CITY OF ANN ARBOR
INVITATION TO BID

Geddes Avenue Improvements Project

ITB No. 4366

Due Date: Friday, May 22, 2015 at 10:00 a.m. (Local Time)

Project Management/ Public Services Area
Administering Service Area/Unit

Issued By:

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

TABLE OF CONTENTS

ATTACHMENTS

City of Ann Arbor Living Wage Forms
City of Ann Arbor Vendor Conflict of Interest Disclosure Form
City of Ann Arbor Non-Discrimination Ordinance Instructions to Contractors and Notice

ADVERTISEMENT

FOR GEDDES AVENUE IMPROVEMENTS PROJECT
CITY OF ANN ARBOR

BID NO. ITB No. 4366

Sealed Bids will be received by the City of Ann Arbor Procurement Unit, 301 East Huron Street, c/o Customer Service, 1st Floor, Larcom City Hall, on or before **Friday, May 22** by **10:00 a.m. (Local Time)** for the construction of **Geddes Avenue Improvements Project**. Bids will be publically opened and read aloud at this time.

A pre-bid conference will be held on **Wednesday, May 6, 2015 at 10:00 a.m.** at
6th Floor Conference Room, Guy C. Larcom Building, City Hall, 301 E. Huron Street, Ann Arbor, Michigan 48107
.
Attendance is **highly** recommended.

Work to be done includes **installation of sanitary sewer, storm sewer, ductile iron pipe water main, concrete retaining wall, modular block retaining wall, concrete curb & gutter, concrete sidewalk, landscaping and all related work on Geddes Ave from approximately Huntington to Hickory Lane. In addition, the work includes the full depth reconstruction of the roadway and the installation of underground infiltration.**

Bid documents, specifications, and addenda, with the exception of the Plans, shall be downloaded by bidders at either of the following websites: Michigan Inter-governmental Trade Network (MITN) www.mitn.info or City of Ann Arbor Purchasing website: www.A2gov.org. It is the bidder's responsibility to verify they have obtained all information before submitting a bid.

Each Bid shall be accompanied by a certified check, or Bid Bond by a surety authorized to transact business in Michigan, in the amount of 5% of the total of the bid price. A Bid, once submitted, becomes the property of the City. In the sole discretion of the City, the City reserves the right to allow a bidder to reclaim submitted documents provided the documents are requested and retrieved no later than 48 hours prior to the scheduled bid opening.

The successful Bidder will be required to furnish satisfactory performance and labor and material bonds in the amount of 100% of the bid price. The form of the Performance Bond and labor and materials bond is attached hereto. The successful Bidder will be required to provide satisfactory insurance coverage, including evidence of endorsement prior to issuance of a Notice to Proceed.

Precondition for entering into a Contract with the City of Ann Arbor is compliance with the wage and employment requirements of Chapter 14 of Title I of the Code of City of Ann Arbor and Chapter 112 of Title IX of the Code of the City of Ann Arbor. Employees whose wage level are subject to federal or state prevailing wage law must be paid in accordance with their U.S. Department of Labor wage rate classification (see www.wdol.gov) The wage determination(s) current on the date 10 days before bids are due shall apply to this contract.

Employees whose wage level are not otherwise subject to federal or state prevailing wage law, must be pay a living wage in accordance with Chapter 112 of the City Code. The successful Bidder may also be required to comply with Chapter 23 of Title I of the Code of the City of Ann

Arbor. Further information is outlined in the Contract Documents. All bidders are required to complete and submit the City of Ann Arbor Conflict of Interest Disclosure Form with the bid.

After the time of opening, no Bid may be withdrawn for a period of **ninety (90)** days. The City reserves the right 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.

Technical questions regarding this project may be submitted in writing to **Elizabeth Rolla (erolla@a2gov.org)**. Questions by telephone call are prohibited. The deadline for questions shall be **Wednesday, May 13, 2015 by 3:00 p.m.** Questions will not be accepted after this date.

The City reserves the right 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.

Any further information on bid documents may be obtained from the Procurement Office, (734) 794-6500.

CITY OF ANN ARBOR PROCUREMENT UNIT

NOTICE OF PRE-BID CONFERENCE

A pre-bid conference for this project will be held on **Wednesday, May 6, 2015 at 10:00 a.m.** at **6th Floor Conference Room, Guy C. Larcom Building, City Hall, 301 E. Huron Street, Ann Arbor, Michigan 48107**

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 Clarification on ITB Specifications

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, May 13, 2015 by 3:00 p.m.** and should be addressed as follows:

Specification/Scope of Work questions emailed to ERolla@a2gov.org

Bid Process and HR Compliance questions emailed to 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 **Elizabeth Rolla** at **ERolla@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 and/or City of Ann Arbor web site 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 **Friday, May 22, 2015 by 10:00 a.m.** 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 two (2) Bid copies in a sealed envelope clearly marked: **ITB No. 4366 – Geddes Avenue Improvements Project.**

Bids must be addressed and delivered to:

City of Ann Arbor
Procurement Unit,
c/o Customer Services, 1st Floor
301 East Huron Street
P.O. Box 8647
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.

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 and obtain an official Bid.

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 ninety (90) days specified in the Advertisement.

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-2, Article III of the Contract. If these time requirements can not 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-3 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-2, outlines the requirements for payment of prevailing wages or of a "living wage" to employees providing service to the City under this contract. The successful bidder must comply with all applicable requirements and provide documentary proof of compliance when requested.

For laborers whose wage level are subject to federal or state 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

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.

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.

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 Advertisement, City Nondiscrimination and Wage requirements, 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 1:319 (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 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 _____, 2015.

_____	_____
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** _____**,** 2015

(Print) Name _____ Title _____

Company: _____

Address: _____

Contact Phone ( ) _____ Fax ( ) _____

Email _____

BID FORM - SECTION 1
PROJECT: GEDDES AVENUE IMPROVEMENTS PROJECT
FILE NO: 2013-037 BID NO: ITB 4366

ITEM #	DESCRIPTION	UNIT	ESTIM. QUANT.	UNIT PRICE	AMOUNT ($)
130	Protective Fence, Orange, Plastic, 4 Foot Ht.	Ft	9,000	$	
135	Tree Removal, 8" and larger	Ea	126	$	
135A	Tree Removal, 8" and larger	Ft	5,200	$	
140	Exploratory Excavation, Trench Detail I (0-10' deep)	Ea	6	$	
141	Exploratory Excavation, Trench Detail VI (0-10' deep)	Ea	4	$	
144	Exploratory Excavation Add'l Depth	VF	20	$	
201	Project Supervision, Max. $100,000	LS	1	$	
202	General Conditions, Max. $100,000	LS	1	$	
203	Minor Traf Devices, Max. $100,000	LS	1	$	
204	Preconstruction Documentation	LS	1	$	
205	Railroad Flagger Allowance	Dlr	48,000	$	
206	Machine Grading, Modified	Sta	51	$	
207	Subgrade Undercutting, Type II	Cyd	2,975	$	
208	Pavt Mrkg, Sprayable, Thermopl, 6 inch, White	Ft	6,635	$	
209	Pavt Mrkg, Sprayable, Thermopl, 4 inch, Yellow	Ft	8,766	$	
210	Pavt Mrkg, Thermopl, 6 inch, Crosswalk	Ft	300	$	
211	Pavt Mrkg, Thermopl, 12 inch, Crosswalk	Ft	128	$	
212	Pavt Mrkg, Thermopl, 24 inch Stop Bar	Ft	120	$	
213	Guardrail, Type B	Ft	438	$	
214	Guardrail Approach Terminal, Type 1B	Ea	1	$	
215	Guardrail Approach Terminal, Type 2B	Ea	1	$	
216	Conduit, Schedule 80 PVC, 2-3 inch, Special	Ft	4,406	$	
217	Communication Handhole Assembly, Complete	Ea	11	$	

Total This Page $_____
(Also to be entered on page BF-10)

BID FORM - SECTION 1
PROJECT: GEDDES AVENUE IMPROVEMENTS PROJECT
FILE NO: 2013-037 BID NO: ITB 4366

ITEM #	DESCRIPTION	UNIT	ESTIM. QUANT.	UNIT PRICE	AMOUNT ($)
218	HMA, 5E1	Ton	1,308	$	
219	HMA, 4E1	Ton	3,682	$	
220	HMA Driveway Approach	Ton	90	$	
221	HMA, LVSP	Ton	35	$	
222	HMA Plane of Weakness Joint	Ft	383	$	
223	Temporary HMA Pavement	Ton	1,000	$	
224	Maintenance Aggregate	Ton	2,000	$	
225	Decorative Stone Wall Removal	LS	1	$	
226	Fence, Rem	Ft	377	$	
227	Guardrail, Rem	Ft	489	$	
228	HMA Surface, Rem	Syd	16,474	$	
229	Cold Milling HMA Surface	Syd	698	$	
230	Remove Concrete Curb or Curb & Gutter - Any Type	Ft	851	$	
231	Remove Concrete Sidewalk and Drive - Any Thickness	Sft	2,193	$	
232	Concrete Curb or Curb & Gutter - Any Type	Ft	5,333	$	
233	Concrete M-Opening - High Early	Ft	766	$	
234	4 inch Concrete Sidewalk	Sft	18,431	$	
235	6 inch Concrete Sidewalk, Ramp or Drive	Sft	2,027	$	
235A	6 inch Concrete Sidewalk , Ramp or Drive - High Early	Sft	6,473	$	
236	Detectable Warning, Cast In Place	Sft	160	$	
237	Adjust Structure Cover	Ea	8	$	
238	Adjust Curb Inlet Structure Cover	Ea	4	$	
239	Adjust Monument Box or Gate Valve Box or Gas Box	Ea	15	$	

Total This Page $_____
(Also to be entered on page BF-10)

BID FORM - SECTION 1
PROJECT: GEDDES AVENUE IMPROVEMENTS PROJECT
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ITEM #	DESCRIPTION	UNIT	ESTIM. QUANT.	UNIT PRICE	AMOUNT ($)
240	Structure Cover	Ea	68	$	
241	Culv, Rem, 24 inch to 48 inch	Ea	1	$	
242	Sewer, Rem - Any Size	Ft	124	$	
243	Dr Structure, Rem	Ea	5	$	
244	Modular Concrete Block Wall	Sft	1,476	$	
245	Natural Boulder Retaining Wall	Sft	2,816	$	
246	Subbase, CIP, Granular Material, Cl II	Cyd	1,352	$	
247	Sand Subbase Course, Class II - C.I.P.	Cyd	5,498	$	
248	Aggregate Base Course, 21AA Limestone, 4 inch, C.I.P.	Syd	23	$	
249	Aggregate Base Course, 21AA Limestone, 6 inch, C.I.P.	Syd	436	$	
250	Aggregate Base Course, 21AA Limestone, 8 inch, C.I.P.	Syd	16,532	$	
251	Aggregate Surface Cse, 8 inch	Syd	1,203	$	
252	Wood Privacy Fence	Ft	99	$	
253	Wood Picket Fence	Ft	165	$	
254	Plastic Drum - Lighted - Furnish and Operate	Ea	300	$	
255	Barricade, Type III - Lighted - Furnish and Operate	Ea	50	$	
256	Temporary Sign, Type B	Sft	345	$	
257	Temporary Sign ,Type B, Special	Sft	633	$	
258	Channelizing Device, 42 inch, Furnish and Operate	Ea	100	$	
259	Sign, Portable, Changeable Message, Furn	Ea	2	$	
260	Sign, Portable, Changeable Message, Oper	Ea	2	$	
261	Mast Arm, Rem	Ea	1	$	
262	Mast Arm Std, Rem	Ea	1	$	

Total This Page $_____
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ITEM #	DESCRIPTION	UNIT	ESTIM. QUANT.	UNIT PRICE	AMOUNT ($)
263	Fdn, Rem	Ea	1	$	
264	Pedestal, Rem	Ea	4	$	
265	Pedestal Fdn, Rem	Ea	4	$	
266	Case Sign, Rem	Ea	1	$	
267	Sign, Type III, Rem	Ea	107	$	
268	Mast Arm Pole, Cat III, Mod	Ea	2	$	
269	Mast Arm, 20 foot, Cat III, Mod	Ea	2	$	
270	Mast Arm Pole, Fdn	Ea	2	$	
271	Pedestal, Fdn	Ea	2	$	
272	Pedestal, Alum, Salv	Ea	2	$	
273	Conduit, DB, 2, 3 inch	Ft	80	$	
274	Riprap	Syd	20	$	
275	Underdrain, Subbase, 6 inch, Special	Ft	8,206	$	
276	Culvert, Cl IV RCP, 24 inch	Ft	30	$	
277	End Section, 54 inch	Ea	1	$	
278	End Section, 24 inch	Ea	2	$	
278A	End Section, 30 inch	Ea	1	$	
282	30 inch Slip-Lining Pipe	Ft	74	$	
283	CIP Conc Manhole Base	Ea	1	$	
284	Hydrodynamic Separator	Ea	1	$	
285	Outlet Control Structure	Ea	1	$	
286	Energy Dissipation Structure	Ea	1	$	
287	Single Inlet	Ea	18	$	

Total This Page $_____
(Also to be entered on page BF-10)

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FILE NO: 2013-037 BID NO: ITB 4366

ITEM #	DESCRIPTION	UNIT	ESTIM. QUANT.	UNIT PRICE	AMOUNT ($)
288	8 inch Schedule 80 PVC Pipe, Trench Detail I	LF	56	$	
290	Drainage Aggregate, Type I	Ton	146	$	
291	Drainage Aggregate, Type II	Ton	8	$	
292	Geotextile Blanket	Syd	1,470	$	
293	Geotextile Separator	Syd	14,237	$	
294	8 inch HDPE Dual Wall, Perforated Infiltration Pipe	Lft	547	$	
295	12 inch HDPE Dual Wall, Perforated Infiltration Pipe	Lft	1,002	$	
296	24 inch Dia Maintenance Basin	Ea	16	$	
297	8 inch Sewer Tap	Ea	4	$	
298	Temp. Water Stop, 16 inch and Larger	Ea	7	$	
299	Temp. Water Stop, 12 inch and Smaller	Ea	2	$	
305	8 inch SDR 26 PVC Pipe, Trench Detail II Mod	LF	3,274	$	
320	12 inch C-76 Cl IV RCP, Trench Detail I	Ft	1,824	$	
321	15 inch C-76 Cl IV RCP, Trench Detail I	Ft	95	$	
322	18 inch C-76 Cl IV RCP, Trench Detail I	Ft	89	$	
323	24 inch C-76 Cl IV RCP, Trench Detail I	Ft	570	$	
324	36 inch C-76 Cl IV RCP, Trench Detail I	Ft	694	$	
335	8 inch by 6 inch SDR 26 PVC Tee (or Wye)	Ea	23	$	
350	6 inch SDR 23.5 PVC Riser	VF	153	$	
353	6 inch SDR 23.5 PVC Service Lead	LF	805	$	
360	Type I Manhole (0-10' deep)	Ea	34	$	
361	Manhole Additional Depth	Ft	34	$	
364	Type III Manhole	Ea	2	$	

Total This Page $_____
(Also to be entered on page BF-10)

BID FORM - SECTION 1
PROJECT: GEDDES AVENUE IMPROVEMENTS PROJECT
FILE NO: 2013-037 BID NO: ITB 4366

ITEM #	DESCRIPTION	UNIT	ESTIM. QUANT.	UNIT PRICE	AMOUNT ($)
356-SP	Sewer, MH, 48 inch dia, (0-10 ft deep)	Ea	17	$	
357-SP	Sewer MH, 48 inch dia Add'l Depth	VF	108	$	
358-SP	Sewer MH, 60 inch dia, (0-10 ft deep)	Ea	2	$	
359-SP	Sewer, MH, 60 inch dia , Add'l Depth	VF	33	$	
370	8 inch Drop Connection	VF	38	$	
381-SP	Earth Retention for Sanitary Sewer Construction	LS	1	$	
392	Pipe Undercut & Refill (6A)	CY	540	$	
400	20 inch, PC350 DIP w/ Polyethylene Wrap, Trench Detail	LF	912	$	
401	16 inch, PC350 DIP w/Polyethylene Wrap, Trench Detail I	LF	15	$	
402	8 inch, Class 50 DIP w/Polyethylene Wrap, Trench Detail I	LF	328	$	
403	6 inch, Class 50 DIP w/Polyethylene Wrap, Trench Detail I	LF	63	$	
404	20 inch, Water Main Cap	Ea	2	$	
405	16 inch, Water Main Cap	Ea	1	$	
406	8 inch, Water Main Cap	Ea	4	$	
407	6 inch, Water Main Cap	Ea	2	$	
410	20 inch, 11.25° Bend	Ea	3	$	
411	20 inch, 22.5° Bend	Ea	2	$	
412	16 inch, 45° Bend	Ea	1	$	
413	8 inch, 11.25° Bend	Ea	2	$	
414	8 inch, 22.5° Bend	Ea	3	$	
415	8 inch, 90° Bend	Ea	1	$	
416	6 inch, 90° Bend	Ea	1	$	
420	8 inch x 6 inch Reducer	Ea	2	$	

Total This Page $_____
(Also to be entered on page BF-10)

BID FORM - SECTION 1
PROJECT: GEDDES AVENUE IMPROVEMENTS PROJECT
FILE NO: 2013-037 BID NO: ITB 4366

ITEM #	DESCRIPTION	UNIT	ESTIM. QUANT.	UNIT PRICE	AMOUNT ($)
430	20 inch by 16 inch Tee	Ea	1	$	
431	20 inch by 8 inch Tee	Ea	1	$	
432	20 inch by 6 inch Tee	Ea	1	$	
433	16 inch by 8 inch Tee	Ea	2	$	
434	8 inch by 6 inch Tee	Ea	2	$	
440	Fire Hydrant Assembly	Ea	5	$	
443	8 inch Gate Valve-in-Well	Ea	1	$	
444	16 inch Gate Valve-in-Box	Ea	1	$	
446	20 inch Butterfly Valve-in-Well	Ea	1	$	
447	16 inch GateValve-in-Well	Ea	1	$	
450	16 inch by 6 inch Tapping Sleeve Valve-in-Box	Ea	1	$	
451	16 inch by 8 inch Tapping Sleeve Valve-in-Well	Ea	4	$	
460	Excavate & Backfill for Water Service Tap and Lead	LF	86	$	
461	Water Service Lead, 1 inch	LF	86	$	
481	Water Main Pipe Abandonment	LF	1,413	$	
482	6 inch Gate Valve-in-Box Abandonment	Ea	1	$	
483	16 inch Butterfly Valve-in-Well Abandonment	Ea	1	$	
490	1 inch Air-Relief Assembly	Ea	1	$	
583	Temporary Pavement Marking, 4 inch White or Yellow, T	Ft	3,600	$	
590	Pavt Mrkg, Ovly Cold Plastic, Thru Arrow Sym	Ea	9	$	
591	Pavt Mrkg, Ovly Cold Plastic, Bike	Ea	9	$	
702	Inlet Filter	Ea	45	$	
800	Silt Fence	Ft	10,271	$	

Total This Page $_____
(Also to be entered on page BF-10)

BID FORM - SECTION 1
PROJECT: GEDDES AVENUE IMPROVEMENTS PROJECT
FILE NO: 2013-037 BID NO: ITB 4366

ITEM #	DESCRIPTION	UNIT	ESTIM. QUANT.	UNIT PRICE	AMOUNT ($)
881	Turf Establishment	Syd	18,178	$	
881A	Landscaping Maintenance and Warranty, 1st Year	LS	1	$	
881B	Landscaping Maintenance and Warranty, 2nd Year	LS	1	$	
900	Excavation, Fdn	Cyd	5,620	$	
901	Earth Retention System, Temp, Left in Place	Sft	940	$	
902	Backfill, Structure, CIP	Cyd	6,840	$	
903	Aggregate, 21A, Modified	Cyd	400	$	
904	Underdrain, Fdn, 4 inch	Ft	905	$	
905	Underdrain Oultet, 4 inch	Ft	360	$	
906	Underdrain Outlet Ending, 4 inch	Ea	18	$	
907	Substructure, Conc	Cyd	1,187	$	
908	Reinforcement, Steel, Epoxy Coated	Lb	169,124	$	
909	Bridge Railing, 4 Tube	Ft	905	$	
910	Sprinkler Head, Relocate	Ea	50	$	
911	Sprinkler Head, Replace	Ea	150	$	
912	Sprinkler Line	Ft	3,000	$	
913	Aluminum Rail Fence, Direct Bury	Ft	280	$	
914	Landscape Stone	Syd	164	$	
915	Underdrain Outlet, 6 inch	Ft	30	$	
916	Post Mailbox, Modified	Ea	30	$	
917	Gleditsia T.I. Imperial, 2.5 inch cal.	Ea	11	$	
918	Nyssa Sylvatica, 2.5 inch	Ea	9	$	
919	Ostrya Virginiana, 2 inch	Ea	6	$	

Total This Page $_____
(Also to be entered on page BF-10)

BID FORM - SECTION 1
PROJECT: GEDDES AVENUE IMPROVEMENTS PROJECT
FILE NO: 2013-037 BID NO: ITB 4366

ITEM #	DESCRIPTION	UNIT	ESTIM. QUANT.	UNIT PRICE	AMOUNT ($)
920	Parthenocissus Tricuspidata, #1 container	Ea	72	$	
921	Picea Glauca, 10 ft ht.	Ea	25	$	
922	Pinus Rubra, 10 ft ht.	Ea	10	$	
923	Quercus Bicolor, 2.5 inch	Ea	16	$	
924	Quercus Rubra, 2.5 inch	Ea	17	$	
925	Fire Hydrant Assembly, Rem	Ea	1	$	
926	Fire Hydrant Adjustment	Ea	3	$	
927	Fire Hydrant Relocate	Ea	2	$	
928	Temporary Turf Establishment	Syd	5,300	$	

Total This Page $_____
(Also to be entered on page BF-10)

BID FORM - SECTION 1
PROJECT: GEDDES AVENUE IMPROVEMENTS PROJECT
FILE NO: 2013-037 BID NO: ITB 4366

Total from BF-1	$ _____
Total from BF-2	$ _____
Total from BF-3	$ _____
Total from BF-4	$ _____
Total from BF-5	$ _____
Total from BF-6	$ _____
Total from BF-7	$ _____
Total from BF-8	$ _____
Total from BF-9	$ _____
TOTAL BASE BID	$ _____

BID FORM

Section 2 - Material and Equipment 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.

Item Number	Description	Add/Deduct Amount

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

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

Signature of Authorized Representative of Bidder _____

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 _____

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.

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

Subcontractor (Name and Address)	Work	Amount

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

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

Signature of Authorized Representative of Bidder _____

BID FORM

Section 5 – References

Include a minimum of three reference from similar project completed within the past five years.

1) _____ _____ _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

2) _____ _____ _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

3) _____ _____ _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

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 _____, 2015, 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 "ITB – Geddes Avenue Improvements Project" 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:

Human Rights Division Contract and Living Wage Declaration of Compliance Forms (if applicable)
Vendor Conflict of Interest Form
Bid Forms
Contract and Exhibits
Bonds
General Conditions
Standard Specifications
Detailed Specifications
Plans
Addenda

ARTICLE II - Definitions

Administering Service Area/Unit means Public Services Area, Project Management Services Unit

Project means Geddes Avenue Improvements Project, ITB No. 4366

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 sixty two (62) consecutive weeks. **Intermediate Completion Dates, Intermediate Times of Completion, Restricted Starting Dates, and Other Special Requirements for certain portions of the work are specified in the "Detailed Specification for Project Schedule."**

(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 $1,000 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

(A) The City shall pay to the Contractor for the performance of the Contract, the unit prices as given in the Bid Forms 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 without the written consent of 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.

ARTICLE IX - Indemnification

To the fullest extent permitted by law, Contractor shall indemnify, defend and hold harmless 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.

ARTICLE X - Entire Agreement

This Contract represents the entire understanding between the City and the Contractor and it supersedes all prior representations or agreements whether written or oral. Neither party has relied on any prior representations in entering into 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

By_____
Jacqueline Beaudry, City Clerk

Approved as to substance

By_____
Steven D. Powers, 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)	(Name of Principal)
By _____	By _____
(Signature)	(Signature)
Its _____	Its _____
(Title of Office)	(Title of Office)
Approved as to form:	Name and address of agent:
_____	_____
Stephen K. Postema, City Attorney	_____
	_____

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 _____, 2013, 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 _____, 2014.

_____	_____
(Name of Surety Company)	(Name of Principal)
By _____	By _____
(Signature)	(Signature)
Its _____	Its _____
(Title of Office)	(Title of Office)
Approved as to form:	Name and address of agent:
_____	_____
Stephen K. Postema, City Attorney	_____
	_____

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."

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.

Further, to the extent that any employees of the Contractor providing services under this contract are not part of the class of craftsmen, mechanics and laborers who receive a prevailing wage in conformance with Section 1:319 of Chapter 14 of Title I of the Code of the City of Ann Arbor, the Contractor agrees to conform to Chapter 23 of Title I of the Code of the City of Ann Arbor, as amended, which in part states:

1:814. Applicability.

(1) This Chapter shall apply to any person that is a contractor/bidder or grantee as defined in Section 1:813 that employs or contracts with five (5) or more individuals; provided, however, that this Chapter shall not apply to a non-profit contractor/bidder or non-profit grantee unless it employs or contracts with ten (10) or more individuals.

(2) This Chapter shall apply to any grant, contract, or subcontract or other form of financial assistance awarded to or entered into with a contractor/bidder or grantee after the effective date of this Chapter and to the extension or renewal after the effective date of this Chapter of any grant, contract, or subcontract or other form of financial assistance with a contractor/bidder or grantee.

1:815. Living Wages Required.

(1) Every contractor/bidder or grantee, as defined in Section 1:813, shall pay its covered employees a living wage as established in this Section.

(a) For a covered employer that provides employee health care to its employees, the living wage shall be $12.52 an hour, or the adjusted amount hereafter established under Section 1:815(3).

(b) For a covered employer that does not provide health care to its employees, the living wage shall be $13.96 an hour, or the adjusted amount hereafter established under Section 1:815(3).

(2) In order to qualify to pay the living wage rate for covered employers providing employee health care under subsection 1:815(1)(a), a covered employer shall furnish proof of said health care coverage and payment therefor to the City Administrator or his/her designee.

(3) The amount of the living wage established in this Section shall be adjusted upward no later than April 30, 2002, and every year thereafter by a percentage equal to the percentage increase, if any, in the federal poverty guidelines as published by the United States Department of Health and Human Services for the years 2001 and 2002. Subsequent annual adjustments shall be based upon the percentage increase, if any, in the United States Department of Health and Human Services poverty guidelines when comparing the prior calendar year's poverty guidelines to the present calendar year's guidelines. The applicable percentage amount will be converted to an amount in cents by multiplying the existing wage under Section 1.815(1)(b) by said percentage, rounding upward to the next cent, and adding this amount of cents to the existing living wage

levels established under Sections 1:815(1)(a) and 1:815(1)(b). Prior to April 1 of each calendar year, the City will notify any covered employer of this adjustment by posting a written notice in a prominent place in City Hall, and, in the case of a covered employer that has provided an address of record to the City, by a written letter to each such covered employer.

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 Section 209 of the Elliot-Larsen Civil Rights Act (MCL 37.2209). The Contractor further agrees to comply with the nondiscrimination provisions of Chapter 112 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. The Contractor further agrees to comply with the provisions of Section 9:158 of Chapter 112 of the Ann Arbor City Code and in particular the following excerpts:

9:158. - Nondiscrimination by city contractors.

(1) 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.

(2) 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.

(3) Upon request, each prospective contractor shall submit to the city data showing current total employment by occupational category, sex and minority group and shall respond to information requests documenting its equal employment opportunity policies and procedures.

(4) If the contract which is being awarded includes federal requirements for affirmative action, each prospective contractor shall submit to the city data showing current total employment by occupational category, sex and minority group. If, after verifying this data, the City Administrator's designee concludes that it indicates total minority and female employment commensurate with their availability within the contractor's labor recruitment area, i.e., the area from which the contractor can reasonably be expected to recruit, said contractor shall be accepted by the City Administrator's designee as having fulfilled affirmative action requirements for the period of the contract at which time the City Administrator's designee shall conduct another review. If the data demonstrates an under-representation the contractor shall develop an affirmative action program for review by the City Administrator's designee. Said program shall include specific goals and timetables for the hiring and promotion of minorities and females. Said goals shall reflect the availability of minorities and females within the contractor's labor recruitment area. In the case of construction contractors, the City Administrator's designee shall use for employment verification the labor recruitment area of the Ann Arbor metropolitan statistical area. Construction contractors determined to be in compliance shall be accepted by the City Administrator's designee as having fulfilled affirmative action requirements for a period of 1 year at which time the City Administrator's designee shall conduct another review.

(5) In hiring for construction projects, contractors shall make good faith efforts to employ local persons, so as to enhance the local economy.

(6) All contracts shall include provisions through which the contractor agrees to follow all applicable federal and state laws.

(7) The City Administrator's designee shall monitor the compliance of each contractor with the nondiscrimination provisions of each contract. The City Administrator's designee, together with the Human Rights Commission, shall develop procedures and regulations consistent with the administrative policy adopted by the City Administrator for notice and enforcement of non-compliance. Such procedures and regulations shall include a provision for the posting of contractors not in compliance.

(8) The City Administrator's designee will provide the City's Human Rights Commission with an annual summary report of contracts awarded; affirmative action requirements reviewed, where applicable; any complaints received alleging violation of the contractor's non-discrimination requirements, and actions taken. The Human Rights Commission will be provided, at its request, with additional information related to the report. The Human Rights Commission and the City Administrator's designee will report annually to the City Council on compliance of city contractors with this chapter.

(9) All city contracts shall provide further that breach of the obligation not to discriminate shall be a material breach of the contract for which the city shall be entitled, at its option, to do any or all of the following:

(a) Cancel, terminate, or suspend the contract in whole or part and/or refuse to make any required periodic payments under the contract;

(b) Declare the contractor ineligible for the award of any future contracts with the city for a specified length of time;

(c) Recover liquidated damages of a specified sum, said sum to be that percentage of the labor expenditure for the time period involved which would have accrued to protected class members had the discrimination provisions not been breached;

(d) Impose for each day of non-compliance, liquidated damages of a specified sum, based upon the following schedule:

Contract Amount	Assessed Damages Per Day of Non-Compliance
$25,000—99,999	$50.00
100,000—199,999	100.00
200,000—499,999	150.00
500,000—1,499,999	200.00
1,500,000—2,999,999	250.00
3,000,000—4,999,999	300.00
5,000,000 and above	500.00

(e) In addition the contractor shall be liable for any costs or expenses incurred by the City of Ann Arbor in obtaining from other sources the work and services to be rendered or performed or the goods or properties to be furnished or delivered to the city under this contract.

(Ord. No. 14-25, § 1, 10-20-14)

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 l3. 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 l80 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 l0 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 which may arise under this Contract; whether the acts were made by the Contractor or by any subcontractor or anyone employed by them directly or indirectly. The following insurance policies are required:

(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 07 98. 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 which 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 Job 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 07 97. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements which diminish the City's protections as an additional insured under the policy. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. 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.

(3) In the case of all Contracts involving on-site work, the Contractor shall provide to the City before the commencement of any work under this Contract documentation demonstrating it has obtained the above mentioned policies. Documentation must provide and demonstrate an unconditional 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; name of insurance company; name and address of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which shall be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified. An original certificate of insurance may be provided as an initial indication of the required insurance, provided that no later than 21 calendar days after commencement of any work the Contractor supplies a copy of the endorsements required on the policies. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) 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 to the Administering Service Area/Unit at least ten days prior to the expiration date.

(4) Any Insurance provider of Contractor shall be admitted and 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-admitted insurance companies are not acceptable unless approved in writing by the City.

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.

Section 44

CONTRACTOR'S AFFIDAVIT

The undersigned Contractor,_____, represents that on , 20___, it was awarded a contract by the City of Ann Arbor, Michigan to_____ under the terms and conditions of a Contract titled _____. The Contractor represents that all work has now been accomplished and the Contract is complete.

The Contractor warrants and certifies that all of its indebtedness arising by reason of the Contract has been fully paid or satisfactorily secured; and that all claims from subcontractors and others for labor and material used in accomplishing the project, as well as all other claims arising from the performance of the Contract, have been fully paid or satisfactorily settled. The Contractor agrees that, if any claim should hereafter arise, it shall assume responsibility for it immediately upon request to do so by the City of Ann Arbor.

The Contractor, for valuable consideration received, does further waive, release and relinquish any and all claims or right of lien which the Contractor now has or may acquire upon the subject premises for labor and material used in the project owned by the City of Ann Arbor.

This affidavit is freely and voluntarily given with full knowledge of the facts.

_____ _____
Contractor Date

By _____
(Signature)

Its _____
(Title of Office)

Subscribed and sworn to before me, on this _____ day of _____, 20__
_____ , _____ County, Michigan
Notary Public
_____ County, MI
My commission expires on:

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 Advertisement. 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.

A copy of the Public Services Department Standard Specifications may be purchased from the Engineering Division, (Fourth Floor, City Hall, Ann Arbor, Michigan), for $35.00 per copy. In addition, a copy of these Standard Specifications is available for public viewing at the Engineering Division office, for review Monday through Friday between the hours of 8:30 a.m. and 4:00 p.m.
Copies of the Standard Specifications can also be downloaded from the web link:

http://www.a2gov.org/government/publicservices/project_management/privatedev/pages/standardspecificationsbook.aspx.

DETAILED SPECIFICATION
FOR
PROJECT SCHEDULE

Examination of Plans, Specifications, and Work Site: Bidders shall carefully examine the Bid Form, plans, specifications and the work site until the Bidder is satisfied as to all local conditions affecting the contract and the detailed requirements of construction. The submission of the bid shall be considered prima facie evidence that the Bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and all requirements of the contract.

The entire work under this Contract shall be completed in accordance with, and subject to, the scheduling requirements as outlined below, and all other requirements of the Contract Documents.

1. By no later than **the Pre-Construction Meeting** the Contractor shall submit a detailed schedule of work, by major item 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.

2. The Contractor will receive two (2) copies of the Contract, for his/her execution, on or before **June 5, 2015**. The Contractor shall properly execute both copies of the Contract and return them, with the required Bonds and Insurance Certificate, to the City by **July 2, 2015**.

3. Contractor may not begin Stage I construction on Geddes Avenue. before **August 27, 2015** and 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.

4. Tree Removals shall not be done until after **October 15th, 2015** and all trees for the project must be removed prior to Stage I being completed.

5. By **November 25, 2015**, the Contractor must install the new sanitary sewers and leads at Apple Way and on Geddes from 12+00 – 18+50, the sanitary sewer and leads on Heather Way, as-directed tree removals, the storm sewer on Apple Way, the gravel road replacement at Apple Way, and place all Temporary Pavement on Geddes. The Contractor must also complete a Punchlist to be generated by the Supervising Professional prior to seasonal suspension of work. All deficiencies on this list must be completed by **November 25, 2015**. 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, **$1000.00** in "Liquidated Damages", and not as a penalty, for each and every calendar day beyond the completion date.

6. A detailed schedule of work identifying the major items of work shall be submitted 4 weeks prior to beginning Stage II. The Contractor may not begin Stage II construction before **April 4, 2016**, unless otherwise approved in writing by the Engineer prior to beginning Stage II construction. By **November 1, 2016**, the Contractor must complete installation of all Contract work including, but not limited to, installation of all permanent placement of hot mix asphalt and/or concrete, water infiltration basins, permanent hot mix asphalt, the restoration of all disturbed areas, and the removal of any and all traffic control devices. 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, **$1000.00** in "Liquidated Damages", and not as a penalty, for each and every calendar day beyond the completion date.

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.

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 in order to complete the project by the final completion date. Costs for the Contractor to organize, coordinate, and schedule all of the work of the project, will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions."

If the City elects to terminate this Construction Contract due to non-performance, contract items paid for on a Lump Sum basis will be pro-rated based on percentage equal to the percentage of the contract work completed.

DETAILED SPECIFICATION
FOR
MAINTENANCE OF TRAFFIC

DESCRIPTION

Traffic shall be maintained in accordance with the City of Ann Arbor Public Services Department Standard Specifications except as specified in Sections 103.05, 810, 812, 919, and 920 of the 2012 Michigan Department of Transportation (MDOT), Standard Specifications for Construction, **the 2011 Michigan Manual of Uniform Traffic Control Devices (MMUTCD)** and as amended herein.

The Contractor shall furnish, erect, maintain and, upon completion of the work, remove all traffic control devices and barricade lights within the project and around the perimeter of the project for the safety and protection of local traffic. This includes, but is not limited to, advance, regulatory, and warning signs; barricades and channelizing devices at intersecting streets on which traffic is to be maintained; barricades at the ends of the project and at right-of-way lines of intersecting streets, and moving traffic control device s for construction operations.

MATERIALS

The materials and equipment shall meet the requirements specified in the corresponding sections of the 2012 MDOT Standard Specifications for Construction and the 2005 Michigan Manual of Uniform Traffic Control Devices (MMUTCD).

Maintenance of Local Traffic

Unless otherwise indicated on the plans, all side roads shall remain open to traffic except during construction operations of short duration and only upon written approval of the Engineer.

Local access shall be maintained at all times for emergency vehicles, refuse pick-up, mail delivery and ingress/egress to private properties. If the refuse receptacles are located within the Contractor's work area, the Contractor shall move the receptacles as needed to allow the refuse to be picked up. The Contractor shall relocate the mailboxes as shown on the plans or as directed by the Engineer to ensure uninterrupted mail delivery.

Contractor must accommodate the safe access to the residential buildings and businesses located within construction area.

Driveways shall not be blocked for extended periods of time unless arrangements can be made with the affected property owner(s). When it becomes necessary to temporarily block driveways, the Contractor shall notify the affected property owners in advance to coordinate the work and allow sufficient time for vehicles to vacate from properties. It may be necessary to allow for vehicles to temporarily park in the roadway, or on side streets, at locations that do not interfere with the Contractor's work. During these periods the owners of the respective vehicles must be available to, with proper notice, move their vehicles if it becomes necessary to accommodate the work.

At times when it becomes necessary to temporarily obstruct local traffic during the performance of the work, the Contractor shall maintain directional Outlet Signs. These signs shall be placed at each driveway and incoming street on Geddes to direct traffic away from construction area to an outlet onto either Huron Parkway to the east or Washtenaw Ave. to the west. Access shall be maintained to one of these outlets for all incoming traffic onto Geddes at all times. The Contractor shall be responsible for adjusting the direction of these signs as changing situations warrant. For situations when the outlet path is disturbed by secondary work, the contractor shall provide flag control in conformance with Part VI of the MMUTCD, Sections 6F-1 thru 6F-7. A minimum of two flaggers are required. The cost of flag control shall be included in the contract pay item "Traffic Regulator Control"

The Contractor shall place temporary Hot Mix Asphalt over all disturbed road surfaces for the Winter Seasonal Shutdown. The cost of placing and removing this Temporary HMA Pavement, shall be included in the pay item "Item #224, Temporary HMA Pavement. The requirements for this work are included in the Detailed Specification for "Item #224, Temporary HMA Pavement. The Contractor shall refer to the Detailed Specification for Project Schedule for scheduling

requirements associated with this work.

A lane-closure permit shall be obtained by the Contractor from the Project Management Services Unit, at least 48 hours in advance of any proposed lane or street closing.

The hours of work on all Local streets are 7:00 a.m. to 8:00 p.m., Monday through Saturday, or as specified on the lane-closure permit. At other times, work will not be permitted unless authorized by the City Administrator. No Saturday work will be permitted unless the Contractor gives the Supervising Professional at least 48 hours notice of the Contractor's intention to work the upcoming Saturday. No equipment will be allowed in the street before or after these hours. Local streets may only be closed to through traffic (local access only) with written authorization of the Engineer. Work must be completed each day such that all streets are re-opened to through traffic by 8:00 p.m. unless otherwise specified, directed, or authorized in writing by the Engineer. All major changes in traffic control shall be made either between 9:30 a.m. and 3:30 p.m. or between 7:00 p.m. and 6:30 a.m. in order to minimize interference with rush-hour traffic. All traffic controls must be in-place and ready for traffic each day by 6:30 a.m. and 3:30 p.m.

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

The Contractor shall use quantities of dust palliative, maintenance aggregate, and cold patching mixture for use as temporary base, surfacing, and dust control at utility crossings, side roads and driveways (wherever required to maintain traffic), and where directed by the Engineer to maintain local access. The cost for the use of dust palliative, as required and directed by the Engineer for maintenance of traffic and local access, shall be included in contract pay item "Item No 202, General Conditions, Max. $200,000" and it will not be paid for separately.

The Contractor shall be responsible for the project site during the Seasonal Shutdown in the winter of 2015 – 2016. The Contractor shall check the site, biweekly at a minimum, for deficiencies and safety concerns, including but not limited to traffic control, mail delivery, temporary surface issues, and SESC measures. The Contractor shall notify the Supervisory Professional, through written notification, that he has checked the site and noticed no issues with SESC, or traffic maintenance. If issues are encountered, the Contractor shall provide a schedule as to when the issue shall be corrected. This biweekly check and written follow-up shall be included in the Item, Project Supervision, Max. $100,000.

The work of maintaining and relocating existing warning, regulatory and/or guide signs; and of removing, salvaging and reinstalling existing signs and supports is included in the bid price for the contract pay item "Item No. 203, Minor Traffic Control, Modified, Max. $100,000."

Mailboxes and newspaper boxes that are in the way of the construction shall be removed and reset immediately in a temporary location approved by the Engineer. Mail and paper delivery shall not be interrupted during the construction. Upon completion of the construction, all mailboxes and newspaper boxes, including their supports, shall be repositioned in their permanent locations as approved by the Engineer.

The Contractor shall perform the work of this Contract while maintaining traffic in accordance with the Contract Documents as specified herein. No traffic shall be allowed on newly placed asphalt surfaces until rolling has been satisfactorily completed and the surface has cooled sufficiently to prevent damage from traffic. This is to be accomplished by flag persons and by relocating traffic control devices to prevent traffic from entering the work area until such time that it can be safely maintained without damaging the new construction. The Contractor shall provide traffic regulators in sufficient number to maintain traffic as described herein, and to keep traffic off sections being surfaced, and provide for safe travel at all times as directed by the Engineer.

There may be areas where the Engineer directs the paving of less than the full width of a phase to stager the paving joints and to accommodate changes in crown and/or cross-sectional dimensions/locations. In these locations the gravel base courses shall be constructed to the full area of the phase, and the Contractor shall place traffic control devices on the base course grade as necessary, and shall place, maintain, and remove maintenance aggregate (MDOT 21AA) all as necessary, and as directed by the Engineer, to maintain local traffic to side streets and drives.

The City will not allow any shut down of existing water mains without prior written approval of construction methods and timing of shut down, by the City of Ann Arbor and the Engineer. All water main valves are to be operated by City of Ann Arbor personnel.

DETAILED SPECIFICATION
FOR
COORDINATION AND COOPERATION WITH OTHERS
AND
WORK BY OTHERS

The Contractor is reminded as to the requirements of article 104.07 of the 2012 edition of the MDOT Standard Specifications, "Cooperation by the Contractor."

The Contractor shall directly coordinate his/her work with individual City Departments/Divisions/Units.

The Contractor is hereby notified that the City of Ann Arbor Field Services Unit may be installing traffic control conduits, traffic signal sensors, and the like, at various locations.

No additional compensation will be paid to the Contractor, and no adjustments to contract unit prices will be made, due to delays and/or the failure of others in the performance of their work, nor for delays due to the encountering of existing utilities that are, or are not, shown on the Plans.

The following Utility Owners may have overhead and/or underground facilities located within the Right-of-Way:

The City of Ann Arbor
DTE - MichCon (Michigan Consolidated Gas Company)
DTE - Edison (Detroit Edison Company)
AT&T
Comcast

Coordination with DTE – MichCon:
DTE will be replacing the 12" High Pressure Gas Main from approximately 41+50 to the POE. This main will be installed in the south greenbelt and will avoid proposed work included in these contract documents. The Contractor shall schedule and coordinate work in this area expecting that DTE will be constructing the new main between March and May 2016.

DTE will also be installing new distribution lines and abandoning existing lines from the POB through 41+50 and as shown on the plans. This relocation work is scheduled for June through September 2015. The Contractor shall schedule and coordinate work as necessary to accommodate this work.

Coordination with DTE – Power:
DTE will be relocating existing utility poles as shown on the plans. This work is anticipated between August and November 2015. The Contractor shall conduct operation in coordination with the planned relocations.

Coordination with AT&T:
AT&T will be relocating existing utility poles as shown on the plans. This work is anticipated between August and November 2015. The Contractor shall conduct operation in coordination with the planned relocations.

"3 Working Days before you Dig - Call MISS DIG - Toll Free" Phone No. 1-800-482-7171.

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.

Stoppages created solely by the operations of the utility companies which delay utility revisions on any portion of this project may be considered as a basis of claim for an extension of time for project completion.

Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions."

DETAILED SPECIFICATION
FOR
ADDITIONAL INSURED

DESCRIPTION

In addition to the City, the Commercial General Liability insurance and Umbrella/Excess Liability insurance of Contractor required under Section 28, Contractor's Insurance, of the General Conditions, shall name:

- Huron River Green Infrastructure Drainage District
- Washtenaw County Water Resources Commission
- Hubbell, Roth & Clark, Inc. including its owners, directors, officer, consultants, agents and employees

and any other party designated by the City as additional insureds on any such insurance policy or coverage.

The Insurance required above shall be considered primary as respects any other valid or collectible insurance that the City or the designated party may possess and any other insurance the additional insured 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 and any designated additional insured parties.

In the case of all Contracts involving on-site work, the Contractor shall provide to the City before the commencement of any work under this Contract documentation demonstrating it has obtained the above mentioned policies and 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.

MEASUREMENT AND PAYMENT

Costs for this requirement will not be paid for separately and shall be included in unit price bid other items of work.

DETAILED SPECIFICATION
FOR
PROTECTION OF UTILITIES

Damages to utilities by the Contractor's operations shall be repaired by the utility owner at the Contractor's expense. Delays to the work due to utility repairs are the sole responsibility of the Contractor.

The Contractor shall keep construction debris out of utilities at all times. The Contractor shall be back charged an amount of $50.00 per day for each manhole/inlet/utility pipe that contains construction debris caused as a result of the Contractor's (including subcontractors and suppliers) work.

The Contractor is solely responsible for any damages to the utilities or abutting properties due to construction debris.

Certain sanitary and storm sewers within the influence of construction may have been cleaned and videotaped prior to construction. The City may also choose to videotape utility line(s) during or after the work of this Contract to inspect them for damages and/or construction debris. If such inspection shows damage and/or debris, then all costs of such inspection, cleaning, repairs, etc, shall be the Contractor's sole responsibility. If such inspection is negative, the City will be responsible for the costs of such inspection.

Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions."

DETAILED SPECIFICATION
FOR
SOIL EROSION CONTROL

The Contractor shall furnish, place, maintain and remove soil erosion and sedimentation control measures, including but not limited to, fabric filters at all drainage structures, all in accordance with all applicable City (and other governmental agencies) codes and standards, as directed by the Engineer, as detailed in the Standard Specifications, and as shown on the Plans.

Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions."

DETAILED SPECIFICATION
FOR
PERMITS

The following permits have been applied for and approved. All permit requirements shall be met and no direct costs are anticipated with the exception of any required bonds.

MDEQ Sanitary: Permit No. 1008283. See attached approved permit.
MDEQ Water Main: Permit No. 1008283. See attached approved permit.
MDOT ROW Permit: Application submitted. Permit Application No. 30793. Permit for advanced signs in Washtenaw Ave. ROW only.

The Contractor is responsible for obtaining all applicable City permits including, but not limited to, SESC and lane closure permits.

DETAILED SPECIFICATION
FOR
MATERIALS AND SUPPLIES CERTIFICATIONS

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
Sanitary Sewer Pipe
Storm Sewer Pipe
Water Main Pipe
Corrugated Metal Pipe
High Density Polyethylene Pipe
Timber for retaining walls
Modular Concrete Block for retaining walls
Edge Drain and Underdrain Pipe
Geotextile Filter Fabric and Stabilization Fabric/Grids

The Contractor shall submit all 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.
Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions."

DETAILED SPECIFICATION
FOR EXISTING
SOIL BORING AND PAVEMENT SECTION DATA

Data pertaining to existing soil borings and pavement sections which may be included in 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.

DETAILED SPECIFICATION
FOR
WORKING IN THE RAIN

The Contractor shall not work in the rain unless authorized in writing by the Engineer.

The Engineer may delay or stop the work due to threatening weather conditions.

The Contractor shall not be compensated 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, which are caused as a result of working in the rain.

DETAILED SPECIFICATION
FOR
WORKING IN THE DARK

The Contractor shall not work in the dark except as approved by the Engineer and only when lighting for night work is provided 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 work cannot be completed within the remaining daylight hours, or if inadequate daylight is present to either properly perform or inspect the work.

The Contractor will not be compensated for unused materials or downtime, when delays or work stoppages are directed by the Engineer for darkness and/or inadequate remaining daylight reasons.

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 are caused as a result of working in the dark.

DETAILED SPECIFICATION
FOR
QUANTITIES AND UNIT PRICES

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, delete streets, or add streets, and no adjustment in unit price will be made for any change in any quantity.**

DETAILED SPECIFICATION
FOR
BUY AMERICAN IRON AND STEEL

The Contractor acknowledges to and for the benefit of the City of Ann Arbor ("Purchaser") and the Michigan Department of Environmental Quality (the "State") that it understands the goods and services under this Agreement are being funded with monies made available by the State Revolving Fund and/or the Drinking Water Revolving Fund and such law contains provisions commonly known as "American Iron and Steel (AIS);" that requires all iron and steel products used in the project be produced in the United States ("AIS Requirements") including iron and steel provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the AIS Requirements, (b) all iron and steel used in the project will be and/or have been produced in the United States in a manner that complies with the AIS Requirements, unless a waiver of the requirements is approved or the State made the determination in writing that the AIS Requirements do not apply to the project, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the AIS requirements, as may be requested by the Purchaser. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

DETAILED SPECIFICATION
FOR
GENERAL CONSTRUCTION NOTES

The following notes pertain to all Plan sheets issued as part of this Contract, and these notes shall be considered part of each Plan sheet or Detailed Information Sheet.

1. All work shall conform to latest revision of the City Standard Specifications. Pay Items not having a Detailed Specification shall refer to the City Standard Specifications for that item. Copies of the City Standard Specifications are not in these Contract Documents but are included herein by reference and can be viewed on-line at: http://www.a2gov.org/departments/engineering/Pages/Engineering-and-Contractor-Resources.aspx

2. The Contractor shall maintain access to all drives throughout the course of construction. Drives shall never be closed during non-working hours, unless otherwise authorized in writing by the Engineer.

3. The Contractor shall completely restore all existing site features to better than, or equal to, their existing condition.

4. The Contractor shall be aware that there are above-ground and below-ground utilities existing in and on these streets which include, but are not limited to: gas mains and service leads; water mains and service leads; storm sewer mains and service leads; sanitary sewer mains and service leads; telephone poles, wires, cables and conduits; electrical poles, wires, cables and conduits; cable television wires, cables and conduits, and other various utilities. The Contractor shall conduct all of its work so as not to damage or alter in any way, any existing utility, except where specified on the Plans or where directed by the Engineer. The City has videotaped and cleaned all sanitary and storm sewers, including storm sewer inlet leads, and has found all of these facilities to be in good condition, with the exception of those shown on the Plans for repairs or replacement.

5. The Contractor is solely responsible for any delays, damages, costs and/or charges incurred due to and/or by reason of any utility, structure, feature and/or site condition, whether shown on the Plans or not, and the Contractor shall repair and/or replace, at its sole expense, to as good or better condition, any and all utilities, structures, features and/or site conditions which are impacted by reason of the work, or injured by its operations, or injured during the operations of its subcontractors or suppliers.

6. No extra payments or adjustments to unit prices will be made for damages, delays, costs and/or charges due to existing utilities, structures, features and/or site conditions not shown or being incorrectly shown or represented on the Plans.

DETAILED SPECIFICATION
FOR
WATER MAIN INSTALLATION AND TESTING

DESCRIPTION

This Detailed Specification is intended to supplement the current City of Ann Arbor Standard Specifications for Construction with regard to water main installation and hydrologic and bacteriologic testing. It is also intended to establish minimum requirements for the work that the Contractor is responsible to follow.

CONSTRUCTION METHODS

During the delivery, handling, installation, and testing of the water main, the Contractor shall comply with the following requirements:

1. Keep all pipes clean and neatly stacked a minimum of six-inches off of the ground at all times. Ends of pipe shall be covered to prevent entry of dust, dirt, small animals, and any other objectionable matter at all times. During installation of the water main and all appurtenances no dirt, soil, or non-potable water shall be allowed to enter the pipe. If dirt, soil, or non-potable water does enter the pipe, the Contractor shall completely remove it prior to installing the next segment of pipe. Segments of pipe that are have visible signs of contamination including, but not limited to; soil, dirt, mud, oil, grease, solvents, animal droppings, etc. shall have all visible traces of the offending substance completely removed by the Contractor in a manner acceptable to the Engineer. Sections of pipe or fittings that have been marked by the Engineer for cleaning shall not be approved for installation until such time as the Engineer has again approved them for use on the project. Acceptable methods of cleaning include flushing and/or power washing, compressed air, or other methods that the Engineer may approve. Approval by the Engineer of a cleaning method shall not be construed by the Contractor to include acceptance of the water main for the purposes of placing it into service. Water main pipe and fittings that have been placed shall remain covered on the advancing end until the next segment of pipe is connected. The Contractor may uncover no more than three segments of pipe in advance of placement. Water main pipe and fittings that have been laid out further in advance of the installation operation must remain covered.

2. Gasket lubricant shall only be applied immediately before connection to the next segment of pipe. Pipe with lubricant applied shall not come in contact with the ground. If the lubricated portion of the pipe end contacts the ground, it shall be thoroughly cleaned to the satisfaction of the Engineer, prior to its installation.

3. All water mains shall be swabbed in accordance with the requirements of Section 3H, Flushing and Swabbing, of the current edition of the City of Ann Arbor Public Services Department Standards. During swabbing of the water main, the swab shall be flushed through the pipe in accordance with the manufacturer's recommendations and in a manner that is acceptable to the Engineer. The Contractor shall submit the product data of the swab from the manufacturer, for review and approval by the Engineer, at or before the pre-construction meeting.

4. Swabbing of the water main shall be followed immediately by flushing of the pipe so that any disturbed particles are washed out before they can resettle. The pipe shall be flushed in accordance with Section 3H, Flushing and Swabbing, of the current edition of the City of Ann Arbor Public Services Department Standard Specifications. The pipe shall be flushed until the water runs clear for a minimum of fifteen minutes or until two full pipe volumes have been flushed (whichever is longer.) Flushing from the existing water main that is to be replaced shall not be allowed.

5. During the chlorination process, the proper level of chlorination must be achieved throughout the entire length pipe. Chlorine levels shall be checked at intermediate locations as directed by the Engineer and the Contractor shall add chlorine until such time as the required levels are achieved at all points. The "plug method" of chlorinating the pipe shall not be allowed. The Contractor shall chlorinate the proposed water main to a minimum residual concentration of 100 parts per million with commercial liquid chlorine solution. The chlorine concentrate shall be a minimum of 10% chlorine (sodium hypochlorite) by volume. Solid chlorine "pellets" or powder shall not be allowed. Any chlorine containing compound used on the project shall be approved by the Engineer. The

minimum recommended dosage of chlorine (sodium hypochlorite) is as follows (based on 10% available chlorine):

Recommended Minimum Chlorine Dosage to Disinfect 100 L.F. of Pipe

Pipe Diameter	10% Chlorine Solution (gallons)
6	0.306
8	0.544
10	0.852
12	1.226
16	2.180
20	3.406
24	4.904

6. Bacteriological testing shall be performed by the City with the Contractor present. The Engineer shall determine the number, location, and type of testing points for each section of water main being tested. Bacteriological samples shall only be drawn from copper or brass sampling points. The use of galvanized steel blow-offs or sampling points are strictly prohibited. Obtaining bacteriological samples from fire hydrants will not be allowed.

7. If a new water main fails two consecutive sets of bacteriological tests, the Engineer may require the Contractor to re-swab the water main in accordance with Section 3H, Flushing and Swabbing, as described above. Additional flushing, prior to subsequent bacteriological sampling will also be required. The required additional swabbing and flushing of the water main by the Contractor shall be performed at no additional cost to the City of Ann Arbor.

MEASUREMENT AND PAYMENT

Payment for all labor, materials, and equipment that is required to comply with this Detailed Specification shall be considered as part of the unit price as bid for each respective water main pipe and fitting and will not be paid for separately.

Payment for all water main pipes shall be as follows:

The Contractor shall be paid for 50% of the water main pipe installed upon satisfactory completion of the installation and backfilling of the water main pipe. The remaining 50% shall be paid upon successful completion of all required bacteriological testing, the water main has been placed into service, and all water service leads have been connected and are in service.

DETAILED SPECIFICATION
FOR
ASPHALTIC SEAL COATINGS
DUCTILE IRON PIPE FITTINGS

DESCRIPTION

The Contractor may not operate City water main valves. For valve operation, contact the City of Ann Arbor Public Services Area. It is recommended that the Contractor request that the existing valves, which will need to be operated in order to perform the water main work, are checked in advance of the work to ensure that they operate properly.

Several items of work on this project require coordination with the City of Ann Arbor Public Services Area (The City). The Contractor shall notify the City three (3) full working days in advance of any items requiring coordination with the City.

The Contractor shall complete the water main work in a manner which minimizes the disruption of water service. Water quality issues arise and treatment costs increase when the well field system is taken off line. No shut downs at the well field shall occur on Saturdays or Sundays. Shut downs shall not be for longer than 8.0 hours for any given shutdown event. Liquidated damages as detailed and described on page C-2 of these documents shall apply to any shut downs that occur on Saturday or Sunday or for a period of time longer than 8.0 hours in any given 24 hour period.

The Contractor shall be responsible for coordination with the City of Ann Arbor Public Services Area for the installation of 1-inch corporations in the gate wells to be used for testing and filling of new main. The Contractor shall pay the City of Ann Arbor's Field Operations Unit all costs associated with installing the corporations.

The Contractor must have all materials, fittings, pumps and other miscellaneous equipment, and personnel on site before the City of Ann Arbor Public Services Area personnel will prepare and shutdown an existing main.

The Contractor shall dig-up and expose utility crossings 60-feet in advance of laying any water main pipe in their vicinity. This will allow the Engineer to adjust the grade of the water main, if possible, to avoid the existing utilities. The costs of the advance excavations, and related costs, shall be included in the respective items of work listed in the Bid Form. Some dig-ups may need to occur out of Phase.

All ductile iron pipe and fittings shall have an asphaltic seal coat on their cement-mortar linings. The coatings shall meet the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects, and be approved for contact with drinking water.

MEASUREMENT AND PAYMENT

Asphaltic seal coat for ductile iron pipe and fittings shall not be measured or paid for separately. This work shall include all labor, materials and equipment costs necessary to provide asphaltic seal coat of ductile iron pipe and fittings. Payment for this work shall be considered as part of the unit price for each respective ductile iron pipe and fitting unit price.

DETAILED SPECIFICATION
FOR
CONCRETE PLACEMENT AND PROTECTION

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 Detailed Specification. These requirements shall not apply to concrete bridge decks, unless otherwise noted.

MATERIALS

The Concrete shall meet the requirements of Sections 601 and 701 of the 2012 Michigan Department of Transportation Standard Specifications for Construction.

The Contractor shall propose specific concrete mix designs for the intended project purpose in accordance with the requirements of this Detailed Specification and other applicable Detailed Specifications 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.

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 2012 Michigan Department of Transportation 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 Section 602.03.M of the 2012 MDOT 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.

WEATHER LIMITATIONS

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 Section 602.03.T. 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.

MEASUREMENT AND PAYMENT

All costs associated with the conformance to the requirements of this Detailed Specification will not be paid for separately, but shall be considered to be included in the respective items of work.

DETAILED SPECIFICATION
FOR
CONCRETE DURABILITY

DESCRIPTION

The Contractor shall furnish a Portland cement concrete mixture for this project that has been tested under this specification and shown to be resistant to excessive expansion caused by alkali-silica reactivity (ASR) and provides adequate air entrainment for freeze thaw durability. The Contractor shall construct the project with practices outlined in this specification.

MATERIALS

The materials provided for use on this project shall conform to the following requirements:

Portland cement	ASTM C 150
Fine Aggregate	ASTM C 33*
Coarse Aggregate	ASTM C 33*
Fly Ash, Class F	ASTM C 618
Slag Cement, Grade 100, 120	ASTM C 989
Silica Fume	ASTM C 1240
Blended Cements	ASTM C-595
Air Entraining Admixtures	ASTM C-260
Chemical Admixtures	ASTM C-494
White Membrane Cure	ASTM C-309 Type 2

* Fine and coarse aggregates shall consist of natural aggregates as defined in the 2012 MDOT Standard Specifications Section 902.02.A.1.

The Contractor shall provide documentation that all materials to be incorporated into proposed mixed designs meet the requirements of this section.

Alkali-Silica Reactivity

The Contractor shall supply to the Engineer preliminary concrete mix designs including a list and location of all suppliers of concrete materials. The Contractor shall evaluate the mixtures for the potential for excessive expansion caused by ASR and provide documentation to the Engineer. The Contractor's evaluation shall include a review of any previous testing of the material sources intended to be used for both the fine and coarse aggregates for the concrete mixtures. The previous testing may be from other projects or records provided by the material suppliers.

Aggregates shall be tested under ASTM C-1260. If the expansion of the mortar bars is less than 0.10%, at 14 days, the aggregates shall be considered innocuous and there are no restrictions for ASR mitigation required with this material.

Previous aggregate test data may be used. If no previous test data is available, for the concrete mix, that shows that it is resistant to ASR, a concrete mixture that will mitigate the potential for ASR must be designed using either method 1 or 2 as described below.

Method 1. Substitution of a portion of the cement with Class F Fly Ash, Slag Cement Grade 100 or 120 or a ternary mix (blended cement) containing a blend of Portland cement and slag cement, or Class F fly ash, or silica fume.

The maximum substitution of cement with the fly ash permitted shall be 25% by weight of total cementitious material (cement plus fly ash). Additional requirements for the Fly Ash, Class F are that the Calcium Oxide (CaO) percent shall be less than 10 % and the available alkalis shall not exceed a maximum of 1.5%. A copy of the most recent mill test report shall be submitted to verify. Note: a Class C fly ash with a minimum total oxides ($SiO_2 + Al_2O_3 + Fe_2O_3$) of 66% and a minimum SiO_2 of 38% may be used in lieu of Type F fly ash.

The maximum substitution of cement with the Slag Cement permitted shall be 40% by weight of total cementitious material (cement plus Slag Cement). The minimum replacement rate with Slag Cement shall be 25%.

For a ternary blend the total replacement of supplementary cementitious materials is 40% with a blend consisting of a maximum of 15% type F fly ash, and/or 8% silica fume and/or slag cement.

For method 1, the effectiveness of the proposed mix combination to resist the potential for excessive expansion caused by ASR shall be demonstrated using current or historic data. To demonstrate the effectiveness of the proposed mix the Contractor shall construct and test mortar bars per ASTM C1567 (14 day test) using both the fine and coarse aggregate along with the proposed cementitious material for the concrete mixture. If a mortar bar constructed of these materials produces an expansion of less than 0.10%, concrete mixture will be considered to be resistant to excessive expansion due to ASR.

If a mortar bar constructed produces an expansion of 0.10% or greater, concrete mixtures containing these materials shall not be considered resistant to the potential for excessive expansion due to ASR and shall be rejected. Additional testing, including alternate proportions or different materials will be required.

Method 2. Use low alkali cement and maintain the total alkali content from the cementitious at no more than 3.0 lbs/cyd (Na_2Oeq). The total alkali contribution is calculated by the quantity contained in the Portland cement only.

Requirements for Low Alkali Cement are that the alkali content does not exceed 0.60% expressed as Na_2O equivalent. Equivalent sodium oxide is calculated as: (percent Na_2O + 0.658 x percent K_2O).

For either method 1 or 2, if the Contractor intends to change any component material supplied after the mix design has been approved all concrete work will be suspended with no cost to the project or extensions of time, unless approved, until evaluation of the new mixtures and testing of the new materials demonstrates that it is resistant to excessive expansion due to ASR.

The Engineer and Contractor shall monitor the concrete that is delivered to the project site so as to insure that the approved mix design is being followed. The supplier shall include on the delivery ticket for each batch of concrete delivered to the job, the identification and proportions of each material batched.

When concrete is placed during cold weather, defined for the purposes of this Detailed Specification to be, air temperatures below 40º F, the use of accelerators, heated aggregates, silica fume and/or additional forms of cold weather protection will be required. Cold weather will not eliminate the requirement for furnishing and placing a concrete mix that is considered resistant to ASR attack.

Prior to cool weather placement, defined for the purposes of this detailed specification to be, air temperatures between 40º and 60º F, the set time of the proposed mix shall be verified under anticipated field conditions. This information shall be used when scheduling pours and saw crews.

Air Entrainment

Air entrainment shall be accomplished by addition of an approved air entraining agent. Air content as determined by ASTM C 231 or ASTM C 173, shall be determined on each day of production as early and as frequently as necessary until the air content is consistently acceptable. If during the period of time while adjustments are being made to the concrete to create a mixture that is consistently acceptable, concrete is produced that does not meet the requirements of this Detailed Specification, the Engineer may reject the material and direct it to be removed from the jobsite. Any rejected material shall be removed from the jobsite at the Contractor's sole expense. Quality Control testing performed by the Contractor to ensure compliance with the project specifications shall be performed on the grade ahead of the placement operation.

Paver placement: During production, the plastic concrete material shall be tested for acceptance at a point ahead of the paver. The air content of the concrete mixture that the Contractor shall provide shall be known as the Acceptance Air Content (AAC). The Contractor shall also provide additional entrained air in the concrete mixture to account for

the air loss which occurs in the concrete mixture experienced during transportation, consolidation and placement of the concrete. The "air loss" shall be added to the air content of the concrete mixture as established on the approved concrete mix design. The AAC for the project will be 6.0% plus an amount equal to the air loss.

For up to the first four loads, the air content measured on-site prior to placement shall be at least 8.0% and no more than 12.0%. To establish the initial AAC on the first day of paving, the air content of the first load shall be tested at the plant. After initial testing at the plant the Contractor shall provide at least two sample sets to determine the actual air loss during placement. A sample set shall consist of two samples of concrete from the same batch, one taken at the point of discharge and the other from the in-place concrete behind the paver. The air loss from the two sample sets shall be averaged and added to 6.0% to establish the AAC (rounded to the next higher 0.5%). After the testing and adjustment procedure(s) have been completed, the project acceptance air tests shall be taken prior to placement. The Contractor shall provide concrete to the jobsite that has an air content of plus 2.0%, or minus 1.0%, of the AAC.

After the AAC has been established, it shall be verified and/or adjusted through daily checks of the air loss through the paver. The Contractor shall check the air loss through the paver a minimum of two times a day. A Revised AAC shall be required to be established by the Contractor if the average air loss from two consecutive tests deviates by more than 0.5% from the current accepted air loss. The testing operations performed by the Contractor to establish a revised AAC shall be performed to the satisfaction of the Engineer. The Contractor shall be solely responsible for any delays and/or costs that occur to the project while establishing revised AACs.

Hand placed concrete: The air content for non-slip-form paving shall be 7.0% plus 1.5%, or minus 1.0%, at the point of placement.

CONSTRUCTION METHODS

Aggregate Control

Gradation control – The supplier shall provide a detailed stockpile management plan, describing their process control procedure for shipping, handling, and stockpiling of each aggregate including workforce training.

Moisture control – All aggregate materials must be conditioned to a moisture content of not less than saturated surface dry (SSD) prior to batching. A watering process using an effective sprinkler system designed and operated by the Contractor shall be required on all coarse aggregate material stockpiles.

The Contractor shall provide verification that these processes have been performed by the supplier. The Engineer reserves the right to independently verify that the supplier has complied with these standards.

Mixing

Central mix plants - The total volume of the batch shall not exceed the designated size of the mixer or the rated capacity as shown on the manufacturer's rating plate.

Drum Mix Plants: After all solid materials are assembled in the mixer drum; the mixing time shall be a minimum of 60 seconds and a maximum of 5 minutes. The mixing time may be decreased if the ASTM C-94 11.3.3 mixer efficiency tests show that the concrete mixing is satisfactory. The Engineer may require an increase in the minimum mix time if the mixer efficiency test determines that the concrete is not being mixed satisfactorily. The minimum mixing time shall start after the mixer is fully charged. Mixers shall be operated at the speed recommended by the manufacturer as mixing speed. The mixer shall be charged so that a uniform blend of materials reached the mixer through out the charging cycle. Any additional slump water required shall be added to the mixing chamber by the end of the first 25% of the specified mixing time. Mixers shall not be used if the drum is not clean or if the mixing blades are damaged or badly worn

Ribbon mixers: After all solid materials are assembled in the mixer; the mixing time shall be a minimum of 30 seconds and a maximum of 2.5 minutes. The mixing time may be decreased if the ASTM C-94 11.3.3 mixer efficiency tests show that the concrete mixing is satisfactory. The Engineer may require an increase in the

minimum mix time if the mixer efficiency test determines that the concrete is not being mixed satisfactorily. The minimum mixing time shall be indicated by an accurate timing device which is automatically started when the mixer is fully charged. Mixers shall be operated at the speed recommended by the manufacturer as mixing speed. The mixer shall be charged so that a uniform blend of materials reached the mixer through out the charging cycle. After any additional slump water is added to the mixing chamber the mixing shall continue for a minimum of 10 seconds. Mixers shall not be used if the mixer is not clean or if the mixing blades are damaged or badly worn.

Truck Mixers -The capacities and mixing capabilities shall be as defined in ASTM C 94, and each unit shall have an attached plate containing the information described therein. The plate may be issued by the Truck Mixer Manufacturer. The mixer capacity shall not be exceeded, and the mixing speeds shall be within the designated limits. Truck mixers shall be equipped with a reliable reset revolution counter. If truck mixers are used for mixing while in transit, the revolution counter shall register the number of revolutions at mixing speed.

An authorized representative of the concrete producer shall certify that the interior of the mixer drum is clean and reasonably free of hardened concrete, that the fins or paddles are not broken or worn excessively, that the other parts are in proper working order, and that the unit has been checked by the representative within the previous 30 calendar day period to substantiate this certification. The current, signed certification shall be with the unit at all times.

The required mixing shall be between 70 and 90 revolutions. The mixing shall be at the rate designated by the manufacturer and shall produce uniform, thoroughly mixed concrete.

The Engineer may inspect mixer units at any time to assure compliance with certification requirements, and removal of inspection ports may be required. Should the Engineer question the quality of mixing, the Engineer may check the slump variation within the batch. Should the slump variation between two samples taken, one after approximately 20% discharge and one after approximately 90% discharge of the batch, show a variation greater than 3/4 inch (20 mm) or 25% of the average of the two, whichever is greater, the Engineer may require the mixing to be increased, the batch size reduced, the charging procedure be modified or the unit removed from the work.

The practice of adding water on the site shall be discouraged. After the slump of the concrete in the first round of trucks has been adjusted on-site, the amount of water added at the plant shall be adjusted accordingly for that day's work. All additions of water on site shall be approved by the Engineer.

Curing

Apply liquid curing compound in a fine atomized spray to form a continuous, uniform film on the horizontal surface, vertical edges, curbs and back of curbs immediately after the surface moisture has disappeared, but no later than 30 minutes after concrete placement. With approval of the Engineer, the timing of cure application may be adjusted due to varying weather conditions and concrete mix properties.

The cure system shall be on site and tested prior to concrete placement.

Apply a curing compound at a rate of application not less than 2 gallons per 25 square yards. The Contractor shall keep the material thoroughly mixed per the Manufacturer's recommendations. The curing compound shall not be diluted.

The finished product shall appear as a uniformly painted solid white surface. Areas exhibiting a blotchy or spotty appearance shall be recoated immediately.

COMPLIANCE WITH STANDARDS

The Engineer will review and approve all material test reports and mix designs supplied by the Contractor before any placement of concrete. The Engineer will visually inspect the placed concrete and review the concrete test reports prior to final acceptance.

Acceptance sampling and testing will be performed using the sampling method and testing option selected by the Engineer. Acceptance testing will be performed at the frequency specified by the Engineer. Quality control measures to

insure job control are the responsibility of the Contractor. The Engineer's testing and/or test results will not relieve the Contractor from his/her responsibilities to produce, deliver, and place concrete that meets all project requirements. The Engineer's test results are for acceptance purposes only.

If the results of the testing are not in compliance with the project specifications, the Engineer shall determine appropriate corrective action(s). Time extensions will not be granted to the Contractor during the time that the Engineer is determining the necessary corrective actions.

If, in the Engineer's judgment, the rejected material must be replaced, the material in question will be removed and replaced at the Contractor's sole expense. The removal costs will be deemed to include all relevant and associated costs including, but not limited to; re-mobilization, traffic control, re-grading the aggregate base course, if required, placement of material meeting the project specifications, and all other expenses. Time extensions will not be granted to the Contractor for any required repair work to meet the requirements of this specification.

If the Engineer decides that the material in question can remain in place, an adjustment to the contract unit price(s) may be made of up to 100% of the bid price(s) for the affected items of work.

MEASUREMENT AND PAYMENT

The cost associated with complying with the requirements as described herein, including any required remedial action(s), shall be included in the cost of other items of work and shall not be paid for separately.

DETAILED SPECIFICATION
FOR
HMA PAVING

DESPRIPTION

Hot Mix Asphalt (HMA) pavement base, leveling, and top courses shall be constructed in accordance with Section 501 of the 2012 MDOT Standard Specifications for Construction, except as modified herein, and as directed by the Engineer.

CONSTRUCTION

Equipment- All equipment shall conform to Section 501.03.A of the 2012 MDOT Standard Specifications, except as modified herein.

The Contractor shall have a 10 foot long straight edge, rubber-tired backhoe (Case 580 type, or equivalent), air-compressor with the ability to develop a minimum pressure of 100 pounds per square inch and continuous rated capacity of 150 cubic feet per minute of air flow, and jackhammer available during all paving operations. The Contractor shall be required to perform any miscellaneous cleaning, trimming, material removal, and other tasks as required by the Engineer in order to ensure the proper and orderly placement of all HMA materials on this project.

The Contractor shall provide sufficient rollers to achieve the specified asphalt densities.

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; including hauling units. The Contractor shall not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

Cleaning and Bond Coat application- Cleaning and bond coat application shall be performed in accordance with Sections 501.03.C and 501.03.D of the 2012 MDOT Standard Specifications, except as modified herein, and as directed by the Engineer.

The Contractor shall furnish and operate throughout the construction period, vacuum-type street cleaning and utility structure cleaning equipment (Vac-All, Vactor, etc.) approved by the Engineer, and when directed by the Engineer, for street cleaning immediately prior to, and for street and utility structure cleaning after any and all paving. The cleaning equipment shall be of sufficient power to remove dust, dirt, and debris from the pavement and from utility structures in and adjacent to the construction area. The vac-all or similar equipment and shall be approved by the Engineer prior to beginning the work. The equipment used shall have an effective means for preventing any dust resulting from the operation from escaping into the air.

The bond coat shall be applied at a minimum rate of 0.05 gallons/yd2. Before placing the bond coat, the existing pavement surface shall be thoroughly cleaned. The Contractor shall also thoroughly clean all joints, cracks, and edges to a minimum depth of one inch with compressed air, vac-all type equipment, or other approved mechanical or hand methods, to remove all dirt, debris, and all foreign material.

HMA Placement- Placement shall conform to Section 501.03.F of the 2012 MDOT Standard Specifications, except as modified herein, and as directed by the Engineer.

HMA placement shall not commence until a “Permit to Place” (no additional costs are required to obtain this permit) has been issued in writing by the Engineer. The Permit to Place shall be issued after the aggregate base course or the adjacent, underlying layer of pavement section has been approved by the Engineer.

The final structure adjustments must be approved by the Engineer prior to the issuance of the “Permit to Place” for the wearing course.

The top course shall be placed with a ¼" lip at the gutter edge of metal.

All HMA thickness dimensions are compacted-in-place.

Paving Operation Scheduling – The Contractor shall schedule the paving operation to avoid longitudinal cold joints that would be required to be left "open" overnight.

In all cases, the Contractor shall pave the primary road's through-traffic lanes ("main line") first, from point-of-beginning to the point-of-ending. All other paving including, but not limited to; acceleration and deceleration lanes, intersection approaches, and center left-turn lanes shall be paved following completion of main line paving, unless authorized by the Engineer prior to the placement of any pavement.

Rate of Paver operation - The rate of the paver's travel shall be maintained such that the paving operation will be continuous, resulting in no transverse cold joints, but shall never exceed the rate of 50 feet per minute.

The Contractor shall furnish and operate enough material, equipment, and hauling units so as to keep the paving machine(s) moving continuously at all times. Failure to do so shall be cause for the suspension of the paving operation until the Contractor can demonstrate to the satisfaction of the Engineer, that sufficient resources have been dedicated to perform the work in accordance with the project specifications.

Longitudinal and Transverse Joints- shall conform to Section 502.03.F of the 2012 MDOT Standard Specifications and as specified herein.

For mainline HMA paving, the width of the mat for each pass of the paver shall be not less than 10.5', nor greater than 15', except as noted in the plans and as directed by the Engineer. The Engineer will direct the layout of all HMA longitudinal joints during construction.

Prior to placing the adjacent paving pass on the leveling and wearing courses of HMA, the Contractor shall cut and remove 6" to 8" of the previously placed pavement at the free edge of the pavement by means of a coulter wheel. The Engineer reserves the right to reject any method(s) for cutting the pavement that does not provide a vertical and satisfactory edge, free of tearing, bending, or other deformations, as determined by the Engineer. Any method(s) employed by the Contractor shall be completely effective. The cut edge shall have a uniform bead of pavement joint adhesive applied to the full-height of the joint. The removal of this HMA material and resulting edge must be approved by the Engineer prior to proceeding with the placement of the succeeding pass of HMA. The base course of HMA and its vertical edge will have bond coat applied in accordance with Section 501.03.D. All costs associated with complying with these requirements will not be paid for separately, but shall be considered to be included in the items of work "HMA, ___" or "HMA, Approach."

Pavement joint adhesive shall be hot-applied, meet, or exceed, the following properties, and be approved by the Engineer prior to performing HMA placement:

Brookfield Viscosity, 400°F, ASTM D2669 – 4,000 to 10,000 cp
Cone Penetration, 77°F, ASTM D5329 – 60 to 100
Flow, 140°F, ASTM D5329 – 5mm maximum
Resilience, 77°F, ASTM D5329 – 30% minimum
Ductility, 77°F, ASTM D113 – 30 cm minimum
Ductility, 39.2°F, ASTM D113 – 30 cm minimum
Tensile Adhesion, 77°F, ASTM D5329 – 500% minimum
Softening Point, ASTM D36 - 170°F minimum
Asphalt Compatibility, ASTM D5329 – pass

Feather Joints – shall be constructed so as to vary the thickness of the HMA from zero inches to the required paving thickness at the rate of approximately 1.5" over a distance of 10 feet, or as directed by the Engineer. The Contractor shall rake the larger pieces of aggregate out of feather joints prior to compaction.

Butt Joints - Construction of butt joints, where directed by the Engineer, shall conform to Section 501.03.C.3 and 501.03.C.4 of the 2012 MDOT Standard Specifications, except as modified herein.

When a butt joint is specified or directed to be placed by the Engineer, remove the existing HMA surface to the thickness of the proposed overlay, or full-depth, as directed by the Engineer, for the full width or length of the joint. The HMA material shall be sawcut to the directed depth along the pavement edge or removal line to prevent tearing of the pavement surface. Cut joints that will be exposed in the completed surface must be cut with a saw or a cold-milling machine or other methods approved by the Engineer. Joints that will be covered by HMA must be cut with a saw, a cold-milling machine, or other methods approved by the Engineer.

Rakers- the Contractor shall provide a minimum of two rakers during the placement of all wearing and leveling courses.

Faulty Mixtures – The Contractor and Engineer shall carefully observe the paving operation for signs of faulty mixtures. Points of weakness in the surface shall be removed or corrected by the Contractor, at his/her sole expense, prior to paving subsequent lifts of bituminous material. Such corrective action may include the removal and replacement of thin or contaminated sections of pavement, segregated HMA, and any sections that are weak or unstable. Once the Contractor or his representative is notified by the Engineer that the material being placed is out of allowable tolerances, or that there is a problem with the paving operation, the Contractor shall stop the paving operation at once, and shall not be permitted to continue placing bituminous material until again authorized by the Engineer. Any costs associated with meeting the requirements specified herein shall not be paid for separately, but shall be included in the item(s) of work being performed at the time the faulty mixture was discovered.

MEASUREMENT AND PAYMENT

Unused HMA remaining in trucks after the work is completed shall be returned to the plant and re-weighed, and the corrected weight slip shall be provided to the Engineer. No payment will be made for the unused HMA material. All weight slips must include the type of mixture (codes are not acceptable), as well as vehicle number, gross weight, tare weight and net weight.

All costs of meeting the requirements of this Detailed Specification shall be included in the bid prices for HMA items in the proposal and will not be paid for separately.

SUPPLEMENTAL SPECIFICATION
FOR
ITEM #135A – TREE REMOVAL, 8" AND LARGER

DESCRIPTION

This work consists of mobilizing and removing trees as detailed in the plans or as directed by the Engineer. The work shall be completed in accordance with the City Standard Specifications for Tree Removal except as modified herein. Up to five (5) separate mobilizations for tree removal shall be included in the unit price bid for Tree Removal, 8" and Larger. Each mobilization may include any number of tree removals that are either shown on the plans or as-directed by the Engineer.

Multiple mobilizations, up to five (5) each, shall be as-directed by the Engineer and coordinated with the Item for Excavation for Tree Evaluation.

Tree removal shown on the plans along the north side of Geddes from station 41+50 to the POE will occur all in one mobilization and Excavation for Tree Evaluation is not anticipated in this area.

DETAILED SPECIFICATION
FOR
ITEM #135A – EXCAVATION FOR TREE REMOVAL

DESCRIPTION

This work consists of hand or small equipment excavation as directed by the Engineer along areas where new sidewalk, retaining walls or other proposed work is near an existing tree that may be saved and protected from construction activities. The work shall be completed in accordance with the City Standard Specifications the Detailed Specification for Machine Grading and Section 205 of the Michigan Department of Transportation 2012 Standard Specifications for Construction except as modified herein.

CONSTRUCTION METHODS

Contractor shall excavate existing ground where directed by the Engineer to expose and evaluate existing tree roots. Excavations methods shall be non-destructive to trees including roots, trunk and canopies. The Contractor shall notify the Engineer 72 hours in advance of planned excavation and the City shall stake the required locations and also provide a certified arborist to evaluate existing trees and proposed construction to determine if removal of the tree will be required or if other measures will be required to preserve the tree. The evaluation will be completed concurrently with the Contractor's excavation operations and any required backfill shall be completed within 24 hours after excavation and evaluation.

Trees along the north side of Geddes from approximately 41+50 to the POE will not require this work.

MEASUREMENT AND PAYMENT

The completed work shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
Excavation for Tree Evaluation	Foot

Excavation for Tree Evaluation will be paid for by the foot along the roadway construction centerline at locations staked by the Engineer and includes all labor, materials, and equipment necessary to perform the work as specified. This item will pay separately for each side of the roadway along areas where this work is required adjacent to existing trees.

DETAILED SPECIFICATION
FOR
ITEM #201 - PROJECT SUPERVISION, MAX. $100,000

DESCRIPTION

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

Prior to the pre-construction meeting, the Contractor shall designate a proposed Project Supervisor by name, and shall furnish the City 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 City, the public, subcontractors, and all other parties typically involved with work of this nature. The Supervising Professional 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 mobile telephone 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.

DUTIES AND RESPONSIBILITIES

The Project Supervisor work harmoniously with 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, HMA concrete, and portland cement concrete materials.

The Project Supervisor shall be responsible for all of 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 be responsible for the legal, proper and safe parking/storage of all of 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 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 coordinate and schedule both Testing inspectors and City inspectors in a timely manner, to assure proper and timely testing and inspection of the work.

The Project Supervisor shall review the Inspector's Daily Reports (IDRs) for accuracy, and shall sign all IDRs on a daily basis as the representative of the Contractor. Items to be reviewed include descriptions, locations and measurements of quantities of work performed, workforce, equipment, and weather. The Project Supervisor shall also be responsible for its subcontractors' review and initialing of IDRs containing work items performed by each respective subcontractors.

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 on a daily basis, all in accordance with the Detailed Specification for Project Schedule contained elsewhere herein.

The Project Supervisor shall schedule and chair a weekly progress meeting with the Engineer and all subcontractors to discuss the work. Upon the completion of each meeting, the Project Supervisor 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.

ADDITIONAL PERFORMANCE REQUIREMENTS

If, in the sole opinion of the Supervising Professional, the Project Supervisor is not adequately performing the duties as outlined in this Detailed Specification, 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. 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. A deduction of 10% will be made from the original Project Supervision contract amount. At this time, the City 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 – An additional deduction of 25% 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 Supervising Professional.

Should, in the sole opinion of the Supervising Professional, 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 Supervising Professional to suspend work without extension of contract time or additional compensation.

MEASUREMENT AND PAYMENT

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 completed work as measured for this item of work will be paid for at the Contract Unit Price for the following Contract (Pay) Item:

PAY ITEM	PAY UNIT
Project Supervision, Max. $100,000	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.

DETAILED SPECIFICATION
FOR
ITEM #202 - GENERAL CONDITIONS, MAX. $100,000

DESCRIPTION

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

- Scheduling 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
- Placing, maintaining, and removing all soil erosion and sedimentation controls
- Maintaining drainage
- Maintaining drives, drive openings, sidewalks, bikepaths, mail deliveries, and solid waste/recycle pick-ups
- Storing all materials and equipment off lawn areas
- Site clean-up
- 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
- 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.
- Disposing of excavated materials and debris
- All miscellaneous and incidental items such as overhead, insurance, and permits.

MEASUREMENT AND PAYMENT

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.

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:

PAY ITEM	PAY UNIT
General Conditions, Max. $100,000	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.

DETAILED SPECIFICATION
FOR
ITEM #203 – MINOR TRAFFIC DEVICES, MAX. $100,000

DESCRIPTION

The work of Minor Traffic Devices shall include, but not be limited to:

- The furnishing and operating of miscellaneous signs, warning devices, flag-persons, and cones;
- The operation of additional signs furnished by the City;
- Removing temporary signs, barricades, barrels, message boards and other temporary maintenance of traffic items for the winter shutdown.
- Bringing back the temporary maintenance of traffic items for Stage II in the spring of 2016 inlcuding but not limited to temporary signs, barricades, barrels, and message boards.
- Furnishing and installing meter bags;
- Coordinating with the City to have meter heads removed and reinstalled;
- 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.

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

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

MEASUREMENT AND PAYMENT

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.

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:

PAY ITEM	PAY UNIT
Minor Traffic Devices, Max $100,000	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.

DETAILED SPECIFICATION
FOR
ITEM #204 – PRECONSTRUCTION DOCUMENTATION

DESCRIPTION

This work shall include completing preconstruction documentation to record the condition of existing facilities adjacent to the right of way prior to demolition and construction and all work necessary to return facilities to their preconstruction condition at the conclusion of the project.

MATERIALS

Recording and camera equipment used to record the condition of existing facilities shall be in proper working condition at the time of preconstruction documentation. CD's, DVD's, or other digital media used to record the preconstruction documentation images shall be good quality, new materials.

Materials needed to return existing facilities to their preconstruction condition shall be new, quality products, and shall match the preconstruction properties of the existing component. Contractor shall submit material choices, including samples and manufacturer's literature, as applicable, to the Engineer for approval a minimum of (7) days prior to incorporating any materials into an existing facility.

PRODUCTION

The preconstruction documentation shall be conducted by the Contractor and witnessed by the Engineer immediately following the award of the Contract and prior to beginning any work. The Contractor shall employ a professional firm acceptable to the City and actively engaged in preconstruction color audio-video recording.

The preconstruction documentation shall include all surface features within the zone of construction influence including existing driveways, sidewalks, parkways, curbs, ditches, streets, landscaping, trees, culverts, retaining walls, fences, visible utilities, bridge piers, abutments, slope paving and all buildings. Documentation shall also include all existing cracks, steps, porches, and all possible areas of concern from various angles on existing buildings that could be affected by the construction. At a minimum, the preconstruction documentation shall include portions of all buildings and structures that are within 30 feet of the street right of way and within 20 feet of any buildings shown to be removed on the drawings. The preconstruction documentation may include, but not necessarily be limited to, areaways, basements of buildings, building interiors and building exteriors. Preconstruction documentation shall include an assessment of existing structural conditions and documentation of all existing cracks and structural defects.

The preconstruction documentation shall be recorded in the form of preconstruction video in DVD format, pictures, and field notes. At a minimum, three copies of the preconstruction documentation shall be furnished to the Engineer prior to starting construction. The Engineer shall effectively coordinate with private property owners for work performed on private property.

Cameras shall be high quality 3 chip color video camera, optical stabilization. 20X minimum optical magnification, and shall be capable of producing NTSC 525 lines resolution/60 fields/30 frames per second and minimum illumination capabilities of at least 3-lux. Video recordings shall be time and date stamped on screen, include 2 simultaneous audio tracks (track 1 for SMPTE time code corresponding with number visible on screen and included on computer printout, track 2 with narrative commentary).

The audio-visual filming shall be completed in accordance with the following minimum requirements:

1. DVD Format, No Editing - The filming shall be done in color using equipment that allows audio and visual information to be recorded. Splicing or editing of the tape shall not be allowed and the speed and electronics of the videotaping equipment and DVD shall be equal to that which is standard to the video taping industry.

2. Perspective / Speed / Pan / Zoom - To ensure proper perspective, the distance from the ground to the camera lens shall not be less than 10 feet and the filming must proceed in the general direction of travel at a speed not to exceed 48 feet per minute. Pan and zoom rates shall be controlled sufficiently so that playback will ensure quality of the object viewed.

3. Display - The recording equipment shall have transparent time, date stamp and digital annotation capabilities. The final copies of the tape shall continuously and simultaneously display the time (hours:minutes:seconds) and the date (month/date/year) in the upper left-hand corner of the frame. Accurate project stationing, where applicable, shall be included in the lower half of the frame in standard format (i.e. 1+00). Below the stationing periodic information is to be shown, including project name, name of area shown, street address, direction of travel, viewing direction, etc.

   If in the event, the stationing has not been established on-site, refer to the plans and approximate the proposed stationing.

4. Audio Commentary / Visual Features. Locations relative to project limits and landmarks must be identified by both audio and video means at intervals no longer than 100 feet along the filming route. Additional audio commentary shall be provided as necessary during filming to describe streets, buildings, landmarks, and other details, which will enhance the record of existing conditions.

5. Visibility / Ground Cover - The filming shall be performed during a time of good visibility. Filming shall not be performed during periods of precipitation or when snow, leaves, or other natural debris obstruct the area being filmed. The Contractor shall notify the Engineer in writing in the event that the weather or snow cover is anticipated to cause a delay in filming.

AUDIOVISUAL FILMING SERVICES

The following companies are known to be capable of providing the filming services required by this Detailed Specification and shall be utilized, unless the Contractor receives prior written approval from the Engineer to utilize another company of comparable or superior qualifications.

Construction Video Media
Midwest Company
Topo Video, Inc.
Video Media Corp.

MEASUREMENT AND PAYMENT

The completed work shall be paid for at the contract unit price for the following contract item (pay item) which shall include all materials, equipment and labor required to complete the work.

PAY ITEM	PAY UNIT
Preconstruction Documentation	Lump Sum

"Preconstruction Documentation" includes recording the condition of existing facilities adjacent to the project and the repair or replacement of any building or structure damaged during construction.

DETAILED SPECIFICATION
FOR
ITEM #205 RAILROAD FLAGGER ALLOWANCE

(PERFORMING WORK WITHIN RAILROAD RIGHT-OF-WAY)

DESCRIPTION

This specification is to describe the coordination, permit needs, allowable work time, and other items the Contractor will need to be aware of to work within the railroad right-of-way (ROW). The Michigan Department of Transportation (MDOT) owns the rail and ROW, Amtrak maintains the rail and ROW for MDOT. Actual work to be performed within the ROW is described elsewhere.

Work within the ROW is required to build the proposed retaining wall. The wall falls within the City's road ROW however, other work will be within MDOT's Rail ROW. This work includes:

- Tree removal
- Grading
- Riprap
- New tree placement

TEMPORARY ACCESS PERMIT

Work within the Rail ROW requires a Temporary Permit from Amtrak which must be applied for by the Contractor. The Contractor should plan on a minimum of 30 days after submission of application to receive the permit. Permit information below is from Amtrak. Additional permit information is attached.

> *Contractors who require access to railroad property must submit a letter requesting a Temporary Permit to Enter Upon Property. The letter should include the contact name and mailing address of the prime contractor responsible for all work, and outline the location, nature, scope and estimated duration of work. Refer to the attached PDF file of Amtrak's current "Temporary Permit to Enter Upon Property" requirement list. If and any subsurface work is required, the letter should clearly specify whether the work is geotechnical or environmental in nature.*
>
> *Prior to any work on or access to Amtrak ROW, the contractor must first execute Amtrak's then current Temporary Permit to Enter Upon Property. The Temporary Permit will include a force account estimate based on the contractor's scope of work and projected duration of work. Amtrak will provide engineering, flag protection and/or other protection services at the sole cost and expense of the contractor. Advance payment for these services is required. After we receive a fully executed permit, payment for applicable fees, approval of the proposed work plans and/or access requirements, and verify that all insurance requirements have been met, we notify the appropriate Division Engineer's representative that the work may proceed.*
>
> *Please note that all contractor employees who will work on railroad property are required to complete Amtrak's Contractor Safety Orientation Training prior to entry on railroad property. The contractor must coordinate all access with Amtrak's Division representative.*
>
> *Due to the heavy volume of requests for Temporary Permits to Enter Upon Amtrak Property, please allow up to 30 business days processing time for initial Permit requests.*
>
> *Please call or e-mail Kate McGrath at 215-349-1750 or mcgratm@amtrak.com if you have any questions.*
>
> *Please note: Fiber Optic rights along the Michigan Line east corridor were retained by Norfolk Southern Railway Corporation (NS). Separate authorization from NS must be obtained prior to Amtrak being able to process PTE requests.*

Amtrak Permit to Enter Contract Information:

Kate McGrath
Project Development Officer
Engineering - I&C
30th Street Station, Box 64
2955 Market Street
Philadelphia, PA 19104
Phone: 215-349-1750
Fax: 215-349-3550
mcgratm@amtrak.com

ALLOWANCE FOR RAILROAD FLAGGER

Any work within 25 feet of the railroad ROW will require a railroad flagger to be present, per Amtrak. An allowance of $48,000 for 60 days of flagging has been established by the City for the Contractor and will be paid for actual days used not to exceed 60 days. If the Contractor requires work beyond these 60 days and have not received an approved extension of time for this work, they are solely responsible for the costs of the railroad flagger.

ACCESS PLAN

The Contractor shall familiarize themselves with the area and provide an access plan for work within the railroad ROW. It is anticipated that the grading, restoration and tree planting within the railroad ROW will occur after wall is complete. This access plan must be brought to the Preconstruction Meeting.

PAY ITEM	**PAY UNIT**
Railroad Flagger Allowance	Dollar

Payment to Contractor will be made once proof of payment to Amtrak has been provided.

Amtrak
Engineering Construction
4th Floor- South Tower
30th Street Station (Mail Box 64) Philadelphia, PA 19104

Temporary Permits to Enter Upon Amtrak Property (PTEs)

Requests for Temporary Permits to Enter Upon Amtrak Property {PTEs) must be submitted to Amtrak in writing and include the following information:

1. Name of company requesting the permit (include address and telephone number)
2. Who's attention the permit should be addressed to
3. Permittee's e-mail address
4. Exact location of work (including railroad milepost, if known)
5. Specific work activity being performed on railroad property (please provide dollar value of the contract if work being performed is other than surveys or bridge inspections)
6. Projected duration of work being performed on railroad property
7. Contact, phone and address where invoices should be sent for payment by Permittee.

Note: *Temporary Permits for performing any environmental or geotechnical tests or studies (e.g., air, soil or water sampling) may be issued subsequent to completion of Amtrak's environmental review and approval process. Requests are reviewed on a case-by-case basis. Depending on the site specific circumstances, a separate Site Access Agreement that addresses environmental liability issues may be required prior to any Temporary Permit.*

All PTE Requests must be submitted to the Amtrak Engineering Construction Department by fax, e-mail or mail as noted below:

- Faxed to (215) 349-3550 or MCGRATM@AMTRAK.COM
- Email to mcqratm@amtrak.com
- Mailed to the following address: Director I&C

  Projects
  National Railroad Passenger Corporation
  3Qth Street Station (Mail Box 64)
  Philadelphia, PA 19104

Due to the heavy volume of requests for Temporary Permits to Enter Upon Amtrak Property, the processing time for initial Permit requests is approximately 30 business days.

Rev. 10122108

DETAILED SPECIFICATION
FOR
ITEM #206 – MACHINE GRADING, MODIFIED

DESCRIPTION

The pay item "Machine Grading, Modified" shall be completed in accordance with Section 205 of the Michigan Department of Transportation 2012 Standard Specifications for Construction (MDOT 2012 SSC) and shall include all work indicated in the MDOT 2012 SSC, shown on the plans, and as specified herein, with the exception that "Subgrade Undercutting, Type __," and "Infiltration Trench Undercutting" shall be paid for separately when separate pay items for the respective items are included in the proposal. "Machine Grading, Modified" shall include all the work specified herein for which there is no separate pay item. This work shall consist of constructing earth grades by excavating, cutting, filling, trimming, and grading; general restoration, and sign removals in accordance with the Detailed Specifications elsewhere herein; and maintaining the work in a finished condition until such time that it is accepted by the Engineer.

CONSTRUCTION METHOD

a. Soils Information.- Soil information provided as part of the contract documents is for informational purposes only and shall not relieve the Contractor of the responsibility of investigating all local conditions before bidding.

b. Materials.- All materials and mixtures shall meet the requirements as specified in Section 205 of the MDOT 2012 Standard Specifications for Construction, except as specified herein.

c. General Provisions. - The Contractor shall:

1. Maintain access to all drive entrances at all times.
2. Maintain pick-up access for garbage and recycle vehicles at all times.
3. Maintain access to all mail boxes for users and the U.S. Postal Service at all times. The Engineer may direct the temporary relocation of mail boxes. The Contractor may propose the temporary relocation of mail boxes, subject to the approval of the Engineer. In either case, the temporary relocation of mail boxes will not be paid for separately. There are 22 mailboxes located within the project grading limits that may need to be temporarily relocated and then re-established in their permanent locations.
4. Grade around mailboxes, trees, light poles, power poles, and the like, which are to remain in place. The Contractor shall be responsible for any damage caused to such structures.
5. Coordinate all work with utility companies and others that need to complete work within the project limits.
6. Maintain the work in a finished condition until it is accepted by the Engineer.

d. Pavement Sawcutting.- The work shall include the full-depth saw-cutting of pavement at the construction limits, and elsewhere as required, if not paid for as part of another item of work. Pavement sawcutting will not be paid for separately.

e. Removal of Trees and Vegetation.- The Contractor shall remove and properly dispose of off-site all vegetation; brush; roots; and trees and stumps less than 8 inch in diameter, as shown on the plans, and as directed by the Engineer as required to complete the project.

f. Removal and Salvaging of Topsoil.- The removal, salvaging and stockpiling of topsoil, and all related work, shall be performed in accordance with Section 205.03.A.1 (Removing and Salvaging Topsoil) of the MDOT 2012 SSC and will not be paid for separately.

g. Miscellaneous Removals.- The removal of bituminous, aggregate, and/or concrete materials from around manholes, structures, and utility covers, and the removal of bituminous curbing, bituminous driveway wedges, bituminous surface on existing curb and gutter, and bituminous surfaces around other miscellaneous unremoved areas shall be paid for as "Machine Grading, Modified" and will not be paid for separately."Machine Grading, Modified" includes the removal of any surface feature located within the grading limits which must be removed and for which there is no specific pay item established in the proposal for its removal.

h. Protection of the Grade.- The work shall be kept well drained at all times. Foundation, roadway embankment or subgrade that becomes damaged by rain shall be undercut and backfilled, or otherwise remedied, by the Contractor, at his/her sole expense, as directed by the Engineer.

The Contractor shall be responsible for the maintenance of the foundation, roadway embankment, and subgrade. Any damage caused, by traffic or the Contractor's operations, to the foundation, roadway embankment or subgrade, in the opinion of the Engineer, shall be remedied by the Contractor at his/her sole expense, as directed by the Engineer.

The Contractor shall not use rubber-tired equipment on the foundation, roadway embankment, or subgrade, when its use causes, in the opinion of the Engineer, unnecessary damage to the foundation, road embankment or subgrade. The Contractor shall conduct his/her operations and provide the necessary equipment to ensure the satisfactory completion of the work without damaging the foundation, roadway embankment or subgrade. This may require the transporting and movement of materials over additional distances.

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 an extension of time or any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

i. Protection of Utilities.- Utility lines may become exposed at, above, or below, the foundation or subgrade elevation during machine grading or subgrade undercutting operations. If this occurs, the Contractor shall excavate around, above and/or below the utility lines, as directed, to complete the machine grading or subgrade undercutting operations. Payment, at contract unit prices, for "Machine Grading, Modified" or "Subgrade Undercutting, Type __," whichever applies, will be considered as payment in full for this work.

j. Removal of Cable, Conduits and Pipe.- The Contractor shall remove, and properly dispose of off-site, all abandoned cables, conduit, and pipe encountered at, or above the bottom of any earthwork excavation or undercut. This shall include abandoned gas main pipe. Where the inverts of abandoned, or to be abandoned or removed, conduits or pipe are less than 16 inches below the bottom of any earth excavation or undercut, the conduits and/or pipe shall be removed and the resulting void filled with an Engineer approved material. The fill material shall be compacted to 95% of its maximum unit weight in lifts not exceeding 12 inches. No separate payment will be made for removal of conduit or pipe, or any of the work, described in this section.

k. Foundation Preparation.- Foundation is defined as the original earth grade upon which roadway embankment is placed. The foundation work shall be completed in accordance with Section 205.03.A (Preparing Roadway Foundation) of the MDOT 2012 SSC as shown on the plans, and as specified herein.

l. The foundation shall be compacted to 95% of its maximum unit weight, as measured by the AASHTO T-180 method, to a depth of at least 10 inches. If this cannot be achieved, in the opinion of the Engineer, he/she will direct the Contractor to perform "Subgrade Undercutting, Type __" or "Subgrade Manipulation," as described herein, on the foundation.

m. Roadway Embankment Construction.- Roadway embankment is defined as the construction of earth on the prepared foundation to form the subgrade. Roadway embankment work shall be completed in accordance with Section 205.03 H (Roadway Embankment) of the MDOT 2012 SSC as shown on the plans, and as specified herein. Roadway embankment shall be compacted to a minimum of 95% of its maximum unit weight, as measured by the AASHTO T-180 method.

n. Subgrade Construction.- Subgrade is defined as the final earth grade which extends from grading limit to grading limit. The subgrade shall be constructed by performing earth excavation and roadway embankment work in accordance with Section 205.03.G (Earth Excavation) and Section 205.03 H (Roadway Embankment) of the MDOT 2012 SSC, as shown on the plans, and as specified herein.

The subgrade shall be constructed to the contours and cross-sections shown on the plans, as specified herein, and as directed by the Engineer. To achieve this, the work shall include, but not be limited to:

1. Removal and disposal off-site of any surplus or unsuitable materials.
2. Furnishing from off-site any additional Engineer approved fill materials necessary.
3. Moving existing and/or furnished materials longitudinally and transversely as necessary.
4. Cutting, placing, compacting, and trimming existing and/or furnished materials to construct the roadway embankment and subgrade to the specified tolerances.
5. Stockpiling, and moving again, any cut materials which cannot be immediately placed upon excavation due to construction staging.

The subgrade shall be graded to accommodate all subbases and aggregate bases wherever used, all bioswale and adjacent planting beds, all roadway pavements, curb and gutter, driveways, sidewalks, bicycle paths, other similar structures, bioswale planting mix, topsoil and any other features which the subgrade supports.

The subgrade shall be prepared so as to ensure uniform support for the pavement structure. The finished subgrade shall be placed to within 1 inch below and ¾ inch above plan grade. Variations within this tolerance shall be gradual.

The subgrade shall be compacted to a minimum of 95% of its maximum unit weight, as measured by the AASHTO T-180 method, to a depth of 10 inches. If this cannot be achieved, in the opinion of the Engineer, he/she will direct the Contractor to perform "Subgrade Undercutting, Type __" or "Subgrade Manipulation" as described herein.

The Contractor shall use equipment and methods of construction best suited, in the opinion of the Engineer, to the earthwork operations being performed and the project requirements. The use of various equipment and methods of construction are subject to the approval of the Engineer. The Engineer may disallow the use of certain equipment and methods of construction and require the use of other equipment and/or methods of construction. No additional compensation or extensions of contract time will be allowed for additional measures that are required for the protection of the grade as specified herein.

o. Test Rolling.- The Contractor shall test-roll the foundation and/or subgrade with a pneumatic tired roller with a suitable body for ballast loading and a gross load capacity that can be varied from 25 and 40 tons. In lieu of this test roller, with the approval of the Engineer, the Contractor may use a fully loaded single axle or tandem axle dump truck.

p. Subgrade Undercutting.- "Subgrade Undercutting, Type __" shall be performed on the foundation or subgrade in accordance with Section 205.03.E (Subgrade Undercutting) of the MDOT 2012 SSC, as shown on the plans, as specified herein, and as directed by the Engineer.

q. Subgrade Manipulation.- "Subgrade Manipulation" shall be performed on the foundation or subgrade in accordance with Section 205.03.F (Subgrade Manipulation) of the MDOT 2012 SSC, as shown on the plans, as specified herein, and as directed by the Engineer.

Where subgrade manipulation is required, the foundation or subgrade shall be thoroughly scarified, blended, and mixed to a depth of 12 inches. The work shall be accomplished by means of a large diameter disc, motor grader, or other equipment approved by the Engineer. After the foundation or subgrade has been manipulated to the satisfaction of the Engineer and allowed to dry, the soil shall be compacted to 95% of its maximum dry density as measured by the AASHTO T-180 method. The time required for drying the soil will not be a basis for an extension of time.

The cost of Subgrade Manipulation shall be included in the cost of "Machine Grading, Modified" unless a pay item for "Subgrade Manipulation" is included in the Proposal.

r. Rock Excavation.- Rock excavation shall be performed in accordance with Section 205.03.B (Rock Excavation) of the MDOT 2012 SSC, as shown on the plans, and as directed by the Engineer.

The pay item "Rock Excavation" will apply only to boulders over ½ cubic yard in volume. Boulders will be measured individually and the volume computed from the average dimension measured in three directions. The removal of rocks, concrete and masonry less than ½ cubic yard in volume shall not be included in the pay item "Rock Excavation," but shall be included in the pay item "Machine Grading, Modified."

If the proposal does not include a pay item for "Rock Excavation," rocks measuring over ½ cubic yard in volume shall be paid for as extra work.

s. Lowering Structures.- Prior to cutting the subgrade, the Contractor shall remove structure covers, lower the structures to a point between 8 inches and 12 inches below the proposed subgrade, and cover the structures with a steel plate. Structures shall not be raised prior to placing roadway embankment.

The steel plates for covering structure openings shall conform to the plan detail, be pegged and properly placed to prevent their movement under all traffic, be thick enough to carry all traffic, and prevent the infiltration of debris into the structures.

The Contractor shall lower valve boxes to a point between 8 inches and 12 inches below the proposed subgrade. Valve boxes shall not be raised prior to placing roadway embankment.

The void in the grade above the steel plates used for structure lowerings and valve box lowerings shall be backfilled, and compacted to 95% of its maximum dry density, with an Engineer approved coarse aggregate.

"Machine Grading, Modified" shall include all the work associated with lowering structures, including backfilling.

The Contractor shall coordinate the lowering of private utility structures with the private utility companies.

t. Structure Covers.- As directed by the Engineer and within two days of their removal, the Contractor shall stockpile on-site, in a location that is mutually agreeable to the Engineer and Contractor, the existing structure covers. The City of Ann Arbor's forces will pick-up the structure covers at a time that is convenient to them and mutually agreeable to the Contractor. The Contractor shall provide the equipment and manpower to load the castings on the City's vehicle(s) so that they can be removed from the site by the City.

u. Structure and Sewer Cleanliness.- All sewers, and structures, including manholes, gate wells, valve boxes, inlet structures and curbs shall be protected from damage and contamination by debris and construction materials. Structures shall be maintained clean of construction debris and properly covered at all times during the construction. The Contractor shall immediately clean any structures and/or sewers that become contaminated with construction debris. The Contractor shall be responsible for all direct and indirect damages which are caused by sewers or structures which have been made unclean or have been damaged by the Contractor.

v. Contractor's Calculations.- Existing and proposed cross sections are provided in the plans. The Contractor shall perform his/her own computations and is responsible to inspect the site to determine his/her own estimate of the quantities of work involved. Deviations between the existing contours and the existing and proposed cross-sections shown on the plans shall not be cause for additional compensation.

w. Estimated Earthwork & Pavement Removal Quantities.- The table shown below contains the Engineer's estimate of the earth excavation (cut) and the embankment (fill) to prepare the foundation as defined herein for the project. These quantities do not take into consideration the suitability of the soils for their intended use, their possible availability due to construction staging or storage limitations, bulking of the material upon excavation, changes in volumes due to moisture content or soil types, or other similar related issues. The Contractor shall remain responsible for determining the actual amount(s) of work to be performed to complete the project as shown on the plans and as specified herein.

Machine Grading Modified Item of Work	**Est. volume of earth excavation (cut), cubic yards**	**Est. volume of embankment (fill), cubic yards**
Geddes Avenue	14,857	1,843

x. Tree trimming. - The Contractor shall coordinate with the City Field Services Unit to schedule trimming of trees by City forces or authorized subcontractor. The Contractor shall not be entitled to an extension of time or any additional compensation for the coordination of this work.

MEASUREMENT AND PAYMENT

Measurement for payment for the item "Machine Grading" shall be the computed in square yard quantity of excavated material (pavement, soil, rock, brick, etc.) from the top of existing grade down to the bottom of the excavation. Embankment, fill, subgrade protection/maintenance, drainage maintenance, topsoil, seeding, and restoration quantities will not be paid for separately, and are included in this item of work.

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:

PAY ITEM	**PAY UNIT**
Machine Grading, Modified	Station

Subsection 205.04.G of the MDOT 2012 SSC, which reads "Machine Grading will be measured by length along the surface edge. The Engineer will measure each side of the road, where work is performed, separately." is hereby deleted. "Machine Grading, Modified" will be measured once, and only once, along the centerline of the roadway or feature being constructed.

"Machine Grading, Modified" will be measured by length in 100 foot long stations, or portions thereof, along the centerline of the feature being constructed.

The various pay items included herein shall include all labor, materials and equipment required to complete the work.

The Contractor shall include all of his/her costs to complete all of the Machine Grading, Modified work in the Machine Grading, Modified pay item and plan quantities included in the proposal. No additional payment will be made for Machine Grading, Modified work which, although, shown on the plans and specified herein as work which needs to be completed, may not be included in a particular Machine Grading, Modified pay item. Plan quantities will be paid for the work, and will only be adjusted due to changes in the limits of the work, as directed by the Engineer, in writing.

The pay item "Machine Grading, Modified" shall include all the work specified herein, including, but not limited to, the removal and offsite disposal of any surplus or unsuitable materials and the furnishing from off-site any additional Engineer approved fill materials necessary to construct the embankment and subgrade to the contours and cross-sections shown on the plans.

The Contractor is advised that due to the phasing of the project and the probable unsuitability of some or all of the excavated material for use as approved fill material, there may be imbalances between the amount of earth cut which is suitable for reuse as fill, and the amount of earth needed to construct the lines and grades shown on the plans, or as directed by the Engineer. The Contractor shall make provisions for such imbalances and shall include in the bid price for this work the cost of importing/furnishing, placement, and compaction of the material, as well as the cost of stockpiling and re-handling of imported and/or on-site Engineer approved materials as necessary to complete the work of constructing the embankment and subgrade to the cross sections shown on the plans.

Subgrade Manipulation will be measured in square yards. Only areas designated by the Engineer as requiring subgrade manipulation will be measured for payment.

DETAILED SPECIFICATION
FOR
ITEM #207 - SUBGRADE UNDERCUTTING, TYPE II

DESCRIPTION

This work includes removal of unsuitable granular base, subbase or clay material(s) to depths as specified by the Engineer.

CONSTRUCTION METHOD

After the pavement has been removed, and/or after rough/finish grading, and/or at the time of proofrolling, 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 recompacted 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.

Subgrade Undercutting - Type II shall be backfilled with 21AA Limestone, Class II Sand, or other material(s), as directed by the Engineer. The backfill material shall be compacted to not less than 98% of its maximum unit weight as determined by the AASHTO T-180 test. The fill material(s) for Subgrade Undercutting Type II shall be paid at the Contract unit price for the corresponding items of work as used which are (Class II Sand - C.I.P., and 21AA Limestone - C.I.P.).

The Contractor shall remove, salvage, deliver to any location within the City limits, and neatly stack/stockpile all bricks, if present, as directed by the Engineer.

The Contractor shall remove, add to, re-shape, re-grade, and re-compact the existing roadbed materials, and shall construct the roadway 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, for this work. Use of each specific piece of equipment is subject to the approval of the Engineer.

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.

MEASUREMENT AND PAYMENT

These items of work shall be measured for payment by calculating the volume of the undercut excavation prior to the placement of backfill.

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:

PAY ITEM	PAY UNIT
Subgrade Undercutting, Type II	Cubic Yard

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.

DETAILED SPECIFICATION
FOR
ITEM #208 - PAVT MRKG, SPRAYABLE THERMOPL, 6 INCH, WHITE
ITEM #209 - PAVT MRKG, SPRAYABLE THERMOPL, 4 INCH, YELLOW
ITEM #210 - PAVT MRKG, THERMOPL, 6 INCH, CROSSWALK
ITEM #211 - PAVT MRKG, THERMOPL, 12 INCH, CROSSWALK
ITEM #212 - PAVT MRKG, THERMOPL, 24 INCH, STOP BAR

DESCRIPTION

This work consists of providing and placing permanent pavement markings in accordance with the Michigan Manual on Uniform Traffic Control Devices. Provide markings, shapes, spacing, and dimensions that conform to the plans, the City of Ann Arbor Standard Specifications, 2012 Michigan Department of Transportation Standard Specifications for Construction, and as specified herein.

MATERIALS

Provide materials in accordance with Sections 811 and 920 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, Sprayable Thermoplactic Pavement Marking Material. Provide the Material Safety Data Sheets to the Engineer for required materials and supplies. Dispose of unused material and containers in accordance with the Federal Resource Conservation Recovery Act (RCRA) of 1976 as amended, and 1994 PA 451, Part 111 Hazardous Waste Management. Provide samples of permanent pavement marking materials upon request.

CONSTRUCTION

The preparation and placement of permanent pavement markings shall conform to Section 811 of the 2012 MDOT Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, the plans, and as specified herein.

MEASUREMENT AND PAYMENT

The measurement and payment for polyurea pavement markings shall be in accordance with Section 811.04 of the 2012 MDOT Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, the plans, and as specified herein. The unit prices for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the Sections 811 and 920 of the 2012 MDOT Standard Specifications and as modified by this Detailed Specification.

PAY ITEM	PAY UNIT
Pavt Mrkg, Sprayable Thermopl, 6 inch, White	Foot
Pavt Mrkg, Sprayalbe Thermopl, 4 inch, Yellow	Foot
Pavt Mrkg, Thermopl, 6 inch, Crosswalk	Foot
Pavt Mrkg, Thermopl, 12 inch, Crosswalk	Foot
Pavt Mrkg, Thermopl, 24 inch, Stop Bar	Foot

All work indicated herein shall be included in the unit prices for the above pay items and shall include all labor, materials and equipment required to complete the work.

DETAILED SPECIFICATION
FOR
ITEM #213 - GUARDRAIL, TYPE B
ITEM #214 – GUARDRAIL APPROACH TERMINAL, TYPE 1B
ITEM #215 – GUARDRAIL APPROACH TERMINAL, TYPE 2B

DESCRIPTION

All work must be completed in accordance with section 807 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, except as stated in this detailed specification, as shown on the plans, and as directed by the Engineer.

MATERIALS

Provide materials in accordance with the following sections of the 2012 MDOT Standard Specifications for Construction:

Sound Earth	205
Guardrail Beam Elements and Hardware	908
Reflectors.....	908
Steel Posts	908
Wood Posts	912
Guardrail Blocks	912

CONSTRUCTION

The construction of Guardrail, Type B, Guardrail Approach Terminal, Type 1B, and Guardrail Approach Terminal, Type 2B shall conform to Section 807 of the 2012 MDOT Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, and the plans.

MEASUREMENT AND PAYMENT

The measurement and payment for Guardrail, Type B , Guardrail Approach Terminal, Type 1B, and Guardrail Approach Terminal, Type 2B shall be in accordance with Section 807 of the 2012 MDOT Standard Specifications for Construction. The unit prices for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the section 807 of the 2012 MDOT Standard Specifications and as modified by this Detailed Specification.

PAY ITEM	PAY UNIT
Guardrail, Type B	Foot
Guardrail Approach Terminal, Type 1B	Each
Guardrail Approach Terminal, Type 2B	Each

All work indicated herein shall be included in the unit prices for the above pay items and shall include all labor, materials and equipment required to complete the work.

DETAILED SPECIFICATION
FOR
ITEM #216 – CONDUIT, SCHEDULE 80 PVC, 2- 3 INCH, SPECIAL

DESCRIPTION

This work shall include the excavation and proper disposal off-site of excess excavated material, the installation of conduits, the placement of MDOT Class II bedding and backfill compacted to 95% of its maximum unit weight, and the installation of pull strings and detection tape. All work shall be completed in accordance with Sections 819 and 918.01 of the MDOT 2012 Standard Specifications for Construction, as shown on the plans, as directed by the Engineer, and as modified herein.

CONSTRUCTION

Schedule 40 PVC conduits will be used in areas outside the influence of the roadway or in areas where the conduit will be placed in concrete encasement or placed in permanent structures. Schedule 80 PVC conduit will be used for roadway crossings and in other areas as directed by the Engineer.

All conduits, including sweeps into handholes, and fittings shall be installed in accordance with the latest revision of Article 347 of the National Electric Code (NEC). The minimum sweep radius of the conduit shall measure at least 7 inches. After clearing the conduits, the Contractor shall install a pull line and install a plug or cap (suitable for removal at the time of future cable installation) for each conduit.

Detectable Marking Tape shall also be installed with the conduit which will allow for detection using an inductive method. The tape shall be pigmented polyolefin film with a printed message on one side. The ink used to print the material shall be permanent which cannot be removed by normal handling or upon underground burial. The polyethylene shall be chemically inert and shall not degrade when exposed to alkalies, acids and other destructive substances commonly found in soil. The tape shall be placed continuously, 6 to 8 inches above the buried conduits with overlap where splices are required. Over the conduit between the communication handhole assemblies, the tape shall be orange in color and shall read "Fiber Optic Cable - City of Ann Arbor Transportation." Over the conduit between the street lighting handholes, the tape shall be red in color and shall read "Caution—Buried Electrical Line."

A “Tracer Wire,” 1/C #10 RHH/RHW/USE, shall be placed around the conduits that are to be utilized for future traffic signal interconnection. The tracer wire shall be continuous and run from handhole to handhole.

The Contractor shall install conduit utilizing trenchless excavation methods for placing conduit under existing curb and gutter, sidewalks, driveway approaches, etc. which will remain in place.

The Contractor shall provide and install appropriate non-metallic sleeves and gasketed expansion couplings for each conduit if it is required to be installed in a bridge at each bridge joint. The Contractor shall submit catalog “cuts” of the proposed materials for review by, and approval of, the Engineer prior to ordering materials or performing any of the work.

MEASUREMENT AND PAYMENT

The completed work shall be paid for at the contract unit price for the following contract items (pay items):

PAY ITEM	PAY UNIT
Conduit, Schedule 80 PVC, 2- 3 inch, Special	Foot

All work indicated herein shall be included in the unit prices for the above pay items and shall include all labor, materials and equipment required to complete the work.

Payment for and “Conduit, Schedule 80 PVC, 2-3 inch, Special” will be measured by length in feet and shall include all labor, equipment, fittings, elbows, sweeps, pull strings, end caps, sleeves, tracer wire, and expansion couplings as shown on the plans, and specified herein.

DETAILED SPECIFICATION
FOR
ITEM #217 – COMMUNICATION HANDHOLE ASSEMBLY, COMPLETE

DESCRIPTION

This work shall consist of furnishing and installing traffic signal handholes and communication handhole assemblies at the locations shown in the Plans, or as directed by the Engineer. All work shall be completed in accordance with the current National Electric Code (NEC), Section 819 of the Michigan Department of Transportation 2012 Standard Specifications for Construction, except as specified herein.

MATERIALS

All materials shall be new and meet the requirements of the current IEEE, NEMA, ANSI Standards as applicable, and as specified herein.

The Contractor shall submit product data sheets for all handholes, covers and other parts for Engineer approval prior to ordering materials. The manufacturer “Quazite Composolite," referenced below, is located in Lenoir City, Tennessee.

CONSTRUCTION

Handholes shall be placed at all junctions of traffic signal or electrical conduit, and as shown on the plans. Maximum distance between any two handholes shall be as shown on the Plans, but in no case shall exceed 500 feet.

The Pay Item Electrical Handhole Assembly, Complete shall include:

- The complete work as shown on plans and in the details.
- Excavation and disposal of excavated materials.
- Placement of foundation material consisting of 4 inches of MDOT Class II sand compacted to 95% of its maximum unit weight.
- Setting the handhole which shall consist of a "Quazite Composolite" box. The box shall be #PG1118BA12. The cover shall be, #PG1118HA41, a locking heavy-duty bolt-down type with a logo that reads “Street Lighting.” The total depth of the handhole shall be 12 inches.
- All work related to connecting handholes to new and existing conduits, whether shown on the plans or not.
- MDOT Class II backfill compacted to 95% of its maximum unit weight around the perimeter of the handhole.

The Pay Item Communication Handhole Assembly, Complete shall include:

- The complete work as shown on plans and in the details.
- Excavation and disposal of excavated materials.
- Placement of foundation material consisting of 4 inches of MDOT Class II sand compacted to 95% of its maximum unit weight.
- Setting the handhole which shall consist of two, stacked "Quazite Composolite" boxes. The lower box shall be #PG1730BB18. The upper box shall be #PG1730BA18. The cover shall be, #PG1730HA46, a locking heavy-duty bolt-down type with a logo that reads “Traffic Signal.” The total depth of the handhole shall be 36 inches.
- All work related to connecting handholes to new and existing conduits, whether shown on the plans or not.
- MDOT Class II backfill compacted to 95% of its maximum unit weight around the perimeter of the assembly.

All conduits shall be connected to the handholes in accordance with the latest revision of Article 346 of the National Electrical Code (NEC).

MEASUREMENT AND PAYMENT

The completed work shall be paid for at the contract unit price for the following contract items (pay items):

PAY ITEM	PAY UNIT
Communication Handhole Assembly, Complete	Each

Communication Handhole Assembly, Complete shall be paid for at their contract unit prices and shall include all labor, equipment, and materials to complete the work as specified herein.

DETAILED SPECIFICATION
FOR
ITEM #218 – HMA, 5E1
ITEM #219 – HMA, 4E1
ITEM #220 – HMA DRIVEWAY APPROACH
ITEM #221 – HMA, LVSP

DESCRIPTION

Hot Mix Asphalt (HMA) pavement base, leveling, and top courses shall be constructed in accordance with Section 501 of the 2012 MDOT Standard Specifications for Construction, except as modified herein, and as directed by the Engineer.

MATERIALS AND EQUIPMENT

The HMA mixtures to be used for this work shall be as follows:

WORK ITEM	MDOT HMA MIXTURE #
HMA Pavement Wearing	5E1
HMA Pavement Leveling (2 lifts)	4E1
HMA Drive Approach	LVSP
HMA Shared Use Path	1100T

Binders for Superpave mixes shall be PG 64-22 for base and leveling courses, and PG 64-22 for the wearing course and binders for LVSP mix shall be PG58-28 , as directed by the Engineer, and shall meet the requirements specified in Section 904 of the 2012 edition of the MDOT Standard Specifications, and any current supplemental MDOT specifications.

The Contractor shall have a 10-foot long straight-edge, backhoe, air-compressor and jackhammer available during all paving operations.

The Aggregate Wear Index (AWI) number for this project is 260. This AWI number applies to all aggregates used in all top course mixtures. Blending aggregates to achieve this AWI requirement is permitted in accordance with current MDOT Standards, and Supplemental Specifications.

Reclaimed Asphalt Pavement (RAP) in HMA Mixtures

The use of Reclaimed Asphalt Pavement (RAP) in HMA mixtures shall be in accordance with Section 501.02.A.2 of the 2012 edition of the MDOT Standard Specifications, and the City of Ann Arbor Standard Specifications.

All equipment shall conform to Section 501.03.A of the 2012 MDOT Standard Specifications, except as modified herein.

The Contractor shall have a 10 foot long straight edge, rubber-tired backhoe (Case 580 type, or equivalent), air-compressor with the ability to develop a minimum pressure of 100 pounds per square inch and continuous rated capacity of 150 cubic feet per minute of air flow, and jackhammer available during all paving operations. The Contractor shall be required to perform any miscellaneous cleaning, trimming, material removal, and other tasks as required by the Engineer in order to ensure the proper and orderly placement of all HMA materials on this project.

The Contractor shall provide sufficient rollers to achieve the specified asphalt densities.

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; including hauling units. The Contractor shall not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

CONSTRUCTION METHODS

All concrete work shall be completed prior to placing HMA mixtures.

The Contractor shall place HMA wedges using the base, leveling, and wearing mixtures specified herein, as directed by the Engineer, prior to placing the wearing course. Such wedging shall be measured and paid for at the respective unit price of the appropriate HMA Pavement item.

Cleaning and Bond Coat application- Cleaning and bond coat application shall be performed in accordance with Sections 501.03.C and 501.03.D of the 2012 MDOT Standard Specifications, except as modified herein, and as directed by the Engineer.

The Contractor shall furnish and operate throughout the construction period, vacuum-type street cleaning and utility structure cleaning equipment (Vac-All, Vactor, etc.) approved by the Engineer, and when directed by the Engineer, for street cleaning immediately prior to, and for street and utility structure cleaning after any and all paving. The cleaning equipment shall be of sufficient power to remove dust, dirt, and debris from the pavement and from utility structures in and adjacent to the construction area. The vac-all or similar equipment and shall be approved by the Engineer prior to beginning the work. The equipment used shall have an effective means for preventing any dust resulting from the operation from escaping into the air.

The bond coat shall be applied at a minimum rate of 0.05 gallons/yd2. Before placing the bond coat, the existing pavement surface shall be thoroughly cleaned. The Contractor shall also thoroughly clean all joints, cracks, and edges to a minimum depth of one inch with compressed air, vac-all type equipment, or other approved mechanical or hand methods, to remove all dirt, debris, and all foreign material.

HMA Placement- Placement shall conform to Section 501.03.F of the 2012 MDOT Standard Specifications, except as modified herein, and as directed by the Engineer.

HMA placement shall not commence until a "Permit to Place" (no additional costs are required to obtain this permit) has been issued in writing by the Engineer. The Permit to Place shall be issued after the aggregate base course or the adjacent, underlying layer of pavement section has been approved by the Engineer.

The final structure adjustments must be approved by the Engineer prior to the issuance of the "Permit to Place" for the wearing course.

The top course shall be placed with a ¼" lip at the gutter edge of metal.

All HMA thickness dimensions are compacted-in-place.

Paving Operation Scheduling – The Contractor shall schedule the paving operation to avoid longitudinal cold joints that would be required to be left "open" over night.

In all cases, the Contractor shall pave the primary road's through-traffic lanes ("main line") first, from point-of-beginning to the point-of-ending. All other paving including, but not limited to; acceleration and deceleration lanes, intersection approaches, and center left-turn lanes shall be paved following completion of main line paving, unless authorized by the Engineer prior to the placement of any pavement.

Rate of Paver operation - The rate of the paver's travel shall be maintained such that the paving operation will be continuous, resulting in no transverse cold joints, but shall never exceed the rate of 50 feet per minute.

The Contractor shall furnish and operate enough material, equipment, and hauling units so as to keep the paving machine(s) moving continuously at all times. Failure to do so shall be cause for the suspension of the paving operation until the Contractor can demonstrate to the satisfaction of the Engineer, that sufficient resources have been dedicated to perform the work in accordance with the project specifications.

Longitudinal and Transverse Joints- shall conform to Section 502.03.F of the 2012 MDOT Standard Specifications and as specified herein.

For mainline HMA paving, the width of the mat for each pass of the paver shall be not less than 10.5', nor greater than 15', except as noted in the plans and as directed by the Engineer. The Engineer will direct the layout of all HMA longitudinal joints during construction.

Prior to placing the adjacent paving pass on the leveling and wearing courses of HMA, the Contractor shall cut and remove 6" to 8" of the previously placed pavement at the free edge of the pavement by means of a coulter wheel. The Engineer reserves the right to reject any method(s) for cutting the pavement that does not provide a vertical and satisfactory edge, free of tearing, bending, or other deformations, as determined by the Engineer. Any method(s) employed by the Contractor shall be completely effective. The cut edge shall have a uniform bead of pavement joint adhesive applied to the full-height of the joint. The removal of this HMA material and resulting edge must be approved by the Engineer prior to proceeding with the placement of the succeeding pass of HMA. The base course of HMA and its vertical edge will have bond coat applied in accordance with Section 501.03.D. All costs associated with complying with these requirements will not be paid for separately, but shall be considered to be included in the items of work "HMA, ___" or "HMA, Approach."

Pavement joint adhesive shall be hot-applied, meet, or exceed, the following properties, and be approved by the Engineer prior to performing HMA placement:

Brookfield Viscosity, 400°F, ASTM D2669 – 4,000 to 10,000 cp
Cone Penetration, 77°F, ASTM D5329 – 60 to 100
Flow, 140°F, ASTM D5329 – 5mm maximum
Resilience, 77°F, ASTM D5329 – 30% minimum
Ductility, 77°F, ASTM D113 – 30 cm minimum
Ductility, 39.2°F, ASTM D113 – 30 cm minimum
Tensile Adhesion, 77°F, ASTM D5329 – 500% minimum
Softening Point, ASTM D36 - 170°F minimum
Asphalt Compatibility, ASTM D5329 – pass

Feather Joints – shall be constructed so as to vary the thickness of the HMA from zero inches to the required paving thickness at the rate of approximately 1.5" over a distance of 10 feet, or as directed by the Engineer. The Contractor shall rake the larger pieces of aggregate out of feather joints prior to compaction.

Butt Joints - Construction of butt joints, where directed by the Engineer, shall conform to Section 501.03.C.3 and 501.03.C.4 of the 2012 MDOT Standard Specifications, except as modified herein.

When a butt joint is specified or directed to be placed by the Engineer, remove the existing HMA surface to the thickness of the proposed overlay, or full-depth, as directed by the Engineer, for the full width or length of the joint. The HMA material shall be sawcut to the directed depth along the pavement edge or removal line to prevent tearing of the pavement surface. Cut joints that will be exposed in the completed surface must be cut with a saw or a cold-milling machine or other methods approved by the Engineer. Joints that will be covered by HMA must be cut with a saw, a cold-milling machine, or other methods approved by the Engineer.

Rakers- the Contractor shall provide a minimum of two rakers during the placement of all wearing and leveling courses.

Faulty Mixtures – The Contractor and Engineer shall carefully observe the paving operation for signs of faulty mixtures. Points of weakness in the surface shall be removed or corrected by the Contractor, at his/her sole expense, prior to paving subsequent lifts of bituminous material. Such corrective action may include the removal and replacement of thin or

contaminated sections of pavement, segregated HMA, and any sections that are weak or unstable. Once the Contractor or his representative is notified by the Engineer that the material being placed is out of allowable tolerances, or that there is a problem with the paving operation, the Contractor shall stop the paving operation at once, and shall not be permitted to continue placing bituminous material until again authorized by the Engineer. Any costs associated with meeting the requirements specified herein shall not be paid for separately, but shall be included in the item(s) of work being performed at the time the faulty mixture was discovered.

MEASUREMENT AND PAYMENT

Measurement of these HMA paving items shall be by the ton, in place. Unused HMA remaining in trucks after the work is completed shall be returned to the plant and re-weighed, and the corrected weight slip shall be provided to the Engineer. No payment will be made for the unused HMA material. All weight slips must include the type of mixture (codes are not acceptable), as well as vehicle number, gross weight, tare weight and net weight.

Corrective action shall be enforced as described at Division 5 of the 2012 MDOT Standard Specifications and will be based on the City's testing reports.

All costs for furnishing and operating vacuum-type street cleaning equipment, backhoes, jackhammers, and air compressors shall be included in the bid prices for these items of work or in the item of work "General Conditions."

All costs of meeting the requirements of this Detailed Specification shall be included in the bid prices for HMA items in the proposal and will not be paid for separately.

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:

PAY ITEM	PAY UNIT
HMA, 5E1	Ton
HMA, 4E1	Ton
HMA Driveway Approach	Ton
HM, LVSP	Ton

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.

DETAILED SPECIFICATION
FOR
ITEMS #222 – HMA Plane of Weakness Joint

DESCRIPTION

This work shall consist of constructing plane of weakness joint as shown on the plans along Geddes Avenue, including all labor, equipment, and material required.

This work shall be completed in accordance with the drawings and detailed specifications of this contract, the MDOT 2012 Standard Specifications for Construction, and as herein specified, including any detailed specifications

MATERIALS

Materials shall meet the requirements as described in the MDOT 2012 Standard Specifications for Construction.

CONSTRUCTION METHODS

These items shall be constructed as required in the MDOT 2012 Standard Specifications for Construction.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
HMA Plane of Weakness Joint	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.

DETAILED SPECIFICATION
FOR
ITEM #223 – TEMPORARY HMA PAVEMENT

DESCRIPTION

This work shall consist of constructing, maintaining, and subsequently removing roads and pavements for maintenance of traffic purposes. Work shall be in accordance with Sections 204, 501, and 602 of the Michigan Department of Transportation 2012 Standard Specifications for Construction, and as specified herein. These requirements shall not apply to pavements to remain in place after construction is completed.

MATERIALS

The materials used for this work shall be in accordance with subsections 501.02 or 601.02 of the 2012 Standard Specifications for Construction, except as modified herein. Temporary pavement may include the following materials or any combination thereof: hot mix asphalt, cold patch mixture, and/or concrete pavement. The type of temporary pavement to be placed must be approved by the Engineer.

The Contractor shall provide mix designs to the Engineer for review prior to placement. For each submittal or resubmittal, the Contractor shall allow at least 7 calendar days from the date of the submittal to receive the Engineer's acceptance, request for revisions, or rejection of the mix design. Required revisions or resubmittals will not be a basis of payment for additional compensation, extra work, or an extension of time.

CONSTRUCTION METHODS

Construct the temporary pavement according to subsection 501.03 and 601.03 of the 2012 Standard Specifications for Construction, except as modified herein.

The temporary pavement material shall meet the minimum thickness shown in the following table:

Pavement Type	Minimum Thickness
Flexible (includes HMA and Cold Patch)	2.5"
Rigid (includes Concrete)	6"

Pavement shall be placed to provide proper drainage and prevent improper ponding of water. Steel reinforcement, lane ties, and steel baskets for longitudinal and transverse joints shall not be required.

Construction methods shall also follow Detailed Specification HMA Paving and Concrete Placement and Protection.

MAINTENANCE

The Contractor is to maintain all portions of the temporary pavements in good condition with respect to both safety and smoothness for travel as long as it is needed for maintenance of traffic according to subsection 104.07.C of the 2012 Standard Specifications of Construction. If at any time during the project the Engineer documents that the temporary pavement requires repairs or renewals, the Engineer will provide written notification with instructions for corrective action to the Contractor. Upon receipt of the notification of correction action, the Contractor has four hours to correct. If the temporary roadway cannot be corrected with the four hour time period, the Contractor will develop a written implementation schedule for the corrective action and submit the schedule to the Engineer for approval within one hour or time agreed upon with the Engineer of receiving the written notification. If the schedule is not approved, or if the schedule is approved but not followed, the Engineer will adjust the contract according to subsection 812.03.C. If the implementation schedule is not followed, the Engineer will notify the Contractor in writing that they are in violation of this subsection.

In addition to the actions described in subsection 812.03.C, of the Standard Specifications for Construction, the following potential action will be in effect for this project. A contract price adjustment will be made in the amount of $100 per hour for every hour the improvements or corrective action remains incomplete. If improvements or corrections have not been made to the satisfaction of the Engineer, the contract will be adjusted until the temporary roadway is acceptable.

REMOVAL

The Contractor shall remove and dispose of the temporary pavement when the temporary pavement is no longer needed in accordance with Section 204 of the Michigan Department of Transportation 2012 Standard Specifications for Construction.

Removal of the temporary pavement shall not be paid for separately, but be included in the pay item "Temporary Pavement".

MEASUREMENT AND PAYMENT

The completed work as measured will be paid for at the contract unit prices for the following contract items (pay items):

PAY ITEM	PAY UNIT
Temporary HMA Pavement	Ton

Measurement of Temporary HMA Pavement shall be by the ton, in place and will be payment in full for all labor, equipment, and material needed to properly complete the work as shown on the plans, as detailed in the Specifications, and as directed by the Engineer.

Unused HMA remaining in trucks after the work is completed shall be returned to the plant and re-weighed, and the corrected weight slip shall be provided to the Engineer. No payment will be made for the unused HMA material. All weight slips must include the type of mixture (codes are not acceptable), as well as vehicle number, gross weight, tare weight and net weight.

DETAILED SPECIFICATION
FOR
ITEMS #224 – MAINTENANCE AGGREGATE

DESCRIPTION

This work shall consist of furnishing and installing maintenance aggregate as shown in the plans and as directed by the Engineer, including all labor, equipment, and material required.

This work shall be completed in accordance with the drawings and detailed specifications of this contract, the MDOT 2012 Standard Specifications for Construction, and as herein specified, including any detailed specifications

MATERIALS

Materials shall meet the requirements as described in the MDOT 2012 Standard Specifications for Construction.

CONSTRUCTION METHODS

These items shall be constructed as required in the MDOT 2012 Standard Specifications for Construction.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
Maintenance Aggregate	Ton

The unit prices 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.

DETAILED SPECIFICATION
FOR
ITEM #225 – DECORATIVE STONE WALL REMOVAL

DESCRIPTION

This work shall be done in accordance with Section 204 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, the plans, and as specified herein.

The work includes removal of the existing decorative stone wall and the resulting rubbish and debris. Rubbish and debris shall be removed from the site, unless otherwise directed, to avoid accumulation at the demolition Site. Materials that cannot be removed daily shall be stored in areas as specified by the Engineer. In the interest of safety, the work shall be performed with regard to the protection of personnel and property.

It shall be the responsibility of the bidder to inspect the decorative stone wall prior to bidding.

Protection of Existing Work - The Contractor shall take all necessary precautions to insure against damage to existing features that are to remain in place at the expense of the Contractor. The Contractor shall construct and maintain shoring, bracing, and supports as required. The Contractor shall insure that structural elements are not overloaded and be responsible for increasing structural support or adding new support as may be required as a result of any removal or demolition work performed under any part of this contract. All additional bracing, shoring, or support shall be provided at no additional cost.

Burning and Explosive - Burning waste and debris materials and the use of explosives at this site are prohibited.

The stone wall is located on north side of Geddes Road between (approximate) stations 40+60 and 41+40.

MATERIALS

Materials shall be in accordance with Section 204 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, the plans, and as specified herein.

CONSTRUCTION

Construction shall be in accordance with Section 204 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, the plans, and as specified herein.

The Contractor shall remove the specified wall including foundation, footings, if applicable. Removal of wall from site shall be the responsibility of the contractor and is included in the lump sum cost of the pay item.

MEASUREMENT AND PAYMENT

The completed work as described will be measured and paid for using the following pay item.

Pay Item	Pay Unit
Decorative Stone Wall Removal	Lump Sum

Payment for Decorative Stone Wall Removal includes equipment, labor and materials to remove and dispose of the existing stone wall as described herein.

DETAILED SPECIFICATION
FOR
ITEM #226 – FENCE, REM

DESCRIPTION

This work shall be done in accordance with Section 204 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, the plans, and as specified herein.

The work includes removal of the existing split rail and white picket fence and any resulting wire, posts and foundations as well as the resulting rubbish and debris. Rubbish and debris shall be removed from the site, unless otherwise directed, to avoid accumulation at the demolition Site.

MATERIALS

Materials shall be in accordance with Section 204 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, the plans, and as specified herein.

CONSTRUCTION

Construction shall be in accordance with Section 204 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, the plans, and as specified herein.

MEASUREMENT AND PAYMENT

The completed work as described will be measured and paid for using the following pay item.

Pay Item	Pay Unit
Fence, Rem	Foot

Payment for Fence, Rem includes equipment, labor and materials to remove and dispose of the existing fence, wire, posts and foundations as described herein.

DETAILED SPECIFICATION
FOR
ITEM #227 - GUARDRAIL REM

DESCRIPTION

This work shall be done in accordance with Section 204 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, the plans, and as specified herein.

The work includes removal of the existing guardrail, beam elements, posts, anchorages, including concrete blocks and sleeves, hardware and other items.

MATERIALS

Materials shall be in accordance with Section 204 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, the plans, and as specified herein.

CONSTRUCTION

Construction shall be in accordance with Section 204 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, the plans, and as specified herein.

MEASUREMENT AND PAYMENT

The completed work as described will be measured and paid for using the following pay item.

Pay Item	Pay Unit
Guardrail, Rem	Foot

Payment for Guardrail, Rem includes equipment, labor and materials to remove and dispose of the existing guardrail and guardrail elements as described herein. The Engineer will measure Guardrail, Rem along the face of the existing guardrail installation.

DETAILED SPECIFICATION
FOR
ITEM #228 – HMA SURFACE, REM

DESCRIPTION

This work shall consist of removing bituminous pavement, curb, sidewalk, and drives as shown on the Plans, as detailed in the Specifications, and as directed by the Engineer, in accordance with Section 204 of the 2012 edition of the MDOT Standard Specifications for Construction, except as specified herein, and as directed by the Engineer.

CONSTRUCTION METHOD

The Contractor shall remove bituminous pavement, curb, sidewalk, and drives, all regardless of the type and thickness, and all as shown on the Plans, as detailed in the Specifications, and as directed by the Engineer.

Prior to the start of removals, the Engineer and Contractor together shall field measure all removals.

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 remove, salvage, deliver to any location within the City limits, and neatly stack/stockpile all bricks, if present, as directed by 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: construct new concrete and bituminous items; to repair or replace existing concrete items; to relocate existing bituminous 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 bituminous 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 re-shape, re-grade, and re-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.

The Engineer may direct aggregate base materials to be either removed from or added to the job-site, to properly complete the work. Where the Engineer directs the addition of such materials, they shall be paid for as either the Item of Work: "21AA Limestone - C.I.P.". Where the Engineer directs such materials to be removed, they will not be paid for separately, but shall be included in the appropriate concrete removal item.

Where existing concrete curb & 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 & 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 sufficient 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 & 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 be adequately protected with barricades or fencing at all times.

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.

Subbase or subgrade 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.

The Contractor shall restore all disturbed areas to better than or equal to their original condition. This includes the placement and compaction of 2.5 inches of topsoil, followed by the placement of grass seed, followed by the placement of 0.5 inches of topsoil at all turf restoration locations, and at locations where concrete items are removed and turf is to be established. All restoration work and materials shall be in accordance with the City Standard Specifications. Restoration work must be performed within one week of the placement of the wearing course for each street.

MEASUREMENT AND PAYMENT

All sawcutting required for removals shall be included in the appropriate item of work, and will not be paid for separately.

Restoration work, including backfilling, compacting, HMA patching adjacent to concrete items, topsoiling and seeding will not be paid for separately, but shall be included in the appropriate associated items of work.

Bituminous removal items shall be field measured and paid for at the contract unit prices for the following contract items (pay items):

PAY ITEM	PAY UNIT
HMA Surface, Rem	Syd

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.

DETAILED SPECIFICATION
FOR
ITEM #229 – COLD MILLING HMA SURFACE

DESCRIPTION

This work shall consist of removing, loading, hauling and disposing of the cold milled material, and cleaning the cold milled pavement.

This work shall be completed in accordance with the drawings and detailed specifications of this contract, the MDOT 2012 Standard Specifications for Construction, and as herein specified, including any detailed specifications

MATERIALS

Materials shall meet the requirements as described in the MDOT 2012 Standard Specifications for Construction.

CONSTRUCTION METHODS

These items shall be constructed as required in the MDOT 2012 Standard Specifications for Construction.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
Cold Milling HMA Surface	Square Yard

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.

DETAILED SPECIFICATION
FOR
ITEM #230 - REMOVE CONCRETE CURB OR CURB & GUTTER - ANY TYPE
ITEM #231 - REMOVE CONCRETE SIDEWALK AND DRIVE - ANY THICKNESS

DESCRIPTION

This work shall consist of removing concrete curb, gutter, curb and gutter, integral curb, sidewalk, sidewalk ramps, drive openings, and drives as shown on the Plans, as detailed in the Specifications, and as directed by the Engineer, in accordance with Section 204 of the 2012 edition of the MDOT Standard Specifications for Construction, except as specified herein, and as directed by the Engineer.

CONSTRUCTION METHOD

The Contractor shall remove concrete curb, gutter, curb & gutter, integral curb, pavement, sidewalk, sidewalk ramps, drive openings, and drives, all regardless of the type and thickness, and all as shown on the Plans, as detailed in the Specifications, and as directed by the Engineer.

Prior to the start of removals, the Engineer and Contractor together shall field measure all removals.

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.

The Contractor shall remove, salvage, deliver to any location within the City limits, and neatly stack/stockpile all bricks, if present, as directed by 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: 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 re-shape, re-grade, and re-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.

The Engineer may direct aggregate base materials to be either removed from or added to the job-site, to properly complete the work. Where the Engineer directs the addition of such materials, they shall be paid for as either the Item of Work: "21AA Limestone - C.I.P.". Where the Engineer directs such materials to be removed, they will not be paid for separately, but shall be included in the appropriate concrete removal item.

Where existing concrete curb & 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 & 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 sufficient 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 & 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 be adequately protected with barricades or fencing at all times.

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.

Subbase or subgrade 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.

The Contractor shall restore all disturbed areas to better than or equal to their original condition. This includes the placement and compaction of 2.5 inches of topsoil, followed by the placement of grass seed, followed by the placement of 0.5 inches of topsoil at all turf restoration locations, and at locations where concrete items are removed and turf is to be established. All restoration work and materials shall be in accordance with the City Standard Specifications. Restoration work must be performed within one week of the placement of the wearing course for each street.

MEASUREMENT AND PAYMENT

Sidewalk ramp removal shall be measured and paid for as “Remove Concrete Sidewalk and Driveways - Any Thickness”.

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, “Remove Concrete Sidewalk & Driveways - Any Thickness”, and will not be paid for separately.

All sawcutting required for removals shall be included in the appropriate item of work, and will not be paid for separately.

Restoration work, including backfilling, compacting, HMA patching adjacent to concrete items, topsoiling and seeding will not be paid for separately, but shall be included in the appropriate associated items of work.

Concrete removal items shall be field measured and paid for at the Contract Unit Prices for their respective Contract (Pay) Items as follows:

PAY ITEM	**PAY UNIT**
Remove Concrete Curb or Curb & Gutter - Any Type	Foot
Remove Concrete Sidewalk & Driveways - Any Thickness	Square 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.

DETAILED SPECIFICATION
FOR
ITEM #232 - CONCRETE CURB OR CURB & GUTTER - ANY TYPE
ITEM #233 - CONCRETE M-OPENING –HIGH EARLY
ITEM #234 - 4 INCH CONCRETE SIDEWALK
ITEM #235 - 6 INCH CONCRETE SIDEWALK, RAMP OR DRIVE
ITEM #235A – 6 INCH CONCRETE SIDEWALK, RAMP OR DRIVE – HIGH EARLY

DESCRIPTION

This work shall consist of constructing concrete items including curb, gutter, curb and gutter, sidewalks, drive approaches, MDOT Type M drive openings, and pavement repairs with mechanical anchors and hook bolts, all of any type and/or dimensions, all of either regular, fibermesh reinforced, and/or high-early concrete, in accordance with Sections 601, 602, 603, 801, 802, and 803 of the 2012 edition of the MDOT Standard Specifications for Construction, except as specified herein, as shown on the Plans, as shown in this Detailed Specification, and as directed by the Engineer.

The Contractor is responsible to construct all sidewalks, sidewalk ramps, curbs, and all other concrete items within ADAAG compliance. All sidewalks and curb ramps must be constructed in accordance with MDOT Standard Detail R-28-F (version in place at time of the bid letting).

In addition, all concrete items of work shall comply with the Detailed Specifications for Concrete Durability and Concrete Placement and Protection.

MATERIALS

Concrete mixtures shall be as follows (or as directed by the Engineer), and concrete materials shall meet the requirements specified in the referenced sections of the MDOT Standard Specifications:

Concrete Item	Concrete Mixture	MDOT Section
Curb or Curb & Gutter	P1, 6-sack	601
Curb or Curb & Gutter - High-Early	HE, 8.4-sack	601
4" or 6" Sidewalk or Ramp	P1, 6-sack	601
6" or 8" Sidewalk/Ramp/Drive - High-Early	HE, 8.4-sack	601

CONSTRUCTION METHODS

General
Curb, gutter, curb and gutter, sidewalk, sidewalk ramps, drive openings, and drives shall be replaced the same day they are removed.

Concrete items, including sidewalk, non-integral curb/gutter, drives, and structure adjustments shall be completed prior to the placement of pavement.

All subgrade work shall be completed prior to placing concrete items, unless directed or approved by the Engineer.

The subbase shall be trimmed to final elevation before placing curb. Curb shall not be placed on a pedestal or mound.

The Contractor shall excavate, cut, remove stumps, remove brush, remove pavement, grade, and trim as needed and as directed, and shall import, furnish, fill, place, grade, and compact Class II granular material and 21AA Aggregate material as needed to: 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.

At locations where the subgrade, subbase or base becomes either disturbed, saturated or otherwise damaged, and where directed by the Engineer, the Contractor shall remove a minimum 6-inch thick layer of the subgrade, subbase or base, and replace it with approved 21AA Aggregate material, compacted in place.

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

The Contractor is responsible for any damage to concrete items, including but not limited to vandalism; vehicular, pedestrian and/or miscellaneous structural damage; surface texture damage; and rain damage.

The Contractor shall maintain on-site at all times, a sufficient quantity of adequate materials to protect concrete items. The Engineer may suspend or defer concrete placement if rain protection is not available. The Contractor shall not be entitled to any additional compensation due to work suspension or deferral resulting from a lack of adequate rain protection.

The Contractor shall perform full-depth saw cutting at removal limits, including those necessary to construct 2-foot wide 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 subbase and adjacent concrete shall be sufficiently wet-down with water prior to placing concrete, to prevent water loss from the new concrete, and to form a better bond between old and new concrete. If a cold-joint becomes necessary, (the) existing concrete surface(s) shall be cleaned with compressed air to expose the aggregate in the concrete.

Where it is necessary to remove existing pavement to provide space for concrete formwork, a sufficient amount of the existing pavement shall be removed to allow for the use of a vibratory plate compactor in front of the curb.

Where concrete items are placed in areas adjacent to existing pavement that is beyond the general resurfacing (pavement removal and/or milling) limits, the adjacent pavement area shall be backfilled and permanently patched within 48-hours of the removal of concrete formwork. The backfill material shall be MDOT 21AA aggregate compacted in place to 95%, up to the elevation of the proposed bottom of pavement. The pavement patching material(s) shall be as specified and as directed by the Engineer.

Where concrete items are placed adjacent to existing pavement that is within areas scheduled for subsequent pavement removal and/or milling, the adjacent pavement area shall, within 48-hours of the removal of concrete formwork, be backfilled with MDOT 21AA aggregate compacted in place to 95% up to the elevation of the bottom of the adjacent pavement.

Prior to compacting backfill in front of curb and gutter, the back of curb shall be backfilled with approved material and compacted by mechanical means to 95%.

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.

Restoration

The Contractor shall restore all disturbed areas to better than or equal to their original condition within two calendar days from the date of concrete placement. This includes the placement and compaction of 2.5 inches of topsoil, followed by the placement of grass seed, followed by the placement of 0.5 inches of topsoil, at all turf restoration locations, and at locations where concrete items are removed and turf is to be established. **Restoration shall also include the replacement of any brickwork, decorative stone, or other adjacent materials.** All restoration work and materials shall be in accordance with the City Standard Specifications.

Contraction Joints in Sidewalk

Contraction joints shall be placed at 5-foot intervals and may be tooled or sawed. The method of forming joints and spacing shall be approved by the Engineer prior to construction.

Expansion Joints in Sidewalks

¾-inch wide expansion joints shall be placed through concrete sidewalks in line with the extension of all property lines, at all expansion joints in the abutting curb, gutter, and combination curb and gutter, and as directed by the Engineer. Transverse expansion joints shall be placed through the sidewalks at uniform intervals of not more than 300-feet.

½-inch wide expansion joints shall be placed between the sidewalk and back of abutting curb or gutter, at the juncture of two sidewalks, between the sidewalk and buildings and other rigid structures, and as directed by the Engineer.

Expansion Joints in Curb and Gutter

¾-inch wide expansion joints shall be placed at all street returns, at all expansion joints in an abutting pavement, at each side of all driveways (at radius points), elsewhere at 300-foot maximum intervals, and as directed by the Engineer.

Expansion joint material shall extend to the full depth of the joint. After installation, the top shall not be above the concrete nor be more than ½-inch below it. No reinforcing steel shall extend through expansion joints.

Plane of Weakness Joints in Curb and Gutter

Intermediate plane of weakness joints shall be placed to divide the structure into uniform sections, normally 10-feet in length, with a minimum being 8-feet in length, and shall be placed opposite all plane of weakness joints in the abutting concrete base course.

Plane of weakness joints shall be formed by narrow divider plates, which shall extend 3-inches into the exposed surfaces of the curb or curb and gutter. Plates shall be notched, if necessary, to permit the steel reinforcement to be continuous through the joint.

Concrete Pavement Repair - High Early

Prior to the placement of concrete, the Contractor shall install mechanical anchors and $^{5}/_{8}$-inch diameter hook bolts into adjacent (new or old) concrete items as required by the MDOT Standard Specifications and Details, as indicated on the Plans, and as directed by the Engineer. The Engineer may delete the installation of mechanical anchors and hook bolts where, in the Engineer's opinion, the adjacent concrete item(s) is/are observed to be of poor quality. The installation of mechanical anchors & hook bolts will be paid for separately, and are not included in the bid price for "Concrete Pavement Repair – High Early."

During the placement of "Concrete Pavement Repair - High-Early", the Contractor shall use a high-frequency mechanical vibrator to compact and consolidate the concrete to provide even, homogeneous placement, and to prevent voids, honeycombing, and/or pockets of air from forming within the concrete.

MEASUREMENT AND PAYMENT

The work of furnishing and installing mechanical anchors and hook bolts will be measured and paid for by the number of hook bolts installed.

All concrete pavement repair, including that which is installed with integral curb and gutter, will be measured and paid for by the area actually placed in square yards (S.Y.).

No additional compensation will be paid for the construction of concrete items adjacent to existing concrete curb, gutter, pavement, or any other pavement or surface feature(s).

No additional compensation will be paid for the removal of a 6-inch thick layer of the subgrade, subbase or base, and replacement with approved 21AA aggregate material, compacted in place.

A deduction in length for catch basins and inlet castings will be made to measurements of Curb and Gutter.

Curb, gutter, curb and gutter, and MDOT type M openings, shall be paid as "Curb & Gutter."

On streets where curb and gutter is to be placed with the item “Concrete Curb & Gutter – Any Type – Slip Form”, all miscellaneous hand work associated with the slip form placement shall be included in this item of work and shall not be paid for separately.

Restoration work, including backfilling, compacting, HMA patching adjacent to concrete items, topsoiling and seeding will not be paid for separately, but shall be included in the appropriate associated items of work.

Payment for saw cutting for Type M openings and for partial removal of existing drives shall be included in the price for the item of work, “Remove Concrete Sidewalk & Driveways - Any Thickness”, and will not be paid for separately.

Payment for the removal of HMA pavement and aggregate base to provide space for concrete formwork and vibratory plate compactor shall be included in the price for the item of work, “Remove Concrete Curb and Gutter - Any Type”, and will not be paid for separately.

The Item, “Stamp Concrete with Detectable Warning” will be measured and paid for by the square foot of area stamped, typically 2' x 5'. This measurement/payment is in addition to the measurement/payment for the concrete ramp placement.

Completed work as measured for these items of work will be paid for at Contract Unit Price for the following Contract (Pay) Items:

PAY ITEMS	**PAY UNIT**
Concrete Curb or Curb & Gutter – Any Type	Foot
Concrete M-Opening – High Early	Foot
4 inch Concrete Sidewalk	Square Foot
6 inch Concrete Sidewalk, Ramp or Drive	Square Foot
6 inch Concrete Sidewalk, Ramp or Drive – High Early	Square 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.

DETAILED SPECIFICATION
FOR
ITEM #236 –DETECTABLE WARNING, CAST IN PLACE

DESCRIPTION

This work shall consist of furnishing and installing cast in place detectable warning units in compliance to the Americans with Disability Act (ADA). All work shall be in accordance with MDOT Standard Detail R-28- F (version in place at time of the bid letting).

MATERIALS AND CONSTRUCTION METHODS

The detectable warning tiles shall be ceramic cement or composite polymer concrete (CRC), colored as Federal Number 22144 (frequently referred to as "Colonial Red" or "Brick Red"). The detectable warning tiles shall meet the following dimensions and tolerances:

1. Dimensions: Cast In Place Detectable/tactile Warning Surface Tiles shall be held within the following dimensions and tolerances:

   Length: 24"
   Width: The full width of the approaching walk (60" for typical sidewalk)
   Depth: 1.375 (1-3/8") (+/-) 5% max.
   Face Thickness: 0.1875 (3/16") (+/-) 5% max. Warpage of Edge: 0.5% max.
   Embedment Flange Spacing: shall be no greater than 3.1"

2. Water Absorption of Tile when tested by ASTM D 570-98 not to exceed 0.05%.
3. Slip Resistance of Tile when tested by ASTM C 1028-96 the combined Wet and Dry Static Co-Efficients of Friction not to be less than 0.80 on top of domes and field area.
4. Compressive Strength of Tile when tested by ASTM D 695-02a not to be less than 28,000 psi.
5. Tensile Strength of Tile when tested by ASTM D 638-03 not to be less than 19,000 psi.
6. Flexural Strength of Tile when tested by ASTM D 790-03 not to be less than 25,000 psi.
7. Chemical Stain Resistance of Tile when tested by ASTM D 543-95 (re approved 2001) to withstand without discoloration or staining - 10% hydrochloric acid, urine, saturated calcium chloride, black stamp pad ink, chewing gum, red aerosol paint, 10% ammonium hydroxide, 1% soap solution, turpentine, Urea 5%, diesel fuel and motor oil.
8. Abrasive Wear of Tile when tested by BYK - Gardner Tester ASTM D 2486-00 with reciprocating linear motion of 37± cycles per minute over a 10" travel. The abrasive medium, a 40 grit Norton Metallite sand paper, to be fixed and leveled to a holder. The combined mass of the sled, weight and wood block is to be 3.2 lb. Average wear depth shall not exceed 0.060 after 1000 abrasion cycles when measured on the top surface of the dome representing the average of three measurement locations per sample.
9. Resistance to Wear of Unglazed Ceramic Tile by Taber Abrasion per ASTM C501-84 (re approved 2002) shall not be less than 500.
10. Fire Resistance of Tile when tested to ASTM E 84-05 flame spread shall be less than 15.
11. Gardner Impact to Geometry "GE" of the standard when tested by ASTM D 5420-04 to have a mean failure energy expressed as a function of specimen thickness of not less than 550 in. Ibf/in. A failure is noted when a crack is visible on either surface or when any brittle splitting is observed on the bottom plaque in the specimen.
12. Accelerated Weathering of Tile when tested by ASTM G 155-05a for 3000 hours shall exhibit the following result -□E <4.5, as well as nodeterioration, fading or chalking of surface.
13. Accelerated Aging and Freeze Thaw Test of Tile and Adhesive System when tested to ASTM D 1037-99 shall show no evidence of cracking, delamination, warpage, checking, blistering, and color change, loosening of tiles or other detrimental defects.
14. Salt and Spray Performance of Tile when tested to ASTM B 117-03 not to show any deterioration or other defects after 200 hours of exposure.
15. AASHTO HB-17 single wheel HS20-44 loading "Standard Specifications for Highways and Bridges". The Cast In Place Tile shall be mounted on a concrete platform with a ½" airspace at the underside of the tile top plate then

subjected to the specified maximum load of 10,400 lbs., corresponding to an 8000 lb individual wheel load and a 30% impact factor. The tile shall exhibit no visible damage at the maximum load of 10,400 lbs.

16. Embedment flange spacing shall be no greater than 3.1" center to center spacing as illustrated on the product Cast In Place drawing.

CONSTRUCTION METHODS

The contractor shall follow manufacturer specifications for installation, except where they conflict with MDOT Standard Detail R-28- F (version in place at time of the bid letting).

MEASUREMENT AND PAYMENT

The completed work as measured for this item of work will be paid for at the Contract Unit Prices for the following Contract (Pay) Item:

PAY ITEM	PAY UNIT
Detectable Warning, Cast In Place	Square Foot

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.

DETAILED SPECIFICATION
FOR
ITEM #237 – ADJUST STRUCTURE COVER
ITEM #238 – ADJUST CURB INLET STRUCTURE COVER
ITEM #239 – ADJUST MONUMENT BOX OR GATE VALVE BOX OR GAS BOX
ITEM #240 – STRUCTURE COVER

DESCRIPTION

This work shall consist of reconstructing, repairing, adjusting, cleaning, and lowering structures, valve wells or boxes, and monument or gas boxes of concrete and concrete block masonry; the replacing, salvaging and transporting of new and existing metal covers, and/or castings; including all excavation, backfilling, patching and the removal and proper disposal off-site of all excavated material and debris, all in accordance with Division 4 of the 2012 edition of the MDOT Standard Specifications for Construction, and the City Standard Specifications, except as specified herein, and except as directed by the Engineer.

MATERIALS

Materials shall meet the requirements of sections 403 and 601 of the 2012 edition of the MDOT Standard Specifications, except that concrete shall be MDOT HE, 8.4-sack per Section 601 of the 2012 MDOT Standard Specifications.

CONSTRUCTION METHODS

General
Materials shall be stored by the Contractor at locations arranged by the Contractor, subject to the approval of the Engineer. The Contractor shall not store materials or equipment, including metal castings and steel plates, on any lawn area.

Hidden, or unknown utility structures may be encountered during the work. It is the Contractor's responsibility to inform the respective utility owner(s) of such findings. In such instances, the City may direct the Contractor to adjust the structure(s) to grade. This work will be paid as "Adjust Structure Covers".

Adjust Structure Cover
This item includes the final adjustment of castings of any type (including drop inlets) to their respective finished elevations, up or down a maximum of 15-inches.

Covers shall be adjusted after the leveling, skin leveling and/or patching course has been placed, unless otherwise authorized or directed by the Engineer.

All underground structure covers shall be adjusted such that their finished surface elevation is within ¼-inch of the finished surface sections, grades, slopes, and elevations, as shown on the Plans, and as directed by the Engineer. The work shall be verified by the use of a 10-foot straight-edge placed parallel with the pavement centerline. Structures not meeting the ¼-inch tolerance shall be readjusted and finish patched, as directed by the Engineer, at the Contractor's expense.

The Contractor is responsible to coordinate and arrange for the adjustment of all non-City utility manholes and valves (Edison, Gas, Cable, Ameritech, etc.) during this project. The Contractor will not be given any additional compensation for delays due to other utilities work. The work of coordinating with other utilities shall be paid for under the Contract Item "General Conditions."

All structure covers, utility covers, valve boxes or monument boxes shall be backfilled with MDOT HE, 8.4-sack concrete from the depth of excavation necessary for adjustment, up to an elevation 2-inches below the top flange of the adjusted casting. This work shall be included in the respective items of work, and will not be paid for separately.

Adjust Monument Box or Gate Valve Box or Gas Box

This item includes the final adjustment of existing or new covers/castings up or down a maximum of 15-inches and to their finished elevations. This also includes the replacement of the top half of the water valve boxes, monument boxes (furnished by the City) and gas boxes where required, and shall be included in this item of work.

Structure Covers

This item shall consist of replacing covers and/or castings for structures, gate wells and inlet structures as shown on the Plans and as directed by the Engineer. All covers and/or castings shall conform to the model(s) specified, as follows:

Type of Casting	MDOT Designation	NEENAH No. (Weight, Lbs)	EJIW No. (Weight, Lbs)
Manhole Flange and Cover	B	R-1642 w/ Type C cover Type D cover (380 lbs.)	1040 w/ Type C cover Type M1 (300 lbs.)
Shoulder Catch Basin	D	Type D	
Field Catch Basin or Maintenance Basin	G	R-4360-D	6126N
Curb Inlet or Catch Basin	K	R-3249F (410 lbs.)	7045 (500 lbs.)

Frames and covers shall have machined bearing surfaces. Covers shall have two, 1-inch vent holes located opposite each other and 6-inches from the edge. Each cover shall have "SEWER" or "W" cast in the surface, whichever is applicable.

Castings and covers for monument and water-valve boxes will be provided by the City. The Contractor shall transport these new castings and covers to the site from the City Utilities Department yard at 4251 Stone School Road (Wheeler Center).

The Contractor shall deliver all salvaged covers and castings to the Wheeler Center within two days of their removal.

MEASUREMENT AND PAYMENT

Payment for transporting new and salvaged castings and covers to and from the Wheeler Center is included in the appropriate items of work.

Furnishing and placing flowable fill as backfill for these items will not be paid separately, but shall be included in the bid prices for these items of work.

Completed work as measured for these items of work will be paid for at Contract Unit Price for the following Contract (Pay) Items:

PAY ITEM	**PAY UNIT**
Adjust Structure Cover	Each
Adjust Curb Inlet Structure Cover	Each
Adjust Monument Box or Gate Valve Box or Gas Box	Each
Structure Cover	Each

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.

DETAILED SPECIFICATION
FOR
ITEM #241 – CULV, REM, 24 INCH TO 48 INCH
ITEM #242 – SEWER, REM – ANY SIZE
ITEM #243 – DR STRUCTURE, REM

DESCRIPTION

This work shall consist of removing sewer, drainage structures and culverts; including all excavation, backfilling and the removal and proper disposal off-site of all excavated materials and debris.

This work shall be completed in accordance with the drawings and detailed specifications of this contract, the MDOT 2012 Standard Specifications for Construction, and as herein specified, including any detailed specifications

MATERIALS

Materials shall meet the requirements as described in the MDOT 2012 Standard Specifications for Construction.

CONSTRUCTION METHODS

These items shall be constructed as required in the MDOT 2012 Standard Specifications for Construction.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
Culv, Rem, 24 inch to 48 inch	Foot
Sewer, Rem – Any Size	Foot
Dr Structure, Rem	Each

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.

DETAILED SPECIFICATION
FOR
ITEM #244 – MODULAR CONCRETE BLOCK RETAINING WALL

DESCRIPTION

This work includes the labor, material and equipment required to design, furnish and install the modular concrete block retaining wall as shown on the plans. The work will involve the design of the wall, excavation, preparing a leveling pad or base, erecting the wall, installing underdrain, installing geogrid reinforcement and placing the drainage layer and backfill for the wall. Complete this work according to the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction, details shown on the plans, the submitted and approved wall design, the wall system manufacturer's recommended installation procedures and this special provision.

SUBMITTALS

The Contractor shall prepare and submit to the Engineer, for review and approval, working drawings and design calculations for the modular concrete block retaining walls at least 21 calendar days prior to planned start of construction. All submittals shall be signed and sealed by a Registered Professional Engineer currently licensed in the State of Michigan with a minimum of two years of experience in the design of modular concrete block retaining walls. The submittal shall also include catalog cuts of the components included in the wall assembly, test data for the block and a sample of the block that is representative of the shape, texture and color proposed. Walls shall be designed for active earth pressure and live load surcharge of 120 PSF.

1. Calculations and Specifications. Design calculations, notes, and specifications shall be provided on 8.5" x 11" sheets, and shall include the County and Engineer project designations, wall designations, date of preparation, page number, and the initials of designer. All calculations shall be verified and initialed by the checker.

   Design calculations and explanatory notes shall be legible and shall demonstrate that the design criteria have been met. The factors of safety against sliding, pullout, and overturning, and the applied bearing pressure and allowable bearing capacity beneath the base of the reinforced soil mass shall be clearly indicated.

2. Plans. Plans shall be prepared on sheets 11" x 17" including borders. The proposed walls shall be clearly defined. Each sheet shall have a title block in the lower right hand corner. The title block shall include the sheet number of the drawing, name or designation of the wall and the County and Engineer project designations. The plans shall include all details, dimensions, quantities and cross sections necessary to construct the wall, and shall include but not be limited to the following items:

A. Elevation views of the walls noting elevations at the top of the wall at all horizontal and vertical break points and at least every 25 feet along the face of the wall, all steps in the wall bottom, the length, type and size of soil reinforcing elements, the location of changes in reinforcement length or type, the original and final ground lines, and applied bearing pressures.
B. Plan views of the walls that indicate the offsets from the construction centerline to the wall reference line at all changes in horizontal alignment, beginning and ending stations for the reinforced soil construction, and the centerline and size of any drainage structure or drainage pipe behind, passing through, or under the wall.
C. Typical cross sections showing the relationship between existing ground elevations and proposed grades, construction limits, excavations limits, and fill requirements.
D. General notes for constructing the wall.
E. Horizontal curve data for layout and constructing the walls.
F. Summary of material quantities on the elevation sheet of each wall.
G. Details for placement of modular block facing elements, cap units, and decorative fence.
H. Details for placement of geogrid reinforcement and connection to modular block.
I. Details for construction around utilities, drainage structures, and other appurtenances or obstructions. Details for diverting reinforcement elements around obstructions shall be shown for each specific occurrence.

J. Details which show end treatment at the wall point of beginning (POB) and wall point of ending (POE).
K. Test data of all materials used in the design and construction of the wall(s).

MATERIALS

Use materials meeting the following requirements:

1. Leveling Pad – 21AA dense graded aggregate per MDOT Specification Section 902.
2. Drainage Layer – 34G open graded aggregate per MDOT Specification Section 902 or 6A coarse aggregate per MDOT Specification Section 902 with a geotextile separator between the coarse aggregate and granular backfill per MDOT Specification Section 910.
3. Backfill – Granular Material Class II per MDOT Specification Section 902.
4. Underdrain - Per MDOT Specification Section 909.
5. Underdrain bedding – Per MDOT Specification Section 404.
6. Uniaxial geogrid – Conform to the manufacturer's recommendations for the wall system supplied. Uniaxial geogrid reinforcement shall utilize a mechanical connection (i.e., pins, pegs, etc.) to connect reinforcement to the blocks.
7. Cap block and wall blocks as manufactured by Keystone Retaining Wall Systems or Allan Block and meeting the following requirements:
    A. Shall conform to ASTM C1372 for normal weight concrete. Provide manufacturer test data certification according to the MDOT Quality Assurance Procedures Manual, documenting that the blocks meet this standard.
    B. Minimum net 28 day compressive strength shall be 5500 psi for any individual unit and 5800 psi for the average of 3 units. Blocks will be fabricated with air-entrained concrete.
    C. Provide manufacturer's test data certification, according to the MDOT Quality Assurance Procedures Manual, documenting that the blocks meet these specifications when tested as specified in ASTM C1372. Freeze-thaw testing must be conducted according to ASTM C1262 in 3 percent saline solution for 60 cycles. The maximum average loss on 5 specimens shall not exceed one percent. Test data must represent testing completed within 12 months prior to delivery.
    D. Block concrete must have maximum moisture absorption of 6% (ASTM C140, 24 hour cold water).
    E. Block Style shall be; Keystone Compac, Straight Split or Allan Block AB Classic.
    F. Block color shall be gray in color and shall be uniform in color throughout the project. Final color to be approved by the City of Ann Arbor.
    G. Protect blocks from damage, chipping and soiling during delivery and storage. Store off the ground on pallets or wood platforms. Do not use blocks with chips, cracks, voids, discoloration or other visible defects exceeding the finish and appearance limits in ASTM C1372.
    H. Provide test results or certification that block materials are inert for Alkili-Silica Reactivity (ASR).

CONSTRUCTION METHODS

Erect the wall according to the Engineer approved shop drawings, manufacturer's recommendations and the following:

1. Excavate to the lines and grades shown on the plans or as directed by the Engineer for construction of the leveling pad. Excavate soils with a high clay or organic material content to a depth of 18 inches below plan grade and backfill. Compact the soils below the leveling pad/base to provide a firm surface on which to place the pad.
2. Place the first course of blocks in full contact with the prepared leveling pad and according to the manufacturer's instructions. Construct each layer to Grade for the entire length of the wall. If any layer deviates from the grade more than 1/8 inch per 10 feet. Remove the entire layer and reinstall with all costs associated with this work borne by the Contractor.
3. Place and compact the backfill material in lifts not to exceed 8 inches. Do not deflect the uniaxial geogrid by more than ¼ inch as a result of the compactive effort.
4. Plan, schedule and coordinate wall construction with round form installation for aluminum rail fence post foundation construction. Maintain fence post foundation form plumbness throughout wall backfilling operation.
5. Apply construction adhesive to the top surface of the final course of blocks and place the cap units into the required position, as shown on the plans. Do not exceed 1/8 inch between units. Cut caps as necessary to fit flush with the underlying units at the end of the wall.

6. The Contractor is responsible for testing leveling pad, drainage layer, backfill and under drain bedding materials delivered to the site to confirm that the materials provided meet the design assumptions and requirements. Testing shall be performed for each truck load delivered. Cost of testing shall be included in this item of work. Test reports shall be submitted to the Engineer within 48 hours. The Engineer shall be verbally informed by the testing agency on the status of the material immediately after the testing has occurred.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

Pay Item	**Pay Unit**
Modular Concrete Block Retaining Wall……..	Square Foot

Modular Concrete Block Retaining Wall will be measured in place, in square feet of wall face from the top of the leveling pad to the top of the wall cap. Payment for Modular Concrete Block Retaining Wall shall include all labor, equipment, leveling pad, drainage layer, wall blocks, cap blocks, 4 inch underdrain, backfill, uniaxial geogrid and material testing as required to complete the work as described herein, the details shown on the plans, and the approved submittals prepared by the Contractor.

Finish grading of the area around the walls will not be paid for separately, but is included in the pay item Modular Concrete Block Retaining Wall.

DETAILED SPECIFICATION
FOR
ITEM #245 –NATURAL BOULDER RETAINING WALL

DESCRIPTION

This work shall include complete installation of a boulder wall of natural material as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. All work shall comply with the City of Ann Arbor General Conditions and Standard Specifications for materials and construction, unless specified or modified by this Detailed Specification.

These walls are to accommodate the change in grade generally along the back slope of the swales.

CONSTRUCTION METHOD

Contractor may have to provide temporary shoring; sheet piling will not be permitted. The maximum height of the wall shall be 30 inches.

A geotextile fabric shall be placed against the native soil. The bottom boulder shall be buried a minimum of 8 inches. The boulders shall be placed on an individual basis and be battered at the slope of the bank but not to exceed one (1) horizontal to three (3) vertical. Boulders shall be keyed with smaller stones as needed or as directed by the Engineer.

MATERIALS

Fabric: the non-woven geotextile fabric shall be Propex GeoTex 801, Ten Cate Mirafi 180N or equal.

Boulder: The rocks shall have a mean dimension of 1.0 foot to 2.0 foot. The boulder shall be clean and natural rock. Prior to installation, boulders shall be reviewed and approved by the Engineer. Crushed concrete or limestone will not be accepted and a natural rock or river rock is required. Contractor shall provide a material submittal for Engineer review and approval.

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:

PAY ITEM	PAY UNIT
Natural Boulder Retaining Wall	Square Foot

This item shall be measured in square feet based on exposed surface area. The unit prices 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.

DETAILED SPECIFICATION
FOR
ITEM #246 – SUBBASE, CIP, GRANULAR MATERIAL, CL II

DESCRIPTION

This work shall be done in accordance with Section 205 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, the plans, and as specified herein.

MATERIALS

Materials shall be in accordance with Section 205 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, the plans, and as specified herein.

CONSTRUCTION

Construction shall be in accordance with Section 205 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, the City of Ann Arbor Standard Specifications, the plans, and as specified herein.

MEASUREMENT AND PAYMENT

The completed work as described will be measured and paid for using the following pay item.

Pay Item	Pay Unit
Subbase, CIP, Granular Material, Cl II	Cubic Yard

Payment for Granular Material includes equipment, labor and materials to install granular material, class II as described herein.

DETAILED SPECIFICATION
FOR
ITEM #247 - SAND SUBBASE COURSE, CLASS II - C.I.P.
ITEM #248 – AGGREGATE BASE COURSE, 21AA LIMESTONE, 6 INCH, C.I.P.
ITEM #249 – AGGREGATE BASE COURSE, 21AA LIMESTONE, 6 INCH, C.I.P.
ITEM #250 - AGGREGATE BASE COURSE, 21AA LIMESTONE, 8 INCH, C.I.P.
ITEM #251 - AGGREGATE SURFACE CSE, 8 INCH

DESCRIPTION

This work shall consist of constructing an aggregate subbase or base course on an existing aggregate surface, or on a prepared subgrade in accordance with Sections 301, 302 and 307 of the 2012 edition of the MDOT Standard Specifications for Construction, except as specified herein.

MATERIAL

The materials used for this work shall be MDOT 21AA and Class II granular material meeting the requirements of the City of Ann Arbor Standard Specifications. Material for aggregate shoulders shall be MDOT 22A.

CONSTRUCTION METHOD

Sand or aggregate courses shall not be placed if, in the opinion of the Engineer, there are any indications that they may become frozen before their specified densities are obtained.

Sand or aggregate courses shall not be placed on a frozen base, subbase or subgrade.

The Contractor shall not use rubber-tired equipment on the grade, when its use causes, or may cause, in the opinion of the Engineer, damage to the grade. The Contractor shall conduct his/her operation(s), and provide all necessary equipment, to insure the satisfactory completion of the work without damaging the grade. This includes the transporting, stockpiling, rehandling, and movement of materials over additional distances, in lieu of driving on an unprotected, or partially unprotected, grade.

The Contractor is solely responsible for the maintenance and protection of the grade. Further, any damage to the grade which, in the opinion of the Engineer, is caused as a result of the Contractor's operation(s), or his/her subcontractors' or suppliers' operation(s), shall be repaired by the Contractor at the Contractor's expense. This includes any additional earthwork and/or maintenance materials as directed by the Engineer, for the purposes of the Contractor's maintenance and protection of the grade.

The Contractor shall shape the base, subbase and subgrade to the elevations, crowns, and grades as specified on the Plans and as directed by the Engineer. This may include regrading the subbase to provide different crown grades than those existing prior to the construction.

The Contractor shall remove, add to, re-shape, re-grade, and re-compact the existing roadbed materials, and shall construct the roadway 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, for this work. Use of each specific piece of equipment is subject to the approval of the Engineer.

The Contractor shall maintain the base, subbase and subgrade in a smooth, well drained condition at all times.
Sand and aggregate courses shall be placed in uniform layers such that when compacted, they have the thicknesses shown on the Plans, or as directed by the Engineer. The loose measure of any layer shall not be more than 9-inches nor less than 4-inches.

Sand subbase and aggregate base courses shall be compacted to not less than 98% of their respective maximum unit weights, as determined by the AASHTO T-180 test.

All granular materials shall be deposited from trucks or through a spreader in a manner that will minimize segregation of material.

Manholes, valve boxes, inlet structures and curbs shall be protected from damage. Manholes & inlet structures shall be continuously cleaned of construction debris and properly covered at all times during the construction. Upon completion of each days work, manholes, water valve boxes, inlets and catch basins shall be thoroughly cleaned of all extraneous material.

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.

MEASUREMENT AND PAYMENT

Where granular materials are used as base, as subbase, or as fill for excavations in Machine Grading areas, items of work "Aggregate Base Course, 21AA Limestone, __ inch, C.I.P." and "Sand Subbase Course, CL II - C.I.P." shall be measured and paid accordingly.

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:

PAY ITEM	PAY UNIT
Sand Subbase Course Class II - C.I.P.	Cubic Yard
Aggregate Base Course, 21AA Limestone, 4 inch, C.I.P.	Square Yard
Aggregate Base Course, 21AA Limestone, 6 inch, C.I.P.	Square Yard
Aggregate Base Course, 21AA Limestone, 8 inch, C.I.P.	Square Yard
Aggregate Surface Cse, 8 inch	Square Yard

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.

DETAILED SPECIFICATION
FOR
ITEM # 252 – WOOD PRIVACY FENCE

DESCRIPTION

This work consists of furnishing all labor, equipment and materials required to complete the construction of the wood privacy fence at the location shown on the plans according to the details and in accordance Section 808 and 912 of the *2012 of the Michigan Department of Transportation Standard Specifications for Construction*, except as provided herein.

The Contractor shall visit the site to become familiar with the type of existing fence to match.

MATERIALS

Fence shall match the existing in look and material however, supply materials in accordance with Section 912.09 of the *Standard Specifications for Construction*, as applicable, with the following additions and exceptions. Pressure treat with Ammoniacal Copper Quat (ACQ) or Copper Azole (CA) preservative as specified in subsection 912.10 of the Standard Specifications for Construction. All wood materials shall be uniform in straightness and size. All wood materials shall be free of decay, with the bark removed. Fence samples must be approved by homeowner and Engineer prior to installation.

1. Fencing, rail boards and structural posts
Sound knots shall be trimmed flush with the surface as to not affect overall strength; loose knots will not be permitted. Knots shall not measure greater than 2 inches at their largest dimension. Ensure that grain distortion caused by knot clusters is no greater than 2½ inches. The surface area of any individual face shall not be covered by more than 10% knots.

Fencing, rails and structural posts shall be free of splits and shakes. Fencing, rails and structural posts that contain checks that may cause splitting will not be permitted for use. Wane shall not occur in excess of ¼ inch on any surface. Twist in excess of ¾ inch from plane will not be permitted.

Cut all lumber to the sizes shown on the plans and field treat as specified by subsection 912.03 of the Standard Specifications for Construction.

2. Fasteners
All fasteners shall meet the requirements of Section 912.10.C of the *Standard Specifications for Construction*. Fasteners shall be installed flush with the outside surface of the attached item.

3. Hardware
All steel hardware must be galvanized according Section 908.11 of the *Standard Specifications for Construction*.

CONSTRUCTION

The Contractor shall inform the property owner/resident a minimum of one week in advance of construction of the wood fence. The Contractor shall perform such clearing and grubbing as necessary to construct the fence to the required alignment and grade as shown on the plans or as directed by the Engineer. Construct the fence to follow the contour of the ground. When the ground contour changes abruptly, use longer posts to maintain consistent grade. The fence shall be a minimum of 7 feet higher than the proposed back of walk. The top of fence shall be horizontal with "steps" made for adjustment of height. The "steps' shall be a minimum of a full panel width apart. Two (2) weeks prior to installation the Contractor is to submit an elevation view of the proposed fencing plan for review with the property owner and Engineer.

At any locations where breaks in a run of fencing are required, appropriate adjustments in fencing alignment and/or post spacing shall be made to accommodate the condition(s) encountered. The Contractor shall receive no additional compensation for such accommodations.

MEASUREMENT AND PAYMENT

The completed work shall be paid for at the contract unit price for the following contract items (pay items):

PAY ITEM	**PAY UNIT**
Wood Privacy Fence	Foot

Wood Privacy Fence includes all labor, equipment and materials required to complete the work as described above and in accordance with the appropriate detail(s) including but not limited to posts, post assemblies, fasteners, boards, preservation treatment, foundation materials, and clearing and grubbing. Wood Privacy Fence shall be measured lineally along the center of the face of the bottom most rail board from the outside of end post to the outside end post for each continuous run of fence, deductions in measurement will be made for any gaps within a fence run. Restoration shall be paid for separately.

DETAILED SPECIFICATION
FOR
ITEM # 253 – WOOD PICKET FENCE

DESCRIPTION

This work consists of furnishing all labor, equipment and materials required to complete the construction of the wood picket fence at the location shown on the plans according to the details and in accordance Section 808 and 912 of the *2012 of the Michigan Department of Transportation Standard Specifications for Construction*, except as provided herein.

The Contractor shall visit the site to become familiar with the type of existing fence to match.

MATERIALS

Fence shall match the existing in look and material however, supply materials in accordance with Section 912.09 of the *Standard Specifications for Construction*, as applicable, with the following additions and exceptions. Pressure treat with Ammoniacal Copper Quat (ACQ) or Copper Azole (CA) preservative as specified in subsection 912.10 of the Standard Specifications for Construction. All wood materials shall be uniform in straightness and size. All wood materials shall be free of decay, with the bark removed. Fence samples must be approved by homeowner and Engineer prior to installation.

1. Fencing, rail boards and structural posts
Sound knots shall be trimmed flush with the surface as to not affect overall strength; loose knots will not be permitted. Knots shall not measure greater than 2 inches at their largest dimension. Ensure that grain distortion caused by knot clusters is no greater than 2½ inches. The surface area of any individual face shall not be covered by more than 10% knots.

Fencing, rails and structural posts shall be free of splits and shakes. Fencing, rails and structural posts that contain checks that may cause splitting will not be permitted for use. Wane shall not occur in excess of ¼ inch on any surface. Twist in excess of ¾ inch from plane will not be permitted.

Cut all lumber to the sizes shown on the plans and field treat as specified by subsection 912.03 of the Standard Specifications for Construction.

2. Fasteners
All fasteners shall meet the requirements of Section 912.10.C of the *Standard Specifications for Construction*. Fasteners shall be installed flush with the outside surface of the attached item.

3. Hardware
All steel hardware must be galvanized according Section 908.11 of the *Standard Specifications for Construction*.

4. Paint
White paint for the fence shall be paint appropriate for outdoor wood applications. Color and type shall be approved by the Engineer prior to installation.

CONSTRUCTION

The Contractor shall inform the property owner/resident a minimum of one week in advance of construction of the wood fence. The Contractor shall perform such clearing and grubbing as necessary to construct the fence to the required alignment and grade as shown on the plans or as directed by the Engineer. Construct the fence to follow the contour of the ground. When the ground contour changes abruptly, use longer posts to maintain consistent grade. The fence height should generally be the same as existing. Two (2) weeks prior to installation the Contractor is to submit an elevation view of the proposed fencing plan for review with the property owner and Engineer.

At any locations where breaks in a run of fencing are required, appropriate adjustments in fencing alignment and/or post spacing shall be made to accommodate the condition(s) encountered. The Contractor shall receive no additional

compensation for such accommodations.

MEASUREMENT AND PAYMENT

The completed work shall be paid for at the contract unit price for the following contract items (pay items):

PAY ITEM	PAY UNIT
Wood Picket Fence	Foot

Wood Picket Fence includes all labor, equipment and materials required to complete the work as described above and in accordance with the appropriate detail(s) including but not limited to posts, post assemblies, fasteners, boards, preservation treatment, foundation materials, and clearing and grubbing. Wood Picket Fence shall be measured lineally along the center of the face of the bottom most rail board from the outside of end post to the outside end post for each continuous run of fence, deductions in measurement will be made for any gaps within a fence run. Restoration shall be paid for separately.

DETAILED SPECIFICATION
FOR
ITEM #254 – PLASTIC DRUM - LIGHTED – FURNISH & OPERATE
ITEM #255 – BARRICADE TYPE III - LIGHTED - FURNISH AND OPERATE
ITEM #256 – TEMPORARY SIGN, TYPE B
ITEM #257 – TEMPORARY SIGN, TYPE B, SPECIAL
ITEM #258 – CHANNELIZING DEVICE, 42 INCH, FURNISH AND OPERATE
ITEM #259 – SIGN, PORTABLE, CHANGEABLE MESSAGE, FURN
ITEM #260 – SIGN, PORTABLE, CHANGEABLE MESSAGE, OPER

DESCRIPTION

This work shall consist of protecting and maintaining vehicular and pedestrian traffic, in accordance with Sections 103.05, 103.06, 812, and 922, of the 2012 MDOT Standard Specifications for Construction; Part 6 of the Michigan Manual of Uniform Traffic Control Devices, Latest Revised Edition (MMUTCD); and the City Standard Specifications, except as modified herein.

MATERIALS, EQUIPMENT, AND CONSTRUCTION METHODS

General

Materials and equipment shall meet the requirements specified in the above-designated sections of the MDOT Standard Specifications.

The Contractor shall maintain traffic such that no vehicle shall be required to drive into active work areas. Patch areas which extend more than halfway across the roadway shall be removed and replaced so as to provide a minimum of half the pavement width at all times for maintaining traffic.

The Contractor shall maintain pedestrian traffic at all times. For maintaining normal pedestrian traffic while performing sidewalk and driveway repair, Type I barricades shall be placed by the Contractor, as directed by the Engineer. "Sidewalk Closed" and/or "Cross Here" signs shall be placed, by the Contractor, when directed by the Engineer.

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 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. Existing City owned signs which are damaged by the Contractor during the work will be repaired by the City at the Contractor's expense.

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

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.

Lighted Plastic Drums; III Barricades; Type B Temporary Signs

The Contractor shall furnish and operate these items as directed by the Engineer.

Type III Barricades shall have standard orange-and-white stripes on both sides of the barricade.

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

"Construction Ahead" warning signs shall be placed, as indicated on the Plans, or as directed by the Engineer, prior to the start of work, regardless of the nature, magnitude or duration of the work.

No-Parking Signs and Posts

Prior to the commencement of any construction activity, the Contractor shall place No-Parking signs as directed by the Engineer. The Contractor shall obtain a permit for "Temporary Permission of Reserve Parking Lane for Work Related Purposes" from the City of Ann Arbor Project Management Services Unit. This permit shall be obtained a minimum of 5 days prior to the posting of No-Parking signs.

The City will furnish No-Parking signs to the Contractor at no cost. The Contractor shall furnish the signposts and shall securely bolt the signs to the signposts as directed by the Engineer. The Contractor shall install the signposts at least 2-feet deep into the ground, and there shall be a minimum 6-feet and maximum 7-feet clearance maintained between the bottom of the sign and the ground. The signs shall be placed at 75-foot intervals (or as necessary) to eliminate parking in the construction area.

The installation of No-Parking signs shall be in accordance with the permit. No-Parking signs shall be installed by the Contractor, as directed by the Engineer, **at least 48 hours prior to the proposed start-of-work/enforcement date**.

No-Parking signs shall be returned to the City at the completion of the work. The cost of unreturned signs will be back charged to the Contractor.

No-Parking signs shall be covered by the Contractor, thereby allowing on-street parking, until between 48 and 36 hours prior to the start of the work. No-Parking signs shall be covered by the Contractor whenever there is no work being performed for a period of time longer than 72 hours.

MEASUREMENT AND PAYMENT

General

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 City.

Costs for transporting barricades and other traffic control devices shall be included in the bid prices for the individual items of work.

Barricade Type III - Lighted - Furnish and Operate

Payment for furnishing and operating lighted Type III barricades shall be for the maximum quantity in-place at any one time during the work of the entire project (all streets).

Temporary Sign - Type B

Payment for Type B signs shall be for the maximum quantity used on each street.

Plastic Drum - Lighted – Furnish and Operate

There will be a one-time payment for each street for the maximum number of lighted drums in-place (operated) at any one time, as directed by the Engineer.

Portable Changeable Message Signs

Measurement for furnishing and operating Portable Changeable Message Signs will be for the maximum quantity in-place

at any one time during the work of the entire project (all streets).

The completed work as measured for these items of work will be paid for at the Contract Unit Price for the following Contract (Pay) Items:

PAY ITEM	**PAY UNIT**
Plastic Drum - Lighted - Furnish& Operate	Each
Barricade Type III - Lighted - Furnish and Operate	Each
Temporary Sign, Type B	Square Foot
Temporary Sign, Type B, Special	Square Foot
Channelizing Device, 42 inch, Furinsh and Operate	Each
Sign, Portable, Changeable Message, Furn	Each
Sign, Portable, Changeable Message, Oper	Each

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.

DETAILED SPECIFICATION
FOR
ITEM #261-267 – MISCELLANEOUS TRAFFIC SIGNAL AND SIGN REMOVALS

DESCRIPTION

This work shall consist of removing existing mast arm, mast arm std, pedestal, pedestal foundations, case sign and traffic signs as shown on the plans or as directed by the Engineer. This work shall be completed in accordance with the drawings and detailed specifications of this contract, the MDOT 2012 Standard Specifications for Construction, and as herein specified, including any detailed specifications

MATERIALS, EQUIPMENT, AND CONSTRUCTION METHODS

All mast arm poles, signs, pedestals, traffic signs and foundations shall be removed in accordance with Sections 810 and 820 of the MDOT 2012 Standard Specifications for Construction, as shown on the plans or as directed by the Engineer.

All removed mast arm poles, traffic signs and pedestal materials shall be turned over to the City of Ann Arbor to salvaged as directed by the Engineer.

MEASUREMENT AND PAYMENT

The completed work as measured for these items of work will be paid for at the Contract Unit Price for the following Contract (Pay) Items:

PAY ITEM	PAY UNIT
Mast Arm, Rem	Each
Mast Arm Std, Rem	Each
Fdn, Rem	Each
Pedestal, Rem	Each
Pedestal Fdn, Rem	Each
Case Sign, Rem	Each
Sign, Type III, Rem	Each

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.

DETAILED SPECIFICATION
FOR
ITEM #268 – MAST ARM POLE, CAT III, MOD
ITEM #269 – MAST ARM, 20 FOOT, CAT III, MOD

DESCRIPTION

This work shall consist of purchasing the mast arm poles and 20 foot mast arms for installation by the City of Ann Arbor as shown on the plans and as directed by the Engineer. The materials shall be in accordance with this specification and the 2012 Michigan Department of Transportation (MDOT) Standard Specification for Construction, as applicable.

SUBMITTALS

One (1) copy of a detailed drawing and material list of the mast arm pole and mast arm assemblies shall be submitted.

MATERIALS AND EQUIPMENT

The pole shaft shall be a one piece, tapered steel tube, having a circular cross section. The pole shall be cylindrical in cross-section having a uniform taper of approximately 0.14 inches of diameter changer per foot of length. Multi-sided poles will not be accepted.

Height of pole shall be 29 feet for Type II.

Base plate shall be constructed for four (4) anchor bolts. Anchor bolts shall be 1-¾ inches in diameter and 90 inches in length, which includes a 6-inch bend.

Street light bracket arms shall have a 6-foot nominal length and be mountable on the pole shaft such that an approximate 30-foot above ground mounting height is provided.

The mast arms shall be mounted 19 feet from the bottom of the base plate. The mast arms shall be attached to the pole by four (4) bolts. The bolts shall fit into a plate welded to the upright pole and bolted into place. The mast arm poles shall be provided with an 18-inch bolt circle.

Poles shall conform to ASTM A595 Grade A with minimum yield strength of 55 KSI or ASTM A572 Grade 55. All poles, bracket arm pole cap and other attachment material shall be hot dip galvanized in accordance with ASTM A123 or ASTM A153. The pole shaft shall be one piece, cylindrical in cross-section, having a uniform taper of approximately 0.14 inches of diameter change per foot of length. There shall be no more than one (1) full-length longitudinal weld on the pole shaft and mast arms.

The poles and mast arms shall be constructed of a minimum 0-gauge material. Pole tubes shall be provided with a 14-inch base diameter. The bottom of the pole shaft shall have a flat steel base plate 1¾ inches thick, in accordance with ASTM A-572 Grade 42. The pole and mast arm shall have a removable end cap, which shall be attached with stainless steel or galvanized setscrews.

The mast arm shall be a tapered steel tube having a circular cross-section conforming to ASTM A595 Grade A with a minimum yield strength of 55,000 ksi after fabrication and hot dip galvanized in accordance with ASTM A123. The mast arm shall be one-piece construction, on arms up to 40 feet, with no more than one (1) full-length longitudinal weld having approximately 0.14 inches of diameter change per foot of length.

All longitudinal welds shall have a minimum 60% penetration. Circumferential welds shall have 100% penetration. There shall be no more than one (1) circumferential weld per pole and mast arm. Tube butt welds shall not be permitted. All welding shall conform to the latest addition of the ANSI/AWS D1.1 Structural Welding Code.

A two-piece full circle bolt cover shall be provided for the anchor bolts. The cover shall fit over the anchor bolt nuts and attach to each other with 6-8 hex head stainless steel bolts.

Street light bracket arms shall be constructed of 2 inch, schedule 40, galvanized steel pipe or of an equal or equivalent material recommended by the manufacturer as meeting the load factors and performance requirements.

There shall be an identification tag mounted on the pole and mast arm. The tag shall indicate the name of the pole manufacturer, design number, pole or arm length and month and year of manufacturer. The identification items shall be stamped into the tags with 3/8-inch characters.

All poles shall be provided with a 24-inch hand hole rim with removable cover on one side. Provision shall be provided for installation of a 24-point terminal block. Hand holes are to be located 18 inches from the bottom of the shaft. The cover shall be fastened with vandal resistant screws. There shall be a grounding lug provided in the bottom of the pole. A hand hole with a nominal opening of 4" x 6" shall be provided at the top of the pole opposite the mast arm pole plate for all Type II poles.

Type II poles shall be provided with 6-foot clamp on street light bracket arm(s). The street light bracket arm shall be constructed to accept a 2-inch slip-fitted 250-watt high-pressure sodium luminaire. Any other method of attaching and securing the bracket arm to the pole shaft must have the prior written approval of the City of Ann Arbor.

Four (4) high strength anchor bolts shall be furnished with each standard. The anchor bolts shall be one and three quarters (1 ¾) inches in diameter and 90 inches long. This length includes a six (6) inch "L" bend at the lower end. The anchor bolts shall be fabricated from high strength steel having minimum yield strength of 55,000 p.s.i. and a minimum ultimate strength of 85,000 p.s.i. and at least 12% elongation in a 2-inch gauge length. Each bolt shall be threaded for a minimum length of 9 inches at the upper end and shall be hot dip galvanized for a minimum distance of 12 inches after threading. Each anchor bolt shall be furnished with two flat washers and two hex nuts meeting the requirements of ASTM A-563 Grade D or ASTM A194 Grade 2H carbon steel. Nuts and washers shall be hot dip galvanized. Nuts shall be re-taped after galvanizing in accordance with ASTM A-563.

All mast arm assemblies and poles shall be designed in accordance with the latest edition of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. The poles and arms shall be designed to Fatigue Category III for galloping, truck gusts (at 65mph velocity) and 90 mph wind speed with a 50-year design life.

Street light bracket arms shall be designed per 7.1 to support a luminaire with a projected area of 3.3 square feet and weight of 55 pounds and a maximum length of 10 feet.

Each steel pole is to be tested as necessary and inspected for conformance with these specifications before shipment. Failure of any part of the pole assembly to meet the requirements of these specifications shall be cause for rejection. The City of Ann Arbor shall have the right to cull out and reject poles and/or parts for non-conformance with the specification. The Contractor shall replace any rejects at his own expense, including all handling and transportation charges.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

Pay Item	**Pay Unit**
Mast Arm Pole, Cat III, Mod……..	...…Each
Mast Arm, 20 Foot, Cat III, Mod……..	……...…Each

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.

DETAILED SPECIFICATION
FOR
ITEM #270 – MAST ARM POLE, FDN
ITEM #271 – PEDESTAL, FDN

DESCRIPTION

This work shall consist of installing new pedestal and mast arm pole foundations and grounding and grounding rods. This work shall be completed in accordance with the drawings and detailed specifications of this contract, the MDOT 2012 Standard Specifications for Construction, and as herein specified, including any detailed specifications

MATERIALS, EQUIPMENT, AND CONSTRUCTION METHODS

Foundations shall be constructed and placed in accordance with Section 206, 701, 810 and 820 of the MDOT 2012 Standard Specifications for Construction. All foundations shall be installed with Two (2), 3" conduits for future use.

MEASUREMENT AND PAYMENT

The completed work as measured for these items of work will be paid for at the Contract Unit Price for the following Contract (Pay) Items:

PAY ITEM	PAY UNIT
Pedestal, Fdn	Each
Mst Arm Pole, Fdn	Each

The unit price for Pedestal, Fdn and Mast Arm Pole, Fdn includes the cost of all labor, equipment and materials required to complete the work as described above, including all excavation, concrete, grounding and ground rods, and backfill around new foundation.

DETAILED SPECIFICATION
FOR
ITEM #272 – PEDESTAL, ALUM, SALV

DESCRIPTION

This work shall be completed in accordance with the drawings and detailed specifications of this contract, the MDOT 2012 Standard Specifications for Construction, and as herein specified, including any detailed specifications

MATERIALS, EQUIPMENT, AND CONSTRUCTION METHODS

Materials shall meet the requirements as described in the MDOT 2012 Standard Specifications for Construction

MEASUREMENT AND PAYMENT

The completed work as measured for these items of work will be paid for at the Contract Unit Price for the following Contract (Pay) Items:

PAY ITEM	PAY UNIT
Pedestal, Alum, Salv	Each

The unit price for Pedestal, Alum, Salv includes the cost of all labor, equipment and materials required to complete the work as described in this detailed specification.

DETAILED SPECIFICATION
FOR
ITEM #273 – CONDUIT, DB, 2, 3 INCH

DESCRIPTION

This work includes the labor, material and equipment required to furnish and install end sections as shown on the plans.

This work shall be completed in accordance with the drawings and detailed specifications of this contract, the MDOT 2012 Standard Specifications for Construction, and as herein specified, including any detailed specifications

MATERIALS

Materials shall meet the requirements as described in the MDOT 2012 Standard Specifications for Construction.

CONSTRUCTION METHODS

These items shall be constructed as required in the MDOT 2012 Standard Specifications for Construction.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
Conduit, DB, 2, 3 inch	Foot

Conduit, DB, 2, 3 inch shall be measured in place by the foot and include all labor, materials, and equipment necessary to perform the work as specified and as detailed on the plans.

DETAILED SPECIFICATION
FOR
ITEM #274 - RIPRAP

DESCRIPTION

This work consists of furnishing and placing riprap as detailed in the plans or as directed by the Engineer. The work shall be completed in accordance with the City Standard Specifications and Section 813 of the Michigan Department of Transportation 2012 Standard Specifications for Construction except as modified herein.

MATERIALS

The riprap shall be an Engineer-approved, consistent, gray-colored, natural stone, or crushed limestone. The Contractor shall provide a sample of the stone to the Engineer for review. Broken concrete is not acceptable.

CONSTRUCTION METHODS

Place riprap in accordance with subsection 813.03.E to the elevations, thickness and lateral limits shown on the plans. Clear brush, trees, stumps and debris from areas to be protected by riprap. Shape all grades to the required cross section, including excavation for toe and header plan details. Place Geotextile liner, as shown on the plans, on the prepared grades. Ensure that the riprap installation does not damage the geotextile liner. The Contractor is soley responsible for determining and utilizing suitable methods of preparing the area for riprap placement and placing the riprap such that the material is placed in accordance with the requirements of the plans and specifications. The use of hand methods to prepare areas for riprap placement and placing riprap may be necessary and/or required. Repair any damage to the existing structure resulting from the placement of riprap under structures as directed by the Engineer and at no cost additional to the City.

MEASUREMENT AND PAYMENT

The completed work shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
Riprap	Square Yard

Riprap shall be measured in place by the square yard and include all labor, materials, and equipment necessary to perform the work as specified.

DETAILED SPECIFICATION
FOR
ITEM #275 – UNDERDRAIN, SUBBASE, 6 INCH, SPECIAL

DESCRIPTION

The work shall include installing 6-inch geotextile-wrapped perforated or slotted underdrain in an 18-inch wide trench, using 2NS sand for bedding and backfill, compacted to 95% of its maximum unit weight

MATERIALS

The materials shall meet the requirements specified in Section 404 of the 2012 MDOT 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 weight 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 a 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.

CONSTRUCTION

Geotextile-wrapped underdrain for subbase 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.

MEASUREMENT AND PAYMENT

The completed work shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
Underdrain, Subbase, 6 inch, Special	Foot

The unit price for Underdrain, Subbase, 6 inch, Special 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.

DETAILED SPECIFICATION
FOR
ITEM #276 – CULVERT, CL IV RCP, 24 INCH

DESCRIPTION

This work includes the labor, material and equipment required to furnish and install 24 inch reinforced concrete culvert as shown on the plans.

This work shall be completed in accordance with the drawings and detailed specifications of this contract, the MDOT 2012 Standard Specifications for Construction, and as herein specified, including any detailed specifications

MATERIALS

Materials shall meet the requirements as described in the MDOT 2012 Standard Specifications for Construction.

CONSTRUCTION METHODS

These items shall be constructed as required in the MDOT 2012 Standard Specifications for Construction.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
Culvert, Cl IV RCP, 24 inch	Foot

Culvert, Cl IV RCP, 24 inch shall be measured in place by the foot and include all labor, materials, and equipment necessary to perform the work as specified and as detailed on the plans.

DETAILED SPECIFICATION
FOR
ITEM #277 – END SECTION, 54 INCH
ITEM #278 – END SECTION, 24 INCH
ITEM #278A – END SECTION, 30 INCH

DESCRIPTION

This work includes the labor, material and equipment required to furnish and install end sections as shown on the plans.

This work shall be completed in accordance with the drawings and detailed specifications of this contract, the MDOT 2012 Standard Specifications for Construction, and as herein specified, including any detailed specifications

MATERIALS

Materials shall meet the requirements as described in the MDOT 2012 Standard Specifications for Construction.

CONSTRUCTION METHODS

These items shall be constructed as required in the MDOT 2012 Standard Specifications for Construction.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
End Section, 54 inch	Each
End Section, 24 inch	Each
End Section, 30 inch	Each

Each end section pay item shall include all labor, materials, and equipment necessary to perform the work as specified and as detailed on the plans.

DETAILED SPECIFICATION
FOR
ITEM #282 - 30 INCH SLIP-LINING PIPE

DESCRIPTION

This work shall include complete installation of the 30 inch slip-lining pipe in the existing stone arch with 36" CMP and RCP extended culvert, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. All work shall comply with the City of Ann Arbor General Conditions and Standard Specifications for materials and construction, unless specified or modified by this Detailed Specification.

DESIGN AND PERFORMANCE REQUIREMENTS

The existing culvert under Geddes Avenue requiring rehabilitation by slip-lining consists of the original stone and mortar arch (approximately 20 feet in length, 36" wide by 48" tall), with 36" CMP extensions on both ends, and RCP extensions off the CMP. Within the CMP section, an existing intermediate concrete block manhole is present. The north end of the culvert is open ended, terminating at a shallow depression with riprap and other concrete construction debris. The south end of the culvert terminates in a concrete block inlet structure.

Maintain flow in the existing storm sewer and culvert systems during construction. Bypass pumping may be necessary, and shall be performed at no additional cost to the Owner.

SUBMITTALS

Submit Shop Drawings outlining installation steps, equipment to be used, maximum jacking forces, and schedule for completion.

Submit pipe manufacturer's data sheets, handling and storage requirements, and installation instructions.

Submit certifications that all materials are new and meet or exceed specification requirements.

MATERIALS

Slip-lining pipe shall consist of dual-wall PVC corrugated sewer pipe with a smooth interior, designed for slip-lining applications, with elastomeric gaskets.

Pipe shall have a minimum pipe stiffness of 46 psi for the diameter specified when tested in accordance with ASTM D2412.

Pipe shall be field connected with molded or fabricated PVC couplings. Couplings shall not increase the outside diameter or reduce the inside diameter when assembled. The joint shall utilize elastomeric sealing gaskets as the sole means to maintain joint water tightness and shall meet the requirements of ASTM D3212. Joints shall remain watertight at 5 degree angularity.

Pipe and fittings shall be made of PVC compound having a minimum cell classification of 12454 in accordance with ASTM D1784. Additional fillers that lower the tensile strength of the compound and change the minimum cell classification shall not be allowed.

Elastomeric gaskets shall meet the requirements of ASTM F477 and be suitable for the service intended.

CONSTRUCTION METHOD

Thoroughly clean existing culvert and remove any accumulated sediment or debris. Properly dispose of all materials removed from the culvert.

Confirm limiting dimensions of culvert prior ordering slip-lining pipe materials to ensure the pipe size that is proposed

can be installed. Immediately notify the Engineer of measurements taken, and allow seven days for the Engineer to modify the design if the proposed pipe size cannot be installed. If the diameter of the slip-lining pipe is required to be reduced in order to install, the smaller diameter pipe shall be ordered and installed at no additional cost to the Owner.

Install slip-lining pipe in strict accordance with manufacturer's requirements and instructions. Provide blocking or other support to the pipe during installation so that final pipe is free of sags, dips or depressions.

Grout the annular space between slip-lining pipe and host pipe using a staged grouting process. The slip-lining pipe manufacturer's instructions for grouting must be strictly adhered to. The first stage of grouting shall create a cradle supporting the full length of the liner pipe. Allow at least 24 hours of cure time for the grout cradle before disturbing the pipe and creating the manhole opening.

After the grout cradle has cured sufficiently, plug the annular space between the slip-lining pipe and host pipe where it enters and leaves the existing intermediate manhole. Place Class C concrete, meeting City of Ann Arbor Materials Standards, to create new flow channel up to the springline of the slip-lining pipe. After the concrete has cured sufficiently, neatly cut and remove the top half of the slip-lining pipe.

Complete grouting of the annular space between the liner pipe and the host pipe, ensuring grout is not intruding into the intermediate manhole. The annular space shall be uniformly and completely filled on both sides of the liner simultaneously to prevent unbalanced or uneven grouting that changes the pipe shape, line or grade.

Perform an internal sewer video inspection upon completion of the work, and provide two copies of the inspection on DVD.

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:

PAY ITEM	PAY UNIT
30 inch Slip-Lining Pipe	Ft

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. The Engineer will measure this item of work as the distance from the inside face of the existing inlet structure to the point where the lining pipe is terminated and the new end section installed.

DETAILED SPECIFICATION
FOR
ITEM #283 - CIP CONC MANHOLE BASE

DESCRIPTION

This work shall include installation of a cast-in-place concrete manhole base, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. All work shall comply with the City of Ann Arbor General Conditions and Standard Specifications for materials and construction, unless specified or modified by this Detailed Specification.

DESIGN AND PERFORMANCE REQUIREMENTS

Perform the structural design of the CIP Conc Manhole Base and provide the material and labor as determined by the structural design, but no less than the minimum requirements specified in the detail included with the Plans.

The Engineer may order additional reinforcement, bracing, or strength for adequacy of the structure. These additions shall not be the cause for a claim for additional cost to the Contract. Neither shall they relieve the Contractor of their responsibility for the sufficiency of strength of the system.

Structure shall be designed to support HS-20 loadings with zero cover at a minimum.

SUBMITTALS

Submit Shop Drawings that include all dimensions, reinforcement sizes and locations, material strengths, and noting any work to be done by others at point of installation.

Submit structural calculations by a Structural Engineer registered in the State of Michigan to Owner's Engineer for review upon request. Engineer review shall not relieve the Contractor of the design responsibility.

Submit certifications that all materials are new and meet or exceed specification requirements.

MATERIALS

Furnish concrete for structures meeting City of Ann Arbor Class A requirements, with a 28-day compressive strength of 3,500 psi. Concrete for structures shall have 0-3" slump and a water to cement ratio not exceeded 0.45. If pumping concrete mix, approved concrete admixtures may be utilized to improve workability.

Reinforcing steel and other materials used for the structure shall conform to the City of Ann Arbor Materials Standards.

Manhole castings shall be heavy-duty, traffic-rated, conforming to the City of Ann Arbor Standard Specifications.

CONSTRUCTION METHOD

Provide the CIP Conc Manhole Base structure meeting all City of Ann Arbor Specifications, with additional work and materials as described in this Detailed Specification and as shown in the Detail included on the Plans.

CIP Conc Manhole Base shall bear on undisturbed earth with a bearing capacity of at least 2,500 pounds per square foot or engineered fill. Suitable engineered fill consists of Class II sand or dense graded aggregate material compacted to at least 95% of the maximum unit weight determined by ASTM D1557.

Construct CIP Conc Manhole Base around existing 54" dia. RCP storm sewer. After the concrete in the manhole base has achieved 80% of its 28-day compressive strength, backfilling can commence and the top half of the sewer can be carefully removed from within the structure. The bottom half may remain and serve as the flow channel through the structure.

The manhole riser shall not be installed until the concrete in the structure has achieved 80% of the 28-day compressive strength. The structure may not be subjected to any traffic loading until the full 28-day compressive strength has been reached.

Support pipes entering or leaving the structure by placing Class C concrete fill under pipe from springline to undisturbed soil; width to be outside diameter of the pipe plus twelve inches.

Install 16-hole, perforated frame and cover, as described in standard specifications..

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:

PAY ITEM	PAY UNIT
CIP Conc Manhole Base	Ea

The unit price for this 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.

DETAILED SPECIFICATION
FOR
ITEM #284 – HYDRODYNAMIC SEPARATOR

DESCRIPTION

This work shall consist of installing storm water hydrodynamic separator units utilizing swirl concentrator and flow control technologies (vortex separation) for the removal of storm water pollutants in a flow through design method. The Contractor shall furnish all labor, equipment and materials necessary to install the storm water treatment device(s) (SWTD) and appurtenances specified in the Plans and these specifications.

Due to existing right-of-way, utility and other project constraints, the Engineer has determined that the SWTD shall be an inline CDS unit, as manufactured by Contech Engineered Solutions, or approved equal. Any proposed substitution shall meet all of the design criteria and be constructible within the limits indicated on the Plans. The decision of what is considered to be an approved equal will be made solely by the Owner. The proposal of any substitution is at the Contractor's risk, and rejection of a proposed substitution shall not be cause for claim of extra compensation by the Contractor.

No filters, bags or disposable/moving parts will be allowed as part of the filtration unit. Maintenance requirements for the units should be restricted to quarterly (seasonal) inspection and maintenance. Cleaning requirements should be such that they may be performed by vacuum truck or sump vac. These units shall be installed as shown on the plans or as configured according to reviewed and approved shop drawings submitted by the Contractor.

A. Removal Efficiencies

1. The SWTD shall be capable of achieving an 80 percent average annual reduction in the total suspended solid load.

2. The SWTD shall be capable of capturing and retaining 100 percent of pollutants greater than or equal to 2.4 millimeters (mm) regardless of the pollutant's specific gravity (i.e.: floatable and neutrally buoyant materials) for flows up to the device's rated-treatment capacity. The SWTD shall be designed to retain all previously captured pollutants addressed by this subsection under all flow conditions.

3. The SWTD shall be capable of capturing and retaining total petroleum hydrocarbons. The SWTD shall be capable of achieving a removal efficiency of 92 and 78 percent when the device is operating at 25 and 50 percent of its rated-treatment capacity. These removal efficiencies shall be based on independent third-party research for influent oil concentrations representative of storm water runoff (20 ± 5 mg/L). The SWTD shall be greater than 99 percent effective in controlling dry-weather accidental oil spills.

4. The SWTD shall be capable of utilizing sorbent media to enhance removal and retention of petroleum based pollutants.

B. Hydraulic Capacity

1. The SWTD shall provide a rated-treatment capacity, which is consistent with governing water treatment regulations. At its rated-treatment capacity, the device shall be capable of achieving greater than 65 percent removal of particles typically found in roadside sediments. This removal efficiency shall be supported by independent third-party research utilizing samples consistent with the NURP gradation or finer.
2. The SWTD shall maintain the peak conveyance capacity of the drainage network; defined as follows:
    a. Tributary Drainage Area = 21 acres
    b. Average Percent Impervious = 30%
    c. Estimated Design Flow for the 10-year Storm = 26 cfs
    d. Estimated Design Flow for the 1-year Storm = 10 cfs

C. Storage Capacity

1. The SWTD shall be designed with a sump chamber for the storage of captured sediments and other negatively buoyant pollutants in between maintenance cycles. The minimum storage capacity provided by the sump chamber shall be in accordance with the volume listed in Table 1. The boundaries of the sump chamber shall be limited to that which do not degrade the SWTD's treatment efficiency as captured pollutants accumulate. The sump chamber shall be separate from the treatment processing portion(s) of the SWTD to minimize the probability of fine particle re-suspension. In order to not restrict the Owner's ability to maintain the SWTD, the minimum dimension providing access from the ground surface to the sump chamber shall be 20 inches in diameter.

2. The SWTD shall be designed to capture and retain Total Petroleum Hydrocarbons generated by wet-weather flow and dry-weather gross spills. The minimum storage capacity provided by the SWTD shall be in accordance with the volume listed in Table 1 below:

TABLE 1

CDS Model	Treatment Capacity (cfs)/(L/s)	Minimum Sump Storage Capacity (yd3)/(m3)	Minimum Oil Storage Capacity (gal)/(L)
CDS4030-D	4.5 (127.4)	4.3 (3.3)	328 (1241)
CDS4040-D	6.0 (169.9)	4.3 (3.3)	396 (1499)
CDS4045-D	7.5 (212.4)	4.3 (3.3)	430 (1627)
CDS5640-D	9.0 (254.9)	5.6 (4.3)	490 (1854)
CDS5653-D	14.0 (396.5)	5.6 (4.3)	599 (2267)
CDS5668-D	19.0 (538.1)	5.6 (4.3)	733 (2774)
CDS5678-D	25.0 (708.0)	5.6 (4.3)	814 (3081)

D. Alternate Treatment Technologies and Sizing Criteria

The sizing criteria for treatment systems must conform to the recommended loading rate and 3rd party testing data requirements as mentioned below:

1. CDS Screening Systems – designed for full treatment of the runoff rate at a loading rate not to exceed the critical flow in the inlet, in order to achieve 80% TSS removal efficiency. (80% TSS removal based on a average particles size of 63 micron)
2. Vortex separation systems – designed for full treatment of the runoff rate at a loading rate not to exceeding 24 gpm/ft2, in order to achieve 80% TSS removal efficiency. The hydraulic capacity should not exceed a loading rate of 100 gpm/ft2 to prevent scouring of previously captured particles. 80% TSS removal based on a average particles size of 63 micron)
3. Gravity systems – designed for full treatment of the runoff rate at a loading rate not to exceeding 10 gpm/ft2, in order to achieve 80% TSS removal efficiency. The gravity units will not exceed luminar flow condition parameters in the treatment unit but will provide a bypass system to prevent turbulence from accruing in the system. (See "Stokes Law" for gravity settling requirements of particles. 80% TSS removal based on a average particles size of 63 micron)

Additionally, the performance of the unit must be evaluated by a third party and verified in a program that allows a more-or-less direct comparison to other technologies. Performance should be third party verified, and removal efficiencies across the spectrum of particle sizes reported, at a range of hydraulic loading rates varying over a range of at least 25 to 125% of the manufacturer's advertised 'water treatment' loading rate.

MATERIALS

The manufacturer of the SWTD shall be one that is regularly engaged in the engineering design and production of systems deployed for the treatment of storm water runoff for at least five (5) years and which have a history of successful production, acceptable to the Engineer. In accordance with the Drawings, the SWTD(s) shall be a CDS® device manufactured by:

CONTECH Stormwater Solutions 9025 Centre Pointe Dr., Suite 400 West Chester, OH 45069 (866) 551-8325 (toll free)

A. Precast Concrete Components
Precast concrete components shall conform to applicable sections of ASTM C 478, ASTM C 857 and ASTM C 858 and the following:

1. Concrete shall achieve a minimum 28-day compressive strength of 4,000 pounds per square-inch (psi);
2. The precast concrete sections shall be designed to withstand lateral earth and AASHTO H-20 traffic loads;
3. Cement shall be Type III Portland Cement conforming to ASTM C 150;
4. Aggregates shall conform to ASTM C 33;
5. Reinforcing steel shall be deformed billet-steel bars, welded steel wire or deformed welded steel wire conforming to ASTM A 615, A 185 or A 497, respectively*;*
6. Joints shall be sealed with preformed joint sealing compound conforming to ASTM C 990 and
7. Shipping of components shall not be initiated until a minimum compressive strength of 4,000 psi is attained or five (5) calendar days after fabrication has expired, whichever occurs first.

B. Internal Components and Appurtenances
Internal Components and appurtenances shall conform to the following:

1. Screen and support structure shall be manufactured of Type 316 and 316L stainless steel conforming to ASTM F 1267-01;
2. Hardware shall be manufactured of Type 316 stainless steel conforming to ASTM A 320;
3. Fiberglass components shall conform to the National Bureau of Standards PS-15 and coated with an isophalic polyester gelcoat and
4. Access system(s) conform to the following:
   a. Manhole castings shall be designed to withstand AASHTO H-20 loadings and manufactured of cast-iron conforming to ASTM A 48 Class 30.
   b. Hatch systems shall be designed to withstand AASHTO H-20 loadings. Hatch systems not subject to direct traffic shall be manufactured of Grade 5086 aluminum. Hatch systems subject to direct traffic loads shall be manufactured of steel conforming to ASTM A 36-93a, supplied with a hot-dip galvanized finish conforming to ASTM A 123 and access doors bolted to the frame.

Submittals

The Contractor shall prepare and submit shop drawings in accordance with the contract documents. The shop drawings shall detail horizontal and vertical dimensioning, reinforcement and joint type and locations.

The Contractor shall submit four (4) sets of shop drawings sealed by a Professional Engineer in the State of Michigan certifying the above requirements to the City of Ann Arbor and showing details and an operation & maintenance plan for the storm water treatment units. The submittal should also include laboratory test results for the proposed units and references for local projects where the units have been installed. These documents must be reviewed and approved prior to the start of construction.

CONSTRUCTION METHODS

Handling and Storage

1. The Contractor shall exercise care in the storage and handling of the SWTD components prior to and during installation. Any repair or replacement costs associated with events occurring after delivery is accepted and unloading has commenced shall be borne by the Contractor.

2. The work shall be completed by a licensed Contractor approved by the City of Ann Arbor.

3. The SWTD shall be installed in accordance with the manufacturer's recommendations and related sections of the contract documents. The manufacturer shall provide the Contractor installation instructions and offer on-site guidance during the important stages of the installation as identified by the manufacturer at no additional expense. A minimum of 72 hours notice shall be provided to the manufacturer prior to their performance of the services included under this subsection.

4. The Contractor shall fill all voids associated with lifting provisions provided by the manufacturer. These voids shall be filled with non-shrinking grout providing a finished surface consistent with adjacent surfaces. The Contractor shall trim all protruding lifting provisions flush with the adjacent concrete surface in a manner which leaves no sharp points or edges.

MEASUREMENT AND PAYMENT

The completed work will be paid for at the contract unit price for the following contract item (pay item).

Contract Item (Pay Item)	Pay Unit
Hydrodynamic Separator	Each

The unit price includes all labor, equipment, materials, and documents necessary to install the Storm Water Treatment Units. Bypass flow shall be accommodated internally and all costs for bypass flow shall be included in the unit price bid.

DETAILED SPECIFICATION
FOR
ITEM #285 - OUTLET CONTROL STRUCTURE

DESCRIPTION

This work shall include complete installation of the outlet control structure, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. All work shall comply with the City of Ann Arbor General Conditions and Standard Specifications for materials and construction, unless specified or modified by this Detailed Specification.

DESIGN AND PERFORMANCE REQUIREMENTS

Perform the structural design of the outlet control structure and provide the material and labor as determined by the structural design, but no less than the minimum requirements specified.

The Engineer may order additional reinforcement, bracing, or strength for adequacy of the outlet control structure. These additions shall not be the cause for a claim for additional cost to the Contract. Neither shall they relieve the Contractor of their responsibility for the sufficiency of strength of the system.

Structure shall be designed to support HS-20 loadings with zero cover at a minimum.

SUBMITTALS

Submit Shop Drawings that include all dimensions, reinforcement sizes and locations, material strengths, and noting any work to be done by others at point of installation.

Submit structural calculations by a Structural Engineer registered in the State of Michigan to Owner's Engineer for review upon request. Engineer review shall not relieve the Contractor of the design responsibility.

Submit certifications that all materials are new and meet or exceed specification requirements.

MATERIALS

Structural components of the outlet control structure shall be precast reinforced concrete, meeting requirements of ASTM C478 at a minimum.

Manhole castings shall be heavy-duty, traffic-rated, conforming to the City of Ann Arbor Standard Specifications.

Polyurethane elastomeric sealant and primer shall be from the same manufacturer and specifically designed to be compatible. Sealant and primer shall be suitable for moist installation environment, vertical installation, and totally submerged service conditions. Sealant shall meet requirements for ASTM C920, Type S, Grade NS, Class 35, using T, NT, O, M, G, I. The material shall be Sikaflex-1A and Sikaflex Primer 429, or approved equal.

Butyl rubber based preformed flexible sealant conforming to ASTM C-990, paragraph 6.2. The material shall be PRO-STIK, EZ-STIK or approved equal.

CONSTRUCTION METHOD

Provide the outlet control structure meeting all City of Ann Arbor Specifications, with additional work and materials as described in this Detailed Specification and as shown in the Detail included on the Plans.

The required outlet control holes shall be formed or drilled so that 3 inches of concrete cover over reinforcing steel is maintained.

Seal between base slab and bottom of precast riser with 3/4” diameter butyl preformed flexible sealant.

Prime and seal the vertical joints on each side of the flow control wall and precast manhole wall with polyurethane elastomeric sealer and compatible primer. Apply primer and sealant in accordance with manufacturer’s instructions. Allow seven days for sealant to cure before allowing to be submerged in water.

Install 16-hole, perforated frame and cover, as described in standard specifications.

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:

PAY ITEM	PAY UNIT
Outlet Control Structure	Each

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.

DETAILED SPECIFICATION
FOR
ITEM #286 - ENERGY DISSIPATION STRUCTURE

DESCRIPTION

This work shall include complete installation of the energy dissipation structure, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. All work shall comply with the City of Ann Arbor General Conditions and Standard Specifications for materials and construction, unless specified or modified by this Detailed Specification.

DESIGN AND PERFORMANCE REQUIREMENTS

Perform the structural design of the energy dissipation structure and provide the material and labor as determined by the structural design, but no less than the minimum requirements specified.

The Engineer may order additional reinforcement, bracing, or strength for adequacy of the energy dissipation structure. These additions shall not be the cause for a claim for additional cost to the Contract. Neither shall they relieve the Contractor of their responsibility for the sufficiency of strength of the system.

Structure shall be designed to support HS-20 loadings with zero cover at a minimum.

SUBMITTALS

Submit Shop Drawings that include all dimensions, reinforcement sizes and locations, material strengths, and noting any work to be done by others at point of installation.

Submit structural calculations by a Structural Engineer registered in the State of Michigan to Owner's Engineer for review upon request. Engineer review shall not relieve the Contractor of the design responsibility.

Submit certifications that all materials are new and meet or exceed specification requirements.

MATERIALS

Structural components of the energy dissipation structure shall be precast reinforced concrete, meeting requirements of ASTM C478 at a minimum.

Manhole castings shall be heavy-duty, traffic-rated, conforming to the City of Ann Arbor Standard Specifications.

Butyl rubber based preformed flexible sealant conforming to ASTM C-990, paragraph 6.2. The material shall be PRO-STIK, EZ-STIK or approved equal.

Drainage stone used for backfill shall consist of MDOT 6AA limestone.

Non-woven geotextile fabric shall heavy-duty, AASHTO M288 strength class 1 designation, Mirafi 180N, Skaps GT180, or approved equal.

CONSTRUCTION METHOD

Provide the energy dissipation structure meeting all City of Ann Arbor Specifications, with additional work and materials as described in this Detailed Specification and as shown in the Detail included on the Plans.

The required energy dissipation slots shall be formed so that 3 inches of concrete cover over reinforcing steel is maintained.

Seal between base slab and bottom of precast structure with 3/4” diameter butyl preformed flexible sealant.

Install two heavy-duty, traffic rated, 16-hole, perforated frames and covers, as described in standard specifications.

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:

PAY ITEM	PAY UNIT
Energy Dissipation Structure	Each

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.

DETAILED SPECIFICATION
FOR
ITEM #288 – 8-INCH SCHEDULE 80 PVC PIPE, TRENCH DETAIL I

DESCRIPTION

This work shall consist of installing Schedule 80 PVC pipe as shown on the plans to provide overflow piping for the infiltration beds, and bedding and backfilling the pipe in accordance with the City of Ann Arbor Utility Installation, Construction and Repair Standard Specifications.

MATERIALS

Domestically produced rigid polyvinyl chloride (PVC) compound, Type I Grade I, with a cell classification of 12454 as defined in ASTM D1784.

Manufactured in accordance with the requirements of ASTM D1785 for physical dimensions and tolerances, consistently meeting or exceeding the Quality Assurance test requirements of this standard with regard to material, workmanship, burst pressure, flattening, and extrusion quality.

Standard lengths of pipe sizes 6-inch and larger shall be beveled each end by the pipe manufacturer.

Injection molded PVC Schedule 80 fittings shall conform to ASTM D2467.

Pipe and fittings shall be manufactured as a system and be the product of one manufacturer.

CONSTRUCTION METHODS

Buried pipe shall be installed in accordance with ASTM F1668 "Standard Guide for Construction Procedures for Buried Plastic Pipe" and ASTM D2321 "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other gravity Flow Application". and comply with City of Ann Arbor Standard Specifications for Utility Installation, Construction and Repair.

Solvent cement joints shall be made in a two-step process with primer manufactured for thermoplastic piping systems (IPS P-70 or Oatey Industrial Grade) and solvent cement conforming to ASTM D2564.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

Pay Item	Pay Unit
8 inch Schedule 80 PVC Pipe, Trench Detail I	Foot

Payment for **8 inch Schedule 80 PVC Pipe, Trench Detail I** shall include all labor, equipment, and materials required to complete the work described and as detailed in the plans including, but not limited to, furnishing and installing the pipe to line and grade as shown on the plans, joints, and connections to all drainage structures. **8 inch Schedule 80 PVC Pipe, Trench Detail I** will be measured by the longitudinal length of the pipe installed along its centerline. Bedding and backfill to be paid for separately.

FOR
ITEM #290 – DRAINAGE AGGREGATE, TYPE I

Description

This work shall consist of furnishing, placing and compacting a drainage aggregate within the limits of the infiltration beds as shown in the project details and on the drawings, as directed by the Engineer.

The drainage aggregate shall be placed and compacted in accordance Section 302 and Section 303 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, except as herein specified.

Materials

Drainage Aggregate, Type I shall be a clean, crushed, angular stone with the following properties:

- Minimum porosity of 50%
  - Determined from the dry rodded unit weight per ASTM C29 and the bulk specific gravity (dry) per ASTM C127
  - Porosity is defined as the volume of voids over the total volume expressed as a percent ("% Voids" as indicated in ASTM C29)
- Maximum stone size of 2-1/2 inches, and
- Maximum loss by wash of 2.0% per Michigan Test Method (MTM 117)
- Minimum crushed content of 90% per MTM 110

Provide recent test data that verifies the porosity, aggregate gradation and loss by wash percent and percent crushed material of the drainage aggregate prior to placement on grade

Material not meeting porosity requirements or loss by wash limits will not be permitted to be placed on the grade.

Drainage Aggregate, Type I materials shall be obtained from natural aggregate. Only fines produced by the crushing process shall be permissible, no plastic fines shall be added. Crushed Concrete or Slag materials will not be permitted.

The Contractor is solely responsible for degradation and segregation during shipment, placement, and compaction of the material.

Construction Methods

This work shall consist of installing Drainage Aggregate, Type I per the cross-sections as indicated on the Drawings and includes all material, labor and equipment used in the preparation of the base, furnishing all material, grading and compacting the material to proper finished elevations, and protecting the subgrade, sub base, and base.

Do not compact subgrade soils.

Remove accumulation of fine materials due to ponding or surface erosion with light equipment. Provide a finished surface, smooth and uniform in appearance that is free of loose aggregates, holes, depressions, ruts, and ridges.

Excavate, fill, and re-grade areas damaged by erosion, ponding or traffic compaction.

Proof rolling with light equipment of suspected unstable areas may be requested by the Project Engineer and shall be included in the cost of the project.

Place geotextile fabric in accordance with the Contract Documents.

Do not drive construction vehicle directly on the geotextile.

Do not place aggregate onto geotextile fabric until surface has been reviewed and approved by the Project Engineer.

Place Drainage Aggregate, Type I to depth specified on the Drawings in 6 to 10-inch lifts.

Place aggregate material onto geotextile fabric by back dumping with trucks onto the geotextile from the edge of the geotextile or over previously placed aggregate.

Compact each lift utilizing a minimum 10-ton, steel drum tandem roller, completing three passes over the drainage aggregate. One complete pass will be considered down and back.

Place drainage aggregate such that the first lift is between the geotextile and equipment tires or tracks at all times.

Turning of vehicles is not permitted on the first lift above the geotextile fabric.

Construction equipment that causes ruts deeper than 3 inches shall not be allowed. Fill ruts with additional Drainage Aggregate, Type I. Ruts will not be allowed to be smoothed without adding additional Drainage Aggregate, Type I.

Fine grade as necessary to conform to the elevations and cross-sections indicated on the Drawings.

Roll final aggregate layer with paving roller until smooth. This work shall be completed prior to installing geotextile fabric wrap on the top of the infiltration bed.

The Owner will sample the aggregates at the jobsite prior to placement on the grade for gradation and other specification compliance testing. The sampling location for materials prior to rolling and compacting shall be from an individual dump truck or a composite sample made up of several truck dumps as the Drainage Aggregate, Type I is being delivered to a job site stockpile. Samples will be collected for each 1,000 tons of material delivered.

The Owner may sample and test the compacted in-place material for final acceptance. If segregation, contamination, or excessive degradation is observed, the Owner will provide written notification to the Contractor of the need for in-place testing and determine the limits of the area subject to in-place acceptance. Material placed or backfilled after receipt of notification of the need for in-place testing may be deemed to be unauthorized work as specified by subsection 104.05 of the Standard Specifications for Construction.

Measurement and Payment

Drainage Aggregate will be paid for at the Contract unit price per ton for the cross-sections specified in the drawings, which includes all work indicated in this Special Provision and related Contract References.

Pay Item	**Pay Unit**
Drainage Aggregate, Type I	Ton

Payment for **Drainage Aggregate, Type I** shall include all labor, equipment, and materials required to complete the work described including, but not limited to, furnishing the crushed aggregate, placing spreading, shaping, compacting, trimming, protecting the geotextile fabric and any drainage structures and pipes that intersect the infiltration beds and all costs associated with corrective action including corrections necessary to rectify degradation, contamination, and segregation are included in the associated item of work.

When the Owner calls for in-place testing, only those costs associated with a failing test result shall be borne by the Contractor.

DETAILED SPECIFICATION
FOR
ITEM #291 – DRAINAGE AGGREGATE, TYPE II

DESCRIPTION

This work shall consist of furnishing, placing and compacting a drainage aggregate above and around a perforated thermoplastic drainage pipe as shown in the project details and on the drawings, as directed by the Engineer.

The drainage aggregate shall be placed and compacted in accordance with ASTM D2321 "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other gravity Flow Application" and Section 401 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, except as herein specified.

MATERIALS

Drainage Aggregate, Type II shall be a clean, crushed, angular stone that meets the gradation requirements specified in Table 1 and the physical requirements listed in Table 902-2 of the 2012 Michigan Department of Transportation Standard Specifications for Construction for 6A stone. In addition, Drainage Aggregate, Type II shall have minimum 90% crushed material (per MTM 110).

TABLE 1
GRADATION LIMITS

Material	Total Percent Passing (Sieve Size)						
	1 ½"	1"	3/4"	1/2"	3/8"	No. 4	Loss by Washing
Drainage Aggregate, Type II	100	95 - 100	_	30 - 60	_	0 - 8	1.0 max

Material with stone sizes larger than 1-1/2 inch or not meeting loss by wash limits in Table 1 will not be permitted to be placed next to any thermoplastic pipe.

Drainage Aggregate, Type II materials shall be obtained from natural aggregate. Only fines produced by the crushing process shall be permissible, no plastic fines shall be added. Crushed Concrete or Slag materials shall not be permitted.

The Contractor is solely responsible for degradation and segregation during shipment, placement, and compaction of the material.

CONSTRUCTION METHODS

Drainage Aggregate, Type II shall be installed in accordance with ASTM D2321 "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications" This work shall consist of installing Drainage Aggregate, Type II per the cross-sections listed in the specifications and as indicated on the drawings and details and includes all material, labor and equipment used to furnish, grade and compact all material to proper finished elevations, and protecting the geotextile fabric trench blanket.

Do not compact subgrade soils. Scarify compacted or disturbed subgrade soils to a minimum depth of 6 inches with a York rake or equivalent method.

If a geotextile fabric is to be used to wrap the trench, do not place aggregate until surface has been reviewed and approved by the Project Engineer.

Remove accumulation of fine materials due to ponding or surface erosion with light equipment.

Provide a stable and uniform minimum 4-inch bed of Drainage Aggregate, Type II for the installation of the thermoplastic pipe. The middle of the bedding (under the pipe invert for a width equal to 1/3 the pipe O.D.) shall be loosely placed with the remainder compacted to minimize voids.

After installation of the thermoplastic pipe, provide haunch bedding in lifts of 4 to 6 inches up to the springline of the pipe. Carefully rod the aggregate to assure material surrounds the underside of the pipe and compact the haunch bedding to minimize voids. Continue the construction of each lift to the springline of the pipe.

The remainder of the pipe bedding shall extend to a minimum of 12-inches above the top of the thermoplastic pipe, placed in 4 to 6-inch lifts. Eliminate any large voids in the bedding by rodding the aggregate and compact to achieve maximum consolidation and minimize voids. Do not use mechanical compaction equipment directly above the thermoplastic pipe.

The Owner will sample the aggregates at the jobsite prior to placement on the grade for gradation and other specification compliance testing. The sampling location for materials prior to rolling and compacting shall be from an individual dump truck or a composite sample made up of several truck dumps as the drainage aggregate is being delivered to a job site stockpile. Samples will be collected for each 1,000 tons of material delivered.

The Owner may sample and test the compacted in-place material for final acceptance. If segregation, contamination, or excessive degradation is observed, the Owner will provide written notification to the Contractor of the need for in-place testing and determine the limits of the area subject to in-place acceptance. Material placed or backfilled after receipt of notification of the need for in-place testing may be deemed to be unauthorized work as specified by subsection 104.05 of the Standard Specifications for Construction.

MEASUREMENT AND PAYMENT

Drainage Aggregate, Type II will be paid for at the Contract unit price per ton to the cross-section specified in the Drawings, which includes all work indicated in this Special Provision and related Contract References.

Pay Item	**Pay Unit**
Drainage Aggregate, Type II	Ton

Payment for **Drainage Aggregate, Type II** shall include all labor, equipment, and materials required to complete the work described including, but not limited to, furnishing the crushed aggregate, placing, spreading, shaping, compacting, trimming, protecting the thermoplastic pipe, and all costs associated with corrective action including corrections necessary to rectify degradation, contamination, and segregation are included in the associated item of work.

When the Owner calls for in-place testing, only those costs associated with a failing test result shall be borne by the Contractor.

DETAILED SPECIFICATION
FOR
ITEM #292 – GEOTEXTILE BLANKET
ITEM #293 – GEOTEXTILE SEPARATOR

DESCRIPTION

This work shall include all materials, labor, and equipment necessary to furnish and install a geotextile fabric against soil to allow for long-term passage of water into a subsurface drain system while retaining in-situ soil.

The primary function of the geotextile fabric is filtration. Geotextile fabric filtration properties are a function of the in-situ soil gradation, plasticity, and hydraulic conditions.

GENERAL

References

American Association of State Highway and Transportation Officials (AASHTO) "Standard Specification for Geotextile Specification for Highway Applications" Designation M 288-00.

AASHTO Test Standards:

1. T 88 – Standard Test Method for Particle Size Analysis of Soils
2. T 90 – Standard Test Method for Determining the Plastic Limit and Plasticity Index of Soils
3. T 99 – Standard Practice for Determination of the Moisture Density Relations of Soils Using a 5.5 lb hammer and 12 in drop (Standard Proctor)

American Society for Testing and Materials (ASTM):

1. D 123 – Standard Terminology Relating to Geotextiles
2. D 276 – Standard Test Method for Identification of Fibers in Textiles
3. D 4354 - Practice for Sampling of Geosynthetics for Testing.
4. D 4355 - Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).
5. D 4439 - Terminology for Geotextiles.
6. D 4491 - Test Methods for Water Permeability of Geotextiles by Permittivity.
7. D 4533 - Test Method for Index Trapezoid Tearing Strength of Geotextiles.
8. D 4632 - Test Method for Grab Breaking Load and Elongation of Geotextiles.
9. D 4751 - Test Method for Determining Apparent Opening Size of a Geotextile.
10. D 4759 - Practice for Determining the Specification Conformance of Geosynthetics.
11. D 4873 - Guide for Identification, Storage, and Handling of Geotextiles.

Definitions

1. Minimum Average Roll Value (MARV): Property value calculated as typical minus two standard deviations. Statistically, it yields a 97.7 percent degree of confidence that any sample taken during quality assurance testing will exceed value reported.
2. Maximum Average Roll Value (MaxARV): Property value calculated as typical plus two standard deviations. Statistically, it yields a 97.7 percent degree of confidence that any sample taken during quality assurance testing will be below the value reported.
3. Manufacturing Quality Control (MQC): A planned system of inspections that is used to directly monitor and control the manufacture of a material that is factory originated
4. Typical Roll Value: Property value calculated from average or mean obtained from test data.

Submittals

A. Certification
   1. The Contractor shall provide the Engineer a certificate stating the name of the geotextile manufacturer, product name, style, chemical compositions of filaments or yarns and other pertinent information to fully describe the geotextile.
   2. The Manufacturer is responsible for establishing and maintaining a quality control program to assure compliance with the requirements of the specification. Documentation describing the quality control program shall be made available upon request.
   3. The manufacturer's certificate shall state that the furnished geotextile meets MARV requirements of the specification as evaluated under the manufacturer's quality control program. A person having legal authority to bind the Manufacturer shall attest to the certificate.
B. Manufacturing Quality Control (MQC) test results shall be provided upon request.

Delivery, Storage, and Handling

A. Geotextile labeling, shipment and storage shall follow ASTM D 4873.
B. Product labels shall clearly show the manufacturer or supplier name, style name, and roll number.
C. Each shipping document shall include a notation certifying that the material is in accordance with the manufacturer's certificate.
D. Each geotextile roll shall be wrapped with a material that will protect the geotextile from damage due to shipment, water, sunlight, and contaminants.
E. The protective wrapping shall be maintained during periods of shipment and storage. If the wrapping is damaged prior to installation, the outer wrap of geotextile material must be discarded before installation.
F. During storage, geotextile rolls shall be elevated off the ground and adequately covered to protect them from the following: Site construction damage, extended exposure to ultraviolet (UV) radiation, precipitation, chemicals that are strong acids or strong bases, flames, sparks, temperatures in excess of 71 deg C (160 deg F) and any other environmental condition that might damage the geotextile.

Quality Control

A. Quality control of all materials used on the project and methods of installation shall be the responsibility of the Contractor. The Owner retains the right to perform random independent testing for the Owner's assurance the project is compliant at his tested locations however contract compliance remains the responsibility of the Contractor.
B. It shall be the responsibility of the Contractor to correct or suspend operations, if necessary, when the work is not in compliance with these specifications.

Quality Assurance

A. Geotextile:
   1. Geotextiles shall be subject to sampling and testing to verify conformance with this specification. Sampling for testing shall be in accordance with ASTM D 4354.
   2. Acceptance shall be in accordance with ASTM D 4759 based on testing of either conformance samples obtained using Procedure A of ASTM D 4354, or based on manufacturer's certifications and testing of quality control samples obtained using Procedure B of ASTM D 4354.
B. Sewn Seams (if required):
   1. For seams that are to be sewn in the field, the Contractor shall provide at least a six (6) foot length of sewn seam for sampling by the Engineer before the geotextile is installed.
   2. For seams that are sewn in the factory, the Engineer shall obtain samples of the factory seams at random from and roll of geotextile that is to be used on the project.
   3. If seams are to be sewn in both directions, samples of seams from both directions shall be provided.
   4. For seams that are field sewn, the seams sewn for sampling shall be sewn using the same equipment and procedures as will be used for the production seams.
   5. The seam assembly description shall be submitted by the Contractor along with the sample of the seam. The description shall include the seam type, sewing thread, and stitch density.

PRODUCTS

Manufacturers

A. Mirafi (TenCate Geosynthetics North America, Pendergrass, Georgia, 30567 USA, Phone: 706-693-2226)
B. Skaps GT (Engineered Synthetic Products, Inc, Lilburn, Georgia, 30047 USA, Phone: 770-564-1857)
C. GEOTEX (Propex Inc., Chattanooga, Tennessee, 37422 USA, Phone: 800-621-1273
D. or Approved Equal

Materials

A. Geotextile
   1. The geotextile construction shall be polypropylene, staple fiber, needlepunched nonwoven heat set on one side to ensure consistent roll width and roll-out.
   2. Resistant to ultraviolet degradation and to biological and chemical environments normally found in soils.
   3. Geotextile Separator (AASHTO Class 1)
      a. Minimum Average Roll

Property	**Test Method**	**Units**	**Property Requirement**
Grab Tensile Strength	ASTM D 4632	N (lbs)	912 (205)
Grab Elongation	ASTM D 4632	Percent	50
Trapezoidal Tear	ASTM D 4533	N (lbs)	356 (80)
Apparent Opening Size (MARV)	ASTM D 4751	mm (US Std. Sieve)	0.18 (80)
Permittivity	ASTM D 4491	sec-1	1.1
Water Flow Rate	ASTM D 4491	l/min/m^2 (gpm/ft^2)	3870 (95)
UV Resistance (at 500 hrs)	ASTM D 4355	Percent	70

   4. Geotextile Liner (AASHTO Class 2)
      a. Minimum Average Roll

Property	**Test Method**	**Units**	**Property Requirement**
Grab Tensile Strength	ASTM D 4632	N (lbs)	712 (160)
Grab Elongation	ASTM D 4632	Percent	50
Trapezoidal Tear	ASTM D 4533	N (lbs)	267 (60)
Apparent Opening Size (MARV)	ASTM D 4751	mm (US Std. Sieve)	0.212 (70)
Permittivity	ASTM D 4491	sec-1	1.3
Water Flow Rate	ASTM D 4491	l/min/m^2 (gpm/ft^2)	4480 (110)
UV Resistance	ASTM D 4355	Percent	70 at 500 hours

5. Geotextile Blanket (AASHTO Class 3)
   a. Minimum Average Roll

Property	Test Method	Units	Property Requirement
Grab Tensile Strength	ASTM D 4632	N (lbs)	534 (120)
Grab Elongation	ASTM D 4632	Percent	50
Trapezoidal Tear	ASTM D 4533	N (lbs)	222 (50)
Apparent Opening Size (MARV)	ASTM D 4751	mm (US Std. Sieve)	0.212 (70)
Permittivity	ASTM D 4491	sec-1	1.7
Water Flow Rate	ASTM D 4491	l/min/m^2 (gpm/ft^2)	5500 (135)
UV Resistance	ASTM D 4355	Percent	70 at 500 hours

6. Quality Control
   a. Manufacturing Quality Control (MQC): Testing shall be performed at a laboratory accredited by GAI-LAP for tests required for the geotextile, at frequency exceeding ASTM D 4354.
7. Sewing Thread (if required)
   a. Sewing thread shall consist of high strength polypropylene or polyester (Nylon shall not be used).
   b. The thread shall be of a contrasting color to the geotextile.

CONSTRUCTION

Preparation of Surfaces

A. Trench excavation shall be completed in accordance with grade, dimensions, and details of the project plans.
B. Remove protruding stones and other matter that might damage the geotextile fabric from the trench wall and base prior to placing the fabric.
C. Before placing the geotextile fabric, smooth, shape, and compact the subgrade to the required grade, section and density.
D. Soft spots and unsuitable areas will be identified during preparation of surfaces and brought to the attention of the Project Engineer.
E. In all instances excavation shall be performed in such a way so as to prevent large voids from occurring in the sides and bottom of the excavation.
F. Do not place geotextile until subgrade has been reviewed and approved by the Project Engineer

Installation

A. Do not place geotextile on a frozen base or subgrade.
B. Remove any accumulation of debris or sediment which has taken place after approval of subgrade, prior to installation of geotextile.
C. Trenches
   1. In trenches equal to or greater than 12 inches in width, after placing the drainage aggregate the geotextile shall be folded over the top of the backfill material in a manner to produce a minimum overlap of 12 inches. In trenches less than 12 inches, but greater than 4 inches wide, the overlap shall be equal to the width of the trench. Where the trench is less than 4 inches the geotextile overlap shall be sewn or otherwise bonded. All seams shall be subject to the approval of the Engineer.
   2. Place the geotextile fabric in the trench so it conforms with the trench walls and remains in proper position during construction and backfilling.
   3. Separate pieces of fabric to be joined by overlapping or sewing.

4. Fabric to be overlapped a minimum of 18 inches in the direction of flow.
5. Placement of drainage aggregate to proceed immediately following placement of geotextile.
    a. Geotextile shall be covered with a minimum of 12 inches of loosely placed aggregate prior to compaction.
    b. If a pipe is to be installed in the trench, a bedding layer of loosely placed aggregate shall be placed below the pipe.
6. In trenches equal to or greater than 12 inches in width, after placing drainage aggregate the geotextile fabric shall be folded over the top of the backfill material in a manner to produce a minimum overlap of 6 inches.
7. Correct misaligned fabric and damaged fabric;
    a. Place an additional section of fabric extending at least 24 inches beyond any point of the damaged area and position between the trench walls and damaged fabric.
    b. Remove the section of fabric containing the damaged area and replace it with a new section of fabric.

D. Subgrade Aggregate Separation
1. In the placement of the geotextile fabric on a subgrade for drainage applications, the geotextile shall be placed loosely with no wrinkles or folds, and with no void spaces between the geotextile and the ground surface. Successive sheets of geotextiles shall be overlapped a minimum of 18 inches, with the upstream sheet overlapping the downstream sheet.
2. On curves the geotextile may be folded or cut to conform to the curves
    a. Fold or overlap shall be in the direction of construction.
    b. Hold in place with pins, staples or piles of fill or aggregate.
3. Inspect geotextile fabric for damage during construction prior to covering.
    a. Review inspection with Project Engineer.
    b. Repair damaged geotextiles immediately
    c. Damaged areas to receive geotextile patch with a minimum 18 inches of overlap, with the upstream sheet overlapping the downstream sheet
4. Place aggregate material over the geotextile fabric by back dumping with trucks onto the geotextile from the edge of the geotextile or over previously placed aggregate.
    a. Construction vehicles are not allowed directly on the geotextile
    b. Place aggregate such that at least the first lift (12 inches) is between the geotextile and equipment tires or tracks at all times.
    c. Turning of vehicles is not permitted on the first lift above the geotextile.
5. Construction equipment that causes ruts deeper than 3 inches shall not be allowed
    a. Fil all ruts with additional material
    b. Ruts will not be allowed to be smoothed without adding additional material
6. Should the geotextile be damaged during installation or drainage aggregate placement, a geotextile patch shall be placed over the damaged area extending beyond the damaged area a distance of 36 inches, or the specified seam overlap, whichever is greater.

E. The aggregate should be compacted with vibratory equipment to a minimum of 95 percent Standard AASHTO T99 density, unless otherwise indicated.

Protection

A. Atmospheric exposure of the geotextile to the elements following lay down shall be limited to 14 days to prevent damage.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

Pay Item	Pay Unit
Geotextile Blanket	Square Yard
Geotextile Separator	Square Yard

Payment for **Geotextile Fabric** shall include all labor, equipment, and materials required to complete the work described and as detailed in the plans including, but not limited to, preparing the subgrade, furnishing and installing the fabric at the location and grade as shown on the plans, securing fabric to the grade, and correcting any misaligned or damaged fabric. The Owner will pay for the amount of Geotextile Blanket based on the method of measurement and basis of payment specified as supported by material tickets supplied by the Contractor and field measurement checks conducted by the Owner.

DETAILED SPECIFICATION
FOR
ITEM #294 & 295 – HDPE DUAL WALL PERFORATED INFILTRATION PIPE

DESCRIPTION

This work shall consist of installing perforated HDPE pipe as shown on the plans, bedding the pipe and backfilling as specified, and forming a ditch line above the centerline of the installed pipe in accordance with the project details.

MATERIALS

Materials shall be in accordance with Sections 401.02 of the 2012 Michigan Department of Transportation Standard Specifications for Construction except as herein specified.

Corrugated, Perforated, Smooth Line HDPE Double-Wall pipe per AASHTO M252 Type SP (4 inch to 10-inch diameter) or M294 Type SP (12-inch to 60-inch diameter).

Advanced Drainage Systems N-12 ST IB Pipe, Hancor HI-Q Sure-Lock or approved equal.

Pipe shall be encased in a geo-synthetic sock that meets the requirements of ASTM D6707.

Pipe shall be joined with using a bell and spigot joint or coupling bands covering at least two corrugations on each end of pipe and shall meet or exceed the soil-tight requirements of AASHTO M252, AASHTO M294 or ASTM F2306. Gaskets shall be installed by the pipe manufacturer and covered with a removable wrap and shall meet the requirements of ASTM F477.

CONSTRUCTION METHODS

Construction shall be consistent with Sections 401.03 and 402.03 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, except that bedding, backfill, and ditch grading requirements shall be in accordance with ASTM D2321 "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other gravity Flow Application". Construction shall also be in accordance with the technical specifications and published manufacturer installation guidelines for the pipe supplied.

Connections of HDPE pipe to concrete drainage structures shall include a boot connection through the entire thickness of the wall of the drainage structure.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

Pay Item	**Pay Unit**
8 inch HDPE Dual Wall, Perforated Infiltration Pipe	Lineal Foot
12 inch HDPE Dual Wall, Perforated Infiltration Pipe	Lineal Foot

Payment for **__ inch HDPE Dual Wall, Perforated Infiltration Pipe** shall include all labor, equipment, and materials required to complete the work described and as detailed in the plans including, but not limited to, furnishing and installing the pipe to line and grade as shown on the plans, joints, all drainage structure connections, and grading to proposed ground elevations above the pipe. **__ inch HDPE Dual Wall, Perforated Infiltration Pipe** will be measured by the longitudinal length of the pipe installed along its centerline.

DETAILED SPECIFICATION
FOR
ITEM #296 – 24 INCH DIA MAINTENANCE BASIN

DESCRIPTION

This work shall consist of installing a perforated HDPE drainage structure as shown on the plans, bedding the pipe and backfilling as specified, and providing a cover for the drainage structure in accordance with the project details.

MATERIALS

Materials shall be in accordance with Sections 403 of the 2012 Michigan Department of Transportation Standard Specifications for Construction except as herein specified.

Corrugated, Perforated, Smooth Line HDPE Double-Wall pipe barrel per M294 Type SP.

Advanced Drainage Systems N-12 ST IB Pipe, Hancor HI-Q Sure-Lock or approved equal.

Maintenance Basin shall be installed with an open bottom on a minimum, 4-inch layer of drainage aggregate compacted to 95% of maximum density

Connections for HDPE Infiltration Pipe to be welded, pre-fabricated or core drilled by the manufacturer in accordance with the reviewed shop drawings. Attention shall be given to the 2 foot sump and 9-inch extension above the detailed field grade when considering structure height prior to submitting shop drawings.

Drainage structure grate shall be EJ series 6121N or approved equal. Drainage grate shall have a dipped coating and should be ordered without the lugs.

CONSTRUCTION METHODS

Construction shall be in accordance with Sections 403 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, except that bedding, backfill, and grading requirements shall be as specified and indicated in the drawings and details. Construction shall also be in accordance with the manufacturer's recommendations for the pipe supplied.

Maintenance Basins shall be adjusted to final elevation during final restoration.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

Pay Item	**Pay Unit**
24 inch Dia Maintenance Basin	Ea

Payment for **24 inch dia Maintenance Basin** shall include all labor, equipment, and materials required to complete the work described and as detailed in the plans including, but not limited to, furnishing and installing the structure at the location and grade as shown on the plans, providing openings or penetrations as described, connecting the proposed pipes, furnishing and installing specified drainage grate, and adjusting structure to final elevation once final restoration activities have concluded. **24 inch dia Maintenance Basin** shall be measured on an each basis for each structure installed. This item also includes the proposed drainage grate as specified in the construction drawings and details.

DETAILED SPECIFICATION
FOR
ITEM #298 – TEMP WATER STOP, 16 INCH AND LARGER
ITEM #299 - TEMP WATER STOP, 12 INCH AND SMALLER

DESCRIPTION

This work shall include complete installation of new water main connections as dry taps to the existing water distribution system, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. All work shall comply with the City of Ann Arbor General Conditions and Standard Specifications for materials and construction, unless specified or modified by this Detailed Specification.

Construct temporary water stops on the existing live water main when existing valves cannot be sufficiently closed to allow dry water main connections, or as required by the Engineer to limit the disruption to water customers, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. All work shall comply with the City of Ann Arbor General Conditions and Standard Specifications for materials and construction, unless specified or modified by this Detailed Specification.

CONSTRUCTION METHOD

Confirm location, depth, material type and dimensions of existing water main pipe at each design point of connection at least seven days before committing significant equipment, labor and other resources to installation of the new water main. Immediately inform the Engineer of any discrepancy found between information included on the Plans and discovered prior to construction to allow for modification to the design and revision of the Plans.

Water main connections shall be made as dry taps.

Temporary water stops shall be installed where necessary to isolate the point of connection from the existing pressurized system. Work shall be completed as described in the Standard Specifications for wet taps.

Promptly remove temporary water stop materials and equipment after the water system is put back in service, and place specified backfill.

Size designations for the items of work are based on the nominal size of the existing main being connected to, not the size of the new water main pipe.

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:

PAY ITEM	PAY UNIT
Temp Water Stop, 16 inch and Larger	Ea
Temp Water Stop, 12 inch and Smaller	Ea

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.

DETAILED SPECIFICATION
FOR
ITEM #305 – 8 INCH SDR 26 PVC PIPE, TRENCH DETAIL II MOD

DESCRIPTION

This work consists of furnishing and installing 8 inch SDR 26 PVC pipe as detailed in the plans. The work shall be completed in accordance with the City Standard Specifications, except as modified in the detail on the plans and as modified herein.

MATERIALS

Materials shall be per the City Standard Specifications except for the pipe material being SDR 26 PVC Pipe and as modified and shown on the plans.

MEASUREMENT AND PAYMENT

The completed work shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
8 inch SDR 26 PVC Pipe, Trench Detail II Mod	Foot

8 inch SDR 26 PVC Pipe, Trench Detail II Mod shall be measured in place by the foot and include all labor, materials, and equipment necessary to perform the work as specified and as detailed on the plans.

DETAILED SPECIFICATION
FOR
ITEM #356-SP – SEWER MH, 48 INCH DIA. (0-10' DEEP)
ITEM #357-SP– SEWER MH, 48 INCH DIA, ADD'L DEPTH
ITEM # 358-SP – SEWER MH, 60 INCH DIA, (0-10' DEEP)
ITEM #359-SP – SEWER MH, 60 INCH DIA, ADD'L DEPTH
ITEM #370 – 8 INCH DROP CONNECTION
ITEM #297 - 8 INCH SEWER TAP

DESCRIPTION

This work shall include complete installation of sanitary sewer manholes, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. All work shall comply with the City of Ann Arbor General Conditions and Standard Specifications for materials and construction, unless specified or modified by this Detailed Specification.

Construct tap to existing manholes to connect new sewer, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. All work shall comply with the City of Ann Arbor General Conditions and Standard Specifications for materials and construction, unless specified or modified by this Detailed Specification.

CONSTRUCTION METHOD

Provide sewer manholes meeting all City of Ann Arbor Specifications, with additional work and materials as described in this Detailed Specification.

Where shown on the Plans or directed by the Engineer where a branch sanitary sewer is brought into a manhole more than 18 inches above the invert elevation in the manhole, a drop connection shall be provided in accordance with the Standard Detail Drawings.

All sanitary manholes shall be precast concrete with rubber-gasket joints meeting City of Ann Arbor Specifications. Integral manhole bases shall be used.

At all sewer connections to manhole, structure manufacturer shall install flexible rubber boots; Kor-N-Seal (with stainless steel Korband), or approved equal. At sewer taps to existing manhole, Contractor shall install flexible rubber boots; Kor-N-Seal (with stainless steel Korband), or approved equal.

Sewer taps to existing sanitary manholes shall be core-drilled to sufficient size to install the proposed sewer pipe and flexible rubber boot. The rough opening of the tap shall not be located within 6 inches of an existing manhole riser joint. Verify the elevation of the existing joints prior to construction of the sewer and inform the Engineer if the proposed invert elevation must be adjusted to meet this requirement.

Install concrete flow channel up to springline of pipe with ¾" to 1" gap at pipe ends provided to maintain joint flexibility.

Install solid, water-tight frame and cover, as described in standard specifications.

Install exterior manhole seal treatment on all new sanitary manholes and existing manholes being tapped, including the following as shown on the Detail included on the Plans:

a) To create a non-permeable chimney and frame seal, provide four cadmium-coated 5/8" dia. threaded studs with ¾" x 2" x 1/8" thick metal washer, ¾" x 2" x 1/16" thick neoprene sealing washers and nuts to attach the frame to the precast manhole section. Provide 1" x 1" preformed butyl rubber flexible rope (PRO-STIK, EZ-STIK or approved equal), 2 each adjustment course (outside and inside of threaded studs) and at frame, conforming to federal specification SS-SS-Z10A and AASHTO M-198.

b) Install external chimney seal in accordance with the standard detail drawing, consisting of elastomeric seal (Press Seal Gasket Co. EZ-STIK all-weather trowelable butyl BK-0069-1, or approved equal) spread over all adjustment components, and 6 mil plastic geomembrane cover over all butyl material.

c) The exterior joints and/or joint surfaces of the structures shall be sealed with a minimum 1.5 inch wide butyl rubber based preformed flexible sealant conforming to ASTM C-990, paragraph 6.2. The material shall be PRO-STIK, EZ-STIK or approved equal.

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:

PAY ITEM	PAY UNIT
Sewer MH, 48 inch Dia, (0-10' Deep)	Ea.
Sewer MH, 48 inch Dia, Add'l Depth	Vft.
Sewer MH, 60 inch Dia, (0-10' Deep)	Ea.
Sewer MH, 60 inch Dia, Add'l Depth	Vft.
8 Inch Drop Connection	Vft
8 inch Sewer Tap	Ea

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.

DETAILED SPECIFICATION
FOR
ITEM #381-SP - EARTH RETENTION FOR SANITARY SEWER CONSTRUCTION

DESCRIPTION

This work shall include complete design, furnishing, installation, maintenance and removal of any earth retention systems, bracing, and associated items employed to enable construction of the sanitary sewer and manholes without damaging or disturbing utilities, structures or any other features not designated for removal while maintaining access for construction equipment and local traffic, as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. All work shall comply with the City of Ann Arbor General Conditions and Standard Specifications for materials and construction, unless specified or modified by this Detailed Specification.

DESIGN AND PERFORMANCE REQUIREMENTS

As a reference the Geotechnical Report for Geddes Avenue Reconstruction, prepared by Materials Testing Consultants, Inc. for the City of Ann Arbor, is included in the Specifications. Contractor shall make their own evaluation of subsurface soil and groundwater conditions that could occur during construction of the proposed work.

Perform the structural design of the Earth Retention System and provide the material and labor as determined by the structural design, but no less than the minimum requirements specified.

The Engineer may order additional bracing, strength or depth for adequacy of the Earth Retention System. These additions shall not be the cause for a claim for additional cost to the Contract. Neither shall they relieve the Contractor of their responsibility for the sufficiency of strength of the system.

Shore against H-20 loadings at a minimum.

Contactor shall support and protect all utilities within work area in accordance with Owner requirements.

Contractor shall maintain access for their construction equipment, and for access of local traffic as described in the Plans and Specifications.

SUBMITTALS

Submit Shop Drawings that include the type of system or systems, material strengths, bracing systems, installation equipment, locations and depths.

Submit structural calculations by a Structural Engineer registered in the State of Michigan to Owner's Engineer for review upon request. Engineer review shall not relieve the Contractor of the design responsibility.

Submit certifications that all materials are new and meet or exceed specification requirements.

QUALITY ASSURANCE

Earth Retention System shall be installed by the Contractor or Subcontractor who has been in the business for not less than four years and is qualified to design, place and drive the selected Earth Retention System. Fabrication and installation personnel shall be knowledgeable of the selected Earth Retention System used, and trained and experienced in the fabrication and installation of the materials and equipment for the system.

MATERIALS

Supply all necessary materials, including but not limited to piling, walers, braces, lagging, connections, and equipment as necessary to construct the selected Earth Retention System.

Sheet piling, if selected, shall comply with ASTM A690 Standard Specification for High Strength Low Alloy Steel H-Piles and Sheet Piling for Use in Marine Environments, and have interlocking joint between panels to minimize water leakage.

Provide Earth Retention System to reach required depth in one piece; field splicing will not be allowed unless clearly described in the Shop Drawings.

EXECUTION

If required, drive Earth Retention System to a minimum of five feet below the required excavation.

Use of vibratory methods for installation of the Earth Retention System are prohibited within the influence of the MDOT Railroad right-of-way, and will require pre-approval by the Owner in other work areas.

There is not a separate pay item for dewatering. All costs associated with dewatering shall be included in the unit prices bid for pay items related to sewer construction.

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:

PAY ITEM	PAY UNIT
Earth Retention for Sanitary Sewer Construction	Lump Sum

The lump sum 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.

DETAILED SPECIFICATION
FOR
ITEM # 881 – TURF ESTABLISHMENT

DESCRIPTION

This work shall consist of furnishing and placing 4" of Engineer-approved topsoil, hydroseeding lawn areas, and placing erosion control matting as indicated on the plans, as detailed in the specifications, or as directed by the Engineer.

The related work of preparing the earth bed, furnishing, and placing the topsoil, furnishing the seed mixtures, furnishing the fertilizer, sowing the seed, furnishing and installing the erosion control matting and watering shall conform to the requirements of this Detailed Specification and Section 816, Turf Establishment, of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction.

MATERIALS

The materials shall meet the requirements specified in the 2012 MDOT Standard Specifications for Construction except as specified herein:

- Seed shall be fresh, clean, dry, new-crop seed complying with the AOSA's "Rules for Testing Seed", tested for purity and germination tolerances.

Variety Proportion	By Weight	Purity	Germination
Baron Kentucky Bluegrass	25%	90	80
Kentucky Bluegrass 98/80	15%	98	80
Park Kentucky Bluegrass	15%	90	80
Omega III Perennial Ryegrass	20%	98	90
Creeping Red Fescue	25%	95	90

Maximum weed content shall be 0.30%.

- Fertilizers shall be a Class A. The percentages by weight shall be at a minimum 10N-10P-10K or as required and approved by the Engineer.

- The seed, fertilizer, and adhesive (mulch binder) shall be mixed together and applied at one time.

- Water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances.

Erosion Control Blanket:

Straw/jute blanket shall be constructed with a 100% agricultural straw matrix with jute and cotton netting on top and bottom, be 100% biodegradable, and have a typical functional longevity of 12 months. Use 6 inch long biodegradable stakes 24 inch O.C. or as directed by the Engineer. Plastic weaving will not be permitted.

MAINTENANCE AND ACCEPTANCE

It is the responsibility of the Contractor to establish a dense, vigorous, weed free lawn of permanent grasses, free from mounds and depressions prior to final acceptance and payment of this project. Any portion of a seeded area that fails to show a uniform germination shall be re-seeded. Such re-seeding shall be at the Contractor's expense and shall continue until a dense, vigorous and weed free lawn is established.

The Contractor shall maintain all lawn areas until they have been accepted by the Engineer. Lawn maintenance shall begin immediately after the grass seed is in place, and shall continue until final acceptance with the following requirements:

- Lawns shall be protected and maintained by watering, mowing, and reseeding as necessary, until the period of time when the final acceptance and payment is made. The Contractor shall establish a uniform, dense, vigorous, and weed-free stand of the specified grasses. Maintenance includes, but is not limited to; deposition of additional topsoil; re-seeding; watering; fertilizing; mowing, and any other work as required to correct all settlement, erosion, germination, and establishment issues until the date of final acceptance by the Engineer.

- Damage to seeded areas resulting from erosion shall be repaired by the Contractor at the Contractor's expense. Scattered bare spots in seeded areas will not be allowed over three (3) percent of the area nor greater than 6"x 6" in size.

When the above requirements have been fulfilled, the Engineer will accept the lawn.

MEASUREMENT AND PAYMENT

The completed work shall be paid for at the contract unit price for the following contract items (pay items):

PAY ITEM	**PAY UNIT**
Turf Establishment	Square Yard

"Turf Establishment" will be measured by area in square yards and will be paid for at the contract unit prices which shall be payment in full for all labor, materials, and equipment needed to accomplish this work.

Topsoil placement shall occur at the locations called for on the plans or, as directed by the Engineer. The unit price for "Turf Establishment" shall include the grading of the area to receive the topsoil, preparing the earth bed, spreading and raking the topsoil to provide a uniform surface free of large clods, lumps, rocks, brush, roots, or other deleterious materials, as determined by the Engineer.

The hydroseeding shall be placed on all lawn areas as called for on the plans, and shall include furnishing and installing seed, fertilizer, mulch, mulch adhesive, erosion control matting and all required watering necessary for the establishment of the turf. Watering will not be paid for separately.

Any damage or soiling to signs, fences, trees, pavements, or structures shall be repaired and/or cleaned by the Contractor at the Contractor's sole expense.

After initial placement of the topsoil and hydroseed mixture(s), fifty (50) percent of the total quantity placed for each item will be certified for payment. The remaining fifty (50) percent of the total quantities will be held by the Engineer until such time as all lawn areas have been established and accepted by the Engineer.

Final acceptance shall occur no sooner than June 15th of the year after the year in which the lawn areas were initially planted during the previous spring planting season; or, final acceptance will occur no sooner than November 1st of the year after the year in which the lawn areas were initially planted during the previous summer planting season.

In no case shall lawn areas be accepted in the same year in which they were planted.

DETAILED SPECIFICATION
FOR
ITEM #881A – LANDSCAPING MAINTENANCE AND WARRENTY, 1ST YEAR
ITEM #881B - LANDSCAPTING MAINTENANCE AND WARRENTY, 2ND YEAR

DESCRIPTION

The landscape maintenance and warranty work shall cover all planting work included in the Detailed Specification for "Planting Items." Watering, removing weeds, and completing all necessary tasks to maintain a healthy stand of plants, and Balled and Burlapped (B&B) Trees as shown on the plans and/or as specified herein is also included in these items of work. Complete this work according to the Section 815, 816 & 917 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction and as described herein. Extent of work shall include, but not be limited to:

1. Watering
2. Weed Control
3. Mulching
4. Disease and insect control
5. Pruning
6. Fertilizer Application
7. Removal of tree support and tags

MATERIALS

Mulch

Mulch shall be composted, double processed, shredded hardwood bark, free from foreign material and fragments, and shall not contain pieces that are in excess of 2 inches in any dimension. Bark will not be accepted. Colored or dyed mulch will not be accepted.

Pesticides & Herbicides

Materials shall comply with Local, State and Federal regulations.

The Contractor shall post signs with public notice prior to any application of pesticide. The signs shall read: "Notice of Pesticide Application", and will include the following information: the name of the pesticide; the date of application; and the appropriate warning term for the EPA toxicity category. These terms are, for toxicity category I: DANGER-POISON. For category II: WARNING. For category III & IV: CAUTION. A website containing more information with regard to the chemicals applied will be printed on them.

Herbicide Types:

Herbicide A - Glyphosate, a non-selective herbicide shall be used to eradicate existing vegetation. It shall be used according to the manufacturer's label.

Herbicide B - Sethoxydim, a selective herbicide shall be used to selectively remove invasive grass from prairie planting and wet meadow planting (if not adjacent to water). It shall be used according to the manufacturer's label.

Herbicide C - Rodeo™, a non-selective herbicide shall be used to eradicate existing vegetation in areas adjacent to open water. It shall be used according to the manufacturer's label.

Common IPM (Integrative Pest Management) practices shall be followed. Pesticides and herbicides shall be used as a last resort.
Fertilizer

Materials shall conform to the standards of the Association of Agricultural Chemists and shall comply with State and Federal regulations.

Fertilizer for B&B trees shall be an organic, slow release with a ratio of 3-1-2 or 3-1-1 or approved substitution.

Maintenance fertilizer for lawn shall contain no phosphorus, shall be derived from an organic product and slow release with a ratio of 27-0-12 or approved substitution.

There shall be no fertilizer applied to Bioswales, Ditch/Creekside, or Native Seed planting areas.

Delivery, Storage and Handling

Packaged materials shall be delivered in original containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and storage.

Submittals

The Contractor shall submit to the Engineer copies of all field reports prepared by the maintenance supervisor identifying the date of each visit and work items completed during each visit. The receipt of the written field report by the Engineer must occur within one week of the actual site visit. Payment for the work of this Detailed Specification shall not be made without the timely receipt of the field reports by the Engineer. The Contractor shall not be allowed to neglect the maintenance, or perform it in a manner that is non-compliant in the opinion of the Engineer, with this Detailed Specification of any planted material in lieu of not being paid for the work.

MAINTENANCE

The Contractor, prior requesting a letter of Provisional Acceptance from the Engineer, shall submit two copies of a maintenance schedule detailing the work items identified under this Detailed Specification. This schedule shall include a 104 week table covering the two-year warranty period, identifying all weekly site visits and the tasks to be performed during each visit. The schedule shall show that no maintenance will occur between the periods of October 15th and April 1st, unless otherwise required by related Detailed Specifications.

Provisional Acceptance: After planting zone/type is finished, the Engineer and Contractor shall perform a site evaluation to determine if planting is complete. After any additional changes have been performed by the Contractor, the Engineer will issue a written Provisional Acceptance letter, after which the Maintenance and Warranty Periods will commence for 2 full years.

Maintenance of plantings shall begin immediately after Provisional Acceptance is granted and shall continue as required until final acceptance at the end of the warranty period. Maintenance required prior to Provisional Acceptance shall be included in the contract unit price for each plant. Provisional Acceptance may be granted for different planting zones/types (e.g. B&B trees, Ditch Planting, etc.) within the project based on project schedule constraints.

The Contractor shall submit to the Engineer copies of all field reports prepared by the maintenance supervisor identifying the date of each visit and work items completed during each visit. This will be required prior to each payment.

Maintenance shall include all measures necessary to establish and maintain plants in a vigorous and healthy growing condition.

The Contractor shall inspect the plantings at least once per week during the warranty period and promptly perform needed maintenance. Weekly maintenance shall be conducted for 2 full years after Provisional Acceptance is granted.
Watering

Water shall come from a source approved by the Engineer.

Monitor all plants during site visits for signs of stress due to lack adequate moisture in the root zone.

Water as required to keep all plants in optimum condition (1 inch of total water per week, including rainfall) and maintain an optimum supply of moisture within the root zone. Recurring overly dry or wet conditions shall be grounds for rejection of plant material. Watering of all deciduous plants and trees shall be performed using the probe method and by the use of water reservoir bags. Each balled and burlapped tree shall receive its own individual water reservoir bag. Water shall not be applied with a force that will displace mulch or cause soil erosion, and shall not be applied so quickly that the mulch and plants cannot absorb it. Apply water in such a manner that it is allowed to penetrate down into root zone of plant.

Herbaceous plugs in the deepest ponding area may require more watering than other planting areas.

If newly planted Bioswales (within first 3 months of planting) have 3 inches of standing water or more for over 12 hours, the Contractor shall pump the affected area(s) out to ensure the survival of the planting. The pumping activities shall occur within 24 hours of the overwhelming rain event.

Any supplemental watering visits necessary will be paid for in accordance with Section 815.04C.3, and must be approved by the Engineer prior to visit.

Weeding/Cultivating

Frequency shall be every visit.

Methods: Weeds shall be removed by hand and include removing the entire root mass of the weed. Before application of any herbicide the Contractor shall receive approval of the Engineer. A selective herbicide shall be applied according to manufacturer's directions.

Herbicides shall only be used when and where necessary as approved by the Engineer. Manufacturer's directions and precautions must be followed rigorously. Excess herbicides shall be properly removed from the site.

The posting of signs as a public notification of herbicide application will be required 24 hours before and maintained for 48 hours following application.

Weed Control: All Planting Areas

Weeding of all planting areas shall occur with each maintenance visit and in no instance shall they be allowed to propagate such that invasive weed species (Sweet Clover, Burdock, Wild Carrot, Purple Knapweed, Canada Thistle, Queen Anne's Lace, Purple Loosestrife, Phragmites, Bindweed, Crab Grass, Lamb's Quarters, non-native honeysuckle, buckthorn, autumn olive, Norway maple, bindweed, barnyard grass, etc.) may set their seed. Additional weeding activities may need to be performed as determined by Engineer.

Post planting management procedures for Bioswale and Adjacent Planting Areas, Ditch/Creekside Re-Vegetation and Native Seed planting areas may consist of, but are not limited to, the following:

1. Pull invasive weed species to remove the entire root mass;
2. Spring or fall dormant seasons application of a non-selective herbicide to control invasive weeds as directed by the Engineer. Follow City of Ann Arbor signage requirements for herbicide application;
3. Summer application of a selective herbicide to control invasive weeds as directed by the Engineer. Follow City of Ann Arbor signage requirements for herbicide application; and
4. Initial mowing of the Native Seed Areas (using flail mower) may occur after one season of growth when the weeds are ten (10) inches high or prior to invasive weeds setting seed. Mowed height shall be 5 inches. Weeds on slopes 1:3 or greater shall be mowed with a hand-held flail mower or common weed whacker.

Herbicide applications for aggressive weeds shall conform to the following guidelines:

1. Invasive forbs such as purple knapweed, purple loosestrife, garlic mustard, Queen Anne's Lace, Canada thistle, bindweed, lambs quarters, phragmites or other invasive forbs shall be spot controlled on an on-going basis beginning in June with Herbicide A through the end of the second growing season and/or before the plants set seed.
2. Invasive grasses such as crabgrass, smooth brome, reed canary, barnyard or other invasive grass shall be spot controlled beginning in May on an on-going basis with Herbicide B through the end of the second growing season and/or before the plants set seed.
3. Invasive woody plants such as non-native honeysuckle, buckthorn, autumn olive, Norway maple, shall be spot controlled beginning in June on an on-going basis with Herbicide A through the end of the second growing season and/or before the plants set seed.
4. Planting Areas adjacent to open water that contain invasive weeds shall be spot controlled beginning in June with Herbicide C until the end of the first full growing season and/or before the plants set seed.

Mulching

Monitoring: All mulch beds shall be reviewed in June and September for each Maintenance and Warranty Period. Any beds that do not meet the following conditions shall be replenished:

1. Depth shall be three (3) inches throughout the mulch saucer for individual trees.
2. Depth shall be two (2) inches throughout the bioswale areas.
3. Do not allow mulch to be deeper than four (4) inches for individual trees.
4. Keep mulch away from root collar of trees.

Disease and Insect Control

Monitoring for diseases and insects shall be the responsibility of the Contractor. The Contractor shall monitor all plants at all times for disease and insect problems.

Treatment shall take place in accordance with common IPM practices.

Pesticides shall only be used when and where necessary as approved by the Engineer. Manufacturer's directions and precautions must be followed rigorously. Excess pesticides shall be properly removed from the site.

The posting of signs as a public notification of pesticide application will be required 24 hours before and maintained for 48 hours following application.

Pruning

Prune all dead wood at first live lateral bud in accordance with standard horticulture practices using sharp instruments cleaned frequently. Pruning shall enhance plant development and ornamental qualities. Do not prune terminal leader or branch tips. A plant's natural form shall not be compromised by any pruning activities.

Additional pruning may be required at the request of the Engineer in order to decrease public liability factors.

Remove all standing dead material from perennials and grasses at earliest Spring maintenance visit.

Remove immediately after pruning all dead, broken and diseased growth and other pruning debris from the site and dispose of in an environmentally sensitive manner.

Plant material that is "topped" by the Contractor shall be replaced at the Contractor's expense.

Maintenance Fertilizer Application

Application shall be according to manufacturer's directions.

Woody Plants

1. Maintenance Fertilizer application for woody plants shall occur in November of the Second Maintenance and Guarantee Period
2. Topdress at a rate of 1 pound of nitrogen per 1,000 square feet.

Lawn

1. Maintenance Fertilizer application for lawn shall occur during the period of May through October as needed to establish and maintain healthy, vigorous, turf during the First and Second Maintenance and Warranty Periods. For Spring seeding, commencement of maintenance fertilizer shall begin during the first growing season. For Fall seeding, commencement of maintenance fertilizer shall begin the subsequent spring.
2. Fertilize by spreading fertilizer at a rate of one (1.0) pounds of nitrogen per 1,000 square feet.

Removal of Tree Support and Tags

Repair all damaged guys and stakes during the First Maintenance Period.

Remove all stakes, guys, labels and support material at the end of the First Maintenance Period and remove from site.
Establishment and Acceptance: Planting Areas (Bioswales and Adjacent Planting Areas, Ditch/Creekside Re-Vegetation and Native Seed Areas)

Establishment of a dense stand of wet meadow perennial grasses and/or flowers as specified is the responsibility of the Contractor. Any part of the area that fails to thrive shall be re-planted until a dense planting in these areas is established.

The Contractor shall remove and replace dead and unacceptable plants as their condition becomes apparent at his/her sole expense.

Watering: The Contractor shall keep plants moist for optimum plant growth (1" of total water per week, including rainfall) through the duration of the Establishment Period.

Watering: The Contractor shall keep seeded areas moist for optimum plant growth (1" of total water per week, including rainfall) until the native seeded areas are four (4) inches high typical.

Protect planted area from traffic and erosion. Safety fences and/or silt fence with appropriate signage may be used at the Contractor's expense until the grasses and flowers are fully established.

Erosion shall be repaired by the Contractor.

Initial mowing of the Native Seed areas (using flail mower) shall occur after one season of growth when the weeds are ten (10) inches high or prior to invasive weeds setting seed. Mowed height shall be 5". Weeds on slopes 1:3 or greater shall be mowed with a hand-held flail mower or common weed whacker.

Provisional Acceptance Native Seeded Areas: Provisional Acceptance shall be granted when 20% of the native species and 80% total cover with no bare areas as large as 4 square feet exist as determined by the Engineer. The Engineer will utilize a meander/search method for reviewing the area(s).

Final Acceptance for Native Seeded Areas: Final Acceptance shall be granted when 40% of the native species and 90% total cover with no bare areas as large as 1 square foot exist as determined by the Engineer. The Engineer will utilize a meander/search method for reviewing the area(s).

Provisional Acceptance Bioswale and Adjacent Planting Areas, Ditch/Creekside Re-Vegetation: Provisional Acceptance shall be granted when 90% total cover with no bare areas as large as 4 square feet exist as determined by the Engineer. The Engineer will utilize a meander/search method for reviewing the area(s). Bare areas as large as 4 square feet shall be

"re-plugged" by the Contractor without additional compensation. (Ditch/Creekside Re-Vegetation areas only planted in riprap with no plugs will not allow bare areas as large as 16 square feet to exist as determined by the Engineer).

Final Acceptance for Bioswale and Adjacent Planting Areas, Ditch/Creekside Re-Vegetation: Final Acceptance shall be granted when no bare areas as large as 1.5 square feet exist as determined by the Engineer. Bare areas as large as 1.5 square feet shall be "re-plugged" by the Contractor without additional compensation.

Final Acceptance will be granted when the above requirements have been met, but in no case sooner than 2 full years after the initial installation of plant material.

Should the Contractor fail to meet the requirements for Final Acceptance, maintenance and warranty work shall continue, without additional compensation, until such time as Final Acceptance can be granted.

Warranty

The Contractor shall warrant all plants to be true to botanical name and specified size.

After receiving a Notice of Provisional Acceptance, the Contractor shall maintain all plantings as specified, and warrant against unsatisfactory growth and improper maintenance for a period of two years.

The Contractor shall not be responsible for defects resulting from City of Ann Arbor negligence, damage by others or unusual phenomena, including predation, lightning, storms, freezing rains, winds over 60 miles per hour, or fires or vandalism that are beyond the Contractor's control.

Replacements

During the warranty period, the Contractor shall replace at his/her sole expense plant materials that are dead or that are, in the opinion of the Engineer, in an unhealthy or unsightly condition. Rejected plant materials shall be removed from the site and legally disposed of by the Contractor at his/her sole expense. The Contractor shall be aware that plants may need to be replaced more than once during the warranty period should the plants be deemed to be in an unhealthy or unsightly condition by the Engineer. The Contractor shall provide the necessary resources in the unit price bid for the work to cover the cost of any needed replacements.

All plant replacement work shall be in accordance with Section 815 of the 2012 MDOT Standard Specifications for Construction and this project's Detailed Specifications.

Plants shall be replaced no later than the next succeeding planting season. Areas damaged by replacement operations shall be fully restored by the Contractor at his/her sole expense.

Final Acceptance Inspection

The final inspection of all planting work, or phase of planting work, will be made by the Engineer and the Contractor just before the final warranty period expires. All plant replacements shall be completed and the site shall be cleaned-up, prior to the inspection.

The final acceptance inspection of plantings or material planted during recognized planting seasons will be made during September for fall planting and by June for spring planting.

Planted areas which do not meet the contract requirements, shall be replanted to the original project specifications and within acceptable planting dates as directed by the Engineer.

MEASUREMENT AND PAYMENT

The completed work as measured will be paid for at the Contract Unit Price for the following contract items (pay items):

PAY ITEM	PAY UNIT
Landscape Maintenance and Warranty, 1st Year	Lump Sum
Landscape Maintenance and Warranty, 2nd Year	Lump Sum

The lump sum contract price shall include all materials, labor, and equipment required to maintain plant materials in a healthy, thriving, condition; remove weeds throughout the warranty period; and, meet all other performance requirements outlined in this Detailed Specification.

Payment for maintenance during the warranty period shall be based on the lump sum contract amount divided by the number of maintenance visits identified in the maintenance schedule supplied by the Contractor prior to issuance of provisional acceptance. Payments will only be made for maintenance performed and verified through field reports submitted by the Contractor with each pay request. Also included in these items of work are restoration of any area damaged by the Contractor during their maintenance or during replacement planting operations.

DETAILED SPECIFICATION
FOR
ITEMS #900, 902, 904-906, 909 – MISCELLANEOUS STRUCTURAL RETAINING WALL ITEMS

DESCRIPTION

This work shall consist of furnishing and installing structural items to construct the retaining wall adjacent to Geddes Avenue and the railroad as shown on the plans, including all labor, equipment, and material required.

This work shall be completed in accordance with the drawings and detailed specifications of this contract, the MDOT 2012 Standard Specifications for Construction, and as herein specified, including any detailed specifications

MATERIALS

Materials shall meet the requirements as described in the MDOT 2012 Standard Specifications for Construction.

CONSTRUCTION METHODS

These items shall be constructed as required in the MDOT 2012 Standard Specifications for Construction.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
Excavation, Fdn	Cubic Yard
Backfill, Structure, CIP	Cubic Yard
Underdrain, Fdn, 4 inch	Feet
Underdrain Outlet, 4 inch	Feet
Underdrain Outlet Ending, 4 inch	Feet
Bridge Railing, 4 Tube	Feet

All work indicated herein shall be included in the unit prices for the above pay items and shall include all labor, materials and equipment required to complete the work.

DETAILED SPECIFICATION
FOR
ITEM #901 – EARTH RETENTION SYSTEM, TEMP, LEFT IN PLACE

DESCRIPTION

This work includes the labor, material and equipment required to design, furnish and install the temporary earth retention system required for construction of the retaining wall adjacent to Geddes Avenue and the railroad as shown on plans.

Complete this work according to the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction, the submitted and approved wall design, and this special provision.

SUBMITTALS

The Contractor shall prepare and submit to the Engineer, for review and approval, working drawings and design calculations for the temporary earth retention system at least 21 calendar days prior to planned start of construction. All submittals shall be signed and sealed by a Registered Professional Engineer currently licensed in the State of Michigan with a minimum of two years of experience in the design of temporary earth retention systems.

MATERIALS

Materials for the temporary earth retention system shall be selected by the contractor and shall provide a system that complies with the intent of this special provision.

CONSTRUCTION METHODS

Construction of the temporary earth retention system shall comply with the following requirements:

7. The temporary earth retention system shall consist of soldier piles and lagging with pre-bored holes, auger cast secant piles or other suitable alternative.
8. Use of pile driving hammers or vibratory hammers is prohibited.
9. The temporary earth retention system shall be constructed within the right-of-way along the right-of way line.
10. The temporary earth retention system shall be designed with sufficient stiffness so there is no subsidence or cracking of the adjacent underground utilities and structures.
11. The temporary earth retention system shall be sufficiently tight to prevent soil loss from behind the retaining structure.
12. Soldier piles shall be encased in concrete below the excavation cut line.
13. The temporary earth retention system shall include provision to divert surface drainage behind the wall and outside of the right-of-way.
14. The temporary earth retention system shall be removed to a depth of at least 1 foot below bottom of road subgrade on completion of the retaining wall construction.
15. Plan, schedule and coordinate this work with the construction of the retaining wall as shown on plans.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
Earth Retention System, Temp, Left in Place	Square Foot

Earth Retention System, Temp, Left in Place will be computed on the area of required earth retention. The vertical dimension for computing the area will be the difference in the ground elevation at the excavation line required for construction of the cast in place retaining wall. The horizontal dimension for computing the area will be the length of the earth retention system at the retained earth grade line. Earth Retention System, Temp, Left in Place includes all labor, equipment, and materials required to complete the work as described herein, the details shown on the plans, and the approved submittals prepared by the Contractor.

DETAILED SPECIFICATION
FOR
ITEM #903 – AGGREGATE 21A, MODIFIED

DESCRIPTION

This work will include placement of an aggregate base course at the depth specified on the plans. Construct the aggregate base course on a prepared subbase or subgrade as shown on the plans, or as directed by the Engineer**.**

This work shall be completed in accordance with the drawings and detailed specifications of this contract, the City of Ann Arbor Standard Specification, and sections 302 and 902 of the MDOT 2012 Standard Specifications for Construction, and as herein specified, including any detailed specifications.

MATERIALS

The materials shall meet the requirements detailed below:

a. Aggregate reservoir: MDOT 21A
The stone reservoir shall consist of MDOT 21A and shall meet the following requirements:
Minimum 25% crushed.
Loss, % Max., Los Angeles Abrasion (MTM 102) = 50%
Gradation as follows:

Sieve	% Passing
1.5-inch	100
1.0-inch	85-100
0.5-inch	50-75
#8	20-45
Loss by Wash	4-8

The thickness shall be in accordance with the plans.

CONSTRUCTION METHODS

Place the modified aggregate base in accordance with Section 302 of the 2012 Standard Specification for Construction by the Michigan Department of Transportation.

MEASUREMENT AND PAYMENT

The items of work included in this Detailed Specification shall include all labor, material and equipment needed to accomplish all the work described in this detailed specification, which includes, but is not limited to: furnishing, placement, and compaction of all sand and aggregate materials.

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:

PAY ITEM	PAY UNIT
Aggregate 21A, Modified	Cubic 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.

DETAILED SPECIFICATION
FOR
ITEM #907 – SUBSTRUCTURE, CONC
ITEM #908 – REINFORCEMENT, STEEL, EPOXY COATED

DESCRIPTION

This Section includes the furnishing and mixing of all materials required for concrete, the furnishing, erection, care and removal of forms; the furnishing placement, finishing, curing and protection of all concrete, and the furnishing and placing of steel reinforcement for all concrete.

Concrete shall be composed of a mixture of Portland Cement, fine aggregate, coarse aggregate and water. The materials and methods used shall produce a dense, homogeneous, impervious, durable and workable concrete of the highest quality and without defects of any kind.

The Contractor shall provide portland cement concrete mixtures that are resistant to excessive expansion caused by alkali-silica reactivity (ASR). The evaluation as to the resistance of submitted concrete mixtures to excessive expansion caused by ASR shall be by the Owner as described herein.

Related Sections

Materials Concrete

Notes: Should any conflict occur between this section and related sections, the provisions of this section shall apply.

MATERIALS

Cement

Cement shall be "Portland Cement" conforming to current ASTM Specification C-150, Type I or Type II. When authorized for use in the work by the Owner, High Early Strength Cement shall conform to current ASTM Specification C-150, Type III.

Only one type of cement shall be used in the same portion or element of the work. All cement shall be of the same brand and shall be produced by a single mill unless otherwise authorized. Cement salvaged by cleaning sacks or from discarded sacks of cement, shall not be used in the work. Any cement which for any reason has become partially set, contaminated or which contains lumps will be rejected and shall be immediately removed from the site.

Fly Ash

Fly ash shall conform to the requirements of ASTM C-618 Class F.

Ground Granulated Blast Furnace Slag

Ground Granulated Blast Furnace Slag (GGBFS) shall conform to the requirements of Grade 100 or 120 (ASTM C 989).

Aggregates

Fine Aggregate shall be natural sand, 2NS.

Coarse aggregate shall conform to ASTM C-33, Class 4S and be graded in accordance with the following Michigan Department of Transportation Specifications for Construction Classifications:

Element	**MDOT Class**
Walls, Slabs & Other Concrete less than 8" thick	26A
All other concrete	6AA

Water

Tap water of potable quality shall be used for mixing concrete and at the time of use shall be clean and free from oil, alkalis, or organic matter.

Admixtures

An air entraining admixture conforming to the requirements of current ASTM Specification C-260 shall be used for all concrete.

All concrete shall contain a water reducing admixture, complying with current ASTM Specification C-494, Type A. The admixture shall, be free of significant amounts of chloride, and shall be used in accordance with the manufacturer's recommendation for the type of cement to be used, except that only volumetric dispensing will be allowed.

The manufacturer shall certify, in writing, that the materials supplied for use under this Contract are identical in all respects, including concentration and chloride content, to the material tested in accordance with current ASTM Specification C-494. When requested by the Owner, the Contractor shall make available the services of a manufacturer's qualified field representative, to assure proper use of the admixture.

Reinforcing Steel

Unless otherwise indicated, reinforcing steel shall be deformed steel bars conforming to the requirements of current ASTM Specification A-615, Grade 60. Reinforcing steel for ties and stirrups shall be new billet steel intermediate grade conforming to the requirements of the current edition of ASTM Spec. A-615 Grade 40.

All reinforcing steel shall be free from defects, kinks, and bends not shown on the drawings.

Wire mesh for reinforcement shall conform to the current requirements of ASTM Specification A-185.

All bars shall be of the shape, size, class, and grade of steel specified and shown on the drawings, and each bar shall have at all points a net section not less than that of a plain round bar of corresponding size.

The Contractor shall furnish the manufacturer's written certification to the Owner that all reinforcing steel of each shipment meets the pertinent requirements of ASTM Specifications.

Samples for the inspection and testing of the reinforcing steel shall be chosen by the Owner, and sampling and testing methods shall conform to the requirements of the General Conditions.

Forms

Forms for structural concrete shall be of metal, plywood, first class dressed lumber, or other material approved by the Owner. The forms shall be true in every respect to the required shape, size, grade, and alignment of the finished structure and shall be of sufficient strength and rigidity to maintain their position and shape under the loads and operations incident to placing and curing the concrete. The forms shall be mortar-tight at the time concrete is placed in them and shall be so constructed that the surface of the finished concrete will be reasonably free from ridges, fins, offsets or similar defects. Suitable molding or beveled strips shall be placed in the forms to chamfer or bevel all exterior corners of the concrete to prevent breaking and spalling at the edges when the forms are removed. Adequate and suitable means for removing the forms without injury to the surface of the finished concrete shall be provided.

The Contractor shall locate and provide adequate shoring to safely support the work at all times. Shoring shall be spaced to insure that no member will be excessively loaded or will be subjected to adverse stresses during construction operations.

Shores shall be continuous between supports and shall be aligned vertically with respect to each other. No adjustable or spliced wooden shores shall be used, unless specifically approved by the Engineer.

When requested by the Owner, drawings showing details of the forms and shoring proposed by the Contractor shall be submitted to the Owner for approval.

The forms shall be maintained at all times in good condition as to shape, strength, rigidity, water-tightness and smoothness of surface. Before each use, forms shall be thoroughly cleaned of all debris and water before concrete is placed, and shall be coated with a non-staining type mineral oil which shall not discolor or otherwise injuriously affect the concrete. The coating shall be applied before reinforcing steel is placed. Temporary openings shall be provided at the bottom of wall forms and at other points where necessary to facilitate cleaning and inspection.

Sectional form panels may be used throughout where practicable. When requested, designs of sectional forms shall be submitted to the Owner for approval before using in the work.

The Owner may at any time condemn any section or sections of forms found deficient in any respect and such forms shall be promptly corrected or removed and replaced. Form alignment tolerances shall conform to current requirements of ACI 347, latest edition.

Wire ties shall not be used as form ties.

Metal inserts for anchorage of materials or equipment to concrete construction shall be provided as required in the work.

The type and kind of form ties and spreaders used shall be subject to the Owner's approval. Form ties shall not project through the finished concrete, but shall be of such type that, upon removal of the forms, the ends of the ties or spreader will remain one inch or more within the face of the concrete.

Waterstops

Waterstops shall be manufactured from a plastic compound, the basic resin of which shall be polyvinyl chloride (PVC), and shall not contain any scrap or reclaimed material. In all construction joints where required, the water stop shall be Sealtight, Type No. 6380 as manufactured by W. R. Meadows, Inc. or Serviced Durajoint, Type No. 5, as manufactured by W. R. Grace Co., Vulco Type VP-8073 as manufactured by Vulcan Metal Products, Inc. or Owner approved equal

Plastic waterstops shall have the following physical properties:

Specific Gravity	1.33 Max.
Durometer Hardness	65-80
Tensile Strength	2000 psi min.
Elongation	300% min.
Temperature Range	from +176 deg. F. to -35 deg. F.

Waterstops shall be chemically resistant to chlorinated water, salt water, acids, alkalis, sewage wastes and oil.

Splices in the continuity of waterstops shall be performed by heat sealing or other methods but always in strict accordance with the manufacturer's recommendations. Corners, tees, and other intersections shall be prefabricated in the shop.

Non-Shrink Grout

Non-shrink grout shall meet C.O.E. specification CRD-C621 and be equivalent to the following:

1. Crystex (L & M)
2. Sure-Grip
3. High Performance (Dayton Superior)
4. Masterflow 713 (Master Builders)

EXECUTION

Proportioning and Strengthening of Concrete

The mixing proportions and water cement ratio shall be such as to produce a dense, homogeneous, workable and durable air-entrained concrete having a minimum compressive strength of 4000 psi @ 28 days for all concrete work.

The Contractor shall provide portland cement concrete mixtures for the project that are resistant to excessive expansion caused by alkali-silica reactivity (ASR).

The evaluation as to the resistance of submitted concrete mixtures to excessive expansion caused by ASR shall be by the Owner as described herein.

Related Sections

This provision is supplemental to all other sections within the specifications of the Contract related to the construction of concrete items for the project.

Submittals

One week after the Owner awards this project the Contractor shall submit to the Owner all proposed concrete mix designs. These shall include the following:

1. Sources for all fine and coarse aggregates proposed to be used identified by their MDOT A.S.I # as listed in the Qualified Products List from the current MDOT Materials Source Guide if applicable or by an identifiable name if not applicable.
2. Sources and recent mill test reports for all cementitious materials and supplementary cementitious materials proposed to be used.

The Contractor also may submit for consideration the following:

1. Recent ASTM C 1260 (Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)) test results for the fine and /or coarse aggregates indicated on the proposed concrete mix designs.
2. Recent ASTM C 1567 (Determining the Potential Alkali Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)) test results for the specific proportionate combinations of cementitious, supplementary cementitious, fine, and coarse aggregate materials indicated on the proposed concrete mix designs.
3. Recent ASTM C 1293 (Determination of Length Change of Concrete Due to Alkali-Silica Reaction) test results for the fine and /or coarse aggregates indicated on the proposed concrete mix designs.

References

Portland Cement	ASTM C 150
Fine Aggregate	ASTM C 33
Coarse Aggregate	ASTM C 33

Ground Granulated Blast Furnace Slag, Grade 100, 120 ASTM C 989

Quality Assurance

The Engineer shall review the submitted information and testing data submitted with the proposed concrete mixtures and any information and/or any test results with respect to ASR the Engineer has on record for the proposed aggregates and/or proportionate combinations of cementitious materials and aggregates.

1. The criteria for approval of a proposed concrete mixture for resistance to excessive expansion caused by ASR shall be as follows:

a. If a proposed concrete mixture contains cement with an alkali level of less than 0.60% expressed as equivalent sodium oxide (percent Na_2O + 0.658 x percent K_2O) the mixture shall be considered to be resistant to the potential for excessive expansion caused by ASR.
   1) The determination of the alkali level of the proposed cement shall be made from the mill test reports submitted per Section 1.03.

b. If a proposed concrete mixture contains both fine and coarse aggregates for which there is testing per ASTM C 1260 that shows that both the fine and course aggregates produce expansions of less than 0.10%, the fine or coarse aggregate used to construct the mortar bar shall be considered to be "innocuous" (per Appendix X1 of ASTM C-33). Concrete mixtures that include both fine and coarse aggregates considered to be innocuous shall be considered to be resistant to excessive expansion caused by ASR.

c. If a proposed concrete mixture for which there is previous testing per ASTM C 1567, shows the proposed combination of cementitious materials and aggregates produce expansions of less than 0.10% the mixture shall be considered to be resistant to excessive expansion caused by ASR.

d. If a proposed concrete mixture for which there is previous testing per ASTM C 1293 shows that both the fine and course aggregates meets the criteria of Appendix XI of ASTM C 1293 with respect to the non-reactivity of the aggregate, the mixtures shall be considered to be resistant to excessive expansion caused by ASR.

e. If, based on the Engineer's evaluation, additional testing of the fine and / or coarse aggregates is needed to make the evaluations as discussed herein; the Owner shall perform such testing.
   1) The Owner shall have access to all materials, including aggregate pits, in order to obtain samples for such additional testing.
   2) The Owner shall perform the following test using the fine and/or coarse aggregates proposed for each concrete mixture: ASTM C 1260 – Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar – Bar Method).
   3) All samples submitted for testing per ASTM C 1260 shall first be tested to establish conformance to the required material specification for gradation.
   4) All samples submitted shall meet the required material specification for gradation prior to being submitted for testing per ASTM C1260.

2. If, based on the Engineer's evaluation, the submitted concrete mixture does not meet any one of the criteria of 1.05A.1. the mixture shall be rejected or be mitigated by Methods 1. or 2. as follows:

a. Method 1. Use of a cement with an alkali level of less than 0.60% expressed as equivalent sodium oxide (percent Na2O + 0.658 x percent K2O).
   1) The determination of the alkali level of the proposed cement shall be made from the mill test reports submitted per Section 1.03.

b. Method 2. Substitution of a portion of the cement with Ground Granulated Blast Furnace Slag (GGBFS) Grade 100 or 120 (ASTM C 689).
   1) For Method 2, the maximum substitution of cement with the GGBFS permitted shall be 35% by weight of total cementitious material (cement plus GGBFS).
   2) For Method 2, the effectiveness of the proposed cement–GGBFS combination to resist the potential for excessive expansion caused by ASR for each aggregate that is considered to be potentially reactive shall be demonstrated.
   3) The effectiveness of the proposed cement–GGBFS combination shall be based on test mortar bars per ASTM C 1260 using each fine or coarse aggregate that has been considered to be potentially reactive and the proposed cement-GGBFS combination for the concrete mixture.
   4) The criteria for evaluating the mitigation of a proposed concrete mixture with respect to ASR by Method 2. shall be as follows:
      a) If a mortar bar constructed of an aggregate that is considered to be potentially reactive and the proposed cement-GGBFS combination produces an expansion of less than 0.10%, the aggregate and proposed cement-GGBFS combination shall be considered to be resistant to excessive expansion caused by ASR.
      b) Concrete mixtures that include both fine and coarse aggregates considered to be resistant to excessive expansion caused by ASR by mitigation Method 2. as described herein shall be considered to have been adequately mitigated with respect to and resistant to excessive expansion caused by ASR.

c) If a mortar bar constructed of an aggregate that is considered to be potentially reactive and the proposed cement-GGBFS combination produces an expansion of 0.10% or greater, concrete mixtures containing these materials shall not be considered resistant to the potential for excessive expansion caused by ASR and the concrete mixture shall be rejected.

c. The contractor shall be responsible for all costs associated with the mitigation of a concrete mixture for ASR and any delay costs incurred from the Owner if, due to the mitigation method selected by the Contractor, it takes the Contractor beyond their completion dates.

If the Contractor intends to change suppliers or if the supplier intends to change concrete mixtures after the evaluation and/or Mortar-Bar tests are performed, the Contractor shall inform the Owner immediately, but not less than forty-five (45) days prior to concrete batching.

1. Upon notification, all concrete work will be postponed, without any additional costs or extension of time allowed by the Owner, until evaluation of the new mixtures and testing of the new materials, if needed, have been completed.

The Owner will be testing the concrete that is delivered to the project site so as to ensure that the approved mix design is being followed.

1. To assist the Owner in establishing that the approved mix design is being followed, the supplier shall include on the delivery ticket for each batch of concrete delivered to the job, the identification and proportions of each material batched.

The cost associated with the testing of the aggregates, or aggregates with the proposed cement–GGBFS combinations as described herein shall be borne by the Owner. The price for assisting the Owner in such testing is included in the item (s) of the concrete being supplied. If, during the testing process, it is determined that alkali-silica reaction (ASR) is not a condition that requires mitigation, the Contractor will not be entitled to any compensation whatsoever, for assisting the Owner in addressing the ASR issue.

Prior to the commencement of concreting operations, the Contractor shall design and submit to the Engineer the concrete mix he proposes to use to obtain the specified minimum strength concrete at 28 days, when sampled in accordance with the requirements of current ASTM Specification C-31, and tested in accordance with the requirements of current ASTM specification C-39, together with a statement of the sources of the materials upon which such concrete design mix is based, and recent certified tests of all components including gradation and physical properties of fine and coarse aggregates. Submittal shall be based upon compliance with ACI 318 Sections 5.2, 5.3, and 5.4.

The design mix shall be proportioned by weight and shall designate: the weight in pounds of fine and coarse aggregates, in saturated surface dry condition, per sack (94 pounds) of cement; the cement content in sacks per cubic yard; the gallons of water per sack of cement; and the volume of admixtures per hundredweight of cement which will be required for the concrete design mix; gross weight and yield per cubic yard and slump of trial mixes; compressive strength developed at 7 days and 28 days from not less than three test cylinders cast for each 7 day and 28 day test and each design mix.

The Concrete mix design to produce concrete of the required minimum strength shall be the sole responsibility of the Contractor, except that not less than 5 1/2 sacks of cement per cubic yard shall be used for 4000 psi concrete and the water cement ratio shall not exceed 0.45. The maximum allowable slump shall be that consistent with the proper placement of the mix and as specified herein, but in no case shall the water content exceed that specified. Air entrainment shall equal 5% ± 1%.

The Contractor may, at his option, substitute up to 20% of fly ash or 35% of GGBFS' by weight of cement for the specified cement content, provided that the resulting concrete meets specified requirements for strength, workability, and appearance.

Recent certified copies of test results of the fine and coarse aggregates proposed by the Contractor shall be provided with the mix design. Test results shall indicate aggregate grading, physical and chemical properties.

Ready Mixed Concrete

Ready mixed concrete shall be batched, mixed and transported in accordance with "Specifications for Ready-Mixed Concrete," ASTM C-94. Full batch ticket information including all items of C-94 Section 16.2 shall be furnished. Plant equipment and facilities shall conform to the "Check List for Certification of Ready Mixed Concrete Production Facilities" of the national Ready Mixed Concrete Association.

Construction Joints

General

Construction joints shall be provided in the locations indicated on the Drawings, or at such locations as designated or approved by the Engineer. They shall be so designed and located as to least impair the strength, water-tightness and appearance of the structure. The distance between construction joints shall in no case be greater than 25 feet, unless otherwise indicated on the Drawings.

Keyways shall be provided in all construction joints. Unless otherwise indicated, the width of keyways shall be approximately one-third of the width of the section at that point and their depth one-third their width, except that the width of keyway shall not exceed 12 inches.

Location

Construction joints in the base slab, walls, and upper slab of structures shall be located in the same vertical plane.

Joints in slabs on grade shall be located at a maximum 16' spacing and shall be perpendicular to the horizontal surfaces. All joints shall be truly vertical or horizontal unless otherwise shown on the Drawings or as ordered by the Owner. The surfaces of horizontal joints shall be screeded level.

Treatment of Hardened Concrete

Before depositing fresh concrete on or against hardened concrete, the surface of the hardened concrete shall be roughened, as required by the Owner, in a manner that will not leave loosened particles of aggregate or concrete at the surface. Such roughening of the surfaces may be accomplished by bush-hammering as required, or by the use of Sika Chemical Corporation Rugasol S or B, ChemMasters H, or equal, applied in accordance with the manufacturer's directions in order to produce a naturally roughened surface. Such hardened surfaces shall be thoroughly cleaned of foreign matter and laitance. Just before the fresh concrete is deposited, the cleaned surface shall be thoroughly wetted, the excess water removed, and the wetted surfaces slushed with a mortar of the same proportions as the mortar in the concrete mix. The coat of mortar on horizontal joints shall not be less than two inches in thickness. The fresh concrete shall be deposited before the mortar has attained its initial set.

Installing Waterstops

Waterstops shall be provided as shown on drawings including all connecting construction joints. Waterstops shall be held rigidly in place and shall extend through slots in the forms. In no case shall waterstops be bent over inside the forms.

The waterstops shall be adequately protected from oil, dirt and damage and shall be maintained and left clean, ready to receive future concrete placement. Damaged waterstops shall be repaired to the satisfaction of the Engineer

Care shall be taken in placing and maintaining waterstops in their correct position during the placing of concrete.

Placing Concrete

Concrete shall not be placed in water other than by tremie method and/or unless authorized by the Engineer nor shall water be allowed to rise or flow over concrete which has not attained its initial set. Concrete shall not be placed in contact with frozen earth.

Concrete shall be placed in the forms only after the forms, bracing, and reinforcing steel have been checked and the space within the forms has been cleaned of all debris and water. This check shall be made by the Owner's designated representative and no concrete shall be placed except with his approval.

When concrete is deposited directly on ground, care shall be taken to prevent loss of moisture from the concrete either by means of sprinkling the ground or by placing a waterproof membrane over the ground prior to placing the concrete.

Concrete shall be promptly placed with a minimum of handling so as to avoid segregation or loss of any ingredients. Each placement shall be completed in a continuous operation and the concrete shall be placed as nearly as possible in its final position to avoid rehandling.

Concrete shall be placed in layers not to exceed 24 inches deep and shall be compacted by mechanical internal vibrating equipment supplemented by hand spading, rodding, and tamping. Vibrators shall not be used to transport concrete inside the forms. Under no circumstances shall concrete that has partly hardened be deposited in the work.

During freezing weather Contractor shall take whatever steps are necessary to prevent the freezing of ground against which concrete has to be placed. This protection will not be considered provided by a mud mat or other thin membrane but shall be provided by insulation, covering and heating, or other Owner approved means.

Sufficient and suitable equipment and labor shall be provided so that, regardless of the method of transporting, handling, and placing the concrete when deposited in the forms shall have the quality and consistency specified. Concrete shall not be pumped through aluminum pipe.

Mixing, handling and transporting equipment and tools shall be kept clean and free from lumps and incrustations of hardened concrete. Buggies, buckets, chutes, conveyors, and other devices used for the transportation of concrete shall be watertight, and their design and the method of transporting the concrete shall be subject to the approval of the Owner. Overloading of vehicles or chutes so that spillage or leakage occurs will not be permitted.

The Contractor shall use the least slump possible consistent with workability for proper placing of concrete. Unless otherwise specified, maximum slumps permitted are:

1. 4” slump For sections with side forms
2. 3” slump For foundation slabs poured with curb forms only

Slump will be determined by the Owner's designated representative by means of the slump cone test as outlined in current ASTM Designation: C-143.

Built in Work

All necessary ties, anchors, bolts, inserts, dowels, waterstops, sleeves for pipe of every kind, and all other work to be anchored or set in the concrete shall be accurately set and securely held in place in accordance with details shown on the Contract Drawings or in accordance with standard practice, including such anchor bolts as may be necessary for equipment furnished by the Owner, or under other contracts.

Sleeves of a suitable size and type shall be set in the concrete where all pipes, conduits, ducts, plumbing and other work are to pass through the concrete work, except where pipe wall castings or other devices are shown to be cast in place on the Contract Drawings.

Protection and Curing

General

1. Fresh concrete shall be protected from rain, and other adverse conditions by means of tarpaulins or other suitable equipment or methods. After placing and finishing operations have been completed, concrete shall not be subjected to loading or otherwise disturbed until it has attained its specified design strength.

Initial Curing

1. One of the following methods shall be used to initially cure freshly placed concrete. This curing shall be employed for a period not less than 24 hours.
   a. Ponding or continuous sprinkling
   b. Fogging

c. Absorptive mat or fabric kept continuously wet
d. Sand or other covering kept continuously wet
e. Continuous steam (not exceeding 150 degrees F within the enclosure)
f. Exposed surface of concrete shall be protected against premature drying by curing in a manner subject to approval by the Owner.

Final Curing

1. Immediately following the initial curing, for a period of not less than six days before concrete has dried, additional curing shall be accomplished by one of the following materials or methods.
   a. Continuing the method used in initial curing
   b. Waterproof paper conforming to current Specifications for Waterproof Paper for Curing concrete ASTM C-171
   c. Other moisture retaining coverings as approved by the Owner.

Measures for Cold Weather Protection

When the mean daily temperature is less than 40°F the Contractor shall provide the necessary temporary heat, protection and enclosures so that newly placed concrete is kept at a temperature of not less than 50 degrees F for 7 days in accordance with ACI 306R recommendations. At the end of the curing period, artificial heating shall be discontinued and protections and enclosures removed in such a manner that the fall in temperature at any point in the concrete will not exceed 50°F in any 24 hours. Excessive heating shall be avoided to assure no undue loss of moisture from the concrete during the curing period. Fire prevention facilities shall be provided. Admixture of calcium chloride will not be allowed.

Concrete placed when the ambient temperature is lower than 40°F shall have a temperature of not less than 55°F and not greater than 90°F.

Measures for Hot Weather Protection

When a combination of high air temperature, lower humidity and higher wind velocity tend to impair concrete quality, the Contractor shall provide the windbreaks, shading, sprinkling or other means and methods necessary to protect the concrete in accordance with ACI 305 recommendations.

The maximum temperature of concrete at placement shall not exceed 90°F in hot weather. Steps shall be taken to control concrete temperature and water evaporation by proper attention to ingredients mixing, placing, handling, protection and curing.

Testing Concrete

All finished concrete testing shall be at the expense of the Owner.

Field cured cylinder test results will be used by the Engineer to verify the specified curing and protection, and to evaluate time intervals for removal of forms and shoring, and imposition of service loads.

When test results are such that there is reasonable doubt that the specified concrete strength and other characteristics have been attained in the structure, the Owner may require the Contractor to take cores from the questionable areas and conduct tests to determine the strength and other characteristics of the in-place concrete. Such tests will be paid for by the Contractor.

Concrete failing to meet specified requirements will be rejected, and may be required to be removed and replaced; or, additional approved construction may be required to compensate for rejected concrete; all without additional cost to the Owner, and as required to meet Owner's approval.

Sampling shall be done in accordance with the methods specified in the current edition of ASTM Specification C-172.

Finishing

General

1. Immediately following the removal of forms all fins, rough spots and hardened mortar shall be removed from all surfaces except those to be covered by backfill.
2. On all surfaces including those to be covered by backfill, the cavities caused by form tie cones shall be repaired with Portland Cement and sand grout. All other holes, honeycomb spots, broken corners or edges shall be thoroughly cleaned to solid concrete but of not less than a minimum depth of one inch with edges cut perpendicular to the surface. After the cuts and surrounding areas have been saturated with water for a period of not less than three hours and the surface to be repaired has been brushed with a grout of equal parts of Portland Cement and sand, they shall be carefully pointed and trued with a mortar of cement and fine aggregate mixed in the same proportion used in the concrete being repaired. Fine aggregate for mortar shall pass a No. 14 screen. The quantity of water used shall be no more than necessary for handling and placing.
3. The repair mortar shall be thoroughly mixed before using until it has reached the stiffest consistency that will permit placing.
4. Repair areas shall be kept moist for seven (7) days by a method meeting the approval of the Engineer.
5. Rough spots, stains, and hardened mortar on surfaces which will be exposed to view shall be removed by rubbing lightly with a fine abrasive stone or hone. Water shall be used freely and rubbing shall be sufficient only to remove the stains without working up a mortar lather or changing the texture of the concrete.
6. Stains caused by excessive use of form oil shall be removed by scrubbing with a 5 to 10 percent solution of muriatic acid, using a stiff bristle brush. The acid solution shall be applied to a thoroughly wetted surface and shall be rinsed off the surface with an abundance of water.

Floated Surface Finish

1. A fine floated surface finish shall be given to all slabs. The concrete surface shall be struck off with a straight edge which shall move on suitable guides set to the required elevation for the finished surface. After striking, the surface shall be finished without excessive working to a smooth even surface without any unevenness of more than 1/8 inch in any 10 ft. length in any direction.

Removal of Laintance

All laitance and concrete which in the opinion of the Owner is of questionable quality shall be removed completely from the top surface of all concrete walls.

Shop Fabrication of Reinforcing Steel

Bars shall be bent cold to the shapes and dimensions shown on the Drawings or as specified herein. Bends shall be made in accordance with the requirements of the current "Manual of Standard Practice" of the Concrete Reinforcing Steel Institute and/or current ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures".

Steel shall not be bent or straightened in a manner injurious to the material. Bending of reinforcing steel by heating will not be permitted. Bent up bars in beams and slabs shall be bent at an angle of 45 degrees unless otherwise shown on the drawings.

Shipping and Storage of Reinforcing Steel

Reinforcing bars shall be shipped to the site of the work in standard bundles, tagged and marked in accordance with the current Code of Standard Practice of the Concrete Reinforcing Steel Institute.

Reinforcing steel shall be stored above the ground on platforms, skids or other supports, and shall be protected from the weather at all times with suitable covering. It shall be stored in an orderly manner and plainly marked to facilitate inspection and checking. Labor and other assistance shall be furnished to the Owner by the Contractor as may be required to check the steel as it is being stored or after storage on the site.

Placing Reinforcing Steel

General

1. All reinforcing steel shall be accurately placed in the position shown on the drawings, or as otherwise specified, and it shall be securely held in place before and during the placing of concrete. When placed in the forms the steel shall be free from dirt, rust, millscale, paint, oil, or other foreign material. In case there is a delay in pouring concrete after the steel has been placed, the steel shall be reinspected, and when necessary, recleaned prior to placing the concrete. Bases shall be wire tied or clipped at intersections, such fastenings being not more than 18 inches apart in either direction, unless otherwise approved by the Owner. Supports for reinforcement which are to remain in the finished work shall be precast concrete or plastic tipped metal.
2. The minimum clear distance between parallel bars shall be not less than the nominal diameter of the bars. In no case shall be clear spacing between bars be less than one inch, nor less than 1 1/3 times the maximum size of the coarse aggregate.
3. The minimum concrete cover for reinforcing steel shall be as called for in the current edition of ACI 318, where not specified otherwise on the drawings.
4. The clear distance between reinforcing steel and the face of the concrete shall be maintained at all points in order that the designed strength of the structure shall not be reduced. No reinforcing steel shall be bent or welded in the field without specific permission of the Owner.
5. Tolerances for location of reinforcing steel shall be as called for in current edition of ACI 318.

Splicing Reinforcing Steel

1. No splicing of reinforcing bars shall be made at points of maximum stress, except with prior approval of the Owner. Splices in adjacent bars shall be staggered. Lapped splices shall not be used for bars larger than Size No. 11. For bars size No. 11 and smaller in tension or compression lap splicing shall be used.
2. Lapped ends of bars shall be placed in contact and securely wired. Bars shall have a minimum lap of 40 bar diameters.

Dowels

1. All dowels shall be in position before the concrete is placed. Dowels shall not be inserted after the concrete has been placed.

Reinforcing Steel Schedules

1. Reinforcing bar schedules and detail shop drawings, showing complete details as to size, length, weight, arrangement, and bending of all reinforcing steel shall be submitted by the Contractor to the Owner. A complete schedule of reinforcement chairs, supports, saddles, spacers, and other accessories shall be included. No reinforcement shall be cut, bent, or fabricated before these schedules and/or drawings are reviewed by the Owner.

Removal of Forms and Shores

Forms shall not be disturbed until the concrete has adequately hardened. Shoring shall not be removed until the supported member has acquired sufficient strength to support its weight and any superimposed load upon it without exceeding the normal amount of deflection. Members subject to additional loads during construction shall be adequately shored to support both the member and the construction loads in such a manner as will protect the member from damage.

Approval Requests

The following approval requests shall be submitted to the Owner for review. No such items or the materials therefore shall be ordered fabricated, delivered, or incorporated in the work until the proper approvals for the same have been received from the Owner.

Approval Requests

Concrete Design Mix
Concrete Mix Materials
Waterstop
Measures for Cold Weather Protection
Measures for Hot Weather Protection

Measurement and Payment

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
Substructure, Conc	Cubic Yard
Reinforcement, Steel, Epoxy Coated	Pound

Payment for these items includes equipment, labor and materials to construct the items as shown on the plans and as described herein.

DETAILED SPECIFICATION
FOR
ITEM #910 – 912 – SPRINKLER SYSTEMS

DESCRIPTION

This work shall be done in accordance with the 2012 Michigan Department of Transportation Standard Specifications for Construction, except as herein provided

MATERIALS

The materials used to reconstruct the sprinkler system(s) shall be of equal or greater quality as originally installed.

CONSTRUCTION

Existing lawn sprinklers shall be relocated to accommodate the proposed construction. Additional sprinklers not shown on the plans may be encountered in the line of the work.
The Contractor shall exercise care in preserving and protecting existing lawn irrigation systems.

All necessary work associated with the relocation, replacement and reconnection of sprinkler systems shall be as directed by the Engineer.

Where replacement of portions of existing systems is necessary, the various components used for replacement shall match and duplicate the existing materials as closely as practicable.

Sprinkler heads and underground piping shall be relocated, restored and reconnected immediately following disruption by construction and grading operations.

Any and all sprinkler systems within the project limits, or impacted by the work of this contract, shall be repaired with at least equal quality materials and workmanship, to a functioning condition at least as good as existed prior to work beginning. For the contractor to be reimbursed for such repairs, before any contract work begins, contractor shall arrange a walk- through with the property owner or designated representative, accompanied by the project engineer or inspector, of each and every adjacent property, for the purpose of determining and evaluating the existing sprinkler system design (location and types of lines, heads, valves, controllers) and its functionality and integrity. This information will be documented with sketches, drawings, and narrative, by the contractor, to be submitted to and used by the project engineer to verify need and approve any payment for repairs to the system. No payment shall be made for repairs not deemed necessary and approved by the project engineer as a result of this walk-through and evaluation process. Failure of the contractor to fulfill these requirements shall cause the project engineer to make the repairs and charge the full cost to the contractor as a contract adjustment.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

Pay Item	Pay Unit
Sprinkler Head, Relocate	Each
Sprinkler Head, Replace	Each
Sprinkler Line	Foot

Payment for Sprinkler items includes equipment, labor and materials to complete this item as specified above. Relocating and replacing sprinkler heads will be measured as units. Sprinkler line, regardless of size, will be measured in linear feet.

Costs for connecting, testing and adjusting the completed work will be included in the Contract unit prices for the above items. Contract unit prices for the above sprinkler items shall also include cost of furnishing all necessary materials and fittings, and for all necessary excavation, backfilling and disposal of surplus material. All necessary components shall be provided by the Contractor, but those not a designated contract pay item will not be paid for separately.

DETAILED SPECIFICATION
FOR
ITEM #913 – ALUMINUM RAIL FENCE

DESCRIPTION

This work shall consist of constructing the aluminum rail fence as shown on the plans and as directed by the Engineer. The fence materials shall be as specified herein and in accordance specification and section 808 of the 2012 Michigan Department of Transportation (MDOT) Standard Specification for Construction, as applicable.

SUBMITTALS

Submit shop drawings as part of the Modular Concrete Block Wall submittal to coordinate post installation and related details between the two items.

MATERIALS

All extrusions to be 6063-T5 or T6, 6061-T6 or 6005-T5 alloy aluminum. All fasteners to be aluminum or stainless steel. Color anodized meeting NAAMM AAMIOC21A42 shall be dark bronze. Railing system shall be Sterling Dula (www.sterlingdula.com) "Contemporary System with Mechanical Pickets" with TR-020 Top Rail, PT-205 Pickets spaced at 4" O.C. or similar by USRailing (www.usrailing.com), Deck Images, (deckimages.com) or other Owner approved equal. An example of the approved Fence can be viewed along the northeast side of West Stadium Boulevard south of Pauline Avenue.

Fence posts shall be buried 30 inches below the finished ground elevation with the concrete footing extending to a depth of 42 inches.

Round stay-in-place weather resistant forms shall be used for post foundation construction.

Railing shall be shop fabricated and assembled per approved shop drawings to the greatest extent possible. Assembly shall be in a neat, craftsmanship manner in accordance with the highest industry standards. Conceal fasteners as much as design will allow. Picket and post spacing to be set in accordance with applicable codes. Field splices to be minimized as much as possible, depending on parameters set by material, finish and shipping. General contractor to verify dimensions on site prior to fabrication.

CONSTRUCTION METHODS

1. Install based on final shop drawings and manufacturer's instructions.
2. Auger holes for post foundations that do not extend through modular concrete block retaining wall geogrid reinforcement. Forms will not be required for holes with stable earth side walls. For holes with unstable earth side walls use round stay-in-place forms to prevent the intrusion of earth within the limits of the excavation.
3. Where foundations extend through the modular concrete block retaining wall geogrid reinforcement the reinforcement shall be neatly cut around the foundation perimeter and round stay-in-place forms shall be used. Coordinate foundations with block wall design and shop drawings.
4. Plan, schedule and coordinate post layout and round form installation with the modular concrete block wall construction. Verify fence post form plumbness and post location after wall construction is complete and before commencing with fence installation.
5. Place concrete in accordance with subsections 706.03H of the 2012 MDOT Standard Specifications for Construction.
6. Hold the railing sections with a fixture to maintain vertical plumbness and panel square for a minimum of 48 hours after placement of concrete.
7. Wash and clean railing with water and soap. Rinse with water. Do not use acid solution, steel wool or other abrasives.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

Pay Item	**Pay Unit**
Aluminum Rail Fence, Direct Bury	Foot

The Aluminum Rail Fence, Direct Bury will be measured in place, in linear feet along the top rail of the fence. Payment of Aluminum Rail Fence, Direct Bury shall include all labor, equipment and materials required to complete the work as described herein, the details shown on the plans and the shop drawing submittals approved by the Engineer.

DETAILED SPECIFICATION
FOR
ITEM #914 – LANDSCAPE STONE

DESCRIPTION

This work includes the labor, material and equipment required to furnish and install the landscape stone at the modular concrete block retaining walls as shown on the plans. The work will involve furnishing and installing; steel edging, weed control fabric and stone ground cover.

SUBMITTALS

Submit catalog cut data and material samples for steel edging, weed control fabric and stone at least 21 days prior to the planned start of construction for this item of work.

MATERIALS

Use materials meeting the following requirements:

1. Edging – 6 inch high by 3/16 inch thick hot rolled low carbon steel with integral straps for stakes and prefabricated corner and splice sections. Stakes shall be 10 gage X 16 inches long fabricated of hot rolled low carbon steel. Paint all components with electrostatically applied powder coating suitable for outdoor exposure. Color black.
2. Weed Control Fabric - Woven polypropylene fabric with a UV treatment.
3. Fabric Anchor Pins – U-shaped, 11 gage steel with a minimum leg length of 6 inches.
4. Stone – 1 ½ inch to 3 inch round washed river stone.

CONSTRUCTION METHODS

Install landscape stone as follows:

4. Grade surface of area to receive stone to remove any dips or surface irregularities.
5. Install edging with a buried depth of 4 inches and a projecting height above the existing graded surface of 2 inches.
6. Regrade surface of area to receive stone.
7. Place weed control fabric on graded surface.
8. Anchor weed control fabric with two rows of anchor pins at 6 foot maximum center to center spacing per row. Stagger spacing between rows 3 feet.
9. Place stone to a minimum thickness of 2 inches over the weed control fabric.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

Pay Item	**Pay Unit**
Landscape Stone ……..…… ……	Square Yard

Landscape Stone will be measured in place, in square yards of plan surface area of stone installed. Payment of Landscape Stone shall include all labor, equipment and materials required to complete the work as described herein, the details shown on the plans and the submittals approved by the Engineer.

DETAILED SPECIFICATION
FOR
ITEM #915 – UNDERDRAIN OUTLET, 6 INCH

DESCRIPTION

This work includes the labor, material and equipment required to furnish and install 6 inch underdrain outlets as shown on the plans.

This work shall be completed in accordance with the drawings and detailed specifications of this contract, the MDOT 2012 Standard Specifications for Construction, and as herein specified, including any detailed specifications

MATERIALS

Materials shall meet the requirements as described in the MDOT 2012 Standard Specifications for Construction.

CONSTRUCTION METHODS

These items shall be constructed as required in the MDOT 2012 Standard Specifications for Construction.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
Underdrain Outlet, 6 inch	Foot

Underdrain Outlet, 6 inch shall be measured in place by the foot and include all labor, materials, and equipment necessary to perform the work as specified and as detailed on the plans.

DETAILED SPECIFICATION
FOR
ITEM #916 – POST, MAILBOX, MODIFIED

DESCRIPTION

This work shall be performed according to Section 807 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, City of Ann Arbor Specifications, U.S. Postal Requirements and/or as specified herein:

MATERIALS

Materials shall conform to Section 807 of the 2012 Michigan Department of Transportation Standard Specifications for Construction.

CONSTRUCTION METHODS

Construction shall conform to Section 807 of the 2012 Michigan Department of Transportation Standard Specifications for Construction. This work shall consist of removing and salvaging the existing mailbox with a new post supplied by the Contractor. Contractor shall be responsible for temporary relocation of existing mailbox during the construction as to not interrupt mail delivery. Salvaged mailbox and new post shall be placed in accordance with section 807 of the 2012 Michigan Department of Transportation Standard Specifications for Construction. If Mailbox is damaged during construction, the Contractor shall replace in kind with no cost to The Owner.

MEASUREMENT AND PAYMENT

The completed work, as measured shall be paid for at the contract unit price for the following contract item (pay item):

Pay Item	**Pay Unit**
Post, Mailbox, Modified	Each

The contract unit price for this item shall include all labor, equipment and materials necessary to complete the work at locations as deemed necessary in the field.

DETAILED SPECIFICATION
FOR
ITEMS #917-924 – MISC TREES AND PLANTINGS

DESCRIPTION

This work shall consist of planting Deciduous Trees and placement of shredded bark mulch at the locations shown on the plans and as directed by the Engineer. Work shall be in accordance with Sections 815, 816 and 917 of the 2003 Michigan Department of Transportation Standard Specifications for Construction with the following amendments or additions.

Tree drip irrigation bags are in addition to planting specifications 815, 816 and 917 of the 2003 Michigan Department of Transportation Standard Specifications.

MATERIALS

All planting methods and materials shall conform to Sections 815, 816 and 917 and the planting details shown on the plans. In addition, tree planting shall include and Tree Drip Irrigation Bags and Watering and Cultivating. Tree types and sizes shall be as shown on the planting plans.

Tree Drip Irrigation Bags shall be Treegator Original 20 gallon slow release watering bags available from John Deere Landscape @ Ann Arbor, 734-668-1020, Christensen's Plant Nursery, 734-454-1400, or approved substitution.

Fertilizer shall be slow release, at minimum 50% derived from a natural, organic source, 12-0-6 or approved substitution.

The contractor shall submit a minimum size sample of ½ gallon-sized container of structural soil and topsoil for approval prior to installation.

The CONTRACTOR shall submit to the ENGINEER sources for all plant material 30 (thirty) days after contract award and submit an invoice following purchase and delivery of the plants.

CONSTRUCTION METHODS

The construction methods shall be in accordance with the 2003 Michigan Department of Transportation Standard Specifications for Construction Section 815.03 and 816.03 unless otherwise stated in this special provision.

All open tree pits shall be excavated to the full extent of their dimensions as shown in the details.

Watering and Cultivating shall follow the schedule in the 2012 Michigan Department of Transportation Standard Specifications for construction section 815 with the adjustment of filling the tree drip irrigation bags with water and using the fertilizer as dictated in this special provision. For each watering and cultivating visit, verification in the form of a report of maintenance activities and certified payroll covering visits, shall be provided to the OWNER by the end of each month that the visits have taken place.

MEASUREMENT AND PAYMENT

The completed work as measured shall be paid for at the contract unit price for the following contract items (pay items):

Pay Item	**Pay Unit**
Gleditsia T.I. Imperial, 2.5 inch cal.	Each
Nyssa Sylvatica, 2.5 inch	Each
Ostrya Virginiana, 2 inch.	Each
Parthenocissus Tricuspidata, #1 container	Each
Picea Glauca, 10 ft ht.	Each
Pinus Rubra, 10 ft ht.	Each
Quercus Bicolor, 2.5 inch.	Each
Quercus Rubra, 2.5 inch	Each

Measurement and payment for the item Trees and Plantings shall include excavation, backfill, topsoil, shredded bark mulch, tree drip irrigation bags, water, and all other equipment necessary, and as described herein, for a complete installation. Watering and Cultivating for two seasons shall also be included in this this item.

The final inspection of all planting work under the Contract will be made by the contractor and Engineer at the end of the maintenance and establishment periods. Before final acceptance is given, the terms of the establishment shall be met and the site shall be cleared of all debris, soil piles and containers.

DETAILED SPECIFICATION
FOR
ITEM # 925 – FIRE HYDRANT ASSEMBLY, REM

DESCRIPTION

This work shall include abandoning and removing fire hydrant assemblies as required by the Plans. All work shall be done in accordance with the City of Ann Arbor Public Services Department Standard Specifications, and as directed by the Engineer.

CONSTRUCTION METHODS

The Construction Methods shall meet all requirements of the City of Ann Arbor Standard Specifications.

In locations as shown on the Plans or where abandoned fire hydrants are within 2.5 feet of the proposed subgrade the resulting hole or trench shall be backfilled with Class II Sand, in maximum lifts of 12 inches, and be compacted to 95% of its modified proctor value, if located within the influence paved surfaces or structures. Otherwise, backfill shall be Engineer approved native material, compacted to 90% of its modified proctor value, in lifts of 12 inches or less, unless otherwise noted on the plans.

Abandoned (salvaged) fire hydrant assemblies shall be delivered to the City of Ann Arbor Field Services Unit at the Wheeler Service Center located at 4251 Stone School Road. As directed by the Engineer and within two days of their removal, the Contractor shall either deliver the existing structure covers and valve boxes to the City's yard at 4251 Stone School Road or dispose of them at his/her sole expense.

MEASUREMENT AND PAYMENT

The unit price for the pay item "Fire Hydrant Assembly Abandonment," includes all labor, material and equipment costs associated with the complete removal of the existing fire hydrant assembly, as specified herein, including but not limited to, excavation MDOT CL II Backfill and compaction; pipe cutting; thrust block removal; pipe plug; thrust block; salvaging of fire hydrant, valve and valve box; and delivery of fire hydrant, valve and valve box to the City's yard, located at 4251 Stone School Road.

PAY ITEM	PAY UNIT
Fire Hydrant Assembly, Rem	Each

All work indicated herein shall be included in the unit prices for the above pay items and shall include all labor, materials and equipment required to complete the work.

DETAILED SPECIFICATION
FOR
ITEM #926 – FIRE HYDRANT ADJUSTMENT
ITEM #927 – FIRE HYDRANT RELOCATE

DESCRIPTION

This work consists of adjusting the elevation and/or relocating existing fire hydrants and valve boxes as required for the proposed construction.

Complete all work in accordance to section 823 of the 2012 Michigan Department of Transportation Standard Specifications for Construction and the City of Ann Arbor Standard Specifications, this special provision, and applicable MDEQ requirements.

MATERIALS

Materials shall conform to requirements shown on the plans or to the requirements of the City of Ann Arbor, and section 701 and 823 of the 2012 Michigan Department of Transportation Standard Specifications for Construction.

CONSTRUCTION METHODS

1. General
   The contractor shall notify the City of Ann Arbor of proposed hydrant work 24 hours before the work is to begin. The work is to be performed under the direction and approval of the City of Ann Arbor.

2. Location
   The location and elevation of the adjusted fire hydrant, valve and box and the orientation of the hydrant nozzles will be shown on the plans or determined by the Engineer.

3. Permit and Financial Requirements
   For this work, apply and obtain permits and follow the City of Ann Arbor and MDEQ ordinances.

4. Adjustment
   Hydrant and valve box covers shall be raised and lowered in accordance with the plans or the requirement of the City of Ann Arbor.

5. Relocation
   Concrete used for thrust blocks shall consist of Grade S2 concrete.

   Hydrant relocation shall also include adjustment to fit the proposed grade as incidental to the relocation work. The plans will only indicate hydrant relocation. The Engineer, will determine the specified method of relocation, which may not be determined until after the main has been exposed.

   Hydrants in conflict with the proposed works shall be relocated to a location 6 feet back of the curb as shown on the plans or as directed by the Engineer. The hydrant shall be relocated by one of the following methods approved by the City of Ann Arbor:

   A. Method A – The old hydrant valve is opened and abandoned after a new valve has been installed.
   B. Method B – The water main is to be shut down, at a time specified by the WDA, and the existing valve relocated. The WDA will close the main and the work may have to be done during the night.
   C. Method C – The hydrant valve is not in conflict with the construction and the valve can be closed to facilitate hydrant relocation.
   D. Method D – Same as Method B except the existing "Tee" in the main shall be rotated 180 degrees.

6. Flushing
   Flush and chlorinate the water system upon completion.

7. Painting
   Paint the adjusted hydrant in accordance with the City of Ann Arbor's requirements.

MEASUREMENT AND PAYMENT

The completed work, as described, will be measured and paid for at the contract unit price for the following pay item(s).

Pay Item	**Pay Unit**
Fire Hydrant Adjustment	Each
Fire Hydrant Relocate	Each

Payment for Fire Hydrant Adjustment and Fire Hydrant Relocate pay items includes equipment, labor and materials to complete this item.

The unit price includes all the work to provide for a complete adjustment or relocation including, when required, excavation, disposal of materials, backfilling, pipe materials, valve, valve box cover, grade S2 concrete for thrust block, protection of the existing facility and other items as required.

Payment for above pay items includes final adjustment water shut-off valve and box for the associated fire hydrant.

DETAILED SPECIFICATION
FOR
ITEM # 928– TEMPORARY TURF ESTABLILSHMENT

DESCRIPTION

This work shall consist of furnishing and placing temporary seed and mulch blanket for the seasonal shut down of construction activities as detailed in the specifications, or as directed by the Engineer.

The related work furnishing, and placing the topsoil, furnishing the seed mixtures and installing the erosion control matting and watering shall conform to the requirements of this Detailed Specification and Section 816, Turf Establishment, of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction.

MATERIALS

The materials shall meet the requirements specified in the 2012 MDOT Standard Specifications for Construction except as specified herein:

Seed shall be fresh, clean, dry, new-crop seed complying with the AOSA's "Rules for Testing Seed", tested for purity and germination tolerances.

Variety Proportion	By Weight	Purity	Germination
Cereal Rye	100%	85	85

Erosion Control Blanket:

Straw/jute blanket shall be constructed with a 100% agricultural straw matrix with jute and cotton netting on top and bottom, be 100% biodegradable, and have a typical functional longevity of 12 months. Use 6 inch long biodegradable stakes 24 inch O.C. or as directed by the Engineer. Plastic weaving will not be permitted.

CONSTRUCTION

The Contractor shall install the temporary seed mixture and mulch blanket after the permanent seeding limitation and prior to the seasonal shut down of construction activities (typically November 15). The Contractor shall remove and properly dispose of the previous installed temporary mulch blanket, prior to final turf establishment operations, after the seasons shutdown has been rescinded (typically April 15). Temporary mulch blanket shall not be utilized in areas where dormant seeding has been approved by the Engineer.

MEASUREMENT AND PAYMENT

PAY ITEM	PAY UNIT
Temporary Turf Establishment	Square Yard

"Temporary Turf Establishment" will be measured by area in square yards and will be paid for at the contract unit prices which shall be payment in full for all labor, materials, and equipment needed to accomplish this work.

REQUIRED STANDARD CONTRACT LANGUAGE: CLEAN WATER STATE REVOLVING FUND AND DRINKING WATER REVOLVING FUND

Davis-Bacon/Prevailing Federal Wages, Including Labor Standards Provisions

Disadvantaged Business Enterprise (DBE) Requirements*

Debarment/Suspension Certification*

* Bidders should note these sections contain instructions regarding forms/information that must be completed/included with any submitted bid.

Davis-Bacon/Prevailing Federal Wage Rates

P.L. 111-88 requires compliance with the Davis Bacon Act and adherence to the current U.S. Department of Labor Wage Decision. Attention is called to the fact that not less than the minimum salaries and wages as set forth in the Contract Documents (see Wage Decision included herein) must be paid on this project. The Wage Decision, including modifications, must be posted by the Contractor on the job site. A copy of the Federal Labor Standards Provisions is included and is hereby a part of this contract.

General Decision Number: MI150074 01/02/2015 MI74

Superseded General Decision Number: MI20140074

State: Michigan

Construction Type: Heavy

County: Washtenaw County in Michigan.

Heavy, Includes Water, Sewer Lines and Excavation (Excludes Hazardous Waste Removal; Coal, Oil, Gas, Duct and other similar Pipeline Construction)

Note: Executive Order (EO) 13658 establishes an hourly minimum wage of $10.10 for 2015 that applies to all contracts subject to the Davis-Bacon Act for which the solicitation is issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.10 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/02/2015

CARP0687-006 06/01/2014

	Rates	Fringes
CARPENTER, Includes Form Work	$ 29.91	25.38

ELEC0252-009 06/04/2012

	Rates	Fringes
ELECTRICIAN	$ 38.98	20.18

ENGI0325-019 09/01/2014

POWER EQUIPMENT OPERATORS: Underground Construction (Including Sewer)

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1	$ 30.48	21.15
GROUP 2	$ 25.75	21.15
GROUP 3	$ 25.02	21.15
GROUP 4	$ 24.45	21.15

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Backhoe/ Excavator, Boring Machine, Bulldozer, Crane, Grader/ Blade, Loader, Roller, Scraper, Trencher (over 8 ft. digging capacity)

GROUP 2: Trencher (8-ft digging capacity and smaller)

GROUP 3: Boom Truck (non-swinging, non- powered type boom)

GROUP 4: Broom/ Sweeper, Fork Truck, Tractor, Bobcat/ Skid Steer /Skid Loader

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ENGI0326-008 06/01/2014

EXCLUDES UNDERGROUND CONSTRUCTION

	Rates	Fringes
OPERATOR: Power Equipment		
GROUP 1	$ 39.14	21.25
GROUP 2	$ 37.64	21.25
GROUP 3	$ 36.14	21.25
GROUP 4	$ 35.84	21.25
GROUP 5	$ 35.02	21.25
GROUP 6	$ 34.16	21.25
GROUP 7	$ 33.19	21.25
GROUP 8	$ 31.48	21.25
GROUP 9	$ 23.14	21.25

FOOTNOTES: Tower cranes: to be paid the crane operator rate determined by the combined length of the mast and the boom.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Crane with boom & jib or leads 400' or longer

GROUP 2: Crane with boom & jib or leads 300' or longer

GROUP 3: Crane with boom & jib or leads 220' or longer

GROUP 4: Crane with boom & jib or leads 140' or longer

GROUP 5: Crane with boom & jib or leads 120' or longer

GROUP 6: Regular crane operator

GROUP 7: Backhoe/Excavator, Bobcat/Skid Loader, Boring Machine, Broom/Sweeper, Bulldozer, Grader/Blade, Loader, Roller, Scraper, Tractor, Trencher

GROUP 8: Forklift

GROUP 9: Oiler

IRON0025-006 06/01/2014

	Rates	Fringes
IRONWORKER		
Reinforcing	$ 28.30	24.60
Structural	$ 33.78	26.97

LABO0334-009 06/01/2014

EXCLUDES OPEN CUT CONSTRUCTION

	Rates	Fringes

Landscape Laborer
GROUP 1.....$ 21.81 6.75
GROUP 2.....$ 17.59 6.75

LANDSCAPE LABORER CLASSIFICATIONS

GROUP 1: Landscape specialist, including air, gas and diesel equipment operator, lawn sprinkler installer and skidsteer (or equivalent)

GROUP 2: Landscape laborer: small power tool operator, material mover, truck driver and lawn sprinkler installer tender

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* LABO0334-018 09/01/2014

SCOPE OF WORK:
OPEN CUT CONSTRUCTION: Excavation of earth and sewer, utilities, and improvements, including underground piping/conduit (including inspection, cleaning, restoration, and relining)

	Rates	Fringes
LABORER		
(1) Common or General	$ 22.45	12.75
(2) Mason Tender-Cement/Concrete	$ 22.56	12.75
(4) Grade Checker	$ 22.75	12.75
(5) Pipelayer	$ 22.90	12.75
(7) Landscape	$ 16.84	12.75

LABO0499-020 08/01/2014

EXCLUDES OPEN CUT CONSTRUCTION

	Rates	Fringes
LABORER		
GROUP 1	$ 28.32	13.85
GROUP 2	$ 28.52	13.85
GROUP 3	$ 28.64	13.85

LABORER CLASSIFICATIONS

GROUP 1: Common or General; Grade Checker

GROUP 2: Mason Tender - Cement/Concrete

GROUP 3: Pipelayer

PAIN0022-005 07/01/2008

	Rates	Fringes
PAINTER		
Brush & Roller	$ 25.06	14.75
Spray	$ 25.86	14.75

PLAS0514-002 09/30/2013

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 30.82	14.34

PLUM0190-010 06/01/2014

	Rates	Fringes
PLUMBER	$ 37.64	20.91

TEAM0007-006 06/01/2014

	Rates	Fringes
TRUCK DRIVER		
Dump Truck under 8 cu. yds.; Tractor Haul Truck	$ 24.90	.50 + a+b
Dump Truck, 8 cu. yds. and over	$ 25.00	.50 + a+b
Lowboy/Semi-Trailer Truck	$ 25.15	.50 + a+b

FOOTNOTE:
a. $395.05 per week.
b. $56.10 daily.

SUMI2010-072 11/09/2010

	Rates	Fringes
TRUCK DRIVER: Off the Road Truck	$ 20.82	3.69

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or

"UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination

* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION
&#65533;

General Decision Number: MI150001 04/10/2015 MI1

Superseded General Decision Number: MI20140001

State: Michigan

Construction Types: Highway (Highway, Airport & Bridge xxxxx and Sewer/Incid. to Hwy.)

Counties: Michigan Statewide.

Note: Executive Order (EO) 13658 establishes an hourly minimum wage of $10.10 for 2015 that applies to all contracts subject to the Davis-Bacon Act for which the solicitation is issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.10 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/02/2015
1	03/06/2015
2	04/03/2015
3	04/10/2015

CARP0004-004 06/01/2013

REMAINDER OF STATE

	Rates	Fringes
CARPENTER (Piledriver)	$ 25.34	17.37

CARP0004-005 06/01/2013

LIVINGSTON (Townships of Brighton, Deerfield, Genoa, Hartland, Oceola & Tyrone), MACOMB, MONROE, OAKLAND, SANILAC, ST. CLAIR AND WAYNE COUNTIES

	Rates	Fringes
CARPENTER (Piledriver)	$ 28.09	24.31

ELEC0017-005 06/02/2014

STATEWIDE

	Rates	Fringes
Line Construction		
Groundman/Driver	$ 26.63	12.70
Journeyman Signal Tech, Communications Tech, Tower Tech & Fiber Optic Splicers	$ 36.16	15.37
Journeyman Specialist	$ 41.58	16.89
Operator A	$ 30.63	13.82

Operator B.....$ 28.62 13.26

Classifications

Journeyman Specialist: Refers to a crew of only one person working alone.
Operator A: Shall be proficient in operating all power equipment including: Backhoe, Excavator, Directional Bore and Boom/Digger truck.
Operator B: Shall be proficient in operating any 2 of the above mentioned pieces of equipment listed under Operator A.

ENGI0324-003 06/01/2014

ALCONA, ALPENA, ARENAC, BAY, CHEBOYGAN, CLARE, CLINTON, CRAWFORD, GENESEE, GLADWIN, GRATIOT, HURON, INGHAM, IOSCO, ISABELLA, JACKSON, LAPEER, LENAWEE, LIVINGSTON, MACOMB, MIDLAND, MONROE, MONTMORENCY, OAKLAND, OGEMAW, OSCODA, OTSEGO, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLAIR, SANILAC, SHIAWASSEE, TUSCOLA, WASHTENAW AND WAYNE COUNTIES:

	Rates	Fringes
OPERATOR: Power Equipment (Steel Erection)		
GROUP 1	$ 43.57	21.55
GROUP 2	$ 44.57	21.55
GROUP 3	$ 42.07	21.55
GROUP 4	$ 43.07	21.55
GROUP 5	$ 40.57	21.55
GROUP 6	$ 41.57	21.55
GROUP 7	$ 40.30	21.55
GROUP 8	$ 41.30	21.55
GROUP 9	$ 39.85	21.55
GROUP 10	$ 40.85	21.55
GROUP 11	$ 39.12	21.55
GROUP 12	$ 40.12	21.55
GROUP 13	$ 38.76	21.55
GROUP 14	$ 39.76	21.55
GROUP 15	$ 38.12	21.55
GROUP 16	$ 36.42	21.55
GROUP 17	$ 31.31	21.55
GROUP 18	$ 29.90	21.55

FOOTNOTE:

Paid Holidays: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Engineer when operating combination of boom and jib 400' or longer

GROUP 2: Engineer when operating combination of boom and jib 400' or longer on a crane that requires an oiler

GROUP 3: Engineer when operating combination of boom and jib 300' or longer

GROUP 4: Engineer when operating combination of boom and jib 300' or longer on a crane that requires an oiler

GROUP 5: Engineer when operating combination of boom and jib 220' or longer

GROUP 6: Engineer when operating combination of boom and jib 220' or longer on a crane that requires an oiler

GROUP 7: Engineer when operating combination of boom and jib 140' or longer

GROUP 8: Engineer when operating combination of boom and jib 140' or longer on a crane that requires an oiler

GROUP 9: Tower crane & derrick operator (where operator's work station is 50 ft. or more above first sub-level)

GROUP 10: Tower crane & derrick operator (where operator's work station is 50 ft. or more above first sub-level) on a crane that requires an oiler

GROUP 11: Engineer when operating combination of boom and jib 120' or longer

GROUP 12: Engineer when operating combination of boom and jib 120' or longer on a crane that requires an oiler

GROUP 13: Crane operator; job mechanic and 3 drum hoist and excavator

GROUP 14: Crane operator on a crane that requires an oiler

GROUP 15: Hoisting operator; 2 drum hoist and rubber tired backhoe

GROUP 16: Forklift and 1 drum hoist

GROUP 17: Compressor or welder operator

GROUP 18: Oiler

ENGI0324-004 06/01/2014

AREA 1: ALLEGAN, BARRY, BERRIEN, BRANCH, CALHOUN, CASS, EATON, HILLSDALE, IONIA, KALAMAZOO, KENT, LAKE, MANISTEE, MASON, MECOSTA, MONTCALM, MUSKEGON, NEWAYGO, OCEANA, OSCEOLA, OTTAWA, ST. JOSEPH, VAN BUREN

AREA 2: ANTRIM, BENZIE, CHARLEVOIX, EMMET, GRAND TRAVERSE, KALKASKA, LEELANAU, MISSAUKEE AND WEXFORD COUNTIES:

	Rates	Fringes
OPERATOR: Power Equipment (Steel Erection)		
AREA 1		
GROUP 1	$ 29.44	21.70
GROUP 2	$ 29.19	21.70
GROUP 3	$ 28.69	21.70
GROUP 4	$ 23.59	21.70

GROUP 5	$ 21.94	21.70
GROUP 6	$ 19.34	21.70
AREA 2		
GROUP 1	$ 29.44	21.70
GROUP 2	$ 29.19	21.70
GROUP 3	$ 28.19	21.70
GROUP 4	$ 23.29	21.70
GROUP 5	$ 21.64	21.70
GROUP 6	$ 18.84	21.70

FOOTNOTES:

Crane operator with main boom and jib 300' or longer: $1.50 additional to the group 1 rate. Crane operator with main boom and jib 400' or longer: $3.00 additional to the group 1 rate.
PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS:

GROUP 1: Crane Operator with main boom & jib 400', 300', or 220' or longer.

GROUP 2: Crane Operator with main boom & jib 140' or longer, Tower Crane; Gantry Crane; Whirley Derrick.

GROUP 3: Regular Equipment Operator, Crane, Dozer, Loader, Hoist, Straddle Wagon, Mechanic, Grader and Hydro Excavator.

GROUP 4: Air Tugger (single drum), Material Hoist Pump 6" or over, Elevators, Brokk Concrete Breaker.

GROUP 5: Air Compressor, Welder, Generators, Conveyors

GROUP 6: Oiler and fire tender

ENGI0324-005 09/01/2014

AREA 1: GENESEE, LAPEER, LIVINGSTON, MACOMB, MONROE, OAKLAND, ST. CLAIR, WASHTENAW AND WAYNE COUNTIES

AREA 2: ALCONA, ALLEGAN, ALGER, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KWEENAW, LAKE, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, SANILAC, SCHOOLCRAFT, SHIAWASSEE, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

	Rates	Fringes
OPERATOR: Power Equipment (Underground construction (including sewer))		
AREA 1:		

GROUP 1	$ 30.48	21.15
GROUP 2	$ 25.75	21.15
GROUP 3	$ 25.02	21.15
GROUP 4	$ 24.45	21.15
AREA 2:		
GROUP 1	$ 28.77	21.15
GROUP 2	$ 23.88	21.15
GROUP 3	$ 23.38	21.15
GROUP 4	$ 23.10	21.15

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Backfiller tamper; Backhoe; Batch plant operator (concrete); Clamshell; Concrete paver (2 drums or larger); Conveyor loader (Euclid type); Crane (crawler, truck type or pile driving); Dozer; Dragline; Elevating grader; Endloader; Gradall (and similar type machine); Grader; Mechanic; Power shovel; Roller (asphalt); Scraper (self-propelled or tractor drawn); Side boom tractor (type D-4 or equivalent and larger); Slip form paver; Slope paver; Trencher (over 8 ft. digging capacity); Well drilling rig; Concrete pump with boom operator; Hydro Excavator

GROUP 2: Boom truck (power swing type boom); Crusher; Hoist; Pump (1 or more - 6-in. discharge or larger - gas or diesel- powered or powered by generator of 300 amperes or more - inclusive of generator); Side boom tractor (smaller than type D-4 or equivalent); Tractor (pneu-tired, other than backhoe or front end loader); Trencher (8-ft. digging capacity and smaller);Vac Truck

GROUP 3: Air compressors (600 cfm or larger); Air compressors (2 or more-less than 600 cfm); Boom truck (non-swinging, non- powered type boom); Concrete breaker (self-propelled or truck mounted - includes compressor); Concrete paver (1 drum-1/2 yd. or larger); Elevator (other than passenger); Maintenance person; Pump (2 or more-4-in. up to 6-in. discharge-gas or diesel powered - excluding submersible pumps); Pumpcrete machine (and similar equipment); Wagon drill (multiple); Welding machine or generator (2 or more-300 amp. or larger - gas or diesel powered)

GROUP 4: Boiler; Concrete saw (40 hp or over); Curing machine (self-propelled); Farm tractor (with attachment); Finishing machine (concrete); Fire person; Hydraulic pipe pushing machine; Mulching equipment; Oiler; Pumps (2 or more up to 4-in. discharge, if used 3 hours or more a day, gas or diesel powered - excluding submersible pumps); Roller (other than asphalt); Stump remover; Trencher (service); Vibrating compaction equipment, self-propelled (6 ft. wide or over); End dump operator; Sweeper (Wayne type); Water wagon and Extend-a boom forklift

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ENGI0324-006 06/01/2014

AREA 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES
AREA 2: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE,

GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

	Rates	Fringes
Power equipment operators: (AIRPORT, BRIDGE & HIGHWAY CONSTRUCTION)		
AREA 1		
GROUP 1	$ 30.26	21.85
GROUP 2	$ 23.53	21.85
GROUP 3	$ 24.83	21.85
GROUP 4	$ 22.97	21.85
GROUP 5	$ 22.80	21.85
AREA 2		
GROUP 1	$ 30.26	21.85
GROUP 2	$ 23.38	21.85
GROUP 3	$ 24.68	21.85
GROUP 4	$ 22.82	21.85
GROUP 5	$ 22.50	21.85

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Asphalt plant operator; Crane operator (does not include work on bridge construction projects when the crane operator is erecting structural components); Dragline operator; Shovel operator; Locomotive operator; Paver operator (5 bags or more); Elevating grader operator; Pile driving operator; Roller operator (asphalt); Blade grader operator; Trenching machine operator (ladder or wheel type); Auto-grader; Slip form paver; Self-propelled or tractor-drawn scraper; Conveyor loader operator (Euclid type); Endloader operator (1 yd. capacity and over); Bulldozer; Hoisting engineer; Tractor operator; Finishing machine operator (asphalt); Mechanic; Pump operator (6-in. discharge or over, gas, diesel powered or generator of 300 amp. or larger); Shouldering or gravel distributing machine operator (self- propelled); Backhoe (with over 3/8 yd. bucket); Side boom tractor (type D-4 or equivalent or larger); Tube finisher (slip form paving); Gradall (and similar type machine); Asphalt paver (self- propelled); Asphalt planer (self-propelled); Batch plant (concrete-central mix); Slurry machine (asphalt); Concrete pump (3 in. and over); Roto-mill; Swinging boom truck (over 12 ton capacity); Hydro demolisher (water blaster); Farm-type tractor with attached pan

GROUP 2: Screening plant operator; Washing plant operator; Crusher operator; Backhoe (with 3/8 yd. bucket or less); Side boom tractor (smaller than D-4 type or equivalent); Sweeper (Wayne type and similar equipment); Vacuum truck operator; Batch plant (concrete dry batch)

GROUP 3: Grease Truck

GROUP 4: Air compressor operator (600 cu. ft. per min or

more); Air compressor operator (two or more, less than 600 cfm); Wagon drill operator; Concrete breaker; Tractor operator (farm type with attachment)

GROUP 5: Boiler fire tender; Oiler; Fire tender; Trencher (service); Flexplane operator; Cleftplane operator; Grader operator (self-propelled fine-grade or form (concrete)); Finishing machine operator (concrete); Boom or winch hoist truck operator; Endloader operator (under 1 yd. capacity); Roller operator (other than asphalt); Curing equipment operator (self-propelled); Concrete saw operator (40 h.p. or over); Power bin operator; Plant drier operator (asphalt); Vibratory compaction equipment operator (6 ft. wide or over); Guard post driver operator (power driven); All mulching equipment; Stump remover; Concrete pump (under 3-in.); Mesh installer (self- propelled); Tractor operator (farm type); End dump; Skid steer

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ENGI0324-007 07/01/2014

ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES:

	Rates	Fringes
OPERATOR: Power Equipment (Steel Erection)		
Compressor, welder and forklift	$ 24.61	21.55
Crane operator, main boom & jib 120' or longer	$ 28.36	21.55
Crane operator, main boom & jib 140' or longer	$ 28.61	21.55
Crane operator, main boom & jib 220' or longer	$ 28.86	21.55
Mechanic with truck and tools	$ 29.36	21.55
Oiler and fireman	$ 23.31	21.55
Regular operator	$ 27.86	21.55

ENGI0324-008 11/01/2014

ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GENESEE, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE, MACKINAC, MACOMB, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MONROE, MUSKEGON, NEWAYGO, OAKLAND, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN, WASHTENAW, WAYNE AND WEXFORD COUNTIES

	Rates	Fringes
OPERATOR: Power Equipment		

(Sewer Relining)
GROUP 1.....$ 29.98 12.75
GROUP 2.....$ 28.45 12.75

SEWER RELINING CLASSIFICATIONS

GROUP 1: Operation of audio-visual closed circuit TV system, including remote in-ground cutter and other equipment used in connection with the CCTV system

GROUP 2: Operation of hot water heaters and circulation systems, water jetters and vacuum and mechanical debris removal systems

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ENGI0325-012 05/01/2014

AREA 1: MACOMB, MONROE, OAKLAND, ST. CLAIR, WASHTENAW AND WAYNE COUNTIES

AREA 2: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GENESEE, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

	Rates	Fringes
Power equipment operators - gas distribution and duct installation work:		
AREA 1		
GROUP 1	$ 27.83	21.80
GROUP 2	$ 27.70	21.80
GROUP 3	$ 26.58	21.80
GROUP 4	$ 26.00	21.80
AREA 2		
GROUP 1	$ 26.92	21.80
GROUP 2-A	$ 26.82	21.80
GROUP 2-B	$ 26.60	21.80
GROUP 3	$ 25.82	21.80
GROUP 4	$ 25.32	21.80

SCOPE OF WORK: The construction, installation, treating and reconditioning of pipelines transporting gas vapors within cities, towns, subdivisions, suburban areas, or within private property boundaries, up to and including private meter settings of private industrial, governmental or other premises, more commonly referred to as "distribution work," starting from the first metering station, connection, similar or related facility, of the main or cross country pipeline and including duct installation.

AREA 1:

GROUP 1: Backhoe, crane, grader, mechanic, dozer (D-6 equivalent or larger), side boom (D-4 equivalent or larger), trencher(except service), endloader (2 yd. capacity or greater).
GROUP 2: Dozer (less than D-6 equivalent), endloader (under 2 yd. capacity), side boom (under D-4 capacity), backfiller, pumps (1 or 2 of 6-inch discharge or greater), boom truck (with powered boom), tractor (wheel type other than backhoe or front endloader).

GROUP 3: Tamper (self-propelled), boom truck (with non-powered boom), concrete saw (20 hp or larger), pumps (2 to 4 under 6-inch discharge), compressor (2 or more or when one is used continuously into the second day) and trencher(service).

GROUP 4: Oiler, hydraulic pipe pushing machine, grease person and hydrostatic testing operator.

AREA 2:

GROUP 1: Mechanic, crane (over 1/2 yd. capacity), backhoe (over 1/2 yd. capacity), grader (Caterpillar 12 equivalent or larger)

GROUP 2-A: Trencher(except service), backhoe (1/2 yd. capacity or less)

GROUP 2-B: Crane (1/2 yd. capacity or less), compressor (2 or more), dozer (D-4 equivalent or larger), endloader (1 yd. capacity or larger), pump (1 or 2 six-inch or larger), side boom (D-4 equivalent or larger)

GROUP 3: Backfiller, boom truck (powered), concrete saw (20 hp or larger), dozer (less than D-4 equivalent), endloader (under 1 yd. capacity), farm tractor (with attachments), pump (2 - 4 under six-inch capacity), side boom tractor(less than D-4 equivalent), tamper (self-propelled), trencher service and grader maintenance

GROUP 4: Oiler, grease person and hydrostatic testing operator

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IRON0008-007 06/01/2013

ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES:

	Rates	Fringes
Ironworker - pre-engineered metal building erector	$ 23.70	6.95
IRONWORKER		
General contracts $10,000,000 or greater	$ 25.75	23.17
General contracts less than $10,000,000	$ 22.53	23.17

Paid Holidays: New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day & Christmas Day.

IRON0025-002 06/01/2014

ALCONA, ALPENA, ARENAC, BAY, CHEBOYGAN, CLARE, CLINTON, CRAWFORD, GENESEE, GLADWIN, GRATIOT, HURON, INGHAM, IOSCO, ISABELLA, JACKSON, LAPEER, LIVINGSTON, MACOMB, MIDLAND, MONTMORENCY, OAKLAND, OGEMAW, OSCODA, OTSEGO, PRESQUE ISLE, ROSCOMMON, SAGINAW, SANILAC, SHIAWASSEE, ST. CLAIR, TUSCOLA, WASHTENAW AND WAYNE COUNTIES:

	Rates	Fringes
Ironworker - pre-engineered metal building erector		
Alcona, Alpena, Arenac, Cheboygan, Clare, Clinton, Crawford, Gladwin, Gratiot, Huron, Ingham, Iosco, Isabella, Jackson, Lapeer, Livingston (west of Burkhardt Road), Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, Shiawassee, Tuscola & Washtenaw (west of U.S. 23)	$ 22.17	20.13
Bay, Genesee, Lapeer, Livingston (east of Burkhardt Road), Macomb, Midland, Oakland, Saginaw, St. Clair, The University of Michigan, Washtenaw (east of U.S. 23) & Wayne	$ 23.39	21.13
IRONWORKER		
Ornamental and Structural	$ 33.78	26.97
Reinforcing	$ 28.30	24.60

IRON0055-005 07/01/2013

LENAWEE AND MONROE COUNTIES:

	Rates	Fringes
IRONWORKER		
Pre-engineered metal buildings	$ 23.59	19.35
All other work	$ 28.32	19.35

IRON0292-003 06/01/2014

BERRIEN AND CASS COUNTIES:

	Rates	Fringes
IRONWORKER (Including pre-engineered metal building erector)	$ 27.62	18.66

IRON0340-001 06/01/2014

ALLEGAN, ANTRIM, BARRY, BENZIE, BRANCH, CALHOUN, CHARLEVOIX,

EATON, EMMET, GRAND TRAVERSE, HILLSDALE, IONIA, KALAMAZOO, KALKASKA, KENT, LAKE, LEELANAU, MANISTEE, MASON, MECOSTA, MISSAUKEE, MONTCALM, MUSKEGON, NEWAYGO, OCEANA, OSCEOLA, OTTAWA, ST. JOSEPH, VAN BUREN AND WEXFORD COUNTIES:

	Rates	Fringes
IRONWORKER (Including pre-engineered metal building erector)	$ 20.68	24.37

LAB00005-006 10/01/2014

	Rates	Fringes
Laborers - hazardous waste abatement: (ALCONA, ALPENA, ANTRIM, BENZIE, CHARLEVOIX, CHEBOYGAN, CRAWFORD, EMMET, GRAND TRAVERSE, IOSCO, KALKASKA, LEELANAU, MISSAUKEE, MONTMORENCY, OSCODA, OTSEGO, PRESQUE ISLE AND WEXFORD COUNTIES - Zone 10)		
Levels A, B or C	$ 17.45	12.75
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D	$ 16.45	12.75
Laborers - hazardous waste abatement: (ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC, MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES - Zone 11)		
Levels A, B or C	$ 20.91	12.78
Work performed in conjunction with site preparation not requiring the use of personal protective equipment; Also, Level D	$ 19.91	12.78
Laborers - hazardous waste abatement: (ALLEGAN, BARRY, BERRIEN, BRANCH, CALHOUN, CASS, IONIA COUNTY (except the city of Portland); KALAMAZOO, KENT, LAKE, MANISTEE, MASON, MECOSTA, MONTCALM, MUSKEGON, NEWAYGO, OCEANA, OSCEOLA, OTTAWA, ST. JOSEPH AND VAN BUREN COUNTIES - Zone 9)		
Levels A, B or C	$ 19.99	12.75
Work performed in conjunction with site preparation not requiring		

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     the use of personal
     protective equipment;
     Also, Level D.............$ 18.99           12.75
Laborers - hazardous waste
abatement: (ARENAC, BAY,
CLARE, GLADWIN, GRATIOT,
HURON, ISABELLA, MIDLAND,
OGEMAW, ROSCOMMON, SAGINAW
AND TUSCOLA COUNTIES - Zone 8)
     Levels A, B or C..........$ 20.02           12.75
     Work performed in
     conjunction with site
     preparation not requiring
     the use of personal
     protective equipment;
     Also, Level D.............$ 19.02           12.75
Laborers - hazardous waste
abatement: (CLINTON, EATON
AND INGHAM COUNTIES; IONIA
COUNTY (City of Portland);
LIVINGSTON COUNTY (west of
Oak Grove Rd., including the
City of Howell) - Zone 6)
     Levels A, B or C..........$ 23.29           12.75
     Work performed in
     conjunction with site
     preparation not requiring
     the use of personal
     protective equipment;
     Also, Level D.............$ 22.29           12.75
Laborers - hazardous waste
abatement: (GENESEE, LAPEER
AND SHIAWASSEE COUNTIES -
Zone 7)
     Levels A, B or C..........$ 23.40           12.79
     Work performed in
     conjunction with site
     preparation not requiring
     the use of personal
     protective equipment;
     Also, Level D.............$ 22.40           12.79
Laborers - hazardous waste
abatement: (HILLSDALE,
JACKSON AND LENAWEE COUNTIES
- Zone 4)
     Levels A, B or C..........$ 30.00           14.09
     Work performed in
     conjunction with site
     preparation not requiring
     the use of personal
     protective equipment;
     Also, Level D.............$ 29.00           14.09
Laborers - hazardous waste
abatement: (LIVINGSTON COUNTY
(east of Oak Grove Rd. and
south of M-59, excluding the
city of Howell); AND
WASHTENAW COUNTY - Zone 3)
     Levels A, B or C..........$ 29.32           13.85
     Work performed in
     conjunction with site
     preparation not requiring
     the use of personal
```

protective equipment;
Also, Level D.....$ 28.32 13.85
Laborers - hazardous waste abatement: (MACOMB AND WAYNE COUNTIES - Zone 1)
Levels A, B or C.....$ 27.94 16.55
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;
Also, Level D.....$ 26.94 16.55
Laborers - hazardous waste abatement: (MONROE COUNTY - Zone 4)
Levels A, B or C.....$ 30.00 14.09
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;
Also, Level D.....$ 29.00 14.09
Laborers - hazardous waste abatement: (OAKLAND COUNTY and the Northeast portion of LIVINGSTON COUNTY bordered by Oak Grove Road on the West and M-59 on the South - Zone 2)
Level A, B, C.....$ 27.94 16.55
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;
Also, Level D.....$ 26.94 16.55
Laborers - hazardous waste abatement: (SANILAC AND ST. CLAIR COUNTIES - Zone 5)
Levels A, B or C.....$ 24.97 15.19
Work performed in conjunction with site preparation not requiring the use of personal protective equipment;
Also, Level D.....$ 23.97 15.19

LABO0259-001 09/01/2014

AREA 1: MACOMB, OAKLAND AND WAYNE COUNTIES
AREA 2: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GENESEE, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONROE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN, WASHTENAW AND WEXFORD COUNTIES

	Rates	Fringes
Laborers - tunnel, shaft and caisson:		
AREA 1		
GROUP 1	$ 21.57	16.28
GROUP 2	$ 21.68	16.28
GROUP 3	$ 21.74	16.28
GROUP 4	$ 21.92	16.28
GROUP 5	$ 22.17	16.28
GROUP 6	$ 22.50	16.28
GROUP 7	$ 15.78	16.28
AREA 2		
GROUP 1	$ 22.80	12.75
GROUP 2	$ 22.89	12.75
GROUP 3	$ 22.99	12.75
GROUP 4	$ 23.15	12.75
GROUP 5	$ 23.41	12.75
GROUP 6	$ 23.72	12.75
GROUP 7	$ 15.99	12.75

SCOPE OF WORK: Tunnel, shaft and caisson work of every type and description and all operations incidental thereto, including, but not limited to, shafts and tunnels for sewers, water, subways, transportation, diversion, sewerage, caverns, shelters, aquafers, reservoirs, missile silos and steel sheeting for underground construction.

TUNNEL LABORER CLASSIFICATIONS

GROUP 1: Tunnel, shaft and caisson laborer, dump, shanty, hog house tender, testing (on gas) and watchman

GROUP 2: Manhole, headwall, catch basin builder, bricklayer tender, mortar machine and material mixer

GROUP 3: Air tool operator (jackhammer, bush hammer and grinder), first bottom, second bottom, cage tender, car pusher, carrier, concrete, concrete form, concrete repair, cement invert laborer, cement finisher, concrete shoveler, conveyor, floor, gasoline and electric tool operator, gunite, grout operator, welder, heading dinky person, inside lock tender, pea gravel operator, pump, outside lock tender, scaffold, top signal person, switch person, track, tugger, utility person, vibrator, winch operator, pipe jacking, wagon drill and air track operator and concrete saw operator (under 40 h.p.)

GROUP 4: Tunnel, shaft and caisson mucker, bracer, liner plate, long haul dinky driver and well point

GROUP 5: Tunnel, shaft and caisson miner, drill runner, key board operator, power knife operator, reinforced steel or mesh (e.g. wire mesh, steel mats, dowel bars, etc.)

GROUP 6: Dynamite and powder

GROUP 7: Restoration laborer, seeding, sodding, planting, cutting, mulching and top soil grading; and the restoration of property such as replacing mailboxes, wood chips, planter boxes, flagstones, etc.

LABO0334-001 09/01/2014

	Rates	Fringes
Laborers - open cut:		
ZONE 1 - MACOMB, OAKLAND AND WAYNE COUNTIES:		
GROUP 1	$ 21.42	16.28
GROUP 2	$ 21.53	16.28
GROUP 3	$ 21.58	16.28
GROUP 4	$ 21.66	16.28
GROUP 5	$ 21.72	16.28
GROUP 6	$ 19.17	16.28
GROUP 7	$ 15.79	16.28
ZONE 2 - LIVINGSTON COUNTY (east of M-151 (Oak Grove Rd.)); MONROE AND WASHTENAW COUNTIES:		
GROUP 1	$ 22.45	12.75
GROUP 2	$ 22.56	12.46
GROUP 3	$ 22.68	12.46
GROUP 4	$ 22.75	12.46
GROUP 5	$ 22.90	12.46
GROUP 6	$ 20.20	12.46
GROUP 7	$ 16.84	12.46
ZONE 3 - CLINTON, EATON, GENESEE, HILLSDALE AND INGHAM COUNTIES; IONIA COUNTY (City of Portland); JACKSON, LAPEER AND LENAWEE COUNTIES; LIVINGSTON COUNTY (west of M-151 Oak Grove Rd.); SANILAC, ST. CLAIR AND SHIAWASSEE COUNTIES:		
GROUP 1	$ 20.64	12.75
GROUP 2	$ 20.78	12.46
GROUP 3	$ 20.90	12.46
GROUP 4	$ 20.95	12.46
GROUP 5	$ 21.09	12.46
GROUP 6	$ 18.39	12.46
GROUP 7	$ 15.54	12.46
ZONE 4 - ALCONA, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CLARE, CRAWFORD, EMMET, GLADWIN, GRAND TRAVERSE, GRATIOT AND HURON COUNTIES; IONIA COUNTY (EXCEPT THE CITY OF PORTLAND); IOSCO, ISABELLA, KALAMAZOO, KALKASKA, KENT, LAKE,LEELANAU, MANISTEE, MASON, MECOSTA, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW,		

OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES:		
GROUP 1	$ 19.65	12.75
GROUP 2	$ 19.78	12.46
GROUP 3	$ 19.89	12.46
GROUP 4	$ 19.96	12.46
GROUP 5	$ 20.08	12.46
GROUP 6	$ 17.30	12.46
GROUP 7	$ 15.64	12.46
ZONE 5 - ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC, MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES:		
GROUP 1	$ 19.86	12.75
GROUP 2	$ 20.00	12.46
GROUP 3	$ 20.13	12.46
GROUP 4	$ 20.18	12.46
GROUP 5	$ 20.23	12.46
GROUP 6	$ 17.61	12.46
GROUP 7	$ 15.72	12.46

SCOPE OF WORK:

Open cut construction work shall be construed to mean work which requires the excavation of earth including industrial, commercial and residential building site excavation and preparation, land balancing, demolition and removal of concrete and underground appurtenances, grading, paving, sewers, utilities and improvements; retention, oxidation, flocculation and irrigation facilities, and also including but not limited to underground piping, conduits, steel sheeting for underground construction, and all work incidental thereto, and general excavation. For all areas except the Upper Peninsula, open cut construction work shall also be construed to mean waterfront work, piers, docks, seawalls, breakwalls, marinas and all incidental work. Open cut construction work shall not include any structural modifications, alterations, additions and repairs to buildings, or highway work, including roads, streets, bridge construction and parking lots or steel erection work and excavation for the building itself and back filling inside of and within 5 ft. of the building and foundations, footings and piers for the building. Open cut construction work shall not include any work covered under Tunnel, Shaft and Caisson work.

OPEN CUT LABORER CLASSIFICATIONS

GROUP 1: Construction laborer

GROUP 2: Mortar and material mixer, concrete form person, signal person, well point person, manhole, headwall and catch basin builder, headwall, seawall, breakwall and dock builder

GROUP 3: Air, gasoline and electric tool operator, vibrator

operator, driller, pump person, tar kettle operator, bracer, rodder, reinforced steel or mesh person (e.g., wire mesh, steel mats, dowel bars, etc.), welder, pipe jacking and boring person, wagon drill and air track operator and concrete saw operator (under 40 h.p.), windlass and tugger person and directional boring person

GROUP 4: Trench or excavating grade person

GROUP 5: Pipe layer (including crock, metal pipe, multi-plate or other conduits)

GROUP 6: Grouting man, audio-visual television operations and all other operations in connection with closed circuit television inspection, pipe cleaning and pipe relining work and the installation and repair of water service pipe and appurtenances

GROUP 7: Restoration laborer, seeding, sodding, planting, cutting, mulching and top soil grading; and the restoration of property such as replacing mailboxes, wood chips, planter boxes, flagstones, etc.

LAB00465-001 06/01/2014

LABORER: Highway, Bridge and Airport Construction

AREA 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES

AREA 2: ALLEGAN, BARRY, BAY, BERRIEN, BRANCH, CALHOUN, CASS, CLINTON, EATON, GRATIOT, HILLSDALE, HURON, INGHAM, JACKSON, KALAMAZOO, LAPEER, LENAWEE, LIVINGSTON, MIDLAND, MUSKEGON, SAGINAW, SANILAC, SHIAWASSEE, ST. CLAIR, ST. JOSEPH, TUSCOLA AND VAN BUREN COUNTIES

AREA 3: ALCONA, ALPENA, ANTRIM, ARENAC, BENZIE, CHARLEVOIX, CHEBOYGAN, CLARE, CRAWFORD, EMMET, GLADWIN, GRAND TRAVERSE, IONIA, IOSCO, ISABELLA, KALKASKA, KENT, LAKE, LEELANAU, MANISTEE, MASON, MECOSTA, MISSAUKEE, MONTCALM, MONTMORENCY, NEWAYGO, OCEANA, OGEMAW, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON AND WEXFORD COUNTIES

AREA 4: ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC, MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES

	Rates	Fringes
LABORER (AREA 1)		
GROUP 1	$ 24.71	12.75
GROUP 2	$ 24.84	12.75
GROUP 3	$ 25.05	12.75
GROUP 4	$ 25.10	12.75
GROUP 5	$ 25.31	12.75
GROUP 6	$ 25.61	12.75
LABORER (AREA 2)		
GROUP 1	$ 22.71	12.75
GROUP 2	$ 22.91	12.75
GROUP 3	$ 23.15	12.75
GROUP 4	$ 23.50	12.75

GROUP 5	$ 22.37	12.75
GROUP 6	$ 23.71	12.75
LABORER (AREA 3)		
GROUP 1	$ 21.96	12.75
GROUP 2	$ 22.17	12.75
GROUP 3	$ 22.46	12.75
GROUP 4	$ 22.90	12.75
GROUP 5	$ 22.32	12.75
GROUP 6	$ 22.95	12.75
LABORER (AREA 4)		
GROUP 1	$ 21.96	12.75
GROUP 2	$ 22.17	12.75
GROUP 3	$ 22.46	12.75
GROUP 4	$ 22.90	12.75
GROUP 5	$ 22.52	12.75
GROUP 6	$ 22.95	12.75

LABORER CLASSIFICATIONS

GROUP 1: Asphalt shoveler or loader; asphalt plant misc.; burlap person; yard person; dumper (wagon, truck, etc.); joint filling laborer; miscellaneous laborer; unskilled laborer; sprinkler laborer; form setting laborer; form stripper; pavement reinforcing; handling and placing (e.g., wire mesh, steel mats, dowel bars); mason's tender or bricklayer's tender on manholes; manhole builder; headwalls, etc.; waterproofing,(other than buildings) seal coating and slurry mix, shoring, underpinning; pressure grouting; bridge pin and hanger removal; material recycling laborer; horizontal paver laborer (brick, concrete, clay, stone and asphalt); ground stabilization and modification laborer; grouting; waterblasting; top person; railroad track and trestle laborer; carpenters' tender; guard rail builders' tender; earth retention barrier and wall and M.S.E. wall installer's tender; highway and median installer's tender(including sound, retaining, and crash barriers); fence erector's tender; asphalt raker tender; sign installer; remote control operated equipment.

GROUP 2: Mixer operator (less than 5 sacks); air or electric tool operator (jackhammer, etc.); spreader; boxperson (asphalt, stone, gravel); concrete paddler; power chain saw operator; paving batch truck dumper; tunnel mucker (highway work only); concrete saw (under 40 h.p.) and dry pack machine; roto-mill grounds person.

GROUP 3: Tunnel miner (highway work only); finishers tenders; guard rail builders; highway and median barrier installer; earth retention barrier and wall and M.S.E. wall installer's (including sound, retaining and crash barriers); fence erector; bottom person; powder person; wagon drill and air track operator; diamond and core drills; grade checker; certified welders; curb and side rail setter's tender.

GROUP 4: Asphalt raker

GROUP 5: Pipe layers, oxy-gun

GROUP 6: Line-form setter for curb or pavement; asphalt screed checker/screw man on asphalt paving machines.

LABO1076-005 04/01/2015

MICHIGAN STATEWIDE

	Rates	Fringes
LABORER (DISTRIBUTION WORK)		
Zone 1	$ 19.77	12.75
Zone 2	$ 18.15	12.75
Zone 3	$ 16.38	12.75
Zone 4	$ 15.75	12.75
Zone 5	$ 15.75	12.75

DISTRIBUTION WORK - The construction, installation, treating and reconditioning of distribution pipelines transporting coal, oil, gas or other similar materials, vapors or liquids, including pipelines within private property boundaries, up to and including the meter settings on residential, commercial, industrial, institutional, private and public structures. All work covering pumping stations and tank farms not covered by the Building Trades Agreement. Other distribution lines with the exception of sewer, water and cable television are included.

Underground Duct Layer Pay: $.40 per hour above the base pay rate.

Zone 1 - Macomb, Oakland and Wayne
Zone 2 - Monroe and Washtenaw
Zone 3 - Bay, Genesee, Lapeer, Midland, Saginaw, Sanilac, Shiawassee and St. Clair
Zone 4 - Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon and Schoolcraft
Zone 5 - Remaining Counties in Michigan

PAIN0022-002 07/01/2008

HILLSDALE, JACKSON AND LENAWEE COUNTIES; LIVINGSTON COUNTY (east of the eastern city limits of Howell, not including the city of Howell, north to the Genesee County line and south to the Washtenaw County line); MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES:

	Rates	Fringes
PAINTER	$ 25.06	14.75

FOOTNOTES: For all spray work and journeyman rigging for spray work, also blowing off, $0.80 per hour additional (applies only to workers doing rigging for spray work on off the floor work. Does not include setting up or moving rigging on floor surfaces, nor does it apply to workers engaged in covering up or tending spray equipment. For all sandblasting and spray work performed on highway bridges, overpasses, tanks or steel, $0.80 per hour additional. For all brushing, cleaning and other preparatory work (other than spraying or steeplejack work) at scaffold heights of fifty (50) feet from the ground or higher, $0.50 per hour additional. For all preparatorial work and painting performed on open steel under forty (40) feet when no

scaffolding is involved, $0.50 per hour additional. For all swing stage work-window jacks and window belts-exterior and interior, $0.50 per hour additional. For all spray work and sandblaster work to a scaffold height of forty (40) feet above the floor level, $0.80 per hour additional. For all preparatorial work and painting on all highway bridges or overpasses up to forty (40) feet in height, $0.50 per hour additional. For all steeplejack work performed where the elevation is forty (40) feet or more, $1.25 per hour additional.

PAIN0312-001 06/12/2014

EXCLUDES: ALLEGAN COUNTY (Townships of Dorr, Fillmore, Heath, Hopkins, Laketown, Leighton, Manlius, Monterey, Overisel, Salem, Saugatuck and Wayland); INCLUDES: Barry, Berrien, Branch, Calhoun, Cass, Hillsdale, Kalamazoo, St. Joseph, Van Buren

	Rates	Fringes
PAINTER		
Brush and roller	$ 21.75	11.94
Spray, Sandblast, Sign Painting	$ 22.75	11.94

PAIN0845-003 05/21/2014

CLINTON COUNTY; EATON COUNTY (does not include the townships of Bellevue and Olivet); INGHAM COUNTY; IONIA COUNTY (east of Hwy. M 66); LIVINGSTON COUNTY (west of the eastern city limits of Howell, including the city of Howell, north to the Genesee County line and south to the Washtenaw County line); AND SHIAWASSEE COUNTY (Townships of Bennington, Laingsbury and Perry):

	Rates	Fringes
PAINTER	$ 21.89	11.85

PAIN0845-015 05/21/2014

MUSKEGON COUNTY; NEWAYGO COUNTY (except the Townships of Barton, Big Prairie, Brooks, Croton, Ensley, Everett, Goodwell, Grant, Home, Monroe, Norwich and Wilcox); OCEANA COUNTY; OTTAWA COUNTY (except the townships of Allendale, Blendone, Chester, Georgetown, Holland, Jamestown, Olive, Park, Polkton, Port Sheldon, Tallmadge, Wright and Zeeland):

	Rates	Fringes
PAINTER	$ 21.89	11.85

PAIN0845-018 05/21/2014

ALLEGAN COUNTY (Townships of Dorr, Fillmore, Heath, Hopkins, Laketown, Leighton, Manlius, Monterey, Overisel, Salem, Saugatuck and Wayland); IONIA COUNTY (west of Hwy. M-66); KENT, MECOSTA AND MONTCALM COUNTIES; NEWAYGO COUNTY (Townships of

Barton, Big Prairie, Brooks, Croton, Ensley, Everett, Goodwell, Grant, Home, Monroe, Norwich and Wilcox); OSCEOLA COUNTY (south of Hwy. #10); OTTAWA COUNTY (Townships of Allendale, Blendone, Chester, Georgetown, Holland, Jamestown, Olive, Park, Polkton, Port Sheldon, Tallmadge, Wright and Zeeland):

	Rates	Fringes
PAINTER	$ 21.89	11.85

FOOTNOTES: Lead abatement work: $1.00 per hour additional.

PAIN1011-003 06/05/2014

ALGER, BARAGA, CHIPPEWA, DELTA, DICKINSON, GOGEBIC, HOUGHTON, IRON, KEWEENAW, LUCE, MACKINAC, MARQUETTE, MENOMINEE, ONTONAGON AND SCHOOLCRAFT COUNTIES:

	Rates	Fringes
PAINTER	$ 24.15	10.52

FOOTNOTES: High pay (bridges, overpasses, watertower): 30 to 80 ft.: $.65 per hour additional. 80 ft. and over: $1.30 per hour additional.

PAIN1474-002 06/01/2010

HURON COUNTY; LAPEER COUNTY (east of Hwy. M-53); ST. CLAIR, SANILAC AND TUSCOLA COUNTIES:

	Rates	Fringes
PAINTER	$ 23.79	12.02

FOOTNOTES: Lead abatement work: $1.00 per hour additional. Work with any hazardous material: $1.00 per hour additional. Sandblasting, steam cleaning and acid cleaning: $1.00 per hour additional. Ladder work at or above 40 ft., scaffold work at or above 40 ft., swing stage, boatswain chair, window jacks and all work performed over a falling height of 40 ft.: $1.00 per hour additional. Spray gun work, pick pullers and those handling needles, blowing off by air pressure, and any person rigging (setting up and moving off the ground): $1.00 per hour additional. Steeplejack, tanks, gas holders, stacks, flag poles, radio towers and beacons, power line towers, bridges, etc.: $1.00 per hour additional, paid from the ground up.

PAIN1803-003 06/01/2014

ALCONA, ALPENA, ANTRIM, ARENAC, BAY, BENZIE, CHARLEVOIX, CHEBOYGAN, CLARE, CRAWFORD, EMMET, GLADWIN, GRAND TRAVERSE, GRATIOT, IOSCO, ISABELLA, KALKASKA, LAKE, LEELANAU, MANISTEE, MASON, MIDLAND, MISSAUKEE, MONTMORENCY AND OGEMAW COUNTIES; OSCEOLA COUNTY (north of Hwy. #10); OSCODA, OTSEGO, PRESQUE ISLE, ROSCOMMON, SAGINAW AND WEXFORD COUNTIES:

	Rates	Fringes
PAINTER		
Work performed on water, bridges over water or moving traffic, radio and powerline towers, elevated tanks, steeples, smoke stacks over 40 ft. of falling heights, recovery of lead-based paints and any work associated with industrial plants, except maintenance of industrial plants	$ 24.00	12.8
All other work, including maintenance of industrial plant	$ 22.58	12.80

FOOTNOTES: Spray painting, sandblasting, blowdown associated with spraying and blasting, water blasting and work involving a swing stage, boatswain chair or spider: $1.00 per hour additional. All work performed inside tanks, vessels, tank trailers, railroad cars, sewers, smoke stacks, boilers or other spaces having limited egress not including buildings, opentop tanks, pits, etc.: $1.25 per hour additional.

PLAS0514-001 06/01/2014

ZONE 1: GENESEE, LIVINGSTON, MACOMB, MONROE, OAKLAND, SAGINAW, WASHTENAW AND WAYNE COUNTIES

ZONE 2: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SANILAC, SCHOOLCRAFT, SHIAWASSEE, ST. CLAIR, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER		
ZONE 1	$ 29.59	12.59
ZONE 2	$ 28.29	12.59

PLUM0190-003 05/01/2014

ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GENESEE, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA,

IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LIVINGSTON, LUCE, MACKINAC, MACOMB, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MONROE, MUSKEGON, NEWAYGO, OAKLAND, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, ST. CLARE, ST. JOSEPH, SANILAC, SCHOOLCRAFT, SHIAWASSEE, TUSCOLA, VAN BUREN, WASHTENAW, WAYNE AND WEXFORD COUNTIES

	Rates	Fringes
Plumber/Pipefitter - gas distribution pipeline:		
Welding in conjunction with gas distribution pipeline work	$ 31.73	19.96
All other work:	$ 20.72	11.15

TEAM0007-004 06/01/2014

AREA 1: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA, BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SAGINAW, SANILAC, SCHOOLCRAFT, SHIAWASSEE, ST. CLAIR, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

AREA 2: GENESEE, LIVINGSTON, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES

	Rates	Fringes
TRUCK DRIVER		
AREA 1		
Euclids, double bottoms and lowboys	$ 25.05	.50 + a+b
Trucks under 8 cu. yds.	$ 24.80	.50 + a+b
Trucks, 8 cu. yds. and over	$ 24.90	.50 + a+b
AREA 2		
Euclids, double bottomms and lowboys	$ 24.895	.50 + a+b
Euclids, double bottoms and lowboys	$ 25.15	.50 + a+b
Trucks under 8 cu. yds.	$ 24.90	.50 + a+b
Trucks, 8 cu. yds. and over	$ 25.00	.50 + a+b

Footnote:
a. $395.05 per week
b. $56.10 daily

TEAM0247-004 06/01/2004

AREA 1: ALCONA, ALGER, ALLEGAN, ALPENA, ANTRIM, ARENAC, BARAGA,

BARRY, BAY, BENZIE, BERRIEN, BRANCH, CALHOUN, CASS, CHARLEVOIX, CHEBOYGAN, CHIPPEWA, CLARE, CLINTON, CRAWFORD, DELTA, DICKINSON, EATON, EMMET, GLADWIN, GOGEBIC, GRAND TRAVERSE, GRATIOT, HILLSDALE, HOUGHTON, HURON, INGHAM, IONIA, IOSCO, IRON, ISABELLA, JACKSON, KALAMAZOO, KALKASKA, KENT, KEWEENAW, LAKE, LAPEER, LEELANAU, LENAWEE, LUCE, MACKINAC, MANISTEE, MARQUETTE, MASON, MECOSTA, MENOMINEE, MIDLAND, MISSAUKEE, MONTCALM, MONTMORENCY, MUSKEGON, NEWAYGO, OCEANA, OGEMAW, ONTONAGON, OSCEOLA, OSCODA, OTSEGO, OTTAWA, PRESQUE ISLE, ROSCOMMON, SANILAC, SCHOOLCRAFT, SHIAWASSEE, SAGINAW, ST. CLAIR, ST. JOSEPH, TUSCOLA, VAN BUREN AND WEXFORD COUNTIES

AREA 2: GENESEE, LIVINGSTON, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES

	Rates	Fringes
Sign Installer		
AREA 1		
GROUP 1	$ 20.18	.15 + a
GROUP 2	$ 19.93	.15 + a
AREA 2		
GROUP 1	$ 21.73	.15 + a
GROUP 2	$ 21.48	.15 + a

FOOTNOTE:

a. $132.70 per week, plus $17.80 per day.

SIGN INSTALLER CLASSIFICATIONS:

GROUP 1: performs all necessary labor and uses all tools required to construct and set concrete forms required in the installation of highway and street signs

GROUP 2: performs all miscellaneous labor, uses all hand and power tools, and operates all other equipment, mobile or otherwise, required for the installation of highway and street signs

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* TEAM0247-010 04/01/2015

AREA 1: LAPEER AND SHIAWASSEE COUNTIES

AREA 2: GENESEE, MACOMB, MONROE, OAKLAND, ST. CLAIR, WASHTENAW AND WAYNE COUNTIES

	Rates	Fringes
TRUCK DRIVER (Underground construction)		
AREA 1		
GROUP 1	$ 22.37	405.90/wk+59.50/day
GROUP 2	$ 22.46	405.90/wk+59.50/day
GROUP 3	$ 22.67	405.90/wk+59.50/day
AREA 2		
GROUP 1	$ 22.67	405.90/wk+59.50/day
GROUP 2	$ 22.81	405.90/wk+59.50/day
GROUP 3	$ 23.00	405.90/wk+59.50/day

PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

SCOPE OF WORK: Excavation, site preparation, land balancing, grading, sewers, utilities and improvements; also including but not limited to, tunnels, underground piping, retention, oxidation, flocculation facilities, conduits, general excavation and steel sheeting for underground construction. Underground construction work shall not include any structural modifications, alterations, additions and repairs to buildings or highway work, including roads, streets, bridge construction and parking lots or steel erection.

TRUCK DRIVER CLASSIFICATIONS

GROUP 1: Truck driver on all trucks (EXCEPT dump trucks of 8 cubic yards capacity or over, pole trailers, semis, low boys, Euclid, double bottom and fuel trucks)

GROUP 2: Truck driver on dump trucks of 8 cubic yards capacity or over, pole trailers, semis and fuel trucks

GROUP 3: Truck driver on low boy, Euclid and double bottom

SUMI2002-001 05/01/2002

	Rates	Fringes
Flag Person	$ 18.99	12.75
LINE PROTECTOR (ZONE 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE)	$ 18.98	12.17
LINE PROTECTOR (ZONE 2: STATEWIDE (EXCLUDING GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE)	$ 17.14	12.17
Pavement Marking Machine (ZONE 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES) Group 1	$ 24.89	12.17
Pavement Marking Machine (ZONE 1: GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE) Group 2	$ 22.40	12.17
Pavement Marking Machine (ZONE 2: STATEWIDE (EXCLUDING GENESEE, MACOMB, MONROE, OAKLAND, WASHTENAW AND WAYNE COUNTIES) Group 1	$ 22.89	12.17
Pavement Marking Machine (ZONE 2: STATEWIDE (EXCLUDING		

GENESEE, MACOMB, MONROE,
OAKLAND, WASHTENAW AND WAYNE)
Group 2.....$ 20.60 12.17

WORK CLASSIFICATIONS:

PAVEMENT MARKER GROUP 1: Drives or operates a truck mounted striper, grinder, blaster, groover, or thermoplastic melter for the placement or removal of temporary or permanent pavement markings or markers.

PAVEMENT MARKER GROUP 2: Performs all functions involved for the placement or removal of temporary or permanent pavement markings or markers not covered by the classification of Pavement Marker Group 1 or Line Protector.

LINE PROTECTOR: Performs all operations for the protection or removal of temporary or permanent pavement markings or markers in a moving convoy operation not performed by the classification of Pavement Marker Group 1. A moving convoy operation is comprised of only Pavement Markers Group 1 and Line Protectors.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1,

2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial

contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

29 CFR Part 5 – Labor Standards Provisions for Federally Assisted Projects

§ 5.5 Contract provisions and related matters.

(a) The Agency head shall cause or require the contracting officer to insert in full in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in Sec. 5.1, the following clauses (or any modifications thereof to meet the particular needs of the agency, *Provided*, That such modifications are first approved by the Department of Labor):

(1) *Minimum wages.* (i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in Sec. 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) *Withholding*. The (write in name of Federal Agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of

1949 in the construction or development of the project), all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) *Payrolls and basic records*. (i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the (write in name of appropriate federal agency) if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency). The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (*e.g.*, the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at *http://www.dol.gov/esa/whd/forms/wh347instr.htm* or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the (write in name of appropriate federal agency) if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency), the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a ``Statement of Compliance,'' signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under Sec. 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under Sec. 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the ``Statement of Compliance'' required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the (write the name of the agency) or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) *Apprentices and trainees*--(i) *Apprentices.* Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its

program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) *Trainees*. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable
program is approved.

(iii) *Equal employment opportunity*. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) *Compliance with Copeland Act requirements*. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) *Subcontracts.* The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the (write in the name of the Federal agency) may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) *Contract termination: debarment.* A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) *Compliance with Davis-Bacon and Related Act requirements.* All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) *Disputes concerning labor standards.* Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

(10) *Certification of eligibility.* (i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(b) *Contract Work Hours and Safety Standards Act.* The Agency Head shall cause or require the contracting officer to insert the following clauses set forth in paragraphs (b)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Sec. 5.5(a) or 4.6 of part 4 of this title. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) *Overtime requirements.* No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) *Violation; liability for unpaid wages; liquidated damages.* In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible there for shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) *Withholding for unpaid wages and liquidated damages.* The (write in the name of the Federal agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) *Subcontracts.* The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

(c) In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in Sec. 5.1, the Agency Head shall cause or require the contracting officer to insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Agency Head shall cause or require the contracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

Disadvantaged Business Enterprises (DBE)

Prime contractors bidding on this project must follow, document, and maintain documentation of their Good Faith Efforts, as listed below, to ensure that Disadvantaged Business Enterprises (DBEs) have the opportunity to participate in the project by increasing DBE awareness of procurement efforts and outreach. Bidders must make the following Good Faith Efforts for any work that will be subcontracted.

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities; including placing DBEs on solicitation lists and soliciting DBEs whenever they are potential sources.

2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitation for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.

3. Consider in the contracting process whether firms competing for large contracts could be subcontracted with DBEs. This will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.

4. Encourage contracting with a consortium of DBEs when a contract is too large for one DBE firm to handle individually.

5. Use the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce.

Subsequent to compliance with the Good Faith Efforts, the following conditions also apply under the DBE requirements. Completed Good Faith Efforts Worksheets (Attachment 1), along with the required supporting documentation outlined in the instructions, must be submitted with your bid proposal. EPA form 6100-2 must also be provided at the pre-bid meeting. A copy of this form is available on the Forms and Guidance page of the Revolving Loan website.

1. The prime contractor must pay its subcontractor for work that has been satisfactorily completed no more than 30 days from the prime contractor's receipt of payment from the owner.

2. The prime contractor must notify the owner in writing prior to the termination of any DBE subcontractor for convenience by the prime contractor.

3. If a DBE contractor fails to complete work under the subcontract for any reason, the prime contractor must employ the Good Faith Efforts if soliciting a replacement contractor.

4. The prime contractor must employ the Good Faith Efforts.

Debarment Certification

The prime contractor must provide a completed **Certification Regarding Debarment, Suspension, and Other Responsibility Matters Form** with its bid or proposal package to the owner (Attachment 2).

Attachment 1

Disadvantaged Business Enterprise (DBE) Utilization
GOOD FAITH EFFORTS WORKSHEET

Michigan Department of Environmental Quality
Office of Drinking Water and Municipal Assistance– Revolving Loan Section
Disadvantaged Business Enterprise (DBE) Utilization
State Revolving Fund/Drinking Water Revolving Fund
GOOD FAITH EFFORTS WORKSHEET

Bidder:_____

Subcontract Area of Work:_____

Contract Goal: Solicit a minimum of three (3) DBEs via email/letters/fax.

List the DBEs contacted for the above area of work and complete the following information for each DBE.

Company Name	Type of Contact	Date of Contact	Price Quote Received	Accepted/ Rejected	Please Explain if Rejected
				☐ A ☐ R	
				☐ A ☐ R	
				☐ A ☐ R	
				☐ A ☐ R	
				☐ A ☐ R	
				☐ A ☐ R	

Explanation for Not Achieving Minimum Contacts (attach extra sheets if necessary):

MITA DBE Posting Date (if applicable): _____
(attach a copy of the DBE advertisement)

Other Efforts (attach extra sheets if necessary):

Please include the completed worksheet and supporting documentation with the bid proposal.

Rev. 7-2012

Rick Snyder, Governor DEQ Dan Wyant, Director

Authorized under Parts 53 & 54 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
www.michigan.gov/deq

Instructions to Bidders for the Completion of the Good Faith Efforts Worksheet

1. Separate worksheets must be provided for each area of work to be subcontracted out. This includes both major and minor subcontracts.

2. A minimum of three (3) DBEs must be contacted by a verifiable means of communication such as e-mail, letter, or fax for each area of work to be subcontracted out. Copies of the solicitation letters/e-mails and fax confirmation sheets must be provided with the worksheet.

3. If this minimum number cannot be achieved with local DBEs, then the solicitations must be sent to DBEs outside of the local area (i.e. statewide).

4. Posting solicitations for quotes/proposals from DBEs on the MITA website (www.mitadbe.com) is highly recommended to facilitate participation in the competitive process whenever possible. The solicitation needs to identify the project and the areas of work to be subcontracted out. A copy of the MITA DBE advertisement must be submitted with the worksheet, if used, or a printout of the resulting quotes posted to the MITA website can be submitted with this form as supporting documentation.

5. If the area of work is so specialized that no DBEs exist, then an explanation is required to support that conclusion.

6. The date of the DBE contact must be identified, as it is important to document that the DBE solicitation was made during the bidding period and that sufficient time was given for the DBE to return a quote.

7. Each DBE firm's price quote must be identified if one was received or N/A entered on the worksheet if a quote was not received. Copies of all quotes must be submitted with the worksheet.

8. If a quote was received, indicate if it was accepted or rejected. Justification for not accepting a quote and not using the DBE subcontractor must be provided.

9. Under Other Efforts, please indicate additional steps you have taken to obtain DBE contractors and provide the appropriate supporting documentation such as:

   Follow-up e-mails, faxes, or letters.

   Copies of announcements/postings in newspapers, trade publications, or minority media that target DBE firms.

Attachment 2

Certification Regarding
Debarment, Suspension, and Other Responsibility Matters

Certification Regarding
Debarment, Suspension, and Other Responsibility Matters

The prospective participant certifies, to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in transactions under federal nonprocurement programs by any federal department or agency;

(2) Have not, within the three year period preceding the proposal, had one or more public transactions (federal, state, or local) terminated for cause or default; and

(3) Are not presently indicted or otherwise criminally or civilly charged by a government entity (federal, state, or local) and have not, within the three year period preceding the proposal, been convicted of or had a civil judgment rendered against it:

(a) For the commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public transaction (federal, state, or local) or a procurement contract under such a public transaction;

(b) For the violation of federal or state antitrust statutes, including those proscribing price fixing between competitors, the allocation of customers between competitors, or bid rigging; or

(c) For the commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

I understand that a false statement on this certification may be grounds for the rejection of this proposal or the termination of the award. In addition, under 18 U.S.C. §1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to five years, or both.

_____
Name and Title of Authorized Representative

_____
Name of Participant Agency or Firm

_____
Signature of Authorized Representative Date

☐ I am unable to certify to the above statement. Attached is my explanation.

Disadvantaged Business Enterprise (DBE) Requirements
Frequently Asked Questions Regarding Contractor Compliance

Q: What is the Good Faith Efforts Worksheet form and how is it to be completed?

A: This form captures efforts by the prime contractor to solicit DBEs for each area of work type that will be subcontracted out. A separate Good Faith Efforts Worksheet must be provided by the prime contractor for each area of work type to be subcontracted out. There are specific instructions that accompany this form that prescribe minimum efforts which bidders must make in order to be in compliance with the DBE requirements.

Q: Can non-certified DBEs be used?

A: While non-certified DBEs can be used, only DBEs, MBEs, and WBEs that are certified by EPA, SBA, or MDOT (or by tribal, state and local governments, as long as their standards for certification meet or exceed the standards in EPA policy) can be counted toward the fair share goal. Proof of certification by one of these recognized and approved agencies should be sought from each DBE.

Q: How does a DBE get certified?

A: Applications for certification under MDOT can be found at http://mdotjboss.state.mi.us/UCP/LearnHowServlet.

Applications for certification under EPA can be found on EPA's Small Business Programs website at http://www.epa.gov/osbp/dbe_firm.htm under Certification Forms.

Q: If a bidder follows the MDOT DBE requirements, will the bidder be in compliance with the SRF/DWRF DBE requirements?

A: No. Federally funded highway projects utilize DBE goals, which require that a certain percentage of work be performed by DBE subcontractors. For SRF/DWRF projects, there is no financial goal. However, there is a solicitation effort goal. Bidders must use Good Faith Efforts for each and every area of work to be subcontracted out to obtain DBEs. The bidders are not required to use DBEs if the quotes are higher than non-DBE subcontractors. **There is no required DBE participation percentage contract goal for the SRF/DWRF.** However, if the SRF/DWRF project is part of a joint project with MDOT, the project can be excluded from SRF/DWRF DBE requirements (i.e., the Good Faith Efforts Worksheet is not required) as it would be difficult to comply with both programs' requirements.

Q. Must the Good Faith Efforts Worksheet and supporting documentation be turned in with the bid proposals?

A: Yes. This is a requirement to document that the contractor has complied with the DBE requirements and the Good Faith Efforts. These compliance efforts must be done during the bidding phase and not after-the-fact. It is highly recommended that the need for these efforts and the submittal of the forms with the bid proposals be emphasized at the pre-bid meetings. Failure to show that the Good Faith Efforts were complied with during the bidding process can lead to a prime contractor being found non-responsive.

Q: Does EPA form 6100-2 need to be provided at the pre-bid meeting?

A: Yes. The form must be made available at the pre-bid meeting.

Q: What kinds of documentation should a contractor provide to document solicitation efforts?

A: Documentation can include fax confirmation sheets, copies of solicitation letters/e-mails, printouts of online solicitations, printouts of online search results, affidavits of publication in newspapers, etc.

Q: How much time will compliance with the Good Faith Efforts require in terms of structuring an adequate bidding period?

A: Due to the extent of the efforts required, a minimum of 30 calendar days is recommended between bid posting and bid opening to ensure adequate time for contractors to locate certified DBEs and solicit quotes.

Q: How does a contractor locate certified DBEs?

A: The Michigan Department of Transportation has a directory of all Michigan certified entities located at http://mdotjboss.state.mi.us/UCP/. Additionally, the federal System for Award Management (SAM) is another place to search and can be found at www.sam.gov. SAM contains information from the former Central Contractor Registration (CCR) database.

Q: If the bidder does not intend to subcontract any work, what forms, if any, must be provided with the bid proposal?

A: The bidder should complete the Good Faith Efforts Worksheet with a notation that no subcontracting will be done. However, if the bidder is awarded the contract and then decides to subcontract work at any point, then the Good Faith Efforts must be made to solicit DBEs.

Q: In the perfect world, the Good Faith Efforts Worksheet is required to be turned in with the proposal. What if no forms are turned in with the bid proposal or forms are blank or incomplete? Should this be cause to determine that the bidder is non-responsive?

A: While the Good Faith Efforts Worksheet is important, it is more critical to confirm that the contractor complied with the DBE requirements prior to bid opening. The owner should contact the bidder as soon as deficiencies are noted for a determination/documentation of efforts taken to comply with the DBE requirements. Immediate submittal of the completed forms will be acceptable provided the Good Faith Efforts were made and it is just a matter of transferring information to the forms.

Q: If the prime contractor is a DBE, does he have to solicit DBE subcontractors?

A: Yes, the DBE requirements still apply if the prime intends to subcontract work out. Good Faith Efforts must be used to solicit DBEs.

Q: If the area of work is one where there are less than three DBE contractors, how is the contractor to document this?

A: Copies of printouts from MDOT and CCR showing no DBEs and advertisements soliciting quotes for all subcontract areas, including the questionable areas, will be adequate.

APPENDIX

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 $12.81/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 $14.30/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 (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

_____
Signature of Authorized Representative Date

_____
Print Name and Title

_____
Address, City, State, Zip

_____
Phone/Email address

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2015 - ENDING APRIL 29, 2016

$12.81 per hour
If the employer provides health care benefits*****

$14.30 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:
Mark Berryman at 734/794-6500 or mberryman@a2gov.org

Vendor Conflict of Interest Disclosure Form

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 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.

Certification: I hereby certify that to my knowledge, there is no conflict of interest involving the vendor named 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:

Vendor Name	Vendor Phone Number
Conflict of Interest Disclosure *	
Name of City of Ann Arbor employees, elected officials, or immediate family members with whom there maybe a potential conflict of interest.	( ) Relationship to employee_____ ( ) Interest in vendor's company _____ ( ) Other

*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.

I certify that the information provided is true and correct by my signature below:

Signature of Vendor Authorized Representative _____ Date _____ Printed Name of Vendor Authorized Representative

PROCUREMENT USE ONLY

☐ Yes, named employee was involved in Bid / Proposal process.

☐ No, named employee was not involved in procurement process or decision.

CITY OF ANN ARBOR
DECLARATION OF COMPLIANCE

Non-Discrimination Ordinance

The "non discrimination by city contractors" provision of the City of Ann Arbor Non-Discrimination Ordinance (Ann Arbor City Code Chapter 112, Section 9:158) requires all contractors proposing to do business with the City to treat employees in a manner which provides equal employment opportunity and does not discriminate against any of their employees, any City employee working with them, or any applicant for employment on the basis 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. It also requires that the contractors include a similar provision in all subcontracts that they execute for City work or programs.

In addition the City Non-Discrimination Ordinance requires that all contractors proposing to do business with the City of Ann Arbor must satisfy the contract compliance administrative policy adopted by the City Administrator. A copy of that policy may be obtained from the Purchasing Manager

The Contractor agrees:

(a) To comply with the terms of the City of Ann Arbor's Non-Discrimination Ordinance and contract compliance administrative policy.

(b) To post the City of Ann Arbor's Non-Discrimination Ordinance Notice in every work place or other location in which employees or other persons are contracted to provide services under a contract with the City.

(c) To provide documentation within the specified time frame in connection with any workforce verification, compliance review or complaint investigation.

(d) To permit access to employees and work sites to City representatives for the purposes of monitoring compliance, or investigating complaints of non-compliance.

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 in accordance with the terms of the Ann Arbor Non-Discrimination Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Non-Discrimination Ordinance, obligates the Contractor 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.

_____
Company Name

_____
Signature of Authorized Representative Date

_____
Print Name and Title

_____
Address, City, State, Zip

_____
Phone/Email address

Questions about the Notice or the City Administrative Policy, Please contact:
Procurement Office of the City of Ann Arbor
(734) 794-6500

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/departments/city-clerk

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 has a grievance alleging a violation of this chapter, he/she has 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 alleged discriminatory action to file a complaint with the city's Human Rights Commission. If an individual fails to file a complaint alleging a violation of this chapter within the specified time frame, the complaint will not be considered by the Human Rights Commission. The complaint should be made in writing to the Human Rights Commission. The complaint may be filed in person with the City Clerk, by e-mail at aahumanrightscommission@gmail.com, or by mail (Ann Arbor Human Rights Commission, PO Box 8647, Ann Arbor, MI 48107). The complaint must contain information about the alleged discrimination, such as name, address, phone number of the complainant and location, date and description of the alleged violation of this chapter.

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