 inches wide regardless of sizing based on the allowable bearing pressures.

Following proper site preparation and inspections, retaining wall footings bearing on native cohesive soils with minimum unconfined compressive strengths of 3,000 psf, native granular soils meeting the compaction criteria below, or new select granular fill, may be designed using an average allowable bearing pressure of 3,000 psf, with a maximum bearing pressure at the toe of 4,000 psf due to overturning.

Suitable bearing of native granular foundation subgrade soils should be verified as:

- Exhibiting a compacted (in-situ) dry density of at least 100 percent of the maximum dry density determined by Standard Proctor (ASTM D 698) laboratory compaction,
- A dynamic cone penetrometer (DCP) reading of at least 8 blows per increment (average over three increments), or
- Other methods to demonstrate an equivalent SPT N-value of 10 bpf or greater.

A friction factor of 0.30 may be utilized along the base of the footing to calculate sliding resistance.

We strongly recommend that the bearing capacity at the bottom of all footing excavations be checked by a geotechnical engineer or qualified representative. Additionally, the presence of our engineer will help facilitate the timely remediation of unsuitable soils.

For the soil types encountered in the borings, and properly placed and compacted engineered fill, the total unit weight ( $\gamma$ ), effective internal angle of friction ( $\phi'$ ), and lateral earth pressure coefficients for at-rest conditions ( $k_o$ ) have been estimated and are provided in the following table.

<b>Table 5.5. Soil Parameters and Lateral Earth Pressure Coefficients</b>					
<b>Generalized Soil Description</b>	<b>Encountered Depths Below Existing Grades (feet)</b>		$\gamma$ (pcf)	$\phi'$ (deg.)	$k_o$
	<b>Boring B-1</b>	<b>Boring B-2</b>			
New Compacted Cohesive Engineered Fill	N.E.	N.E.	135	30	0.50
New Compacted Granular Engineered Fill	N.E.	N.E.	120	32	0.47
Upper Profile Medium Stiff to Stiff Cohesive Soils	0 – 4	0 – 4	135	34	0.44
Dense to Very Dense Granular Soils	4 – 25*	4 – 21*	125	41	0.34
Sandy Silt Zone	N.E.	8 – 9.8	135	35	0.43
Lower Profile Hard Cohesive Soils	18 – 21	21 – 25	135	28	0.53

N.E. – Not Encountered

\* With the exception of cohesive zones as noted

Retaining structures or walls that are considered rigid and unyielding should be designed for “at-rest” lateral earth pressure condition. If lower active earth pressures are preferred for structural reasons or overturning stability, we recommend that a select, free-draining granular fill (meeting gradation characteristics of USCS soil types GW, GP, SW, or SP) be utilized for the entire wall backfill zone.

It should also be noted that these earth pressures do not include hydrostatic pressures that may result from elevated groundwater conditions. For this reason, at least a 2-foot zone of free-draining granular material should be placed immediately behind the wall to alleviate hydrostatic conditions on the wall. In addition, the earth pressures indicated above are based on a level backfill condition behind the retaining wall, which is anticipated to be the case for the retaining walls.

### **General Excavation Considerations**

The sides of temporary excavations for retaining wall foundations and other construction should be adequately sloped to provide stable sides and safe working conditions. Otherwise, the excavation must be properly braced against lateral movements. In any case, applicable Occupational Safety and Health Administration (OSHA) safety standards must be followed.



Based on the test borings, it is likely that excavations will encounter a range of soil conditions that include the following OSHA designations:

- Type A soils (cohesive soils with unconfined compressive strengths of 3,000 pounds per square foot (psf) or greater),
- Type B soils (cohesive soils with unconfined compressive strengths greater than 1,000 psf but less than 3,000 psf), and
- Type C soils (granular soils)

For temporary excavations in Type A, B, and C soils, side slopes must be no steeper than  $\frac{3}{4}$  horizontal to 1 vertical ( $\frac{3}{4}$ H:1V), 1H:1V, and 1½H:1V, respectively. For situations where a higher strength soil is underlain by a lower strength soil and the excavation extends into the lower strength soil, the slope of the entire excavation is governed by that required for the lower strength soil. In all cases, flatter slopes may be required if lower strength soils or adverse seepage conditions are encountered during construction.

For permanent excavations and slopes, we recommend that grades be no steeper than 3H:1V without a more extensive geotechnical evaluation of the proposed construction plans and site conditions.

### **Site and Subgrade Preparation**

Prior to proceeding with construction operations, all structures, pavements, topsoil, root mats, vegetation, and other deleterious non-soil materials should be removed from the proposed construction areas. Suitable topsoil may be stockpiled for later use in landscape areas. The actual amount of required stripping should be determined in the field by a geotechnical engineer or qualified representative.

Upon completion of stripping and clearing, the areas intended to support new fill and pavements should be carefully inspected by a geotechnical engineer. At that time, the engineer may require proof rolling of the cohesive subgrade soils using a 20- to 30-ton loaded truck or other pneumatic-tired vehicle of similar size and weight. For proof rolling/compaction of the granular subgrades, a vibratory, smooth-drum roller should be utilized. The roller or truck should make a minimum of two passes covering the proposed development area, with additional passes as necessary to achieve required compaction and/or subgrade stabilization.

The purpose of proof rolling the cohesive subgrades is to locate any weak, soft, or excessively wet soils that may be present at the time of construction. The purpose of vibratory compaction for the granular soils is to densify zones of loose materials that are encountered in the upper portion of the soil profile, thereby providing more uniform subgrade support. We recommend a roller with a minimum dead weight on the drums of 8 tons, vibrating at 30 Hz or greater, and traveling at speeds not exceeding approximately 4 feet per second (about 3 miles per hour). These operational criteria should provide sufficient dynamic compaction energy to alleviate loose soil conditions within the zone of influence for subgrade support.

Any unsuitable materials observed during the inspection and proof-rolling operations should be undercut and replaced with compacted fill or stabilized in place utilizing conventional remedial measures such as discing, aeration, and recompaction. Once the site has been proof rolled, inspected, and stabilized, the proof-rolled or inspected subgrades should not be exposed to wet conditions. It should be recognized that during periods of wet weather, the silty and clayey soils that will be exposed at design subgrades will tend to pond water for short periods of time, with the potential to deteriorate the prepared subgrade.

The results of the inspection and proof-rolling operations will be partially dependent on construction operations, the moisture content of the soil, and the weather conditions prevalent at the time. If pumping or rutting is encountered and difficulty is experienced in the operation of construction equipment, TTL should be notified in order to determine which method of subgrade modification may be best suited for the conditions encountered. Should such conditions be experienced, we may recommend that a small test area be used to determine the necessary depth of undercutting and stone replacement or other remedial action necessary to achieve a stable subgrade condition.

## **QUALIFICATION OF RECOMMENDATIONS**

Our evaluation of retaining wall and construction conditions has been based on our understanding of the site and project information, and the data obtained during our field investigation. The general subsurface conditions were based on interpretation of the subsurface data obtained at specific boring locations. Regardless of the thoroughness of a subsurface investigation, there is the possibility that conditions between borings will differ from those at the boring locations, that conditions are not as anticipated by the designers, or that the construction process has altered the soil conditions. Therefore, experienced geotechnical engineers should observe earthwork and foundation construction to confirm that the conditions anticipated in design are noted. Otherwise, TTL assumes no responsibility for construction compliance with the design concepts, specifications or recommendations.

The design recommendations in this report have been developed on the basis of the previously described project characteristics and subsurface conditions. If project criteria or locations change, a qualified geotechnical engineer should be permitted to determine whether the recommendations must be modified. The findings of such a review will be presented in a supplemental report.

The nature and extent of variations between the borings may not become evident until the course of construction. If such variations are encountered, it will be necessary to reevaluate the recommendations of this report after on-site observations of the conditions.

Our professional services have been performed, our findings derived, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied. TTL is not responsible for the conclusions, opinions, or recommendations of others based on this data.

Should you have any questions regarding this report or require additional information, please contact our office.

Sincerely,

**TTL Associates, Inc.**



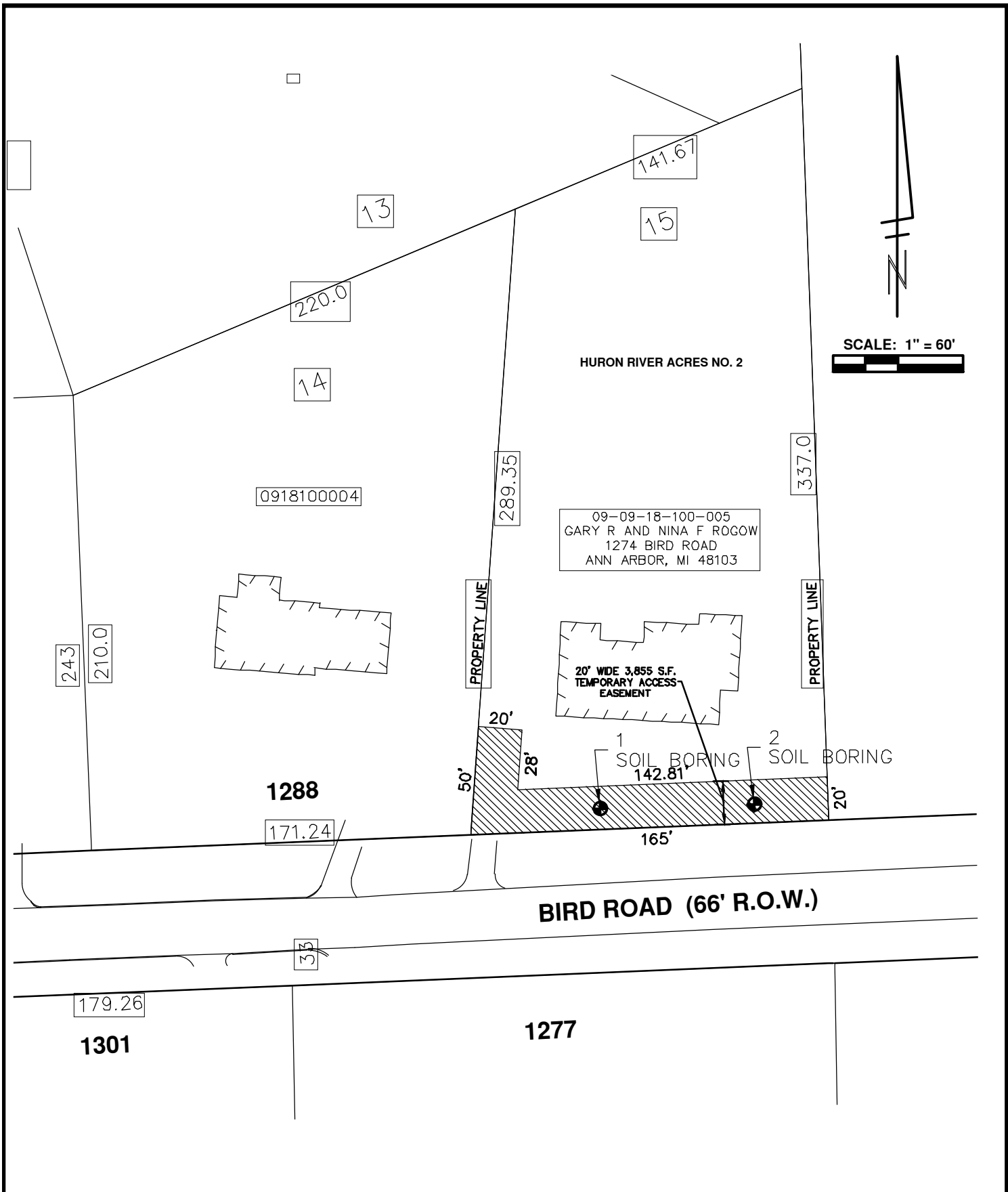
Katherine C. Hennicken, P.E.  
Senior Geotechnical Engineer



Curtis E. Roupe, P.E.  
Vice President

Attachments:    Test Boring Location Plan  
                      Logs of Test Borings  
                      Grain Size Distribution

T:\Geotech\Projects 2018\1504703...Report\Bird Road\1504703 Geotech Report Bird Road Retaining Wall.doc



**CITY OF ANN ARBOR  
PUBLIC SERVICE**  
301 EAST HURON STREET  
P.O. BOX 8647  
ANN ARBOR, MI 48107-8647  
734-794-6410  
www.a2gov.org

**BIRD ROAD RETAINING WALL  
TEMPORARY ACCESS EASEMENT**

1274 BIRD ROAD  
ANN ARBOR, MICHIGAN

PROJ.#: 2018029

DATE: 8/14/2018

DRAWING NO.

DB: DPF

FILE: 1274 BIRD

**2018029-EA1**



TTL Associates, Inc.  
 1915 N 12th Street  
 Toledo, Ohio 43624  
 Telephone: 419-324-2222  
 Fax: 419-241-1808

**BORING NUMBER Bird B-1**  
 PAGE 1 OF 2

**CLIENT** City of Ann Arbor **PROJECT NAME** Geotechnical Bundle #2  
**PROJECT NUMBER** 1504703 **PROJECT LOCATION** Ann Arbor, MI  
**DRILLING CONTRACTOR** TTL Associates TB MB **RIG NO.** 550 **GROUND ELEVATION**  
**DRILLING METHOD** 2-1/4 in. HSA **GROUND WATER LEVELS:**  
**DATE STARTED** 3/11/19 **COMPLETED** 3/11/19 **AT TIME OF DRILLING** None  
**LOGGED BY** KKC **CHECKED BY** KCH **AT END OF DRILLING** None  
**NOTES** 1274 Bird Road **0hrs AFTER DRILLING** Backfilled w/Cuttings and Bentonite Chips

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL			
									20	40	60	80
0.0	0.0		TOPSOIL - 3 Inches									
			Moist Medium Stiff Brown SANDY SILTY CLAY w/Trace Gravel and Organics (CL/ML)	SS 1	67	6-3-3 (6)	2.50			▲ 15	● H	
	2.5		Moist Medium Stiff Brown SILTY CLAY w/Sand (CL/ML)	SS 2	100	4-4-4 (8)	3.00			▲ 19	●	
	5.0		Moist Dense Brown POORLY GRADED SAND w/Gravel and Trace Silt (SP)	SS 3	100	8-17-27 (44)	NP					
	7.5		Moist Very Dense Brown SILTY SAND w/Trace Gravel (SM)	SS 4	100	18-27-20 (47)	NP					
	10.0		Moist Very Dense Brown POORLY GRADED SAND w/Gravel and Trace Silt (SP)	SS 5	100	18-27-30 (57)	NP					
	12.5			SS 6	80	50/5"	NP					>>▲
	15.0			SS 7	90	47-50/4"	NP					>>▲

TTL\_GEOTECH\_STANDARD\_1504703.GPJ GINT US LAB.GDT 4/23/19

(Continued Next Page)



TTL Associates, Inc.  
 1915 N 12th Street  
 Toledo, Ohio 43624  
 Telephone: 419-324-2222  
 Fax: 419-241-1808

**CLIENT** City of Ann Arbor **PROJECT NAME** Geotechnical Bundle #2  
**PROJECT NUMBER** 1504703 **PROJECT LOCATION** Ann Arbor, MI

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL			
									20	40	60	80
	16.5'		Moist Very Dense Brown SILTY SAND w/Trace Gravel (SM)	SS 8	83	38-38-28 (66)	NP					
	17.5'											
	18.0'		Moist Hard Brown LEAN CLAY w/Sand, Trace Gravel, and Iron Oxide Stain Seam (CL)									
	20.0'			SS 9	78	20-30-32 (62)	>4.5	10				
	21.0'		Moist Very Dense Brown SILTY SAND w/Gravel (SM)	SS 10	80	50/5"	NP					>>
	22.5'											
	23.0'		Moist Very Dense Brown POORLY GRADED SAND w/Gravel and Trace Silt (SP)	SS 11	100	50/3"	NP					>>
	25.0'		Bottom of hole at 25.0 feet.									

TTL\_GEOTECH\_STANDARD\_1504703.GPJ\_GINT\_US\_LAB\_GDT\_4/23/19









TTL Associates, Inc.  
 1915 N 12th Street  
 Toledo, Ohio 43624  
 Telephone: 419-324-2222  
 Fax: 419-241-1808

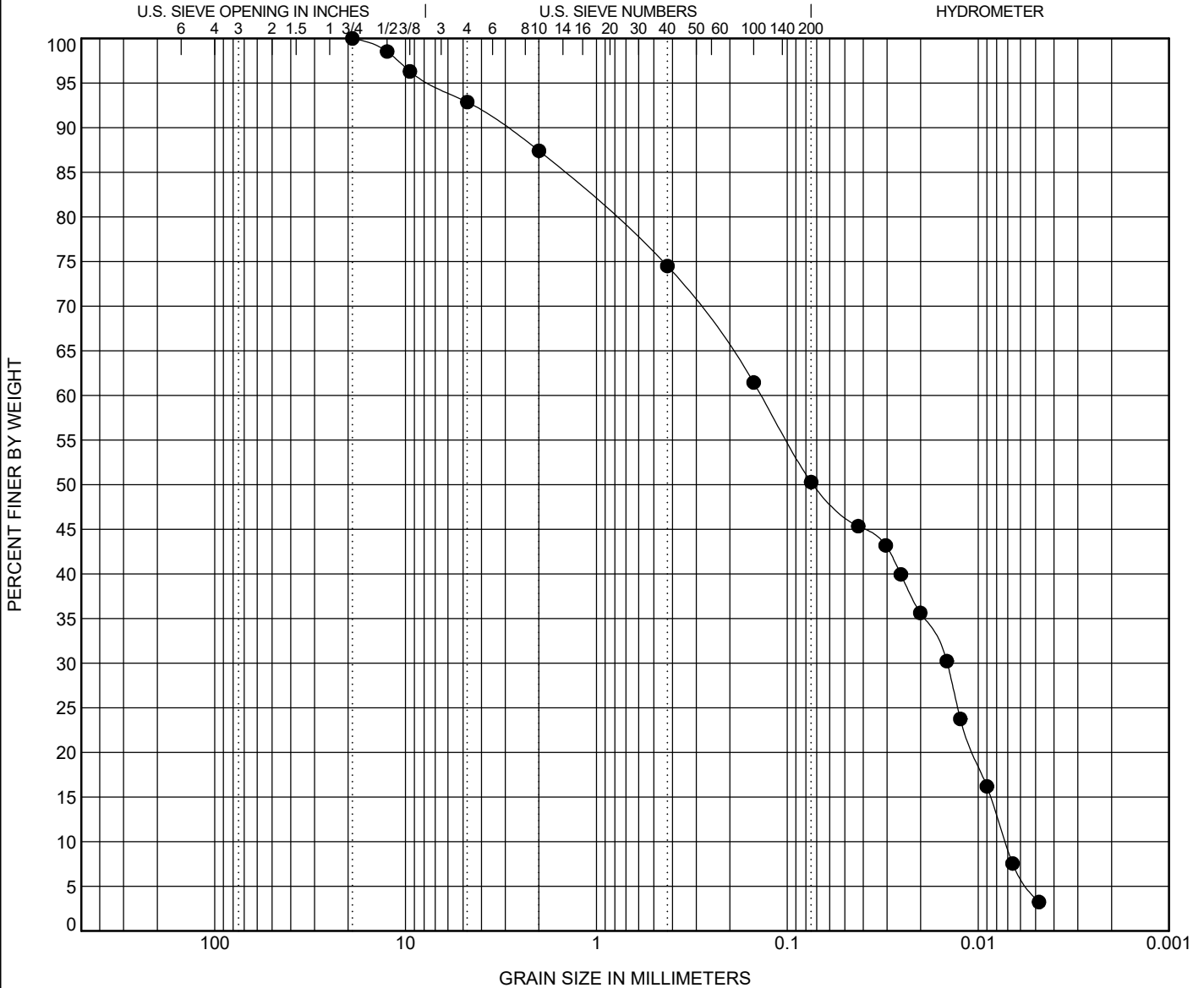
# GRAIN SIZE DISTRIBUTION

CLIENT City of Ann Arbor

PROJECT NAME Geotechnical Bundle #2

PROJECT NUMBER 1504703

PROJECT LOCATION Ann Arbor, MI



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	USCS Classification	LL	PL	PI	Cc	Cu
● Bird B-2 8.5	<b>SANDY SILT (ML)</b>	<b>16</b>	<b>14</b>	<b>2</b>	<b>0.2</b>	<b>19.0</b>

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● Bird B-2 8.5	<b>19</b>	<b>0.137</b>	<b>0.015</b>	<b>0.007</b>	<b>7.1</b>	<b>42.6</b>	<b>46.5</b>	<b>3.8</b>

GRAIN SIZE 1504703.GPJ GINT US LAB.GDT 4/23/19



**CITY OF ANN ARBOR**  
**LIVING WAGE ORDINANCE DECLARATION OF COMPLIANCE**

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that an employer who is (a) a contractor providing services to or for the City for a value greater than \$10,000 for any twelve-month contract term, or (b) a recipient of federal, state, or local grant funding administered by the City for a value greater than \$10,000, or (c) a recipient of financial assistance awarded by the City for a value greater than \$10,000, shall pay its employees a prescribed minimum level of compensation (i.e., Living Wage) for the time those employees perform work on the contract or in connection with the grant or financial assistance. The Living Wage must be paid to these employees for the length of the contract/program.

*Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from compliance with the Living Wage Ordinance. If this exemption applies to your company/non-profit agency please check here  No. of employees\_\_*

The Contractor or Grantee agrees:

- (a) To pay each of its employees whose wage level is not required to comply with federal, state or local prevailing wage law, for work covered or funded by a contract with or grant from the City, no less than the Living Wage. The current Living Wage is defined as \$13.61/hour for those employers that provide employee health care (as defined in the Ordinance at Section 1:815 Sec. 1 (a)), or no less than \$15.18/hour for those employers that do not provide health care. The Contractor or Grantor understands that the Living Wage is adjusted and established annually on April 30 in accordance with the Ordinance and covered employers shall be required to pay the adjusted amount thereafter to be in compliance with Section 1:815(3).

**Check the applicable box below which applies to your workforce**

Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage without health benefits

Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage with health benefits

- (b) To post a notice approved by the City regarding the applicability of the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.
- (c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.
- (d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.
- (e) To take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee covered by the Living Wage Ordinance or any person contracted for employment and covered by the Living Wage Ordinance in order to pay the living wage required by the Living Wage Ordinance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services or agrees to accept financial assistance in accordance with the terms of the Living Wage Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Living Wage Ordinance, obligates the Employer/Grantee to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract or grant of financial assistance.

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
Signature of Authorized Representative

\_\_\_\_\_  
Date

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Print Name and Title

\_\_\_\_\_  
Phone/Email address

# CITY OF ANN ARBOR LIVING WAGE ORDINANCE

**RATE EFFECTIVE APRIL 30, 2019 - ENDING APRIL 29, 2020**

**\$13.61** per hour

If the employer provides health care benefits\*

**\$15.18** per hour

If the employer does **NOT** provide health care benefits\*

Employers providing services to or for the City of Ann Arbor or recipients of grants or financial assistance from the City of Ann Arbor for a value of more than \$10,000 in a twelve-month period of time must pay those employees performing work on a City of Ann Arbor contract or grant, the above living wage.

## **ENFORCEMENT**

The City of Ann Arbor may recover back wages either administratively or through court action for the employees that have been underpaid in violation of the law. Persons denied payment of the living wage have the right to bring a civil action for damages in addition to any action taken by the City.

Violation of this Ordinance is punishable by fines of not more than \$500/violation plus costs, with each day being considered a separate violation. Additionally, the City of Ann Arbor has the right to modify, terminate, cancel or suspend a contract in the event of a violation of the Ordinance.

\* Health Care benefits include those paid for by the employer or making an employer contribution toward the purchase of health care. The employee contribution must not exceed \$.50 an hour for an average work week; and the employer cost or contribution must equal no less than \$1/hr for the average work week.

**The Law Requires Employers to Display This Poster Where Employees Can Readily See It.**

**For Additional Information or to File a Complaint contact  
Colin Spencer at 734/794-6500 or [cspencer@a2gov.org](mailto:cspencer@a2gov.org)**



<b>Vendor Conflict of Interest Disclosure Form</b>
--

All vendors interested in conducting business with the City of Ann Arbor must complete and return the Vendor Conflict of Interest Disclosure Form in order to be eligible to be awarded a contract. Please note that all vendors are subject to comply with the City of Ann Arbor’s conflict of interest policies as stated within the certification section below.

If a vendor has a relationship with a City of Ann Arbor official or employee, an immediate family member of a City of Ann Arbor official or employee, the vendor shall disclose the information required below.

1. No City official or employee or City employee’s immediate family member has an ownership interest in vendor’s company or is deriving personal financial gain from this contract.
2. No retired or separated City official or employee who has been retired or separated from the City for less than one (1) year has an ownership interest in vendor’s Company.
3. No City employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any City employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

<b>Conflict of Interest Disclosure*</b>	
Name of City of Ann Arbor employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	<input type="checkbox"/> Relationship to employee <hr style="border: 0; border-top: 1px solid black;"/> <input type="checkbox"/> Interest in vendor’s company <input type="checkbox"/> Other (please describe in box below)

\*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the City, vendor will be exempt from doing business with the City.

<b>I certify that this Conflict of Interest Disclosure has been examined by me and that its contents are true and correct to my knowledge and belief and I have the authority to so certify on behalf of the Vendor by my signature below:</b>		
<b>Vendor Name</b>	<b>Vendor Phone Number</b>	
<b>Signature of Vendor Authorized Representative</b>	<b>Date</b>	<b>Printed Name of Vendor Authorized Representative</b>

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500, [procurement@a2gov.org](mailto:procurement@a2gov.org)



# CITY OF ANN ARBOR NON-DISCRIMINATION ORDINANCE

Relevant provisions of Chapter 112, Nondiscrimination, of the Ann Arbor City Code are included below.  
You can review the entire ordinance at [www.a2gov.org/humanrights](http://www.a2gov.org/humanrights).

**Intent:** It is the intent of the city that no individual be denied equal protection of the laws; nor shall any individual be denied the enjoyment of his or her civil or political rights or be discriminated against because of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight.

**Discriminatory Employment Practices:** No person shall discriminate in the hire, employment, compensation, work classifications, conditions or terms, promotion or demotion, or termination of employment of any individual. No person shall discriminate in limiting membership, conditions of membership or termination of membership in any labor union or apprenticeship program.

**Discriminatory Effects:** No person shall adopt, enforce or employ any policy or requirement which has the effect of creating unequal opportunities according to actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight for an individual to obtain housing, employment or public accommodation, except for a bona fide business necessity. Such a necessity does not arise due to a mere inconvenience or because of suspected objection to such a person by neighbors, customers or other persons.

**Nondiscrimination by City Contractors:** All contractors proposing to do business with the City of Ann Arbor shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All city contractors shall ensure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate inequality based upon any classification protected by this chapter. All contractors shall agree not to 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 any applicable protected classification. All contractors shall be required to post a copy of Ann Arbor's Non-Discrimination Ordinance at all work locations where its employees provide services under a contract with the city.

**Complaint Procedure:** If any individual believes there has been a violation of this chapter, he/she may file a complaint with the City's Human Rights Commission. The complaint must be filed within 180 calendar days from the date of the individual's knowledge of the allegedly discriminatory action or 180 calendar days from the date when the individual should have known of the allegedly discriminatory action. A complaint that is not filed within this timeframe cannot be considered by the Human Rights Commission. To file a complaint, first complete the complaint form, which is available at [www.a2gov.org/humanrights](http://www.a2gov.org/humanrights). Then submit it to the Human Rights Commission by e-mail ([hrc@a2gov.org](mailto:hrc@a2gov.org)), by mail (Ann Arbor Human Rights Commission, PO Box 8647, Ann Arbor, MI 48107), or in person (City Clerk's Office). For further information, please call the commission at 734-794-6141 or e-mail the commission at [hrc@a2gov.org](mailto:hrc@a2gov.org).

**Private Actions For Damages or Injunctive Relief:** To the extent allowed by law, an individual who is the victim of discriminatory action in violation of this chapter may bring a civil action for appropriate injunctive relief or damages or both against the person(s) who acted in violation of this chapter.

THIS IS AN OFFICIAL GOVERNMENT NOTICE AND  
MUST BE DISPLAYED WHERE EMPLOYEES CAN READILY SEE IT.

## MICHIGAN DEPARTMENT OF TRANSPORTATION CERTIFIED PAYROLL

COMPLETION OF CERTIFIED PAYROLL FORM FULFILLS THE MINIMUM MDOT PREVAILING WAGE REQUIREMENTS

(1) NAME OF CONTRACTOR / SUBCONTRACTOR (CIRCLE ONE) (2) ADDRESS

(3) PAYROLL NO. (4) FOR WEEK ENDING (5) PROJECT AND LOCATION (6) CONTRACT ID

(a)	(b)	(c)	(d) DAY AND DATE							(e)	(f)	(g)	(h)	(i)	(j) DEDUCTIONS						(k)
															TOTAL HOURS ON PROJECT	PROJECT RATE OF PAY	PROJECT RATE OF FRINGE PAY	GROSS PROJECT EARNED	GROSS WEEKLY EARNED	TOTAL WEEKLY HOURS WORKED ALL JOBS	
EMPLOYEE INFORMATION	WORK CLASSIFICATION	Hour Type	HOURS WORKED ON PROJECT							TOTAL HOURS ON PROJECT	PROJECT RATE OF PAY	PROJECT RATE OF FRINGE PAY	GROSS PROJECT EARNED	GROSS WEEKLY EARNED	TOTAL WEEKLY HOURS WORKED ALL JOBS	FICA	FEDERAL	STATE	OTHER	TOTAL DEDUCT	TOTAL WEEKLY WAGES PAID FOR ALL JOBS
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00
ETH#GEN: ID #:	GROUP/CLASS #:	S							0											\$0.00	\$0.00
NAME:									0				\$0.00							\$0.00	\$0.00



