

CONTRACT DOCUMENTS  
FOR  
**WEST PARK STORMWATER COMPLETION PROJECT**



May 2012

FILE NO.: 2011-022  
BID NO.: 4218

PUBLIC SERVICES AREA  
PROJECT MANAGEMENT SERVICE UNIT

CITY OF ANN ARBOR  
301 E. Huron Street  
Ann Arbor, Michigan 48107

## TABLE OF CONTENTS

<u>Section</u>	<u>Pages</u>
Table of Contents .....	TC-1 to 2
Advertisement .....	AD-1
Notice of Pre-Bid Conference .....	NP-1
Instructions to Bidders .....	IB-1 to 4
Invitation to Bid .....	P-1 to 3
Bid Forms .....	BF-1 to 6
Contract .....	C-1 to 4
Bond Forms .....	B-1 to 2
General Conditions .....	GC-1 to 19
Standard Specifications .....	SS-1
Detailed Specifications .....	DS-1 to 61

<u>Item #</u>	<u>Item Name</u>	<u>Page #</u>
N.A.	Project Schedule .....	DS-1
N.A.	Insurance Requirements .....	DS-2
201	General Conditions .....	DS-3
203	Audiovisual Tape Coverage .....	DS-4
205	Tree Trimming .....	DS-6
207, 209	Type B & No Parking Signs .....	DS-7
211-215	Cast-In-Place Diversion Structures .....	DS-10
217, 219	Stop Log Assemblies .....	DS-15
221-225	Drainage Structures, Modify .....	DS-19
227-231	Remove Sewer Pipe .....	DS-20
233-237	Remove Drainage Structure .....	DS-21
239	Headwall, 24-Inch .....	DS-22
241	Headwall, Relocate .....	DS-23
243	Maintaining Pipe Flow .....	DS-24
245	Riprap, Heavy .....	DS-26
247	Dewatering .....	DS-27
249	Site Clearing .....	DS-30
251	Project Earthwork .....	DS-31
253, 255	HMA Pavement .....	DS-33
257	Clean-Up & Restoration .....	DS-34
259	Grass Pavers .....	DS-46
261	Gravel Tracking Mat .....	DS-47
263	Decorative Boulders .....	DS-48
265-277	Storm Sewer Pipe Items .....	DS-49
279-283	Precast Diversion Structures (Alternate Bid Items) .....	DS-51

<u>Item #</u>	<u>Item Name</u>	<u>Page #</u>
N.A.	Coordination, Cooperation, and Work by Others .....	DS-57
N.A.	Protection of Utilities.....	DS-58
N.A.	Vacuum-Type Street and Utility Cleaning Equipment .....	DS-59
N.A.	Materials and Supplies Certifications .....	DS-59
N.A.	Contract Drawings/Plans .....	DS-59
N.A.	Soil Boring & Pavement Section Data .....	DS-60
N.A.	Working In the Rain .....	DS-60
N.A.	Quantities and Unit Prices .....	DS-60
N.A.	General Construction Notes.....	DS-61

APPENDIX A – CONTRACT COMPLIANCE & LIVING WAGE FORMS

APPENDIX B – SOILS REPORT

APPENDIX C – FAIR EMPLOYMENT PRACTICE

ADVERTISEMENT TO BID  
CITY OF ANN ARBOR, MICHIGAN

ITB# **4218**

Sealed Bids will be received by the Procurement Unit, Fifth (5<sup>th</sup>) Floor, Guy Larcom Building, on or before **April 10, 2012 by 10:00 a.m.** for construction of the **West Park Stormwater Completion Project**. Bids will be publicly opened and read aloud at this time.

Work to be done includes the **replacement several stormwater diversion structures within West Park with either cast-in-place or precast structures**, and all related work.

Bid documents, specifications, plans and addendum shall be downloaded by vendors at either of the following web sites, Michigan Inter-governmental Trade Network (MITN) [www.mitn.info](http://www.mitn.info) or City of Ann Arbor web site [www.A2gov.org](http://www.A2gov.org).

Each proposal shall be accompanied by a certified check, or Bid Bond by a recognized surety, in the amount of 5% of the total of the bid price. A proposal, 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 and satisfactory insurance coverage.

Precondition for entering into a contract with the City of Ann Arbor is compliance with Chapter 112 of Title IX of the Code of the City of Ann Arbor. 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.

After the time of opening, no Bid may be withdrawn for a period of 60 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.

Any further information may be obtained from the Procurement Unit, (734) 794-6576.

CITY OF ANN ARBOR, MICHIGAN

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

A pre-bid conference for this project will be held on **March 28 at 10:00 a.m.** in the Fourth Floor Conference Room of the Guy C. Larcom Building, City Hall, located at 301 E. Huron Street, Ann Arbor, Michigan 48107.

Attendance at this conference is optional, but **highly recommended**. Administrative and technical questions regarding this project will be answered at this time. The pre-bid meeting 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.

The City shall make available to all prospective Bidders, prior to receipt of the Bids, access to the area in which the work is to be performed. Advance notice should be given to the Administering Service Area/Unit in cases where access to the site must be arranged by the City.

Any Bid which does not conform fully with 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 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.

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 April 4, 2012 by 3:00 p.m. and should be addressed as follows:

Specification/Scope of Work questions emailed to [nhutchinson@a2gov.org](mailto:nhutchinson@a2gov.org).

Bid Process and HR Compliance questions emailed to [Lnewton@a2gov.org](mailto:Lnewton@a2gov.org).

### **Addenda**

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

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

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

## **Bid Submission**

All Bids are due and must be delivered to the City of Ann Arbor Procurement Unit on or before April 10, 2012 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 one (1) Bid copy(ies) in a sealed envelope clearly marked: **ITB 4218 – West Park Stormwater Completion Project.**

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

City of Ann Arbor  
Procurement Unit, 5<sup>th</sup> 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.

Bids should be date/time stamped/signed at the address above in order to be considered. Normal business hours are 8:00 a.m. to 4:00 p.m. Monday through Friday. 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 will not be granted to a single Bidder; however, additional time may be granted to all Bidders when the City determines 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 discounts 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 lump sum and unit 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 the alternate Bids for items listed in the forms, or other alternates which the Bidder may wish to submit. **Note that the City is requesting alternate bid prices for precast concrete structures** (Items #279-283), which would replace Items #211-215, although the submission of alternate prices for these items is not required.

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.

### **Official Documents**

The City of Ann Arbor shall accept no changes to the bid documents made by the Bidder unless those changes are set forth in the “Alternate” section of Bid form.

The City of Ann Arbor officially distributes bid documents from the Purchasing Unit or through the Michigan Intergovernmental Trade Network (MITN). Copies of the bid documents obtained from any other source are not considered Official copies. Only those Bidders who obtain bid documents from MITN system are guaranteed access to receive addendum information if issued. If you obtained City of Ann Arbor Bid documents from other sources, it is recommended that you register on [www.MITN.info](http://www.MITN.info) and obtain an official Bid.

### **Bid Security**

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

### **Withdrawal of Bids**

After the time of opening, no Bid may be withdrawn for the period of days 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-1, Article III of the Contract. If these time requirements cannot be met, the Bidder must stipulate on Bid Form Section 3 - Time Alternate its schedule for performance of the work. Consideration will be given to time in evaluating bids.

### **Liquidated Damages**

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

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

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



## **Human Rights Information**

Section 5, beginning at page GC-3, outlines the requirements for fair employment practices under City of Ann Arbor Contracts. To establish compliance with this Ordinance, the Bidder must complete and return with its bid completed copies of the Human Rights Division Contract Compliance Forms (see Appendix A) or an acceptable equivalent.

## **Wage Requirements**

Section 4, beginning at page GC-1, 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.

## **Major Subcontractors**

The Bidder shall identify 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.

## **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**

All information in a submitter’s bid is subjected to disclosure under the provisions of Public Act No. 442 of 1976 know as the “Freedom of Information Act”. This act also provides for the complete disclosure of contracts and attachments thereto except where specifically exempted under the Freedom of Information Act.

## **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 vendor must clearly state the reasons for the protest. If a vendor contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/Unit shall refer the vendor to the Purchasing Agent. The Purchasing Agent will provide the vendor with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee who’s decision shall be final.

## **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, Human Rights Division Contract Compliance Forms, 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 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 1, 2, 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 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 9<sup>TH</sup> DAY OF April, 2012.

TSP Services, Inc.

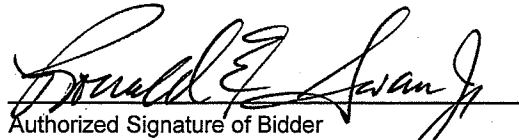
Bidder's Name

12641 Stark Rd.

Official Address

734.838.0426

Telephone Number



Authorized Signature of Bidder

Ronald E. Swan, Jr.

(Print Name of Signer Above)

LEGAL STATUS OF BIDDER

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

Bidder declares that it is:

-----

\* A corporation organized and doing business under the laws of the state of Michigan, for whom Ronald E. Swan, Jr., bearing the office title of President, whose signature is affixed to this proposal, is authorized to execute contracts.

-----

\* A partnership, list all members and the street and mailing address of each:

Also identify the County and State where partnership papers are filed:

County of \_\_\_\_\_, State of \_\_\_\_\_

-----

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

-----

**BID FORM - SECTION 1**  
**PROJECT: West Park Stormwater Completion Project**  
**File No. 2011-022      Bid No. 4218**

ITEM	DESCRIPTION	UNITS	ESTIM. QUANT.	UNIT PRICE (\$)	AMOUNT (\$)
110	Minor Traffic Control	LS	1	\$ 1,500.	\$ 1,500.
111	Type II Lighted Barricade (Drum), Furn.	Each	12	\$ 105.	\$ 1,260.
112	Type II Lighted Barricade (Drum), Oper.	Each	12	\$ 105.	\$ 1,260.
130	Protective Fencing	LF	1,950	\$ 4.24	\$ 8,268.
135	Tree Removal (8" and Larger Trees)	Each	1	\$ 1,350.	\$ 1,350.
201	General Conditions, Max \$10,000	LS	1	\$ 10,000.	\$ 10,000.
203	Audiovisual Tape Coverage, Modified	LS	1	\$ 1,600.	\$ 1,600.
205	Tree Trimming	Each	2	\$ 225.	\$ 450.
207	Temporary Type B Signs, Modified	SF	136	\$ 10.	\$ 1,360.
209	No Parking Signs	Each	6	\$ 400.	\$ 2,400.
211	Cast-In-Place Diversion Structure, R-14	Each	1	\$ 56,553.	\$ 56,553.
213	Cast-In-Place Diversion Structure, R-19	Each	1	\$ 59,087.	\$ 59,087.
215	Cast-In-Place Drainage Structure, R-31	Each	1	\$ 51,134.	\$ 51,134.
217	Stop Log Assembly, R-14	Each	1	\$ 26,600.	\$ 26,600.
219	Stop Log Assembly, R-19	Each	1	\$ 51,250.	\$ 51,250.
221	Dr Structure, r-18 , Modify	Each	1	\$ 1,800.	\$ 1,800.
223	Dr Structure, r-18A , Modify	Each	1	\$ 2,950.	\$ 2,950.
225	Dr Structure, r-18B , Modify	Each	1	\$ 2,950.	\$ 2,950.
227	Sewer, Rem, 24-inch	LF	45	\$ 20.	\$ 850. 900 NH
229	Sewer, Rem, 42-inch	LF	44	\$ 20.	\$ 880.
231	Sewer, Rem, 54-inch	LF	10	\$ 28.	\$ 280.
233	Dr Structure, r-14, Remove	Each	1	\$ 2,200.	\$ 2,200.
235	Dr Structure, r-19, Remove	Each	1	\$ 2,600.	\$ 2,600.
237	Dr Structure, r-31, Remove	Each	1	\$ 2,200.	\$ 2,200.
239	Headwall, 24-inch	Each	1	\$ 1,600.	\$ 1,600.
241	Headwall, Relocate	Each	1	\$ 800.	\$ 800.
243	Maintaining Pipe Flow	LS	1	\$ 57,000.	\$ 57,000.

**TOTAL PAGE BF-1 \$ 350,182.**  
(Also to be entered on Page BF-3)

350,232 NH

**BID FORM - SECTION 1**  
**PROJECT: West Park Stormwater Completion Project**  
**File No. 2011-022      Bid No. 4218**

ITEM	DESCRIPTION	UNITS	ESTIM. QUANT.	UNIT PRICE (\$)	AMOUNT (\$)
245	Riprap, Heavy	SY	60	\$ 80.	\$ 4,800.
247	Dewatering	LS	1	\$ 15,000.	\$ 15,000.
249	Site Clearing	LS	1	\$ 4,500.	\$ 4,500.
251	Project Earthwork	LS	1	\$ 15,000.	\$ 15,000.
253	HMA Pavement Wearing, 36A	Ton	25	\$ 425.	\$ 10,625.
255	HMA Pavement Base & Leveling, 13A	Ton	25	\$ 425.	\$ 10,625.
257	Clean-Up & Restoration, Special	LS	1	\$ 18,000.	\$ 18,000.
259	Grass Pavers	SF	240	\$ 32.	\$ 7,680.
261	Gravel Tracking Mat	Each	1	\$ 2,600.	\$ 2,600.
263	Decorative Boulder, 2-foot Diameter	Each	24	\$ 90.	\$ 2,160.
265	CI IV RCP, 54-inch, Detail III, Modified	LF	10	\$ 225.	\$ 2,250.
267	CI IV RCP, 24-inch, Detail V, Modified	LF	37	\$ 78.	\$ 2,886.
269	ADS N-12, 42-inch, Detail V, Modified	LF	45	\$ 108.	\$ 4,860.
271	ADS N-12, 24-inch, Detail V, Modified	LF	20	\$ 104.	\$ 2,080.
273	HDPE, 42-inch, 22.5 Degree Bend	Each	2	\$ 1,800.	\$ 3,600.
275	HDPE, 42-inch x 24-inch, Reducer	Each	2	\$ 1,800.	\$ 3,600.
277	HDPE, 42-inch x 24-inch, Tee	Each	2	\$ 1,800.	\$ 3,600.
360	Type III Manhole (0-10' deep)	Each	1	\$ 2,250.	\$ 2,250.
392	Pipe Undercut & Refill (6A)	CY	25	\$ 26.	\$ 650.
500	Remove Bituminous Pavement	SY	170	\$ 2.	\$ 340.
503	Rem. Concrete Sidewalk, Ramp & Drives- Any Thickness	SF	600	\$ 2.	\$ 1,200.
525	21AA Limestone-C.I.P	CY	100	\$ 42.	\$ 4,200.
552	4" Concrete Sidewalk	SF	400	\$ 4.	\$ 1,600.
554	8" Concrete Sidewalk, Ramp, Drive Approach	SF	4,350	\$ 6.50	\$ 28,275.
702	Inlet Filter	Each	17	\$ 250	\$ 4,250.
703	Silt Fence	LF	820	\$ 2.25	\$ 1,845.
820	2" Tilia Americana (American Linden)	Each	1	\$ 350	\$ 350.

**TOTAL PAGE BF-2 \$ 158,826.**

(Also to be entered on Page BF-3)

**BID FORM - SECTION 1**  
**PROJECT: West Park Stormwater Completion Project**  
**File No. 2011-022      Bid No. 4218**

350,232 NH

TOTAL FROM PAGE BF-1 \$ ~~350,182.~~

TOTAL FROM PAGE BF-2 \$ 158,826.

**TOTAL BASE BID:** \$ ~~509,008.~~ 509,058.00 NH

**Alternate Bid Items for Precast Concrete Structures**

The following alternate bid prices for precast concrete structures would replace items #211 - 215.  
The City is requesting alternate bid prices for these items, however it is not required.

ITEM	DESCRIPTION	UNITS	ESTIM. QUANT.	UNIT PRICE (\$)	AMOUNT (\$)
279	Precast Diversion Structure, R-14	Each	1	\$ 65,800	\$ 65,800.
281	Precast Diversion Structure, R-19	Each	1	\$ 63,700	\$ 63,700.
283	Precast Drainage Structure, R-31	Each	1	\$ 35,986	\$ 35,986.

**TOTAL OF ALTERNATE BID ITEMS #279-283** \$ 165,486

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.

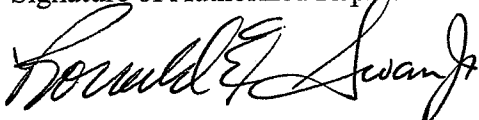
If the Contractor wishes to quote alternate items for consideration by the City, it may do so under this Section. A complete description of the item and the proposed price differential must be provided. Unless approved at the time of award, substitutions where items are specifically named will be considered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

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

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

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

Signature of Authorized Representative of Bidder





BID FORM

Section 3 - Time Alternate

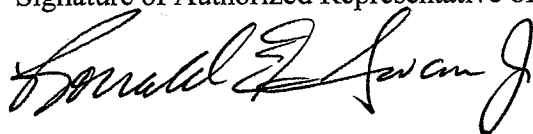
If the Bidder takes exception to the time stipulated in Article III of the Contract, Time of Completion, page C-1, it is requested to stipulate below its proposed time for performance of the work. Consideration will be given to time in evaluating bids.

TSP Services, Inc. respectfully requests  
an 80 day schedule for substantial completion.

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 - 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 subcontractors to perform the work identified:

<u>Type of Work</u>	<u>Name and Address</u>	<u>Value of Subcontract</u>
Cast-in-place Conc.	Saturn Construction, South Lyon	\$100,000.
HMA Paving	Hutch Paving, Madison Hqts.	\$ 15,000.

If the Bidder does not expect to engage any 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 subcontractor to perform work under the contract.

Signature of Authorized Representative of Bidder



## CONTRACT

THIS AGREEMENT is made on the 21<sup>st</sup> day of May, 2012, between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 E. Huron Street, Ann Arbor, Michigan 48107 (“City”) and TSP Services, Inc., a Michigan Corporation located at 12641 Stark Road, Livonia, Michigan 48150.

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 “**West Park Stormwater Completion 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 Compliance Forms	Proposal Contract and Exhibits
Living Wage Declaration of Compliance Forms (if applicable)	Bonds General Conditions Standard Specifications
Bid Forms – using Alternate Bid Items for Precast Concrete Structures	Detailed Specifications Plans Addenda

### ARTICLE II - Definitions

Administering Department means **Public Services Area**.

Supervising Professional means **Homayoon Pirooz, P.E., Project Management Manager** or other persons acting under the authorization of the Director of the Administering Department.

Project means **West Park Stormwater Completion Project** Bid No. **4218**.

### ARTICLE III - Time of Completion

- (A) The work to be completed under this Contract shall begin immediately after the Contractor’s receipt of a fully executed Contract.
- (B) The entire work for this Contract shall be completed in accordance with the scheduling requirements outlined in the “Detailed Specification for Project Scheduling” found on page DS-1 of the Contract Documents.

- (C) Failure to complete all the work within the time(s) 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, the amount(s) specified in the “Detailed Specification for Project Schedule” contained elsewhere herein 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

As an independent requirement, where the Detailed Specifications identify certain portions of the work to be completed within a shorter period of time and the Contractor fails to complete each portion within the shorter period specified for each portion, including any extension granted in writing by the Project Supervisor, the City is entitled to deduct from the monies due the Contractor, as liquidated damages and not as a penalty, the amount identified in the Detailed Specifications for each portion of the work not timely completed for each calendar day of delay in completion of each portion of the work.

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.

Liquidated damages under this section are in addition to any liquidated damages due under Section 5 of the General Conditions.

#### 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, using the Alternate Bid Items for Precast Concrete Structures, for the estimated total of:

Five Hundred Seven Thousand Seven Hundred Seventy Dollars (\$507,770.00)

- (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.

#### 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.

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, for any loss not covered by insurance under this contract, 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:

By \_\_\_\_\_

Its:

**FOR THE CITY OF ANN ARBOR**

By \_\_\_\_\_

John Hieftje, Mayor

By \_\_\_\_\_

Jacqueline Beaudry, City Clerk

**Approved as to substance**

By \_\_\_\_\_

Steven D. Powers, City Administrator

By \_\_\_\_\_

Craig Hupy  
Interim Public Services Area Administrator

**Approved as to form and content**

By \_\_\_\_\_

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 May 7, 2012, for: West Park Stormwater Completion Project 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 \_\_\_\_\_, 20\_\_\_\_.

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

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

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

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

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

Its \_\_\_\_\_  
(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 May 7, 2012, for West Park Stormwater Completion Project; 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 \_\_\_\_\_, 20\_\_\_\_.

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

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

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

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

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

Its \_\_\_\_\_  
(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) Proposal.

### **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/vendor 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/vendor 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/vendor 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/vendor or grantee.

### **1:815. Living Wages Required.**

- (1) Every contractor/vendor 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 \$9.42 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 \$10.91 a 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.

### Section 5 - Non-Discrimination

The Contractor agrees to comply with the nondiscrimination provisions of Chapter 112 of the Ann Arbor City Code and to take affirmative action to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate any inequality based upon race, national origin or sex. The Contractor agrees to comply with the provisions of Section 9:161 of Chapter 112 of the Ann Arbor City Code and in particular the following excerpts:

#### 9:161 NONDISCRIMINATION BY CITY CONTRACTORS

- (1) All contractors proposing to do business with the City of Ann Arbor shall satisfy the nondiscrimination administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All contractors shall receive approval from the Director prior to entering into a contract with the City, unless specifically exempted by administrative policy. All City contractors shall take affirmative action to insure 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 race, national origin or sex.
- (2) 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 Director 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 Director as having fulfilled affirmative action requirements for a period of one year at which time the Director shall conduct another review. Other contractors shall develop an affirmative action program in conjunction with the Director. 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 Director shall use for employment verification the labor recruitment area of the Ann Arbor-Ypsilanti standard metropolitan statistical area. Construction contractors determined to be in compliance shall be accepted by the Director as having fulfilled affirmative action requirements for a period of six (6) months at which time the Director shall conduct another review.

- (3) In hiring for construction projects, contractors shall make good faith efforts to employ local persons, so as to enhance the local economy.
- (4) All contracts shall include provisions through which the contractor agrees, in addition to any other applicable Federal or State labor laws:
  - (a) To set goals, in conference with the Human Resources Director, for each job category or division of the work force used in the completion of the City work;
  - (b) To provide periodic reports concerning the progress the contractor has made in meeting the affirmative action goals it has agreed to;
  - (c) To permit the Director access to all books, records and accounts pertaining to its employment practices for the purpose of determining compliance with the affirmative action requirements.
- (5) The Director shall monitor the compliance of each contractor with the nondiscrimination provisions of each contract. The Director 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.
- (6) 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) To 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) To 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 minority group members had the affirmative action not been breached;
  - (d) Impose for each day of non-compliance, liquidated damages of a specified sum, based upon the following schedule:

<u>Contract Amount</u>	<u>Assessed Damages Per Day of Non-Compliance</u>
\$ 10,000 - 24,999	\$ 25.00
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.

#### 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 it's work and to public and private property resulting from lack of reasonable protective precautions, except as may be due to errors in the contract documents, or caused by agents or employees of the City. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

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

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

## Section 11 - Inspection of Work

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

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

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

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

## Section 12 - Superintendence

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

## Section 13 - Changes in the Work

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

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

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

## Section 14 - Extension of Time

Extension of time stipulated in the Contract for completion of the work will be made if and as the Supervising Professional may deem proper under any of the following circumstances:

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

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

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

#### Section 15 - Claims for Extra Cost

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

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

- (1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;
- (2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same; the cost of all material and supplies required of either temporary or permanent character; rental of all power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;
- (3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility;
- (4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;
- (5) Payments of all charges for work under this Section in any one month shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.



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

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

#### Section 16 - Progress Payments

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

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

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract Sum upon completion of erection of all equipment furnished, but not later than 60 days after the date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than 180 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

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

#### Section 17 - Deductions for Uncorrected Work

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

## Section 18 - Correction of Work Before Final Payment

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

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

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

## Section 19 - Acceptance and Final Payment

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

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

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

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

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

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

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

#### Section 20 - Suspension of Work

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

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

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

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

If the Contractor is adjudged a bankrupt, or if it makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it fails to make prompt payments to subcontractors or for material or labor, or persistently disregards laws, ordinances or the instructions of the Supervising Professional, or otherwise is guilty of a substantial violation of any provision of the Contract, then the City, upon the certificate of the Supervising Professional that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor 3 days written notice, terminate this Contract. The City may then take possession of the premises and of all materials, tools and appliances thereon and without prejudice to any other remedy it may have, make good the deficiencies or finish the work by whatever method it may deem expedient, and deduct the cost from the payment due the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of finishing the work, including compensation for additional managerial and administrative services exceeds the unpaid balance of the Contract Sum, the Contractor and its surety are liable to the City for any excess cost incurred. The expense incurred by the City, and the damage incurred through the Contractor's default, shall be certified by the Supervising Professional.

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

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

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

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

## Section 24 - Removal of Equipment and Supplies

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

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

## Section 25 - Responsibility for Work and Warranties

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

The Contractor shall guarantee the quality of the work for a period of one year. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of one year. At the end of one year after the Contractor's receipt of final payment, the complete work, including equipment and materials furnished and installed under the contract, shall be inspected by the Contractor and the Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days.

The Contractor shall assign all manufacturer or material supplier warranties to the City prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

## Section 26 - Partial Completion and Acceptance

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

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

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

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

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

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

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

## Section 28 - Contractor's Insurance

- A. 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 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:

1. 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

2. 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 including, but not limited to: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further, 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

3. 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. 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.

4. 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.

- B. Insurance required under Section A.2 and A.3 of this Contract 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.

- C. 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.
- D. 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 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.



**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  
By \_\_\_\_\_  
(Signature)  
Its \_\_\_\_\_  
(Title of Office)

Subscribed and sworn to before me, on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
\_\_\_\_\_, \_\_\_\_\_ County, Michigan

Notary Public  
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 Project Management Services Unit, (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 Project Management Services Unit 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 obtained on the web from:

[http://www.a2gov.org/government/publicservices/project\\_management/privatedev/Pages/StandardSpecificationsBook.aspx](http://www.a2gov.org/government/publicservices/project_management/privatedev/Pages/StandardSpecificationsBook.aspx)

**DETAILED SPECIFICATION  
FOR  
PROJECT SCHEDULE**

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.

The Contractor is expected to submit a signed contract including the appropriate insurance and bond requirements within 7 days after the award of the construction contract by City Council. Upon approval of the documents submitted, the Contractor may expect a copy of a fully executed contract and a Notice to Proceed from the City. The Contractor must mobilize and begin work within 10 days from receiving a Notice to Proceed. The City is working with AquaShield, Inc. and L.F. Manufacturing, Inc., the manufacturer and fabricator of the stormwater treatment units that were previously installed, to perform certain repairs that must be completed in advance of this project. The schedule is to have their work completed by May 31, 2012. The Contractor cannot begin working on this project until the repair work for the treatment units is completed, and only upon receipt of the Notice to Proceed.

The entire work of this Contract shall be completed within 70 consecutive calendar days, and final restoration must be completed by September 30, 2012.

The Contractor shall note that some materials that are to be incorporated into the project require significant lead time for their procurement. This includes the steel grating and attachment hardware. The Contractor shall review all planned construction, including specific design elements for their respective procurement times, and make sure that these times are accurately reflected in the project schedule.

**DETAILED SPECIFICATION  
FOR  
AMENDMENTS TO THE GENERAL CONDITIONS  
INSURANCE REQUIREMENTS**

Section 28, Part A.2 within the General Conditions of the City of Ann Arbor contract shall be modified. In addition to the City of Ann Arbor, the Contractor's Commercial General Liability Insurance shall name the following parties as additionally insured:

- Orchard, Hiltz & McCliment, Inc., their consultants, agents and employees
- Washtenaw County Water Resources Commissioner

**DETAILED SPECIFICATION  
FOR  
ITEM #201 – GENERAL CONDITIONS, MAX \$10,000**

**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
- Installing tree protections as shown on the Plans
- Maintaining drainage
- Maintaining driveways drive openings, sidewalks, bike paths, mail deliveries, and solid waste/recycle pick-ups. This includes the placement and maintenance of gravel in driveway openings as directed by the Engineer
- Coordination efforts to furnish and operate various-size vehicles/equipment as directed by the Engineer
- Furnishing and operating vacuum-type street cleaning equipment a minimum of once per week or more frequently as directed by the Engineer
- Furnishing and operating vacuum-type utility structure cleaning equipment
- Furnishing and operating both vibratory plate and pneumatic-type (“pogo-stick”) compactors
- Noise and dust control
- Mobilization(s) and demobilization(s)
- Furnishing submittals and certifications for materials and supplies
- Furnishing, placing and then removing, upon completion of construction, temporary gravel surfaces to aid site access and the transportation of equipment and materials.
- 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, 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**

General Conditions, Max \$10,000

**PAY UNIT**

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 – AUDIOVISUAL TAPE COVERAGE, MODIFIED**

**DESCRIPTION**

This work shall include digital audiovisual record of the physical, structural, and aesthetic conditions of the construction site and adjacent areas as provided herein. This work will be performed for the entire project limits prior to the start of construction.

The audio-visual filming shall be:

1. Of professional quality, providing a clear and accurate audio and visual record of existing conditions.
2. Prepared within the four (4) week period immediately prior to the start of construction.
3. Furnished to the Engineer a minimum of one (1) week prior to bringing any materials or equipment within the areas described in this Detailed Specification.
4. Carried out under the supervision of the Engineer.

The Contractor shall furnish three (3) copies of the completed audiovisual record to the Engineer. An index of the footage shall be included that will enable any particular area of the project to be easily found. This includes indexing the files according to street. The Contractor shall retain a second copy of the audiovisual record for his/her own use.

Any portion of the film determined by the Engineer to be unacceptable for the documentation of existing conditions shall be filmed again at the Contractor's sole expense prior to mobilizing onto the site.

**PRODUCTION**

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 recording industry. The physical medium is a DVD, but the recording itself must be WAV, MPEG-1, MPEG-2, or equal, which can be played on any standard DVD player.
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 record 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 that the stationing has not been established onsite, 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.

**COVERAGE**

The audiovisual film coverage shall include the following:

1. General Criteria - This general criteria shall apply to all filming and shall include all areas where construction activities will take place or where construction vehicles or equipment will be operated or parked and or where materials will be stored. The filming shall extend an additional 50 feet outside of all areas. The filming shall include all significant, existing manmade and natural features such as driveways, sidewalks, utility covers, utility markers, utility poles, other utility features, traffic signal structures and features, public signs, private signs, fences, landscaping, trees, shrubs, other vegetation, and other similar or significant features.
2. Other Areas - The Contractor shall film at his sole expense other areas where, in his/her opinion, the establishment of a record of existing conditions is warranted. The Contractor shall notify the Engineer in writing of such areas. All trees over 6 inches in diameter that are located on private property at the edges of the work zone shall be filmed from trunk base to top of canopy and included in the recording.

The Engineer may direct the filming of other minor areas not specified herein at the Contractor’s sole expense.

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

<b><u>PAY ITEM</u></b>	<b><u>PAY UNIT</u></b>
Audiovisual Tape Coverage, Modified	Lump Sum

Audiovisual Tape Coverage shall include all labor, equipment, and materials required to perform the filming and to provide the finished DVD recording to the Engineer. The unit price includes filming the entire project limits as described above.

**DETAILED SPECIFICATION  
FOR  
ITEM #205 – TREE TRIMMING**

**DESCRIPTION**

The Contractor shall note that during the construction, access to West Park will be limited to designated locations along N. Seventh Street. These locations may require working around trees that have prominent canopies. The work of this pay item is to allow selective trimming of tree limbs, where authorized by the City Forestry Supervisor, to allow for improved access of construction equipment to the Park. The work shall be performed by an experienced forestry contractor retained by the Contractor.

The City Forestry Supervisor is Kay Sicheneder. She can be reached at:

(734) 794-6000, ext. 43321  
ksicheneder@a2gov.org

**CONSTRUCTION METHODS**

The construction method(s) shall meet the requirements of the Michigan Forestry Association and the City Forestry Supervisor. All removed tree material shall become the property of the Contractor and shall be properly disposed of offsite unless otherwise directed by the Engineer.

Damage to trees resulting from the careless operation(s) of the Contractor, the Contractor's subcontractor(s), or supplier(s) shall be repaired under the direction of the City Forestry Supervisor. The associated costs shall be charged directly to the Contractor. Payment of these charges is the Contractor's responsibility and is not a part of any City Project Contract.

**MEASUREMENT AND PAYMENT**

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

<b><u>PAY ITEM</u></b>	<b><u>PAY UNIT</u></b>
Tree Trimming	Each

Tree Trimming shall include all labor, equipment and materials required to perform the work, including proper disposal offsite of all removed tree materials.

**DETAILED SPECIFICATION  
FOR  
ITEM #207 - TEMPORARY TYPE B SIGNS, MODIFIED  
ITEM #209 - NO PARKING SIGNS**

**DESCRIPTION**

This work shall consist of protecting and maintaining vehicular and pedestrian traffic, in accordance with Sections 103.05, 103.06, 810 and 812, of the 2003 MDOT Standard Specifications for Construction; Part 6 of the Michigan Manual of Uniform Traffic Control Devices, Latest Revised Edition (MMUTCD); and the City of Ann Arbor Public Services Department 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 two-way traffic on major streets, access for local traffic on local streets, and keep all intersections open to traffic at all times, unless specifically authorized in writing by the Engineer.

The Contractor shall maintain traffic such that no vehicle shall be required to drive into active work areas.

The Contractor shall keep all driveways open at all times, unless specifically authorized in writing by the Engineer.

The Contractor shall maintain pedestrian traffic at all times. For maintaining normal pedestrian traffic while performing sidewalk and driveway repair, Type II barricades (drum type and lighted) 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 that are damaged by the Contractor during the work will be repaired by the City at the Contractor's expense.

A lane-closure permit shall be obtained by the Contractor from the City 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. 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 reopened 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.

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.

#### Temporary Type B Signs, Modified

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

Sufficient signs shall be provided by the Contractor to ensure 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

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 sign posts and all mounting hardware, which will be paid for as "No-Parking Signs" 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-foot and maximum 7-foot 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.

#### Steel Sign Posts

The Contractor shall provide steel sign posts meeting the MDOT, 3 pound, designation and all related sign-mounting hardware. The posts shall be placed as shown on the plans or as directed by the Engineer to support Temporary Type B Signs and No-Parking Signs. Upon completion of the project, the posts shall be removed by the Contractor.

## **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.

### **Temporary Type B Signs, Modified**

Payment for Temporary Type B Signs, Modified shall be for the maximum quantity used on the project at any one time.

### **No-Parking Signs**

No-Parking Signs will be measured as the maximum number installed on each street at any one time. The unit price includes furnishing, placing and removing sign posts, and the removal and return of No-Parking signs to the City upon completion of the project. The Contractor shall be back charged for the replacement costs for damaged or unreturned signs.

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**

Temporary Type B Signs, Modified  
No-Parking Signs

#### **PAY UNIT**

Square Foot  
Each

**DETAILED SPECIFICATION  
FOR  
ITEM #211 - CAST-IN-PLACE DIVERSION STRUCTURE, R-14  
ITEM #213 - CAST-IN-PLACE DIVERSION STRUCTURE, R-19  
ITEM #215 - CAST-IN-PLACE DRAINAGE STRUCTURE, R-31**

**DESCRIPTION**

This work shall consist of constructing two (2) stormwater diversion structures and one (1) stormwater drainage structure, to replace existing drainage structures that are to be removed, for flow control from upstream to downstream storm systems. The work is to be performed using reinforced, cast-in-place concrete in accordance with Section(s) 701, 702, 704, 706, 901, 902, 903, 905, 908, 909 and 914, as identified in the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

Contractor may provide alternate bid prices for Diversion Structures R-14 and R-19, and Drainage Structure R-31 for using precast concrete in substitution for cast-in-place concrete. The alternate bid prices will include any related appurtenances that would be impacted as a result of a precast concrete structural system.

**DESIGN**

All stormwater diversion structures shall accommodate the equivalent of H20-44 vehicular loading. In addition, all steel grating shall comply with the American Disabilities Act (ADA).

All existing soils below proposed stormwater diversion and drainage structures shall be undisturbed natural subgrade materials. If it is determined that the existing soils do not appear to be suitable existing subgrade (through material testing or visual inspection), the Contractor is responsible for notifying the City immediately to quickly address any unforeseen field conditions.

1. Cast-In-Place Concrete

- A. All concrete construction shall comply with ACI 301 (Latest Edition), "Specifications for Structural Concrete," and the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction.
- B. All reinforcement placed in concrete shall be continuous unless detailed otherwise. Reinforcement placement and minimum cover requirements shall be in accordance with ACI 318.
- C. All reinforcement shall be adequately supported from bar and sand chairs prior to the placement of concrete. Use of brick and lift hooks are not permitted.
- D. For hot and cold weather placement, follow all requirements of ACI 305 and ACI 306. No concrete shall be placed adjacent to frozen surfaces.
- E. Concrete shall be set in place with the use of vibratory equipment.
- F. Concrete mix design for slabs and walls - mix design properties:
  - Minimum Compressive Strength, f'c - 4,000 psi
  - Maximum Water Cement Ratio (By Weight): 0.46
  - Maximum Slump: 4 inches for slabs, foundations and walls \*\*

\*\*8 inch slump is permitted with the addition of water-reducing admixtures using super-plastisizer or high range water-reducing admixture.

2. Materials
  - A. Cement: ASTM C-150 Type I (Min. 6 Sacks Per Cubic Yard, 4,000 PSI concrete)
  - B. Coarse Aggregate: ASTM C-33 MDOT 6A
  - C. Fine Aggregate: ASTM C-33 MDOT 2NS
  - D. Water-reducing Admixture: ASTM C-494, Type F
  - E. Water: Clean and Potable
  - F. Entrained Air: 5+/-1%
  - G. Steel Reinforcement: ASTM 615, Grade:  $f_y = 60,000$  psi.
  - H. The materials shall meet the requirements specified in Sections 701, 702, 704, 706, 901, 902, 903, 905, 908, 909, and 914 of the 2012 MDOT Standard Specifications for Construction.
  - I. MDOT 6A coarse aggregate shall be used for excavation backfill within a one foot (horizontal): one foot (vertical) influence of paved surfaces and structures. In other areas, Engineer-approved backfill material may be substituted.
  - J. All removable heavy steel grating shall be hot-dipped galvanized with perimeter banding to each respective panel. Each galvanized steel grating panel shall be fastened with stainless steel clips (hold-downs). Anchorages and miscellaneous structural steel metals shall also be stainless steel.
  - K. ASTM A1011/A-04 Standard Specification for Steel Sheet and Strip
  - L. AISI 1008 Standard Low Carbon Steel
  - M. ANSI/NAAMM-MBG-531-00 Metal Bar Grating Manual
  - N. ASTM A-123 Standard Specification for Zinc Hot-Dip Galvanized Products.
  - O. Use for vertical reinforced concrete joints five (5) inches thick or greater and horizontal reinforced concrete no less than four (4) inches thick and for concrete with one row of reinforcement. "Volclay Waterstop - RX 102", or an approved equal. Note - Waterstop RX is not a self-adhering product. Adhesive is to adhere with Waterstop-RX to concrete or metal surfaces. "Volclay Waterstop - WB Adhesive", or an approved equal.
3. Concrete surfaces shall receive the following finishes:
  - A. "Smooth-formed finish": Formed concrete surfaces exposed to view, during normal operation or maintenance, including waterproofing and damproofing shall be arranged orderly and symmetrically with minimum seams. Repair and patch any defective areas. Remove and smooth fins or other projections completely. Fill major air void holes greater than one-quarter inch.
  - B. "Brush finish": Formed concrete horizontal surfaces exposed to view, during normal operation or maintenance, including waterproofing and damproofing shall be arranged orderly and symmetrically with minimum seams. Repair and patch any defective areas. Remove and smooth fins or other projections completely. Fill major air void holes greater than one-quarter inch.
  - C. "Rough-formed finish": Formed concrete surfaces not exposed to view. Tie holes, defective areas and one-quarter inch fin projections shall be repaired and patched.
4. Curing shall begin immediately after the concrete is placed and shall occur continuously throughout the finishing operation. This shall be accomplished initially by keeping concrete surfaces continuously wet by covering with water or by covering with wet Burlene (or approved equal).
5. All reinforcement in concrete walls and foundations shall be continuous in accordance with lap-splicing standards only in regions of low stress.
6. All construction joints in concrete walls shall have a continuous keyway as described within the standard details. All construction joints, except those detailed, shall have Engineer approval. Construction joints in walls shall be spaced as shown on the drawings. Caulk joints exposed to view.

## **HEAVY DUTY METAL GRINDING**

Heavy duty metal grating shall be “Wheels n’ Heels Short Span Heavy Duty Steel Grating” by Ohio Gratings, Inc., Model No. 8-WH-4, or an Engineer-approved equal. The following parameters shall be required for this project:

1. Bearing Bars: To be ¼” width x 2”, ASTM A-36 bar spaced at ¼” clear open.
2. Cross Bars: 3/8” diameter carbon steel wire rod spaced 4” center-to-center and welded at right angles to bearing bars with one fillet at each bearing bar/cross bar intersection.
3. Surface: Slip-resistant.
4. Loading: AASHTO H20-44.
5. Finish: The gratings shall be galvanized after fabrication.
6. Fabrication and tolerances shall be in accordance with NAAMM Metal Bar Grating Manual.
7. Miscellaneous hold-down fastenings shall be stainless steel in accordance with manufacturer specifications.

## **CONSTRUCTION METHODS**

The Contractor shall construct the new diversion and drainage structures in accordance with the details shown on the plans. This work will include preparation of submittal review packages, reinforced concrete work, overflow weirs, galvanized grating system, manhole access materials, metals, connectivity to existing and proposed storm pipes, and flow channels. The work will also include protecting existing pipe segments that may be exposed during the excavation, preventing soil and debris from entering the storm sewers, and backfilling the excavation as needed to complete the work.

1. Shop drawings prepared by suppliers and subcontractors shall be reviewed and coordinated by the Contractor, prior to submitting to the Engineer. Shop drawings shall be submitted for the following:
  - Concrete mix design including all material specifications.
  - Compression test breaking strength data.
  - Reinforcement steel layout details for fabrication.
  - Heavy-duty, hot dip galvanized steel grating system.
2. Verify existing site conditions prior to construction and commencement of construction activities.
3. Temporary diversions of flow control during construction of the structure shall be the responsibility of the Contractor. Contractor shall provide Temporary Diversion Flow Control Plan Description for concurrency by Engineer prior to construction, and it shall be paid for under contract pay item “Maintaining Pipe Flow.”
4. Temporary bracing shall be required for installation of all structural components.
5. Existing construction not undergoing alteration is to remain undisturbed. This may include existing pipes. Where such areas are disturbed as a result of the construction operations of this contract, it shall be repaired or replaced by the Contractor as required and to the satisfaction of the Engineer.
6. Contractor shall take all necessary fire and safety precautions during field construction operation such as welding if permitted on the site.
7. Prior to any excavation, the Contractor shall contact “Miss Dig” for location of underground utilities and shall also notify representatives of other utility owners located within the vicinity of the work.
8. Contractor shall provide appropriate traffic safety control devices for construction activities that are to take place within the public road right-of-way.
9. Contractor shall supply and install grout fillets as designated on the engineering drawings for direction flow control.
10. Contractor shall supply and install manhole frames and covers as part of the construction of the work.
11. Contractor shall supply and install waterstops, and the associated adhesive material at vertical and horizontal construction joints per manufacturer’s specifications, and is paid for as part of this Detailed Specification.
12. Prior to heavy duty grating installation, Contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the Engineer or Owner’s representative prior to placement.
13. Contractor shall install grating in accordance with shop drawings and standard installation clearances as recommended by ANSI/NAAMM Metal Bar Grating Manual.



14. Cutting, Fitting and Placement
  - A. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align in the short span direction as shown on the drawings.
  - B. Wherever grating is pierced by pipes, ducts, and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as the bearing bars.
  - C. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Utilize standard panel widths wherever possible.
15. Cold Weather Concrete Placement: Protect concrete work from physical damage or reduced strength attributed to frost, freezing actions, or low temperatures by using techniques in ACI 306 and as specified in this Section.

When air temperature has fallen to or is to fall below 40 degrees F, uniformly heat water and aggregates before mixing to obtain concrete mixture temperature not less than 50 degrees F, and not more than 80 degrees F at placement point.

Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

Do not use calcium chloride, salt and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.

16. Hot Weather Concrete Placement: When air temperature is above 85 degrees F, conditions could exist that would seriously impair quality and concrete strength; place concrete in compliance with ACI 305 and as specified in this Section.

Cool ingredients before mixing to maintain concrete temperature at time of placement below 80 degrees F. Chill mixing water, or use chopped ice to control temperature. If using ice, water equivalent of ice is included in total mixing water quantity.

Cover reinforcing steel with water-soaked burlap if steel becomes too hot, to reduce steel temperature so not to exceed ambient air temperature immediately before placement of concrete.

Fog spray forms, reinforcing steel and subgrade prior to placing concrete.

Use water-reducing retarding admixture (Type D) when required by high temperatures, low humidity, or other adverse placing conditions.

17. Grating Attachment – Use approved attachment fastening system to secure grating to supporting members in accordance with manufacturer's specifications.

## **EARTHWORK**

1. MDOT 6A coarse aggregate shall be used for excavation backfill within a one foot (horizontal): one foot (vertical) influence of paved surfaces and structures. In other areas, Engineer-approved backfill material may be substituted.
2. Prior to construction, soils below proposed foundations and slabs shall be tested by the City's geotechnical/testing consultant (retained by Owner) to confirm a net allowable soil bearing capacity of 2,000 pounds per square foot (psf). If it is determined through testing the net allowable soil bearing pressure is less than 2,000 psf, the Contractor shall notify the Engineer immediately to provide alternative design recommendation, if necessary.

## **MEASUREMENT AND PAYMENT**

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

<b><u>PAY ITEM</u></b>	<b><u>PAY UNIT</u></b>
Cast-In-Place Diversion Structure, R-14	Each
Cast-In-Place Diversion Structure, R-19	Each
Cast-In-Place Drainage Structure, R-31	Each

The contract unit price shall be payment in full for all labor, materials, and equipment necessary to construct diversion/drainage structures, including, but not limited to, all required excavation and structural construction and pipe modifications (temporary and permanent), as well as constructing manhole channels and “benches” to allow for the installation of stop log assemblies, the furnishing and placement of all galvanized grating, structural steel and fastening hardware; and the furnishing and placement of castings and covers. The contract price shall also include backfilling with MDOT 6A coarse aggregate or Engineer-approved fill, and removing and properly disposing materials and debris offsite. The contract price shall also include any temporary sheeting, shoring, and bracing that may be necessary for the work.

**DETAILED SPECIFICATION  
FOR  
ITEM #217 - STOP LOG ASSEMBLY, R-14  
ITEM #219 - STOP LOG ASSEMBLY, R-19**

**DESCRIPTION**

Contractor shall furnish and install Heavy Duty Stop Logs and guides as manufactured by Plasti-Fab, Inc., P. O. Box 100, Tualatin, Oregon, or approved equal. Stop logs and guides shall be furnished complete with necessary lifting devices and shall be fabricated, assembled, and placed in proper operating condition in accordance with installation instructions and recommendations of the equipment manufacturer. Equipment shall be the latest product design of a manufacturer regularly engaged in the production of equipment of this type for a minimum of 10 years.

Manufacturers other than the above-named company wishing to quote on equipment in this section shall submit detailed drawings of their proposed equipment, and suitable evidence of experience and results to the Engineer, and obtain written approval to quote at least ten (10) days prior to bid opening.

**DESIGN CRITERIA**

**WORKMANSHIP**

Composition of the stop log laminate shall be in accordance with the recommendations shown in the Quality Assurance Report for Reinforced Thermoset Plastic (RTP) Corrosion Resistant Equipment prepared under the sponsorship of the Society of the Plastics Industry, Inc. (SPI). And the Material Technology Institute (MTI) of the Chemical Process Industry, and shall meet the specifications for Type I, Grade 10 laminates shown in Appendix M-1 of said report. Stop Logs shall be warranted against failure due to corrosion for a full 25 years.

**DESIGN**

The outer shell (of the stop logs) shall be fabricated by means of vacuum infusion with complete encapsulation of the internal structural matrix for protection against corrosion from moisture or chemical deterioration with a minimum thickness of ¼ inch (6mm). Outer shell shall be Fiberglass Reinforced Plastic (FRP) on the front and back facings, and ¾ inch (19mm) FRP on the remaining perimeter. Stop logs shall be designed so that the maximum fiber stress (ultimate or yield, whichever applies) does not exceed 2.5 times the working stress. Stop logs shall be suitably reinforced to withstand the maximum seating head with a deflection less than  $\ell/360$  of the gate width, or ¼ inch (6mm), whichever is the lesser of the two shall govern. The maximum inertial water pressure shall be 1,500 pounds per square foot per stop log segment and stop log assembly. Stop log covers that are fabricated from pressed or laminated sheet material and glued/bonded to a substructure shall not be acceptable. Delaminating seams or joints will not be accepted in addition to any occurrence of seepage, or provisions for an avenue to collect debris.

All stop logs shall be flat and level. Warping throughout the entire stop log shall not produce a crown of more than 1/16 inch (1.6mm) in any direction. Visual inspection for defects shall be made without the aid of magnification. Defects shall be classified as to type and level as shown in Table I of ANSI/ASTM D2563-0, approved 1977, or any subsequent revision. Allowable surface tolerances shall not exceed the following:

DEFECT	ALLOWABLE TOLERANCES
Cracks, crazing, chips, pits, blisters, dry spots, fish eyes, burned areas, or entrapped air	None
Scratches	None more than 0.002 inches (0.05mm) in depth
Exposed glass, exposure of cut edges	None
Wrinkles and solid blisters	Maximum deviation: 10% of thickness, but not to exceed 1/8 inch (0.3mm)
Surface porosity (pinholes or pores in the laminate surface)	None
Foreign matter	None

#### LEAKAGE

Maximum allowable leakage of stop logs with seating head shall not exceed 0.03 GPM/ft (0.11 LPM/305mm) of wetted linear seal area under full design head when installed in manufacturer's Guide Frames.

#### MATERIALS

GUIDE FRAMES: T-304 stainless steel.

#### SHARP-CRESTED WEIR PLATE

Stainless Steel, Sharp-crested weir plate shall be sized with vertical adjustment up to six (6) inches in height. Slotted holes, spacings, and bolt assemblies shall be permitted for anchorage to the top stop log. Slotted holes shall use stainless steel plate washers to block flow from penetrating through slotted holes. Lifting pins shall properly align with slotted holes to minimize obstruction with weir plate. Sharp-crested weir plate shall be designed to withstand a lateral pressure of 1,500 pounds per square foot.

#### STOP LOGS

Stop logs shall have an external surface of continuous composite FRP premium isophthalic thermoset polyester resin totally encapsulating an internal reinforcing structure without glued, or otherwise joined parts per section Design above. Internal steel structure to be welded per ASME/ASTM standard, sandblasted and coated with vinyl ester resin immediately prior to vacuum infusion to ensure complete bonding with external corrosion barrier. To assure maximum service life, the composite FRP shall be ultraviolet stabilized and seamless to protect inner structural members from corrosion. Metal/concrete/wood logs subject to corrosion/bacterial breakdown/rot shall not be acceptable alternatives to composite FRP material. Structural characteristics for a minimum 1/4-inch (6mm) glass mat laminate shall meet the following minimum physical properties:

Tensile strength	14,700 psi (1,034 ksc)
Flexural modulus	800,000 psi (56,246 ksc)
Flexural strength	23,300 psi (1,638 ksc)
Impact strength	9.0 ft-lbs./in. (1.24 kgf/m)
Water absorption	<0.13% (in 24 hours)

Note: Contractor shall supply stop logs in six inch increments. One of the six inch stop logs will accommodate the installation of a variable height sharp-crested weir plate. One (1) additional stop log (spare) will be supplied as part of the stop log assembly with a height of **four inches** to accommodate variability in heights and flow control at the weir crest. This one (1) additional stop log shall meet all the design requirements as stipulated above.

## SHOP DRAWINGS AND COMPUTATIONS

Contractor shall submit one (1) complete package of stop log fabrication details and computations in accordance with shop drawing procedures. Additional copies of the fabrication details shall be provided through coordination with the Owner's Representative. Only one (1) set of computations will be necessary for this submittal package. Computations shall be completed by an Engineer, Registered within the State of Michigan.

## LIFTING PINS / EYES

T-316 super duplex stainless steel. Pin assembly must pass completely through the Stop Log and be encapsulated with a minimum thickness of 6mm FRP. Lifting pins that are located within the same proximity of weir plate assemblies shall be properly aligned and sized for lifting (removal and placement) purposes.

## STOP LOG & GUIDE FRAME SEALS

All seals shall be virgin Neoprene, per ASTM D-2000. The following minimum physical characteristics apply:

Specific gravity	1.25
Hardness	55-65 Shore A Durometer
Tensile strength	1,500 psi (0.07ksc)
Elongation	300%
Low temperature brittleness	-40 Degrees F

## STOP LOG LIFTING BEAM

A lifting beam with automatic latching hooks shall be provided for stop logs that weigh more than 75 pounds (34kg). The lifting beam shall be built in such a manner as to automatically latch on to the stop logs when lowered into the guide frame. The lifting beam shall also have a tagline release mechanism. The beam and hooks shall be of hot dipped galvanized steel.

## **CONSTRUCTION METHOD**

### STOP LOGS

Each stop log shall be vacuum infusion molded individually to the exact dimensions specified. Stop logs shall be manufactured of reinforced premium isophthalic thermoset polyester resin containing ultraviolet absorbers. The surface shall be resin-rich to a depth of 0.010 inches (.25mm) to 0.020 inches (.51mm) and reinforced with C-glass or polymeric fiber surfacing material. The surface shall be free of exposed reinforcing fibers. The composition of these layers shall be approximately 95% by weight resin. The remaining laminate shall be made up of FRP composite and reinforcing fibers in a form, orientation and position to meet the engineered mechanical requirements. Structural reinforcing shall be utilized to attain the necessary stiffness to meet deflection requirements, and shall be entirely encapsulated with a laminate not less than ¼ inch (6mm) thick on any side to insure against any permeation by water to the core area. Stainless steel lifting pin shall be fastened to the log with sufficient reinforcing to withstand the lifting force. Lifting pins assemblies shall pass completely through the stop log, which shall be entirely encapsulated with a minimum thickness of ¼ inch (6mm) of FRP.

### SEALS

Stop logs shall be equipped with elastomeric seals between each stop log segment. A special labyrinth seal shall also be fastened to the guide to form a watertight joint with the stop logs. Seals shall be made of virgin Neoprene having a hardness of 55 - 65 Shore A Durometer, conforming to ASTM D-2000, with a maximum compression set of 25%, and low temperature brittleness to meet suffix F-17 (-40 Degrees F).

### GUIDES

Guide frames shall be styled for surface mounting to meet project requirements. Guides frames shall be fabricated from T-316 stainless steel and shall have a slot suitable for mating with the stop log. Guides frames to be bolted to each end wall and shall be equipped with heavy duty mounting angles for ease of mounting to the channel wall by means of T-316 stainless steel anchorage bolts. Inverts shall be flush with the channel bottom as shown on the drawings.

Guides shall be fitted with virgin Neoprene seal having two raised seating points fastened to the guide with a UHMW clamping bar and stainless steel flat head machine screws. Seals shall be on each side of the guide groove.

**INSTALLATION**

Stop logs shall be installed by skilled workers in accordance with the plans and specifications, and in full conformity with the instructions and recommendations of the equipment manufacturer.

**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**

Stop Log Assembly, R-14  
Stop Log Assembly, R-19

**PAY UNIT**

Each  
Each

**DETAILED SPECIFICATION  
FOR  
ITEM #221 - DR STRUCTURE, r-18, MODIFY  
ITEM #223 - DR STRUCTURE, r-18A, MODIFY  
ITEM #225 - DR STRUCTURE, r-18B, MODIFY**

**DESCRIPTION**

This work shall consist of modifying existing drainage structures to eliminate or modify existing pipe connections, or add new opening for realigning pipe connections. The work is to be performed in accordance with Sections 403, 406 and 706 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

**MATERIAL**

The materials shall meet the requirements specified in Sections 701, 702, 703, 901, 902, 903, 905, 909 and 914 of the 2012 MDOT Standard Specifications for Construction.

MDOT 6A coarse aggregate shall be used for excavation backfill within a one foot (horizontal): one foot (vertical) influence of paved surfaces and structures. In other areas, Engineer-approved backfill material may be substituted.

**CONSTRUCTION METHODS**

The Contractor shall fill in exposed end pipe openings where pipe is to be abandoned or removed, and construct new openings as detailed on the plans. This work will include modifying flow channels and manhole “benches” to redirect flow to the new pipe connections. The work may also include realigning manhole covers or precast sections to reposition manhole access openings, as well as removing and repositioning manhole steps, as required. The work will also include protecting pipe segments that may be exposed during excavation, prevention of soil and debris from entering storm sewers and backfilling the excavation as needed to complete the work. Backfilling shall be placed in lifts and compacted to 95% maximum dry density to minimize future settlement of soils.

**MEASUREMENT AND PAYMENT**

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

<b><u>PAY ITEM</u></b>	<b><u>PAY UNIT</u></b>
Dr Structure, r-18, Modify	Each
Dr Structure, r-18A, Modify	Each
Dr Structure, r-18B, Modify	Each

The contract unit price shall be payment in full for all labor, materials, and equipment necessary to modify drainage structures to eliminate, or modify existing pipe connections, or add new opening for realigning pipe connections. The contract price will include all required excavation and structural modifications, as well as modifying manhole channels and “benches,” manhole step location (if needed), backfilling with MDOT 6A coarse aggregate or Engineer-approved fill, and removing and properly disposing materials and debris offsite. The contract price shall also include any temporary sheeting, shoring, and bracing that may be necessary for the removal work.

**DETAILED SPECIFICATION  
FOR  
ITEM #227 - SEWER, REM, 24 INCH  
ITEM #229 - SEWER, REM, 42 INCH  
ITEM #231 - SEWER, REM, 54 INCH**

**DESCRIPTION**

This work shall consist of removing storm sewer in accordance with Section 203 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

**MATERIAL**

The materials shall meet the requirements specified in Sections 205 and 902 of the 2012 MDOT Standard Specifications for Construction.

MDOT 6A coarse aggregate shall be used for excavation backfill within a one foot (horizontal): one foot (vertical) influence of paved surfaces and structures. In other areas, Engineer-approved backfill material may be substituted.

**CONSTRUCTION METHODS**

This work shall conform to Section 203 of the 2012 Michigan Department of Transportation 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 Prices for the following Contract (Pay) Items:

<b><u>PAY ITEM</u></b>	<b><u>PAY UNIT</u></b>
Sewer, Rem, 24 inch	Lineal Foot
Sewer, Rem, 42 inch	Lineal Foot
Sewer, Rem, 54 inch	Lineal Foot

Storm sewer removal shall be measured horizontally by the lineal foot. The length shall be measured along the sewer centerline from center of structure to center of structure or to end of end section.

In the event that the storm sewer is not connected to a structure then the measurement for payment shall be made end-to-end of pipe removed. When fittings are encountered (e.g. tees, reducers, etc.), they shall be removed with the pipe and not paid for separately.

The contract unit price shall be payment in full for all labor, materials, and equipment necessary for removing sewer and properly disposing it offsite, as well as all required excavation; and furnishing, placing, and compacting suitable backfill material in the remaining trench. The contract price shall also include saw cutting as necessary to remove pipe; and any temporary sheeting, shoring, and bracing that may be necessary for the removal work.



**DETAILED SPECIFICATION  
FOR  
ITEM #233 - DR STRUCTURE, r-14, REM  
ITEM #235 - DR STRUCTURE, r-19, REM  
ITEM #237 - DR STRUCTURE, r-31, REM**

**DESCRIPTION**

This work shall consist of removing drainage structures in accordance with Section 203 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

**MATERIAL**

The materials shall meet the requirements specified in Sections 205 and 902 of the 2012 MDOT Standard Specifications for Construction.

MDOT 6A coarse aggregate shall be used for excavation backfill within a one foot (horizontal): one foot (vertical) influence of paved surfaces and structures. In other areas, Engineer-approved backfill material may be substituted.

**CONSTRUCTION METHODS**

The Contractor shall carefully remove the structure while taking particular care to salvage and protect the existing storm sewer pipe segments that connect to the structure, and that are to be reconnected to the new structure to be constructed in its place. The work may include removing and salvaging pipe segments for reuse and reconnection to new drainage structures, and backfilling the excavation as needed to complete the work.

Drainage Structures r-14 and r-19 are 10-foot diameter (inside dimension) precast concrete structures. Drainage Structure r-31 is a poured-in-place concrete structure that is approximately 8-foot square (outside dimensions).

**MEASUREMENT AND PAYMENT**

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

<b><u>PAY ITEM</u></b>	<b><u>PAY UNIT</u></b>
Dr Structure, r-14, Rem	Each
Dr Structure, r-19, Rem	Each
Dr Structure, r-31, Rem	Each

The contract unit price shall be payment in full for all labor, materials, and equipment necessary for the complete removal of the storm drainage structure including the casting, adjusting rings, cone, riser sections and base. If existing adjacent storm sewers are to be abandoned, then bulkheads shall be placed on these sewer ends as incidental to the storm structure removal work. Proper offsite disposal of the storm structure, as well as salvaging adjacent pipe segments, all required excavation, and furnishing, placing, and compacting suitable backfill material in the hole shall also be considered included in the work. The contract price shall include any temporary sheeting, shoring, and bracing that may be necessary for the removal work. It shall also include salvaging castings that are removed and delivering them to the W. R. Wheeler Service Center at 4251 Stone School Rd.

**DETAILED SPECIFICATION  
FOR  
ITEM #239 – HEADWALL, 24-INCH**

**DESCRIPTION**

This work shall consist of constructing a new storm sewer headwall as shown on the plans or as directed by the Engineer. The work shall be performed in accordance with Sections 203 and 402 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

**MATERIAL**

The materials shall meet the requirements specified in Sections 402, 706 and 902 of the 2012 MDOT Standard Specifications for Construction.

MDOT 6A coarse aggregate shall be used for pipe and headwall bedding, and a minimum one foot of aggregate pipe cover per the trench details. It shall also be used as excavation backfill within a one foot (horizontal): one foot (vertical) influence of paved surfaces and structures. In other areas, Engineer-approved backfill material may be substituted.

MDOT S3 concrete shall be used.

**CONSTRUCTION METHODS**

The Contractor shall construct the headwall as detailed on the plans and as directed by the Engineer. The work will include, but not be limited to, placement of steel reinforcement; forming and pouring of concrete, all required excavation, backfilling the excavation as needed to complete the work.

**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) Item:

<b><u>PAY ITEM</u></b>	<b><u>PAY UNIT</u></b>
Headwall, 24-Inch	Each

The contract unit price shall be payment in full for all labor, materials, and equipment necessary for the construction of the headwall, including all excavation, placing steel reinforcement, forming and pouring concrete; furnishing, placing and compacting MDOT 6A coarse aggregate and Engineer-approved fill as needed to complete the work. The contract price shall also include any temporary sheeting, shoring, and bracing that may be necessary for the work.

**DETAILED SPECIFICATION  
FOR  
ITEM #241 – HEADWALL, RELOCATE**

**DESCRIPTION**

This work shall consist of removing, salvaging and relocating an existing storm sewer headwall as shown on the plans or as directed by the Engineer. The work shall be performed in accordance with Sections 203 and 402 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

**MATERIAL**

The materials shall meet the requirements specified in Sections 205, 701 and 902 of the 2012 MDOT Standard Specifications for Construction.

MDOT 6A coarse aggregate shall be used for pipe and headwall bedding, and a minimum one foot of aggregate pipe cover per the trench details. It shall also be used as excavation backfill within a one foot (horizontal): one foot (vertical) influence of paved surfaces and structures. In other areas, Engineer-approved backfill material may be substituted.

**CONSTRUCTION METHODS**

The Contractor shall carefully remove the headwall while taking particular care to salvage and protect it and the existing storm sewer pipe segments that connect to it. The headwall shall be relocated to the location shown on the plans or as directed by the Engineer. The work will also include all excavation and furnishing, placing and compacting backfill material as needed to complete the work.

**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) Item:

<b><u>PAY ITEM</u></b>	<b><u>PAY UNIT</u></b>
Headwall, Relocate	Each

The contract unit price shall be payment in full for all labor, materials, and equipment necessary for removing, salvaging and relocating a storm sewer headwall. Salvaging adjacent pipe segments; all required excavation; and furnishing, placing, and compacting MDOT 6A coarse aggregate or Engineer-approved backfill material in the hole shall also be considered included in the work. The contract price shall also include any temporary sheeting, shoring, and bracing that may be necessary for the removal work.

**DETAILED SPECIFICATION  
FOR  
ITEM #243 – MAINTAINING PIPE FLOW**

**DESCRIPTION**

The Contractor shall provide adequate measures to divert the flow from the 54-inch storm sewers around the work area during construction. These measures shall include, but not be limited to; the design, installation, and operation of a temporary bypass pumping system(s) to divert flow and maintain a dry working environment for the project construction. This system(s) may include other provisions for collecting and diverting the flow, such as the installation of temporary diversion structures, temporary connections to the existing pipe, temporary steel sheeting or other measures proposed by the Contractor.

Also included is the removal of the bypass pumping system(s) and all temporary measures, protection of personnel and structures, environmental protection, and restoration and repair of all temporary connections.

The Contractor shall be responsible for the complete design of all structures and methods proposed for diverting and maintaining pipe flows, and bypass pumping, including the implementation of all materials, tools, and equipment proposed for use in the work. Temporary wiring associated with the bypass pumping shall comply with the applicable portions of the National Electric Code.

The bypass pumping system(s) shall be designed by a Professional Engineer registered in the State of Michigan with a minimum of seven years of documented experience in the design, installation, and operation of bypass pumping systems.

**CONSTRUCTION METHODS**

The Contractor shall divert pipe flows and bypass pump as necessary to ensure the proper construction of the work. Drainage or discharge lines shall be connected to the 54-inch storm sewer(s). Adequate filtering methods must be used. This may require temporary pipe connections, which will be the responsibility of the Contractor to provide and repair, to the satisfaction of the Engineer, upon completion of the project. Discharging into sanitary sewers will not be allowed. In any event, all bypass pumping shall be done without damage to any public or private property, and without interference with the rights of public or private property owners.

The bypass pumping system(s) shall have sufficient scope, size, and capacity to handle the pipe flows, and permit excavation and construction to proceed in a dry environment.

The bypass pumping operation shall include adequate provisions to prevent sediment from being captured, transported and deposited downstream or within the Park. This includes sediment that may accumulate within the infrastructure of the Park. If sediment does accumulate, in the opinion of the Engineer, it shall be removed by the Contractor at their sole expense. Any required restoration will also be performed at the Contractor's sole expense.

In handling and directing this water, the Contractor is required to comply with all applicable local, state, and federal requirements regarding soil erosion and sedimentation control and shall provide check dams, or any other measure that is necessary in order to comply with the applicable laws and ordinances. The ultimate discharge point will be into the 54-inch storm sewer(s).

The Contractor shall provide electrical power from the local utility provider or portable generators. Provide stand-by power and any other required auxiliary by-pass pumping equipment to ensure continuous bypass pumping capability. Bypass pumping, where required, shall be continuous. Bypass pumping shall not be stopped during work stoppages without the approval of the Engineer. The Contractor shall coordinate construction operations to minimize duration and extent of required bypass pumping.

Sumps used as a part of the bypass pumping system shall be strongly sheathed and braced to protect the construction while in use. Sumps, when abandoned, shall be backfilled and compacted with Engineer-approved fill.

Equipment for bypass pumping and pumping methods shall be the responsibility of the Contractor and shall be acceptable to the Engineer. The Contractor shall furnish and construct adequate discharge piping systems to collect and divert water so as to prevent damage to existing structures or property. Pumping equipment shall be of proper type and size for the work, be in good working condition, and be properly maintained throughout the life of the project until it is no longer needed. The Contractor shall provide all anchors and supports for pumping equipment.

Upon completion of the bypass pumping operation(s) for the project, the Contractor shall fill all holes, trenches, ditches and other earth excavations created by the work of this section and not scheduled to remain. Perform all filling, backfilling and grading to restore excavations and earth banks to the lines and grades as indicated on the Plans and as determined by the Engineer. All earth fills shall be compacted to 95% of the material's maximum unit weight.

Any and all method(s) of maintaining pipe flows that are proposed by the Contractor shall be effective. The Contractor is responsible for maintaining pipe flow within the site in an effective, timely-manner, that will not unduly delay the work of the project. Delays due to failure to maintain pipe flow(s) will not be a basis of payment for additional compensation, extra work, or an extension of contract time. The Engineer's acceptance of a particular method of maintaining pipe flow(s) shall not relieve the Contractor of their responsibility of performing the work in a manner that meets the requirements of this Detailed Specification, the Contract Documents, and all other local, state, and federal requirements.

The Contractor shall submit to the Engineer a detailed plan, calculations and description of the proposed method of maintaining pipe flow(s) involving the use of pumps, manifolds, or discharge piping that is over four inches in diameter. The work of preparing the detailed plans, calculations, and descriptions of the proposed work shall be in accordance with Section 104.02 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction and the Supplemental Specification for Plans and Working Drawings. Plans, calculations and descriptions shall be sealed by a Professional Engineer registered in the State of Michigan.

For each submittal or resubmittal, the Contractor shall allow at least 14 calendar days from the date of the submittal to receive the Engineer's acceptance or request for revisions. The Engineer's comments shall be incorporated into the submitted plans, calculations and descriptions. The Engineer's acceptance of the proposed plan for maintaining pipe flow is required before beginning the work. Resubmittals may take less than 14 calendar days depending upon the magnitude of revisions requested. Required revisions will not be a basis of payment for additional compensation, extra work, or an extension of contract time. The Contractor shall include time for this entire review process in his/her schedule.

## **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) Item:

<b><u>PAY ITEM</u></b>	<b><u>PAY UNIT</u></b>
Maintaining Pipe Flow	Lump Sum

The contract unit price shall be payment in full for all labor, material, and equipment for furnishing, installing, maintaining, and operating, a complete bypass pumping system(s) and required measures for maintaining pipe flows as necessary to complete the work. It shall also include, but not be limited to; the preparation of shop plans, design drawings, and calculations; header tubing, discharge tubing, suction tubing; pumps, generators, electrical lines and service (if required); removal of all appurtenances when no longer needed; protection of existing or proposed improvements; and miscellaneous restoration needed to resume construction when the bypass pumping operations are completed. The contract unit price shall also include the construction of temporary structures and pipe connections that may be required, and their removal or repair, to the satisfaction of the Engineer, when they are no longer needed; the costs associated with fuel or electricity for operating pumping facilities if proposed; and any temporary sheeting, shoring, and bracing that may be necessary for the work. It shall also include any excavation and backfill with Engineer-approved backfill that may be required to complete the work, and all other items necessary to complete the work, whether specifically mentioned or implied.

**DETAILED SPECIFICATION  
FOR  
ITEM #245 – RIPRAP, HEAVY**

**DESCRIPTION**

This work shall consist of placing “Heavy Riprap” as detailed on the plans or as directed by the Engineer. The work shall be performed in accordance with Sections 813, 910 and 916 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

**MATERIAL**

Geotextile material shall be placed in accordance with the plan details. Geotextile shall be non-woven fabric and shall have physical properties equivalent to Geotextile Separator Non Woven described in Table 910-1 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction.

The materials shall meet the requirements specified in Sections 910 and 916 of the 2012 MDOT Standard Specifications for Construction.

Only natural stone shall be used, and the minimum in-place thickness shall be two (2) feet.

**CONSTRUCTION METHODS**

The Contractor shall place the “Heavy Riprap” as detailed on the plans and as directed by the Engineer. The work will include, but not be limited to, all excavation, and furnishing and placing geotextile fabric and natural stone, all meeting the specifications.

**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) Item:

<b><u>PAY ITEM</u></b>	<b><u>PAY UNIT</u></b>
Riprap, Heavy	Square Yard

The contract unit price shall be payment in full for all labor, materials, and equipment necessary for the placement of “Heavy Riprap,” including all excavation, and furnishing and placing geotextile fabric and natural stone.

**DETAILED SPECIFICATION  
FOR  
ITEM #247 – DEWATERING**

**DESCRIPTION**

The Contractor shall provide and maintain adequate pumping facilities for removing and disposing of water from trenches and excavations. Where the excavation exposes groundwater, or takes on surface runoff, the Contractor shall provide, install, maintain and operate pumps, and well points if required, connecting manifolds and discharge piping as necessary to ensure proper construction of the work.

Also included is the complete design of dewatering system(s), construction and operation of dewatering system(s), abandonment or removal of dewatering system(s), protection of personnel and structures, environmental protection and restoration.

The Contractor shall be responsible for the complete design of all structures and methods proposed for de-watering the project site, including the implementation of all materials, tools, and equipment proposed for use in the work. Temporary wiring associated with the dewatering shall comply with the applicable portions of the National Electric Code.

Dewatering system(s) shall be designed by a Professional Engineer registered in the State of Michigan with a minimum of seven years of documented experience in the design, installation, and operation of de-watering systems.

**CONSTRUCTION METHODS**

The Contractor shall dewater utility trenches and excavations as necessary to ensure the proper construction of the work. The discharge point will be into a filter bag, with drainage into the natural wetlands, overflowing into the 54-inch storm sewer(s), or discharged to locations where directed by the Engineer. Adequate filtering methods must be used. Discharging into sanitary sewers will not be allowed. In any event, all pumping and drainage shall be done without damage to any public or private property, and without interference with the rights of public or private property owners.

The dewatering system(s) shall have sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and surface runoff, and permit excavation and construction to proceed on dry, stable subgrades.

The temporary dewatering operation shall include adequate provisions for filtering discharge water so that it does not deposit or release sediment within the Park. This includes sediment that may accumulate upon the surface or within the infrastructure of the Park. If sediment does accumulate, in the opinion of the Engineer, it shall be removed by the Contractor at their sole expense. Any required restoration will also be performed at the Contractor's sole expense.

In handling and directing this water, the Contractor is required to comply with all applicable local, state, and federal requirements regarding soil erosion and sedimentation control and shall provide filters, filter bags, check dams, or any other measures that are necessary in order to comply with the applicable laws and ordinances.

The Contractor shall prepare and follow a water management plan for all of its activities, including, but not limited to; dewatering, site grading, underground utility installation, excavation and backfilling operations of any type, etc. to ensure water quality standards and that all relevant and applicable environmental laws, rules, regulations, and operating standards are met.

Precautions must be taken to minimize erosion and/or erosion velocities in these wetlands.

The Contractor shall provide electrical power from the local utility provider or portable generators. Provide stand-by power and any other required auxiliary dewatering equipment to assure continuous de-watering capability. Dewatering, where required, shall be continuous. Dewatering shall not be stopped during work stoppages without the approval of the Engineer. The Contractor shall coordinate construction operations to minimize duration and extent of dewatering required.

All excavations which extend down to or below the static groundwater elevation shall be dewatered by lowering and maintaining the ground water level beneath such excavations a distance of not less than 12 inches below the bottom of the excavation.

Sumps and wells used as a part of the dewatering system(s) shall be strongly sheathed and braced to protect the construction while in use. Tops of well casings shall be covered to prevent animals and debris from entering and shall be 2 to 3 feet above ground level. Sumps and wells, when abandoned, shall be backfilled and compacted, or grouted in place, to the satisfaction of the Engineer.

Methods used in drilling wells associated with dewatering system(s) shall be the responsibility of the Contractor and shall be acceptable to the Engineer. Drilling methods shall insure proper placement of well materials and shall not involve displacement of earth formations.

Equipment for pumping and pumping methods associated with dewatering system(s) shall be the responsibility of the Contractor and shall be acceptable to the Engineer. The Contractor shall furnish and construct adequate discharge piping system(s) to conduct and dispose of the water so as to prevent damage to existing structures or property. Pumping equipment shall be of proper type and size for the work, be in good working condition, and be properly maintained throughout the life of the project until it is no longer needed. The Contractor shall provide all anchors and supports for pumping equipment.

Upon completion of dewatering work for the project, the Contractor shall fill all holes, trenches, ditches and other earth excavations created by the work of this section and not scheduled to remain. Perform all filling, backfilling and grading to restore excavations and earth banks to the lines and grades as indicated on the Plans and as determined by the Engineer. All earth fills shall be compacted to 95% of the material's maximum unit weight.

Any and all method(s) of dewatering proposed by the Contractor shall be effective. The Contractor is responsible for dewatering the site in an effective, timely-manner, that will not unduly delay the work of the project. Delays due to dewatering efforts will not be a basis of payment for additional compensation, extra work, or an extension of contract time.

The Engineer's acceptance of a particular method of de-watering shall not relieve the Contractor of their responsibility of performing the work in a manner that meets the requirements of this Detailed Specification, the Contract Documents, and all other local, state, and federal requirements.

The Contractor shall submit to the Engineer a detailed plan, calculations and description of the proposed method of dewatering involving the use of pumps, well points (if required), manifolds, or discharge piping that is over four inches in diameter. The work of preparing the detailed plans, calculations, and descriptions of the proposed work shall be in accordance with Section 104.02 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction and the Supplemental Specification for Plans and Working Drawings. Plans, calculations and descriptions shall be sealed by a Professional Engineer registered in the State of Michigan.

For each submittal or resubmittal, the Contractor shall allow at least 14 calendar days from the date of the submittal to receive the Engineer's acceptance or request for revisions. The Engineer's comments shall be incorporated into the submitted plans, calculations and descriptions. The Engineer's acceptance of the proposed dewatering plan is required before beginning the work. Resubmittals may take less than 14 calendar days depending upon the magnitude of revisions requested. Required revisions will not be a basis of payment for additional compensation, extra work, or an extension of contract time. The Contractor shall include time for this entire review process in his/her schedule.



## **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) Item:

**PAY ITEM**  
Dewatering

**PAY UNIT**  
Lump Sum

The contract unit price shall be payment in full for all labor, material, and equipment for furnishing, installing, maintaining, and operating, complete dewatering system(s) as necessary to complete the work, and shall include, but not be limited to; the preparation of shop plans, design drawings, and calculations; all deep wells, well points, header tubing, discharge tubing, suction tubing; pumps, generators, electrical lines and service (if required); the costs associated with fuel or electricity for operating the dewatering system(s) if proposed; special well backfill, grouting of wells when they are no longer needed, removal of well casings and all appurtenances when no longer needed; protection of existing or proposed improvements; miscellaneous restoration needed to resume construction when the dewatering operations are completed; furnishing, maintaining, and removing when no longer needed, all soil erosion and sedimentation control devices associated with the discharge of dewatering devices; complying with all applicable local, state, and federal environmental and soil erosion and sedimentation control measures; and, all other items necessary to complete the work, whether specifically mentioned or implied.

**DETAILED SPECIFICATION  
FOR  
ITEM #249 – SITE CLEARING**

**DESCRIPTION**

The Contractor shall furnish all labor, equipment and materials to clear the site as needed where construction will take place. Prior to the start of construction, the Contractor shall verify the grading limits and the location of trees and other site features that are to be saved and protected during the construction. The Contractor shall then install soil erosion and sedimentation control measures, and tree protection as shown on the plans or as directed by the Engineer. This work will be paid for under separate pay items. The Contractor shall then clear the site, which shall include designated trees and stumps that are less than eight (8) inches in diameter, existing turf and vegetation that will be disturbed as part of the project construction, and other miscellaneous items that must be removed to complete the project, but are not covered by separate pay items. The work shall also include removing debris and existing gravel surfaces or temporary stone surfaces and mud mats that the Contractor may install to access the site. The work will also include removing the wood ARRA Project Sign that faces South Seventh Street.

**CONSTRUCTION METHODS**

Prior to the start of construction, the Contractor shall verify the limits of trees and other items that are to be saved, as well as those items to be removed within the grading limits. The Contractor shall then clear the site of all remaining trees, brush, and other miscellaneous items that need to be removed to facilitate the construction.

When clearing the site, the Contractor shall take necessary care to protect all site features which are to be saved or are located beyond the grading limits of the project. All materials that are cleared from the site shall be properly disposed of offsite. Resulting voids in the earth shall be filled with Engineer-approved backfill material, and the surface will be restored in accordance with the plans and specifications.

**MEASUREMENT AND PAYMENT**

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

<b><u>PAY ITEM</u></b>	<b><u>PAY UNIT</u></b>
Site Clearing	Lump Sum

The contract unit price shall be payment in full for all labor, material and equipment necessary to clear the site within the proposed grading limits. The unit price shall include the costs for removing trees and stumps that are less than (8) inches in diameter, roots, vegetation, rock, masonry material, gravel surfaces, debris and the wood ARRA Project Sign. The unit price shall also include the costs for properly disposing of removed materials offsite. Any items that are identified for removal, or that must be removed to facilitate the construction, which are not covered by separate pay items shall be considered included in this pay item.

**DETAILED SPECIFICATION  
FOR  
ITEM #251 – PROJECT EARTHWORK**

**DESCRIPTION**

This work shall consist of performing site earthwork and related items in accordance with Section 205 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein. The Contractor shall furnish all labor, material and equipment for all excavating, grading, trimming, re-shaping, regrading, removing and properly disposing offsite any surplus or unsuitable materials. Also included is the stripping and stockpiling of topsoil; and moving, scarifying and re-compacting excavated soils along the grade as necessary to construct swales and prepare the grade or subgrade for the placement of specified subbase and/or aggregate base courses and surface treatments. Also included is the furnishing, placing, and compacting of fill materials to develop the grades as shown on the plan sheets, and maintaining the work in a finished condition until such time that it is accepted by the Engineer. All work to excavate and/or furnish and compact materials not covered by separate pay items in the contract will be considered included in "Project Earthwork" and will not be paid for separately.

**MATERIAL**

All materials shall meet the requirements as specified in Division 9 of the 2012 MDOT Standard Specifications for Construction. All fill material shall be properly screened of non-soil debris to remove rocks and shards of man-made materials, including, but not limited to, pottery, glass and metals if present.

**CONSTRUCTION METHODS**

The Contractor shall excavate, and/or move materials longitudinally and transversely, as needed to construct the site to grades indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. This shall include, but not be limited to, the removal, reshaping, regrading, and re-compacting of the existing surface grade, or proposed grade of the site. The Contractor shall use blade graders, 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.

In fill areas, the Contractor shall remove topsoil if present and thoroughly scarify the existing grade to a minimum depth of 4". The Contractor shall then place, reshape and compact additional Engineer-approved fill as necessary to bring the grade up to the line and elevation of the proposed subgrade as detailed on the Plans. The work associated with scarifying the existing grade, placing, reshaping and re-compacting Engineer-approved fill that is obtained onsite shall not be paid for separately, but shall be included in "Project Earthwork."

The work shall be kept well graded and drained at all times. Aggregate base that has become damaged by rain shall be repaired by a method approved by the Engineer at the Contractor's sole expense.

Handwork required to remove HMA, aggregate, and/or concrete surfaces from around manholes, structures, and utility covers will not be paid for separately, but shall be included in the items of work "Project Earthwork."

**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 test roll the subgrade prior to placing the subbase. Test rolling shall consist of proof rolling the grade or other surfaces as directed by the Engineer. The equipment shall be a pneumatic tired roller and shall have suitable body for ballast loading with such capacity that the gross load may be varied between 25 and 40 tons. The Engineer may authorize the use of a fully-loaded single axle or tandem axle dump truck in lieu of the specified roller.

The Contractor is responsible to grade around existing structures and around any other items located within the grading limits that are indicated to remain. The Contractor shall be responsible for any damage to structures or trees caused by their work operations.

**MEASUREMENT AND PAYMENT**

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

**PAY ITEM**

Project Earthwork

**PAY UNIT**

Lump Sum

“Project Earthwork” will be paid for by lump sum. The contract unit price shall include payment for all labor, equipment, and material needed to accomplish the work required by this detailed specification.

**DETAILED SPECIFICATION  
FOR  
ITEM #253 - HMA PAVEMENT WEARING, 36A  
ITEM #255 - HMA PAVEMENT BASE & LEVELING, 13A**

**DESCRIPTION**

This work shall conform to Division IX, Section 3, Items No. 530 through 538 of the Public Services Department Standard Specifications, except as specified herein.

**MATERIAL**

All materials for this item of work shall conform to the Division III, Section 3D, Public Services Department Standard Specifications, except as modified herein.

HMA pavement mixtures shall be mixed in accordance with the requirements of Division 5 of the 2012 MDOT Standard Specifications for Construction.

**MEASUREMENT AND PAYMENT**

Measurement and Payment for this item of work shall conform to Division IX, Section 3, Items No. 530 through 538 of the Public Services Department Standard Specifications, except as specified herein.

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**

HMA Pavement Wearing, 36A  
HMA Pavement Base & Leveling, 13A

**PAY UNIT**

Ton  
Ton

**DETAILED SPECIFICATION  
FOR  
ITEM #257 – CLEAN-UP & RESTORATION, SPECIAL**

**DESCRIPTION**

This item of work shall conform to **Division IX, Section 6, Item No. 891, Clean-Up & Restoration** of the City of Ann Arbor Public Services Department Standard Specifications, except as specified herein.

**MATERIALS AND CONSTRUCTION METHODS**

Clean-up and Restoration shall include the removal of all surplus materials from the site including, but not limited to, tools, temporary structures, dirt, rubbish, and excess excavated material. It shall also include removal of temporary soil erosion and sedimentation control measures after the permanent measures have been placed and are established. Immediately after completion of construction, the Contractor shall clean the entire area within the influence of construction, including but not limited to all pavement, sidewalks, lawn areas, and underground utility structures of all materials that may have accumulated prior to or during the construction.

This work shall also include the restoration of all existing lawn areas disturbed by the construction, including adjusting existing utility castings to finished grade.

Based on the turf restoration location within the site, there are three (3) types of seed mixtures that are specified for various locations. They include Michigan Department of Transportation (MDOT) THM Seed Mixture for general turf areas, and Upland Sun Seed and Wet to Mesic Seed Mixtures for other specified areas. The related work of re-spreading stockpiled topsoil; and furnishing, placing, and raking imported topsoil; furnishing and placing fertilizer and seed mixtures; furnishing and placing mulch and mulch blankets; and watering shall also be included in this contract pay item. The MDOT THM seeding shall be performed in accordance with Section 816, Turf Establishment, of the 2012 MDOT Standard Specifications for Construction. Upland Sun seeding and Wet Mesic seeding shall be performed in accordance with the following specification for native seeding.

**SUMMARY**

**A. Section includes:**

1. Native Seeding
2. Maintenance and Warranty Period

**B. Related Sections:**

1. Detailed Specification for Contract Pay Item No. 205 “Tree Trimming” for trimming of existing trees to remain that are affected by the work.
2. Detailed Specification for Contract Pay Item No. 249 “Site Clearing” for protection of existing trees and site features, and site clearing.
3. Detailed Specification for Contract Pay Item No. 251 “Project Earthwork” for all excavation, filling and backfilling; rough and fine grading; and for stripping and stockpiling topsoil.

## DEFINITIONS

A. Plant Stock: This includes plant material that is to be introduced to Site regardless of its form or maturity. Plant stock may be referred to as woody, such as trees, shrubs, and some varieties of vines, or herbaceous, such as forbs, grasses, sedges, and some varieties of vines. Immature plant stock may be in the form of germinated and ungerminated seeds.

B. Finish Grade: Elevation of finished surface of planting soil.

C. Planting Area: Areas to be planted.

D. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before topsoil is placed.

## SUBMITTALS

A. Herbicides: Include product label and manufacturer's application instructions specific to this project.

B. Native Seeding: Submit Seed Certificates for inspection by the Engineer a minimum of one (1) month prior to initiation of work.

1. Seed Mixture Certificates from seed suppliers shall include:

- a. Botanical names and common names.
- b. Net weight.
- c. Percentage of seeds by weights.
- d. Purity of seed.
- e. Germination percentage.
- f. Amount of undesirable plant seeds present in mixture.
- g. Date of production.
- h. Date of packaging.
- i. Location of packaging.
- j. Name, address, and phone number of supplier.

C. Qualification Data: For qualified landscape installer.

D. Provide all relevant permits, licenses, and authorizations to Engineer before initiation of work.

E. All substitutions, materials or execution, shall be approved by the Engineer, in writing, a minimum of one (1) month prior to construction. The Engineer reserves the right to require a sample of substituted material(s) prior to approval for construction.

F. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of plant stock during a calendar year. Submit before start of required maintenance periods.

## QUALITY ASSURANCE

A. Native Seed Suppliers: Obtain native seed only from established suppliers capable of providing quantities adequate to complete this project. Suppliers shall be required to provide data requested for required submittals prior to use of stock. Suppliers shall be located in Michigan, when possible.

B. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful establishment of native plant stock.

1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network of the American Nursery and Landscape Association.

2. Experience: Five years' experience in landscape installation.

3. Herbicide Applicator: State licensed, commercial.

C. Preinstallation Conference: Conduct conference at Project site.

## DELIVERY, STORAGE, AND HANDLING

A. Pack, handle, and transport seed in a manner approved for that species and size by Engineer. Take precautions that are customary in good trade practice to ensure proper transport and arrival of seed.

B. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.

C. Store seed in a manner to prevent damage or deterioration. Seed stored for excessive lengths of time or at a time of year that is not suitable by standard horticultural practice shall not be accepted for planting.

D. Store seed in aboveground locations in non-construction areas approved by Engineer if not installed directly.

E. The following conditions shall render seed unacceptable:

1. Seed that has been in storage for extended periods of time.

2. Seed displaying mold, decay, or physical damage.

3. Seed in damaged packaging is not acceptable.

F. The Engineer shall reserve the right to refuse any plant material that is unacceptable upon delivery to site.

G. Changes and/or substitutions of seed from what is specified are unacceptable without prior written authorization from Engineer.

H. All seed shall be inspected and approved by Engineer prior to installation onsite.

## PROJECT CONDITIONS

A. Field Measurements: Verify actual grade elevations, service and utility locations, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.



## B. Planting Restrictions:

1. Native Seed shall be installed according to the following timeframes:

- a. May 1, or as soon thereafter as soil is free of frost and in workable condition, through June 15, and August 15 through September 15.

C. Anticipate field conditions that may result in erosion, fires, noise, dust, and other potentially problematic situations and take steps necessary to reduce or eliminate these conditions in compliance with relevant ordinances and regulations.

D. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

## MAINTENANCE SERVICE

A. Initial Native Seeding Maintenance Service: Provide full maintenance by skilled employees of landscape installer. Maintain as required in Execution. Begin maintenance immediately after each area is planted and continue until plant establishment is acceptable but for not less than the one (1) year warranty and maintenance period.

## PRODUCTS

### SEED STOCK

A. Seed Mixtures indicated on the plans shall be provided as follows:

1. Upland Sun Seed Mix shall include the following species or approved equals.

<b><u>Scientific Name</u></b>	<b><u>Common Name</u></b>	<b><u>LBS/AC</u></b>
Agropyron trachycaulum	Slender Wheat	1.000
Andropogon gerardii	Big Bluestem	1.500
Andropogon scoparius	Little Bluestem	1.000
Asclepias tuberosa	Butterfly Weed	0.063
Aster laevis	Smooth Blue Aster	0.188
Aster novae-angliae	New England Aster	0.125
Carex bicknellii	Bicknell's Oval Sedge	0.063
Cassia fasciculata	Partridge Pea	0.188
Coreopsis tripteris	Tall Coreopsis	0.125
Elymus canadensis	Canada Wild Rye	1.000
Elymus virginicus	Virginia Wild Rye	3.000
Juncus tenuis	Slender Rush	0.125
Heliopsis helianthoides	False Sunflower	0.188
Lespedeza capitata	Roundhead Bushclover	0.094
Liatis aspera	Blazing Star	0.125
Lupinus perennis occidentalis	Lupine	0.250
Monarda fistulosa	Bergamot	0.063
Panicum virgatum	Switchgrass	0.250
Penstemon digitalis	Foxglove Beardtongue	0.125
Physostegia virginiana	False Dragonhead	0.031
Potentilla arguta	Prairie cinquefoil	0.063
Pycnanthemum virginianum	Common Mt. Mint	0.125
Ratibida pin nata	Yellow Coneflower	0.500
Rudbeckia hirta	Black Eyed Susan	0.250
Silphium terebinthinaceum	Prairie Dock	0.020

Solidago graminifolia	Grass Leafed Goldenrod	0.031
Solidago nemoralis	Old-field Goldenrod	0.125
Solidago riddellii	Riddell's Goldenrod	0.094
Solidago rigida	Stiff Goldenrod	0.125
Solidago speciosa	Showy Goldenrod	0.125
Verbena stricta	Hoary Vervain	0.250
Vernonia Missouriica	Missouri Ironweed	0.125
Zizia aurea	Golden Alexander	0.063

2. Wet to Mesic Seed Mix shall include the following species or approved equals.

<b><u>Scientific Name</u></b>	<b><u>Common Name</u></b>	<b><u>LBS/AC</u></b>
Alisma subcordatum	Common Water Plantain	0.375
Asclepias incarnata	Swamp Milkweed	0.063
Aster nova-angliae	New England Aster	0.063
Carex blanda	Common Wood Sedge	0.015
Carex bebbii	Bebb's Sedge	0.063
Carex lupuliformis	Knobbed Hop Sedge	0.063
Carex scoparia	Pointed Broom Sedge	0.125
Carex stipata	Awl Fruited Sedge	0.125
Carex Vulpinoidea	Fox Sedge	1.000
Elymus Virginicus	Virginia Wild Rye	2.000
Eupatorium perfoliatum	Boneset	0.125
Glyceria striata	Fowl Manna Grass	0.125
Helenium autumnale	Sneezeweed	0.063
Juncus tenuis	Path Rush	0.031
Juncus torreyi	Torrey's Rush	0.031
Lobelia siphilitica	Great Blue Lobelia	0.031
Lolium multiflorum	Annual Rye	4.000
Mimulus ringens	Monkey Flower	0.031
Penthorum sedoides	Ditch Stonecrop	0.001
Panicum virgatum	Switch Grass	0.125
Polygonum lapathifolium Nodding	Smartweed	0.250
Polygonum pennsylvanicum	Giant Smartweed	0.250
Rudbeckia laciniata	Green Coneflower	0.125
Sagittaria latifolia	Common Arrowhead	0.063
Scirpus atrovirens	Dark Green Rush	1.250
Scirpus cyperinus	Wool Grass	0.031
Scirpus fluviatilis	River Bulrush	0.125
Scirpus validus	Soft Stem Bulrush	0.125
Spartina pectinata	Prairie Cord Grass	3.000
Verbena hastata	Blue Vervain	0.125
Vernonia missurica	Missouri Ironweed	0.063

3. THM Seed mixture shall be applied in general turf areas and shall meet the requirements as specified in Section 816, Turf Establishment, of the 2012 MDOT Standard Specifications for Construction.

B. Seed mixtures shall be blended by supplier at specified ratios of various species and shall be guaranteed by supplier as being true to specifications. Three local nurseries that are a good source for seed include:

1. Native Plant Nursery 734-677-3260
2. Michigan Wildflower Farm 517-647-6010
3. Wildtype Nursery 517-244-1140

C. Seed shall be "clean" according to industry quality standards.

1. Seed Mixes shall contain no more than 1 percent by weight of undesirable plants species. As defined below, determined by standard purity tests.

a. Undesirable species for native seed areas and turf grass areas: Black Bentgrass (*Agrostis gigantea*), Bermuda Grass (*Cynodon dactylon*), Field Bindweed (*Convolvulus arvensis*), Blackberry (*Rubus V. Eubatus Flagellares spp.*), Burdock (*Arctium spp.*), Canada Thistle (*Cirsium arvense*). Chickweed (*Stellaria media*). Common Buckthorn (*Rhamnus cathartica*), Crabgrass (*Digitaria sanguinalis*). Cress (*Barbareaa spp.*). Dandelion (*Taraxacum officinale*), Dog Strangling Vine (*Cynanchum spp.*), Garlic Mustard (*Alliaria petiolata*), Glossy Buckthorn (*Rhamnus frangula*), Lambsquarters (*Chenopodium album*). Jimsonweed (*Datura stramonium*), Johnson Grass (*Sorghum vulgare*). Morning Glory (*Ipomoea sp.*), Mustards (*Cruciferae sp.*), Nimble Will (*Polygonum auberti*, *P. convolvulus*, *P. cristatum*, *P. cuspidatum*, *P. sachalinense*, *P. scandens*), Nutgrass (*Cyperus rotundus*), Poison Sumac (*Rhus vernix*). Poison Ivy (*Toxicodendron radicans*), Quackgrass (*Agropyron repens*, *A. pseudorepens*), Ragweed (*Ambrosia artemisiifolia*, *A. trifida*), Rush Grass (*Sporobolus spp.*), Sheep Sorrel (*Rumex acetosella*), Sweet Clover (*Melilotus spp.*), Tansy (*Tanacetum vulgare*), Tatarian Honeysuckle (*Lonicera tatarica*), Teasel (*Dipsacus laciniatus*, *D. sylvestris*), Wild Garlic (*Allium canadense*).

b. Additional undesirable species for wet to mesic areas: Asian Snap Weed (*Impatiens glandulifera*). Canada Thistle (*Cirsium arvense*), Carolina Poplar (*Populus x canadensis Moench*), Dames Rocket (*Hesperis matronalis*), Eurasian Water-Milfoil (*Myriophyllum spicatum*), Glossy Buckthorn (*Rhamnus frangula*), Hedge Reed (*Phragmites communis*, *P. australis*), Kentucky Blue Grass (*Poa pratensis*), Lotus (*Nelumbo lutea*), Multiflora Rose (*Rose multiflora*), Narrow-Leaved Cattail (*Typha angustifolia*), Ox-eye Daisy (*Chrysanthemum leucanthemum*), Perennial Rye Grass (*Lolium perenne*), Purple Loosestrife (*Lythrum salicaria*), Reed Canary Grass (*Phalaris arundianacea*), Sago Pond Weed (*Potamageton pectinatus*), Sheep's Fescue (*Festuca ovina*), True Watercress (*Nasturtium officinale*), Waterweed (*Elodea canadensis*).

c. Seed shall contain no federal or state listed noxious or invasive weeds (an amount within the tolerance of zero percent) as determined by a standard purity test.

d. Seed mix substitutions can be made only by written approval of the Engineer.

## TOPSOIL

A. Topsoil: Existing, native surface topsoil formed under natural conditions with the duff layer retained during excavation process and stockpiled onsite, Verify suitability of native surface topsoil to produce viable seed bed, clean soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

1. After spreading topsoil, remove all sticks, roots, stones, clay lumps or other debris larger than 1".
2. Supplement with imported topsoil when quantities or quality are insufficient. Imported topsoil shall be tested as specified for existing stockpiled topsoil.
3. Existing, native topsoil containing cattail (*Typhus spp.*) roots or debris shall not be used in native seeding or planting areas.

## FERTILIZER

A. Fertilizer: Provide fertilizer meeting the requirement of the seed supplier. The application of fertilizer shall be in accordance with Title VI, Chapter 70 of the Ann Arbor City Code.

## MULCH

A. Straw Mulch: Provide air-dried, clean, mildew-and-seed-free salt hay or threshed straw of wheat, rye, oats, or barley.

## HERBICIDES AND PESTICIDES

A. Any herbicide or pesticide intended for use in native planting areas must be approved by the Engineer prior to use.

B. Herbicides shall have Glyphosate as the primary active ingredient.

C. The use of pesticides is not recommended in native planting areas and will only be approved under extreme circumstances. Under no circumstances will pesticide application be allowed in detention areas, swales, or other areas where the risk of surface water contamination exists.

## EROSION-CONTROL MATERIALS

A. Erosion Control Blankets: Biodegradable straw mat enclosed in a double net jute mesh. Include manufacturer's recommended steel wire staples, 6 inches long.

B. Basis-of-Design Product: Provide ECS-2B Biodegradable Double Net Straw Blanket as manufactured by East Coast Erosion Blankets, Bernville, PA or Engineer-approved equal compliant with the following:

1. Fill Material: 100% organic, weed free agricultural straw
2. Net Material: Double net, natural biodegradable jute mesh

## EQUIPMENT

A. Seeding Equipment: Obtain Engineer's approval prior to use. The following requirements apply to specific equipment that may be used in seeding activities:

1. Tractors and Crawlers: Shall have low-pressure flotation tires or broad tracks so that soil compaction is minimized in areas of Site preparation or seeding activities.
2. Disc: In good repair with sound unbroken blades; weighted as necessary to achieve required tillage depth.
3. Rollers or Cultipackers: Minimum 6-inch diameter rollers; of sufficient weight to pulverize clods of soil. To be used following rough grading on subgrade soils as a preparation for installation of seedbed soils.
4. Airway Shattertyne: Roller tyres shall be 10 to 12 inch OD so that topsoil or organic-rich common fill and surface mulches are mixed into top 2 to 4 inches of subgrade. Weighting of this equipment should be minimal so as to avoid compaction of organic-rich common fill.
5. Spinning Disc Seeder: When spinning disc seeders are used, mix individual seeds comprising mixture with an appropriate dispersal medium such as damp sterile sand or sawdust prior to sowing.
6. Tractor-drawn or Mounted Seeders: Provide with a calibrated adjustable gate opening providing uniform flow over a width adapted to work and able to drop seed directly on prepared seedbed. Obtain Engineer's approval prior to using this system. Equipment shall be equipped with low-pressure high flotation tires or wide tracks, which shall result in minimal disruption and compaction of graded wetland surfaces.
7. Broadcast Seeders: Hand methods (cyclone seeders) and mechanical tractor-drawn methods.
8. No Till Planters and Drills: Rangeland type grass drills and no till rangeland grass drill planters shall be designed specifically for seeding native grasses and forbs.

## SEED PROTECTION-ZONE FENCING

A. Plastic Protection-Zone Fencing: Fencing shall be fixed in position and shall meet the following Requirements.

1. Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg. F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel wire tires; and supported by tubular or T-shape galvanized posts spaced not more than 8 feet apart.

a. Height: 4 feet.

b. Color: High-visibility orange, nonfading.

## EXECUTION

### EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting performance.

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.

2. Do not mix or place soils and soil amendments in frozen, wet or muddy conditions.

3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.

4. Uniformly moisten excessively dry soil that is not workable and that is too dusty.

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

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Engineer and replace with new planting soil.

### PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

1. Protect grade stakes set by others until directed to remove them.

B. Install erosion control measures to prevent erosion or displacement of soils and discharge of soil bearing runoff or airborne dust to adjacent properties and walkways.

C. Layout seeding locations and obtain Engineer's acceptance of layout before excavating or planting. Make minor adjustments as required.

D. Schedule topsoil placement (within areas disturbed by grading) to permit seeding operations under optimum growing conditions during specified planting time frames. Install seed within 7 days of topsoil placement.

E. Protect finish-graded areas from damage by vehicular or pedestrian traffic and erosion. Maintain drainage patterns as indicated on the drawings. Re-till areas compacted by construction to a minimum depth of 6 inches. Rework and restore any areas compacted or damaged by rain, traffic, or other cause, prior to planting.

## F. Environmental Requirements

1. Do not conduct seeding when soil is frozen. Materials shall not be applied over snow or ice.
2. Do not undertake seeding during stormy weather when excessive precipitation may result in washing of seed away from location intended.
3. Do not install seed during periods of temperature extremes when atmospheric temperature may drop below 36 degrees F or rise above 90 degrees F.
4. Do not install native seed when wind velocities exceed 30 miles per hour.
5. Do not apply seeds, seed mixtures, slurries with seeds, or mulch when wind conditions are such that materials would be carried beyond designated areas or materials would not be uniformly applied.

## NATIVE SEEDING PREPARATION

A. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 6 inches. Remove stones larger than 1 inch in any dimension and remove sticks, roots, rubbish, and other extraneous matter, and legally dispose of them offsite.

1. Spread topsoil to a minimum depth of 4 inches in areas to receive MDOT THM Seed Mixture, and 6 inches in areas to receive Upland Sun Seed and Wet to Mesic Seed Mixtures.

B. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.

C. Unchanged Subgrades: For native seeding in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface as follows:

1. Prior to seeding, and with final approval of Engineer, kill all herbaceous vegetation (top growth and roots) using a nonselective, nonresidual post emergent herbicide acceptable to Engineer. Up to three herbicide applications may be required to kill existing vegetation. After each application, wait at least 5 days to allow new vegetation to emerge before reapplying. Labels of all herbicides to be used shall be submitted to Engineer for review and approval not less than 7 days prior to anticipated date of application. Perform application in accordance with manufacturer's recommendations by crews experienced in use of chemical herbicides. No mechanized soil disturbance will be allowed.
2. Care shall be taken to avoid herbicide contact with the trunk collar and/or exposed roots of existing trees. Hand application methods may be necessary in these areas.

D. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

E. Before planting, obtain Engineer's acceptance of finish grading. Restore planting areas if eroded or otherwise disturbed after finish grading.

## PREPARATION FOR EROSION-CONTROL MATERIALS

A. Erosion Control Blanket or Mesh: Install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.

## NATIVE SEEDING

A. Prior to starting Work, seeding equipment shall be calibrated and adjusted to sow seed at proper seeding rate. Equipment shall be operated in a manner ensuring complete coverage of entire area to be seeded. Engineer shall be notified 48 hours prior to beginning seeding operations. Any gaps between areas of growth greater than 5 square feet shall be resown.

B. Obtain Engineer's approval of seedbed preparation and required Seeding Plan prior to seeding. Where limits or seed type are not clearly shown, request clarification by the Engineer.

C. Use seeding rates as indicated by seed manufacturer recommendations unless alternative mixtures and application formulas are reviewed and approved by Engineer.

D. Mechanical seeding methods may be used in open areas with no plants, shrubs, trees or other obstacles. Where obstacles, saturated soils, or other site conditions make use of mechanical seeding equipment impractical, hand broadcast techniques shall be used.

1. Where hand broadcasting techniques are used in areas disturbed by grading, broadcast seed into soil to a maximum depth of 1/4" inch within 12 hours by raking soil or chain dragging, then lightly compacting seedbed with roller or approved equivalent.

2. In areas undisturbed by grading, seed shall be drilled directly into existing soil in a manner that ensures good seed to soil contact.

E. Protect seeded areas with slopes exceeding 1:3 with erosion control blankets installed and stapled according to manufacturer's written instructions.

F. Protect seeded areas with slopes not exceeding 1:3 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1 inch in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.

1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.

## CLEANUP AND PROTECTION

A. Immediately clean up excess soil, mulch, or other debris and properly dispose of deleterious materials offsite in a manner consistent with local laws. Take necessary precautions to prevent contamination of clean areas as a result of cleaning operations.

B. Promptly remove soil and debris created by native planting work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

C. Promptly remove equipment and unused materials at completion of activities in given area.

D. Return stockpile and storage areas to their original grade and restore ground surfaces after stored material has been removed.

E. Immediately repair damaged vegetation and aerate soil over root zone of negatively impacted vegetation.

F. Erect temporary fencing or barricades and warning signs as required to protect newly seeded areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

G. Immediately restore areas disturbed by continuing operations.

## MAINTENANCE AND WARRANTY PERIOD

A. Preliminary Inspection: Upon completion of all seeding and all cleanup work, the Contractor shall request a preliminary inspection. Completion of all corrective work and inspection and approval of it shall establish the beginning of the warranty/maintenance period. No partial approvals shall be given. Engineer shall furnish the written notice of items to be adjusted, repaired, replaced, etc. within 3 business days of the preliminary inspection.

B. Warranty: The Contractor shall guarantee all native seeding specified herein for 12 months from date of substantial completion. The Contractor shall respond within two (2) weeks of written requests by the Engineer for replacement/repair. If the Contractor fails to respond within this time, the Engineer may proceed with replacement work and bill the Contractor.

1. Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period. Failures include, but are not limited to, the following:

a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner, or incidents that are beyond Contractor's control.

2. Include the following remedial actions as a minimum:

a. Patchy or bare areas (in excess of 5 square feet) where seed mix failed to create sufficient density of cover shall be reseeded by hand at the recommended application rate at no additional cost to Owner. All replacement materials shall meet the same requirements as stated herein.

b. Provide extended warranty for period equal to original warranty period, for replaced plant material.

3. Maintenance during the warranty period shall include but not be limited to:

a. Watering of all native seeded areas. Seed should be kept moist (1" of total water per week, including rainfall) until vegetation is 4" high typical. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch.

b. Weeding.

c. First year mowing of native seeded areas: cut the planting to a height of 6-8 inches whenever growth reaches 12-18 inches throughout the first growing season. A string trimmer may be used on rough terrain or if a mower cannot be set high enough. Mow no more than 3 times during the first growing season.

d. Control of undesirable plants by spot spraying with herbicide, including but not limited to: Common Buckthorn (*Rhamnus carthatica*), Glossy Buckthorn (*Rhamnus frangula*), Poison Ivy (*Toxicodendron radicans*), Honeysuckle (*Lonicera* spp.), Cat-tails (*Typha* spp.) and Purple Loosestrife (*Lythrum salicaria*).

e. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.

f. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.

g. Control of undesirable insects, and plant disease.

h. Notify Engineer prior to and following any maintenance activity.

i. Final Acceptance of work of this Section will be subject to acceptance by Engineer at end of the guarantee period.



Contractor shall be responsible for any damage to existing infrastructure, utilities, or other improvements and shall arrange for appropriate repairs to the satisfaction of the appropriate responsible party.

When the above requirements have been fulfilled, the Engineer will accept the lawn.

**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) Item:

**PAY ITEM**

Clean-Up & Restoration, Special

**PAY UNIT**

Lump Sum

The completed work as measured for "Clean-Up & Restoration, Special" will be paid for on a lump sum basis in accordance with the following schedule:

Fifty percent (50%) of the unit price will be paid upon approval by the Engineer of the initial site restoration and seeding. The remaining fifty percent (50%) of the unit price will be paid after the turf is well established, in the opinion of the Engineer.

**DETAILED SPECIFICATION  
FOR  
ITEM #259 – GRASS PAVERS**

**DESCRIPTION**

This work shall consist of installing grass pavers as shown on the plans or as directed by the Engineer. The work shall be performed in accordance with Sections 816 of the Michigan Department of Transportation (MDOT) Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

**MATERIALS**

The materials shall meet the requirements specified in Sections 902 and 917 of the 2012 MDOT Standard Specifications for Construction.

The grass pavers shall be “Drivable Grass” by Soil Retention or Engineer-approved equal.

The base material shall be as detailed on the plans.

**CONSTRUCTION METHODS**

The grass pavers shall be installed in accordance with the manufacturer’s recommendations. The grass pavers shall be placed on a prepared base as detailed on the plans. This work must be performed before the application of fertilizer and site seeding. The base shall be constructed of 4 inches of a MDOT Class II granular material mixed at the ratio of 70 percent MDOT Class II granular material and 30 percent Engineer-approved topsoil. This is the same mixture that is to be used in covering the grass pavers before placement of fertilizer and grass seed.

**MEASUREMENT AND PAYMENT**

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

**PAY ITEM**

Grass Pavers

**PAY UNIT**

Square Foot

The contract unit price shall be payment in full for all labor, materials, and equipment necessary for furnishing and placing grass pavers. All required excavation, filling and grading, as well as furnishing, placing and compacting base material and Engineer-approved topsoil shall be considered included in the work.

**DETAILED SPECIFICATION  
FOR  
ITEM #261 – GRAVEL TRACKING MAT**

**DESCRIPTION**

The Contractor shall furnish all labor, materials, equipment required to place a gravel tracking mat as called for on the plans or as directed by the Engineer. The tracking mat shall be placed at the egress point of the job site to remove earth from tires prior to vehicles leaving the job site.

**MATERIAL**

Geotextile material shall be placed in accordance with the plan details. Geotextile shall be non-woven fabric and shall have physical properties equivalent to Geotextile Separator Non Woven described in Table 910-1 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction.

Aggregate shall be 2” x 3” angular aggregate washed free of “fines.” Crushed concrete shall not be used.

**CONSTRUCTION METHODS**

This work shall conform to Section 208 of the 2012 Michigan Department of Transportation Standard Specifications for Construction and the plan details. The access drive shall be constructed by placing geotextile material atop the existing earth at the intended access location. Geotextile shall be placed with material overlapping at least 1 foot along seam lines and 1 foot along ends with shingling in the downstream direction.

Aggregate shall be placed atop the prepared fabric and rolled into place.

**MEASUREMENT AND PAYMENT**

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

<b><u>PAY ITEM</u></b>	<b><u>PAY UNIT</u></b>
Gravel Tracking Mat	Each

The contract unit price shall be payment in full for all labor, material, and equipment necessary to place a gravel tracking mat. The cost of geotextile and stone are included in the cost of each gravel tracking mat. Maintenance of the gravel mat, including adding clean stone and removing old stone shall be included for the duration of the project. The removal and disposal of geotextile and stone after construction completion shall also be included.

**DETAILED SPECIFICATION  
FOR  
ITEM #263 – DECORATIVE BOULDER, 2-FOOT DIAMETER**

**DESCRIPTION**

This work shall consist of placing decorative boulders with a minimum 2-foot diameter as detailed on the plans or as directed by the Engineer. The work shall be performed in accordance with Sections 815 of the Michigan Department of Transportation (MDOT) Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

**MATERIAL**

The boulders shall be comprised of natural stone of the same general size, type and color as approved by the Engineer. Their surfaces shall be “rounded” and free of sharp edges or broken faces.

**CONSTRUCTION METHODS**

The Contractor shall place the decorative boulders as detailed on the plans and as directed by the Engineer. The work will include furnishing and placing decorative boulders meeting the requirements of the specifications.

**MEASUREMENT AND PAYMENT**

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

**PAY ITEM**

Decorative Boulder, 2-Foot Diameter

**PAY UNIT**

Each

The contract unit price shall be payment in full for all labor, materials, and equipment necessary for furnishing and placing decorative boulders.

**DETAILED SPECIFICATION  
FOR  
ITEM #265 - CL IV RCP, 54-IN, DETAIL III, MODIFIED  
ITEM #267 - CL IV RCP, 24-IN, DETAIL V, MODIFIED  
ITEM #269 - ADS N-12, 42-INCH, DETAIL V, MODIFIED  
ITEM #271 - ADS N-12, 24-INCH, DETAIL V, MODIFIED  
ITEM #273 - HDPE, 42-INCH, 22.5 DEGREE BEND  
ITEM #275 - HDPE, 42-INCH X 24-INCH, REDUCER  
ITEM #277 - HDPE, 42-INCH X 24-INCH, TEE**

**DESCRIPTION**

This work shall consist of installing storm sewer as detailed on the plans or as directed by the Engineer. The work is to be performed in accordance with Sections 403, 406 and 706 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

**MATERIAL**

The materials shall meet the requirements specified in Sections 402, 902 and 909 of the 2012 MDOT Standard Specifications for Construction, the City of Ann Arbor Public Services Department Standard Specifications and plan details except as modified herein.

MDOT 6A coarse aggregate shall be used for pipe bedding and a minimum one foot of aggregate pipe cover per the trench details. It shall also be used as excavation backfill within a one foot (horizontal): one foot (vertical) influence of paved surfaces and structures. In other areas, Engineer-approved backfill material may be substituted.

Concrete pipe shall be C-76 Class IV RCP or Engineer approved equal.

The high-density polyethylene pipe (HDPE) shall be manufactured by Advanced Drainage Systems, Inc. (ADS), ADS N-12 ST IB or Engineer-approved equal.

HDPE fittings (tees and reducers) shall be "eccentric" type so that invert elevations match and are not offset. They shall be manufactured by ADS or Engineer-approved equal.

Joints shall be connected using Mar Mac Polyseal Repair Couplers (double wide) or Engineer approved equal.

**CONSTRUCTION METHODS**

The Contractor shall install the storm sewer pipe and fittings were called for on the plans or as directed by the Engineer. The work shall include furnishing, placing and compacting MDOT 6A coarse aggregate and Engineer-approved backfill material, all in accordance with the plans and specifications. The work will also include removing all excess excavated soil, or soil that cannot be incorporated into the work, and properly disposing it offsite. The work will also include protecting pipe segments and drainage structures that may be exposed during the excavation, preventing soil and debris from entering them, and backfilling the excavation as needed to complete the work.

**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**

CI IV RCP, 54-inch, Detail III, Modified  
CI IV RCP, 24-inch, Detail V, Modified  
ADS N-12, 42-inch, Detail V, Modified  
ADS N-12, 24-inch, Detail V, Modified  
HDPE, 42-inch, 22.5 Degree Bend  
HDPE, 42-inch x 24-inch, Reducer  
HDPE, 42-inch x 24-inch, Tee

**PAY UNIT**

Lineal Foot  
Lineal Foot  
Lineal Foot  
Lineal Foot  
Each  
Each  
Each

The contract unit price shall be payment in full for all labor, materials, and equipment necessary to install the storm sewer pipe and fittings where called for on the plans or as directed by the Engineer. The contract price will include all required excavation; and furnishing, placing and compacting MDOT 6A coarse aggregate or Engineer-approved fill; furnishing and placing pipe, fittings and joint couplers; and removing and properly disposing materials and debris offsite. The contract price shall also include any temporary sheeting, shoring, and bracing that may be necessary for the removal work.

**DETAILED SPECIFICATION  
FOR  
ITEM #279 – PRECAST DIVERSION STRUCTURE, R-14  
ITEM #281 – PRECAST DIVERSION STRUCTURE, R-19  
ITEM #283 – PRECAST DRAINAGE STRUCTURE, R-31**

**DESCRIPTION**

This work shall consist of constructing two (2) stormwater diversion structures and one (1) stormwater drainage structure, to replace existing drainage structures that are to be removed, for flow control from upstream to downstream storm systems. The work is to be performed using reinforced, precast concrete in accordance with Section(s) 701, 702, 704, 706, 901, 902, 903, 905, 908, 909 and 914, as identified in the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein. In addition, the following shall apply:

1. ACI 304 – Guide for Measuring, Mixing, Transporting and Placing Concrete
2. ACI 318 - Building Code Requirements for Reinforced Concrete
3. ASTM C478 - Specification for Precast Reinforced Concrete Manholes Sections
4. ASTM C857 - Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
5. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures
6. ASTM C890 - Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures
7. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures
8. ASTM C915 - Standard Specification for Precast Reinforced Concrete Crib Wall Members
9. ASTM C923 – Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals
10. ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants
11. ASTM 1433 - Standard Specification for Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers
12. ASTM C1478 - Standard Specification for Storm Drain Resilient Connectors Between Reinforced Concrete Storm Sewer Structures, Pipes and Laterals
13. AWS D1.1 - Structural Welding Code - Structural Steel
14. AWS D1.4 - Structural Welding Code - Reinforcing Steel
15. CRSI Manual of Standard Practice

Contractor shall utilize this Detailed Specification for submitting bid prices for Diversion Structures R-14 and R-19, and Drainage Structure R-31 for using precast concrete in substitution for cast-in-place concrete. The alternate bid prices will include any related appurtenances that would be impacted as a result of a precast concrete structural system.

**DESIGN**

FRANCHISE PRODUCTS - Products manufactured under franchise arrangements shall conform to all the requirements specified by the franchiser. Items not included in the franchise specification but included in this specification shall conform to the requirements in this specification.

**PRODUCT DATA**

For standard precast concrete units, the precast concrete producer will supply cut sheets showing conformance to project drawings and requirements, and to applicable ASTM specifications listed in this specification. The precast concrete producer shall certify that such products will meet the ASTM specifications.

For proprietary precast concrete units, the precast concrete producer may supply standard plans or informative literature. Supporting calculations and design details shall be available upon request. The Precast concrete producer shall warrant that such products will perform the intended task.

All precast concrete stormwater structures shall accommodate the equivalent of H20-44 vehicular loading. In addition, all steel grating shall comply with the American Disabilities Act (ADA) and pedestrian accessibility.

All existing soils below proposed stormwater diversion structures shall be undisturbed natural subgrade materials. If it is determined that the existing soils do not appear to be suitable existing subgrades (through material testing or visual inspection), the Contractor is responsible for notifying the City immediately to quickly address any unforeseen field conditions.

## 1. Precast Concrete

- A. All concrete construction shall comply with ACI 301 (Latest Edition), "Specifications for Structural Concrete," and the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction.
- B. All reinforcement placed in concrete shall be continuous unless detailed otherwise. Reinforcement placement and minimum cover requirements shall be in accordance with ACI 318.
- C. All reinforcement shall be adequately supported from bar and sand chairs prior to the placement of concrete. Use of brick and lift hooks are not permitted.
- D. Concrete mix design for slabs and walls - mix design properties:
  - Minimum Compressive Strength,  $f'_c$  - 4,500 psi
  - Maximum Water Cement Ratio (By Weight): 0.46
  - Maximum Slump: 4 inches for slabs, footings and walls \*\*

\*\*8 inch slump is permitted with the addition of water-reducing admixtures using super-plastisizer or high range water-reducing admixture.

## 2. Materials

- A. Cement: ASTM C-150 Type I (Min. 6 Sacks Per Cubic Yard, 4,500 psi concrete)
- B. Coarse Aggregate: ASTM C-33 MDOT 6A
- C. Fine Aggregate: ASTM C-33 MDOT 2NS
- D. Water-reducing Admixture: ASTM C-494, Type F
- E. Water: Clean and Potable
- F. Entrained Air: 5+/-1%
- G. Steel Reinforcement: ASTM 615, Grade:  $f_y = 60,000$  psi
- H. For hot and cold weather placement, follow all requirements of ACI 305 and ACI 306. No concrete shall be placed adjacent to frozen surfaces.
- I. Concrete shall be set in place with the use of vibratory equipment.
- J. The materials shall meet the requirements specified in Sections 701, 702, 901, 902, 903, 905, 908, 909, and 914 of the 2012 MDOT Standard Specifications for Construction.
- K. MDOT 6A coarse aggregate shall be used for excavation backfill within a one foot (horizontal): one foot (vertical) influence of paved surfaces and structures. In other areas, Engineer-approved backfill material may be substituted.
- L. All removable heavy steel grating shall be hot-dipped galvanized with perimeter banding to each respective panel. Each galvanized steel grating panel shall be fastened with stainless steel clips (hold-downs). Anchorages and miscellaneous structural steel metals shall also be made of stainless steel.
- M. ASTM A1011/A-04 Standard Specification for Steel Sheet and Strip
- N. AISI 1008 Standard Low Carbon Steel
- O. ANSI/NAAMM-MBG-531-00 Metal Bar Grating Manual
- P. ASTM A-123 Standard Specification for Zinc Hot-Dip Galvanized Products.



3. Concrete surfaces shall receive the following finishes:
  - A. "Smooth-formed finish": Formed concrete surfaces exposed to view, during normal operation or maintenance, including waterproofing and damproofing shall be arranged orderly and symmetrically with minimum seams. Repair and patch any defective areas. Remove and smooth fins or other projections completely. Fill major air void holes greater than one-quarter inch.
  - B. "Brush finish": Formed concrete horizontal surfaces exposed to view, during normal operation or maintenance, including waterproofing and damproofing shall be arranged orderly and symmetrically with minimum seams. Repair and patch any defective areas. Remove and smooth fins or other projections completely. Fill major air void holes greater than one-quarter inch.
  - C. "Rough-formed finish": Formed concrete surfaces not exposed to view. Tie holes, defective areas and one-quarter inch fin projections shall be repaired and patched.
4. Concrete curing at the precast concrete manufacturing plant shall begin immediately after the concrete is placed and shall occur continuously throughout the finishing operation. This shall be accomplished by keeping concrete surfaces continuously wet by covering with water or by covering with wet Burlene (or approved equal).
5. All reinforcement in concrete walls and foundations shall be continuous in accordance with lap-splicing standards only in regions of low stress.
6. All construction joints in concrete walls shall have a continuous keyway as described within the standard details. All construction joints, except those detailed, shall have Engineer approval. Construction joints in walls shall be spaced as shown on the drawings. Caulk joints exposed to view.

### **HEAVY DUTY METAL GRATING**

Heavy duty metal grating shall be "Wheels n' Heels Short Span Heavy Duty Steel Grating" by Ohio Gratings, Inc., Model No. 8-WH-4, or an Engineer-approved equal. The following parameters shall be required for this project:

1. Bearing Bars: To be 1/4" width x 2", ASTM A-36 bars spaced at 1/4" clear open.
2. Cross Bars: 3/8" diameter carbon steel wire rod spaced 4" center-to-center and welded at right angles to bearing bars with one fillet at each bearing bar/cross bar intersection.
3. Surface: Slip-resistant
4. Loading: AASHTO H20-44
5. Finish: The gratings shall be galvanized after fabrication.
6. Fabrication and tolerances shall be in accordance with NAAMM Metal Bar Grating Manual.
7. Miscellaneous hold-down fastenings shall be stainless steel in accordance with manufacturer specifications.

### **CONSTRUCTION METHODS**

The Contractor shall construct the new diversion structures in accordance with the details shown on the plans. This work will include preparation of submittal review packages, reinforced concrete work, overflow weirs, galvanized grating system, manhole access materials, metals, connectivity to existing storm pipes, and flow channels. The work will also include protecting existing pipe segments that may be exposed during the excavation, preventing soil and debris from entering the storm sewers, and backfilling the excavation as needed to complete the work.

1. The plans for custom-made precast concrete units shall be shop drawings furnished by the precast concrete producer for approval by the Owner or Owner's representative (specifier). These drawings shall show complete design, installation, and construction information in such detail as to enable the Owner to determine the adequacy of the proposed units for the intended purpose. Details of steel reinforcement size and placement as well as supporting design calculations shall be included. The drawings shall include a schedule, which will list the size and type of precast concrete units at each location where they are to be used.

2. The precast concrete units shall be produced in accordance with the approved drawings. Shop drawings prepared by suppliers and subcontractors shall be reviewed and coordinated by the Contractor, prior to submitting to the Engineer. Shop drawings shall be submitted for the following:
  - Concrete mix design including all material specifications.
  - Compression test breaking strength data.
  - Reinforcement steel layout details for fabrication.
  - Heavy-duty, hot dip galvanized steel grating system.
3. Plant fabrication process – Inspections will be performed by the City of Ann Arbor or their designee. This inspection shall take place at the precast concrete manufacturing plant prior to placement of concrete to inspect materials, conditions, and quality of workmanship. An assessment of any potential deficiencies shall be reported. The Contractor shall be responsible for all reimbursable expenses to the City, which shall include, but not be limited to, on-site inspection services at the precast concrete manufacturing plant and travel expenses.
4. Verify existing site conditions prior to construction and commencement of construction activities. Temporary diversions of flow control during construction of the structure shall be the responsibility of the Contractor.
5. Temporary bracing shall be required for installation of all structural components.
6. Existing construction not undergoing alteration is to remain undisturbed. This may include existing pipes. Where such areas are disturbed as a result of the construction operations of this contract, it shall be repaired or replaced by the Contractor as required and to the satisfaction of the Owner’s Representative.
7. Contractor shall take all necessary fire and safety precautions during field construction operation such as welding.
8. Prior to any excavation, the Contractor shall contact “Miss Dig” for location of underground utilities and shall also notify representatives of other utility owners located within the vicinity of the work.
9. Contractor shall provide appropriate traffic safety control devices for construction activities that are to take place within the public road right-of-way.
10. Contractor shall supply and install grout fillets as designated on the engineering drawings for direction flow control.
11. Contractor shall supply and install manhole frames and covers as part of the construction of the work.
12. Contractor shall supply and install waterstops (Volclay, RX-102, or approved equal), or as indicated on the drawings.
13. Prior to heavy duty grating installation, Contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the Engineer or Owner’s representative prior to placement.
14. Contractor shall install grating in accordance with shop drawings and standard installation clearances as recommended by ANSI/NAAMM Metal Bar Grating Manual.
15. Cutting, Fitting and Placement
  - A. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align in the short span direction as shown on the drawings.
  - B. Wherever grating is pierced by pipes, ducts, and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as the bearing bars.
  - C. Cutouts for circular obstructions are to be at least 2” larger in diameter than the obstruction. Utilize standard panel widths wherever possible.
16. Grating Attachment – Use approved attachment system and fasteners to secure grating to supporting members in accordance with manufacturer’s specifications.

## **QUALITY ASSURANCE**

Precast concrete producer shall demonstrate adherence to the standards set forth in the National Precast Concrete Association Quality Control Manual. Precast concrete producer shall meet requirements written as shown below:

- NPCA Certification - The precast concrete producer shall be certified by the National Precast Concrete Association’s Plant Certification Program prior to and during production of the products for this project.
- Qualifications, Testing and Inspection

The precast concrete producer shall have been in the business of producing precast concrete products similar to those specified for a minimum of 5 years. The precast concrete producer shall maintain a permanent quality control department or retain an independent testing agency on a continuing basis. The agency shall issue a report, certified by a licensed engineer, detailing the ability of the precast concrete producer to produce quality products consistent with industry standards.

The precast concrete producer shall show that the following tests are performed in accordance with the ASTM standards indicated. Tests shall be performed for each 150 cu. yd. of concrete placed, but not less frequently than once per week.

1. Slump: C143
2. Compressive Strength: C31, C192, C39
3. Air Content (when air-entrained concrete is being used): C231 or C173
4. Unit Weight: C138

The Owner will place an inspector in the plant when the products covered by this specification are being manufactured.

### **DELIVERY, STORAGE AND HANDLING**

Handling - Products shall be stored, handled shipped and unloaded in a manner to minimize damage. Lifting holes or inserts shall be consistent with industry standards. Lifting shall be accomplished with methods or devices intended for this purpose.

Acceptance at Site - The Owner's representative shall make final inspection and acceptance of the precast concrete products upon arrival at the jobsite.

1. Repairing Minor Defects – Minor defects are constituted as defects that will not impair the functional use or expected life of a manufactured precast concrete product and may be repaired by any method that does not impair the product.
2. Repairing Honeycombed Areas - When honeycombed areas are to be repaired, all loose material shall be removed and the areas cut back into essentially horizontal or vertical planes to a depth at which coarse aggregate particles break under chipping rather than being dislodged. Proprietary repair materials shall be used in accordance with the manufacturer's instructions. If a proprietary repair material is not used, the area shall be saturated with water and, immediately prior to repair, the area should be damp, but free of excess water. A cement-sand grout or an approved bonding agent shall be applied to the chipped surfaces, followed immediately by consolidating an appropriate repair material into the cavity.
3. Repairing Major Defects - Defects in precast concrete products which impair the functional use or the expected life of products shall be evaluated by qualified personnel to determine if repairs are feasible and, if so, to establish the repair procedure.

### **SITE ACCESS**

General contractor shall be responsible for providing adequate access to the site to facilitate hauling, storage and proper handling of the precast concrete products.

### **INSTALLATION**

1. Precast concrete products shall be installed to the lines and grades shown in the contract documents or otherwise specified.
2. Products shall be lifted by suitable lifting devices at points provided by the precast concrete producer.
3. Products shall be installed per the precast concrete producer's recommendation.

**EARTHWORK**

- 1. MDOT 6A coarse aggregate shall be used for excavation backfill within a one foot (horizontal): one foot (vertical) influence of paved surfaces and structures. In other areas, Engineer-approved backfill material may be substituted.
- 2. Prior to construction, soils below proposed foundations and slabs shall be tested by the City’s geotechnical/testing consultant to confirm a new net allowable soil bearing capacity of 2,000 pounds per square foot (psf). If it is determined through testing the net allowable soil bearing pressure is less than 2,000 psf, the Contractor shall notify the Engineer immediately to provide alternative design recommendation, if necessary.

**GROUT**

Grout fillet installation shall take place upon installation of the precast units and storm pipes.

- 1. Cement grout: Portland cement with enough water for the required strength and sand for proper consistency. May contain mineral or chemical admixtures, if approved by Owner’s representative.
- 2. Non-shrink grout: Premixed, packaged expansive and non-expansive shrink- resistant grout.

**MEASUREMENT AND PAYMENT**

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

<b><u>PAY ITEM</u></b>	<b><u>PAY UNIT</u></b>
Precast Diversion Structure, R-14	Each
Precast Diversion Structure, R-19	Each
Precast Drainage Structure, R-31	Each

The contract unit price shall be payment in full for all labor, materials, and equipment necessary to construct diversion/drainage structures, including, but not limited to, all required excavation and structural construction and pipe modifications (temporary and permanent), as well as constructing manhole channels and “benches” to allow for the installation of stop log assemblies, the furnishing and placement of all galvanized grating, structural steel and fastening hardware; and the furnishing and placement of castings and covers. The contract price shall also include backfilling with MDOT 6A coarse aggregate or Engineer-approved fill, and removing and properly disposing materials and debris offsite. The contract price shall also include any temporary sheeting, shoring, and bracing that may be necessary for the work.

**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.

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)
- SBC - (Ameritech)
- Comcast
- MCI Communications
- Sprint Communications
- The University of Michigan

**On all projects:**

**"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  
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  
VACUUM TYPE STREET AND UTILITY STRUCTURE CLEANING EQUIPMENT**

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, as and when directed by the Engineer for dust control, for dirt/debris control, and 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.

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  
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
- Storm Sewer Pipe
- High Density Polyethylene 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  
CONTRACT DRAWINGS/PLANS**

The Contractor shall carefully check and review all Drawings/Plans and advise the Engineer of any errors or omissions discovered. The Drawings/Plans may be supplemented by such additional Drawings/Plans and sketches as may be necessary or desirable as the work progresses. The Contractor shall perform all work shown on any additional or supplemental Drawings/Plans issued by the Engineer.

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



**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 the latest revision of the City of Ann Arbor Public Services Department Standard Specifications.
2. On-site material and soil density testing will be performed by a geotechnical/testing firm hired by the City.
3. 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.
4. The Contractor shall completely restore all existing site features to better than, or equal to, their existing condition.
5. 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.
6. 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.
7. 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.