PUBLIC IMPROVEMENT REQUEST FOR PROPOSAL

RFP# 23-25

Earhart Road Improvements Project

City of Ann Arbor
Public Services Engineering Division

Due Date: May 23, 2023 by 10:00 a.m. (local time)

Issued By:

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

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SECTION I - GENERAL INFORMATION

A. OBJECTIVE

The purpose of this Request for Proposal (RFP) is to select a Contractor to provide construction services for the Earhart Road Improvements project.

B. 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.

Proposals that fail to provide a bid security upon proposal opening will be deemed non-responsive and will not be considered for award.

C. QUESTIONS AND CLARIFICATIONS / DESIGNATED CITY CONTACTS

All questions regarding this Request for Proposal (RFP) shall be submitted via e-mail. Questions will be accepted and answered in accordance with the terms and conditions of this RFP.

All questions shall be submitted on or before May 11, 2023 at 10:00 a.m. (local time), and should be addressed as follows:

Scope of Work/Proposal Content questions shall be e-mailed to nbayley@a2gov.org

RFP Process and Compliance questions shall be e-mailed to Colin Spencer, Buyer - CSpencer@a2gov.org

Should any prospective bidder be in doubt as to the true meaning of any portion of this RFP, or should the prospective bidder find any ambiguity, inconsistency, or omission therein, the prospective bidder shall make a written request for an official interpretation or correction by the due date for questions above.

All interpretations, corrections, or additions to this RFP will be made only as an official addendum that will be posted to a2gov.org and MITN.info and it shall be the prospective bidder's responsibility to ensure they have received all addenda before submitting a proposal. Any addendum issued by the City shall become part of the RFP, and must be incorporated in the proposal where applicable.

D. PRE-PROPOSAL MEETING

A non-mandatory pre-proposal conference for this project will be held on Tuesday **May 9, 2023 at 10:00 a.m**. via Teams at
Meeting ID: **245 822 856 762** Passcode: **aCffjp**

Attendance at this conference is highly recommended. Administrative and technical questions regarding this project will be answered at this time. The pre-proposal conference is for information only. Any answers furnished will not be official until they are included in the meeting minutes via addendum. Answers that change or substantially clarify the proposal will be affirmed in an addendum.

E. PROPOSAL FORMAT

To be considered, each firm must submit a response to this RFP using the format provided in Section III. No other distribution of proposals is to be made by the prospective bidder. An official authorized to bind the bidder to its provisions must sign the proposal. Each proposal must remain valid for at least one hundred and twenty (120) days from the due date of this RFP.

Proposals should be prepared simply and economically providing a straightforward, concise description of the bidder's ability to meet the requirements of the RFP. No erasures are permitted. Mistakes may be crossed out and corrected and must be initialed in ink by the person signing the proposal.

F. SELECTION CRITERIA

Responses to this RFP will be evaluated using a point system as shown in Section III. A selection committee comprised primarily of staff from the City will complete the evaluation.

If interviews are desired by the City, the selected firms will be given the opportunity to discuss their proposal, qualifications, past experience, and their fee proposal in more detail. The City further reserves the right to interview the key personnel assigned by the selected bidder to this project.

All proposals submitted may be subject to clarifications and further negotiation. All agreements resulting from negotiations that differ from what is represented within the RFP or in the proposal response shall be documented and included as part of the final contract.

G. SEALED PROPOSAL SUBMISSION

All proposals are due and must be delivered to the City on or before May 23, 2023 by 10:00a.m. (local time). Proposals submitted late or via oral, telephonic, telegraphic, electronic mail or facsimile **will not** be considered or accepted.

Each respondent should submit in a sealed envelope

- **one (1) original proposal**
- **one (1) additional proposal copy**
- **one (1) digital copy of the proposal preferably on a USB/flash drive as one file in PDF format**

Proposals submitted should be clearly marked: **RFP No. 23-25 – Earhart Road Improvements Project** and list the bidder's name and address.

Proposals must be addressed and delivered to:
City of Ann Arbor
c/o Customer Service
301 East Huron Street
Ann Arbor, MI 48107

All proposals received on or before the due date will be publicly opened and recorded on the due date. No immediate decisions will be rendered.

Hand delivered proposals may be dropped off in the Purchasing drop box located in the Ann Street (north) vestibule/entrance of City Hall which is open to the public Monday through Friday from 8am to 5pm (except holidays). The City will not be liable to any prospective bidder for any unforeseen circumstances, delivery, or postal delays. Postmarking on the due date will not substitute for receipt of the proposal.

Bidders are responsible for submission of their proposal. Additional time will not be granted to a single prospective bidder. However, additional time may be granted to all prospective bidders at the discretion of the City.

A proposal may be disqualified if the following required forms are not included with the proposal:

- **Attachment D - Prevailing Wage Declaration of Compliance**
- **Attachment E - Living Wage Declaration of Compliance**
- **Attachment G - Vendor Conflict of Interest Disclosure Form**
- **Attachment H - Non-Discrimination Declaration of Compliance**

Proposals that fail to provide these forms listed above upon proposal opening may be deemed non-responsive and may not be considered for award.

H. DISCLOSURES

Under the Freedom of Information Act (Public Act 442), the City is obligated to permit review of its files, if requested by others. All information in a proposal is subject to disclosure under this provision. This act also provides for a complete disclosure of contracts and attachments thereto.

I. TYPE OF CONTRACT

A sample of the Construction Agreement is included as Attachment A. Those who wish to submit a proposal to the City are required to review this sample agreement carefully. **The City will not entertain changes to its Construction Agreement.**

For all construction work, the respondent must further adhere to the City of Ann Arbor General Conditions. The General Conditions are included herein. Retainage will be held as necessary based on individual tasks and not on the total contract value. The Contractor shall provide the required bonds included in the Contract Documents for the duration of the Contract.

The City reserves the right to award the total proposal, to reject any or all proposals in whole or in part, and to waive any informality or technical defects if, in the City's sole judgment, the best interests of the City will be so served.

This RFP and the selected bidder's response thereto, shall constitute the basis of the scope of services in the contract by reference.

J. NONDISCRIMINATION

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

K. WAGE REQUIREMENTS

The Attachments provided herein outline 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.

Pursuant to Resolution R-16-469 all public improvement contractors are subject to prevailing wage and will be required to provide to the City payroll records sufficient to demonstrate compliance with the prevailing wage requirements. Use of Michigan

Department of Transportation Prevailing Wage Forms (sample attached hereto) or a City-approved equivalent will be required along with wage rate interviews.

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

For the purposes of this RFP the Construction Type of: **Heavy, or Highway** will apply.

L. CONFLICT OF INTEREST DISCLOSURE

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

M. COST LIABILITY

The City of Ann Arbor assumes no responsibility or liability for costs incurred by the bidder prior to the execution of an Agreement. The liability of the City is limited to the terms and conditions outlined in the Agreement. By submitting a proposal, bidder agrees to bear all costs incurred or related to the preparation, submission, and selection process for the proposal.

N. DEBARMENT

Submission of a proposal in response to this RFP is certification that the Respondent 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.

O. PROPOSAL PROTEST

All proposal protests must be in writing and filed with the Purchasing Manager within five (5) business days of any notices of intent, including, but not exclusively, divisions on prequalification of bidders, shortlisting of bidders, or a notice of intent to award. Only bidders who responded to the solicitation may file a bid protest. The bidder must clearly state the reasons for the protest. If any bidder contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/Unit shall refer the bidder to the Purchasing Manager. The Purchasing Manager will provide the bidder with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee, whose decision shall be final.

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

P. SCHEDULE

The following is the schedule for this RFP process.

Activity/Event	**Anticipated Date**
Pre-Proposal Conference	May 9, 2023, 10:00 a.m. (Local Time)
Written Question Deadline	May 11, 2023, 10:00 a.m.
Addenda Published	May 16, 2023
Proposal Due Date	May 23, 2023, 10:00 a.m. (Local Time)
Expected City Council Authorizations	July 3, 2023

The above schedule is for information purposes only and is subject to change at the City's discretion.

Q. IRS FORM W-9

The selected bidder will be required to provide the City an IRS form W-9.

R. RESERVATION OF RIGHTS

1. The City reserves the right in its sole and absolute discretion to accept or reject any or all proposals, or alternative proposals, in whole or in part, with or without cause.
2. The City reserves the right to waive, or not waive, informalities or irregularities in terms or conditions of any proposal if determined by the City to be in its best interest.

3. The City reserves the right to request additional information from any or all bidders.
4. The City reserves the right to reject any proposal that it determines to be unresponsive and deficient in any of the information requested within RFP.
5. The City reserves the right to determine whether the scope of the project will be entirely as described in the RFP, a portion of the scope, or a revised scope be implemented.
6. The City reserves the right to select one or more contractors or service providers to perform services.
7. The City reserves the right to retain all proposals submitted and to use any ideas in a proposal regardless of whether that proposal is selected. Submission of a proposal indicates acceptance by the firm of the conditions contained in this RFP, unless clearly and specifically noted in the proposal submitted.
8. The City reserves the right to disqualify proposals that fail to respond to any requirements outlined in the RFP, or failure to enclose copies of the required documents outlined within the RFP.

S. IDLEFREE ORDINANCE

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

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

(a) For any period of time while the Commercial Vehicle is unoccupied; or

(b) For more than 5 minutes in any 60-minute period while the Commercial Vehicle is occupied.

In addition, generators and other internal combustion engines are covered

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

T. ENVIRONMENTAL COMMITMENT

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

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

N. 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. The Bidder shall not change or replace a subcontractor without approval by the City.

O. 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.

SECTION II - SCOPE OF WORK

The Earhart Road Improvements includes approximately 1.3 miles of HMA 2-inch Mill and overlay, with some areas of full depth HMA removal and replacement, 950 ft section of road widening, 2000 ft of single lane narrowing, 3 mini roundabouts, 1,950 ft of 5 ft wide sidewalk, ADA Ramps Improvements, Catch Basin Replacements Pavement marking for on-street dedicated bike lanes for the entire length of the project between Geddes and US-23.

Please see the plan set for more details.

SECTION III - MINIMUM INFORMATION REQUIRED

PROPOSAL FORMAT

The following describes the elements that should be included in each of the proposal sections and the weighted point system that will be used for evaluation of the proposals.

Bidders should organize Proposals into the following Sections:

A. Qualifications, Experience and Accountability
B. Workplace Safety
C. Workforce Development
D. Social Equity and Sustainability
E. Schedule of Pricing/Cost
F. Authorized Negotiator
G. Attachments

Bidders are strongly encouraged to provided details for all of the information requested below within initial proposals. Backup documentation may be requested at the sole discretion of the City to validate all of the responses provided herein by bidders. False statements by bidders to any of the criteria provided herein will result in the proposal being considered non-responsive and will not be considered for award.

Pursuant to Sec 1:325 of the City Code which sets forth requirements for evaluating public improvement bids, Bidders should submit the following:

A. Qualifications, Experience and Accountability - 20 Points

1. Qualifications and experience of the bidder and of key persons, management, and supervisory personnel to be assigned by the bidder.

2. References from individuals or entities the bidder has worked for within the last five (5) years including information regarding records of performance and job site cooperation.

3. Evidence of any quality control program used by the bidder and the results of any such program on the bidder's previous projects.

4. A statement from the bidder as to any major subcontractors it expects to engage including the name, work, and amount.

B. Workplace Safety – 20 Points

1. Provide a copy of the bidder's safety program, and evidence of a safety-training program for employees addressing potential hazards of the proposed job site. Bidder must identify a designated qualified safety representative responsible for bidder's safety program who serves as a contact for safety related matters.

2. Provide the bidder's Experience Modification Rating ("EMR") for the last three consecutive years. Preference within this criterion will be given to an EMR of 1.0 or less based on a **three-year** average.

3. Evidence that all craft labor that will be employed by the bidder for the project has, or will have prior to project commencement, completed at least an authorized 10-hour OSHA Construction Safety Course.

4. For the last three years provide a copy of any documented violations and the bidder's corrective actions as a result of inspections conducted by the Michigan Occupational Safety & Health Administration (MIOSHA), U.S. Department of Labor – Occupational Safety and Health Administration (OSHA), or any other applicable safety agency.

C. Workforce Development – 20 Points

1. Documentation as to bidder's pay rates, health insurance, pension or other retirement benefits, paid leave, or other fringe benefits to its employees.

2.. Documentation that the bidder participates in a Registered Apprenticeship Program that is registered with the United States Department of Labor Office of Apprenticeship or by a State Apprenticeship Agency recognized by the USDOL Office of Apprenticeship. USDOL apprenticeship agreements shall be disclosed to the City in the solicitation response.

3. Bidders shall disclose the number of non-craft employees who will work on the project on a 1099 basis, and the bidders shall be awarded points based on their relative reliance on 1099 work arrangements with more points assigned to companies with fewer 1099 arrangements. Bidders will acknowledge that the City may ask them to produce payroll records at points during the project to verify compliance with this section.

D. Social Equity and Sustainability – 20 Points

1. A statement from the bidder as to what percentage of its workforce resides in the City of Ann Arbor and in Washtenaw County, Michigan. The City will consider in

evaluating which bids best serve its interests, the extent to which responsible and qualified bidders employ individuals in either the city of the county. Washtenaw County jurisdiction is prioritized for evaluation purposes for this solicitation.

2. Evidence of Equal Employment Opportunity Programs for minorities, women, veterans, returning citizens, and small businesses.

3. Evidence that the bidder is an equal opportunity employer and does not discriminate on the basis of race, sex, pregnancy, age, religion, national origin, marital status, sexual orientation, gender identity or expression, height, weight, or disability.

4. The bidder's proposed use of sustainable products, technologies, or practices for the project, which reduce the impact on human health and the environment, including raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, and waste management.

5. The bidder's environmental record, including findings of violations and penalties imposed by government agencies.

E. Schedule of Pricing/Cost – 20 Points

Company: _____

Project: Crescents Water Main Replacement and Resurfacing Ph 1 Project
File # 2022-012 RFP 23-19

Item	Description	Unit	Estimated Quantity	Unit Price	Total Price
101	General Conditions, Max $120,000	LS	1	$	$
102	Digital Audio Visual Tape Coverage	LS	1	$	$
120	Project Supervision, Max $90,000	LS	1	$	$
200	Certified Payroll Compliance and Reporting	LS	1	$	$
201	Allowance for Unforeseen Site Conditions	DLR	1	$ 1.00	$ 40,000
205	Project Clean-up & Restoration, Special, Max $30,000	LS	1	$	$
210	Minor Traffic Control, Max $50,000	LS	1	$	$
211	Lighted Arrow Board	EA	4	$	$
212	Sign, Portable Changeable Message	EA	4	$	$
215	"No Parking" Signs	EA	75	$	$
215	Pedestrian Type II Barricade, Temp	EA	25	$	$
217	Temporary Pedestrian Mat	EA	4	$	$
219	Barricade Type III - Lighted	EA	10	$	$
220	Temporary Sign, Type B	SFT	768	$	$
221	Temporary Sign, Type B, Special	SFT	66	$	$
222	Plastic Drum - Lighted	EA	836	$	$
223	Channelizing Device, 42 Inch	EA	75	$	$
230	Protective Fencing	FT	412	$	$
235.1	Tree Removal, 6-inch to 12-inch	EA	25	$	$
235.2	Tree Removal, 13-inch to 24-inch	EA	3	$	$
235.3	Tree Removal, Greater than 24-inch	EA	2	$	$
240.0	Exploratory Excavation (0-10' deep)	EA	8	$	$
240.1	Excavation, Earth	CYD	1300	$	$
320.0	12" CL IV RCP Storm Sewer Pipe, Trench Detail I	FT	672	$	$
358.2	Sewer Remove, Any Size or Depth	FT	717	$	$
360.2	Sewer Tap, 12 inch	EA	1	$	$

TOTAL THIS PAGE 15 $ _____

(Also to be entered on Page 18)

Company:

Project: Crescents Water Main Replacement and Resurfacing Ph 1 Project
File # 2022-012 RFP 23-19

366.1	Dr Structure, Inlet Junction, 36 inch dia	EA	2	$		$
367.1	Dr Inlet Structure, 24 inch dia	EA	23	$		$
386.2	Structure Remove, Any Size or Depth	EA	23	$		$
500.1	HMA Pavement Removal, Any Depth	SYD	1279	$		$
502.1	Remove Concrete Curb or Curb & Gutter - Any Type	FT	3572	$		$
503.2	Remove Concrete Sidewalk, Ramp - Any Thickness	SFT	2839	$		$
504.1	Remove Block Retaining Wall	SFT	1500	$		$
510.1	Cold Milling HMA Surface	SYD	32204	$		$
510.2	Cold Milling HMA Surface Modified -[Contingency]	SYD	6450	$		$
516.0	6" Wrapped Edge Drain	FT	1224	$		$
520.1	Machine Grading	SYD	1417	$		$
520.2	Machine Grading, Swale	SYD	1274	$		$
521.1	Subgrade Undercutting- [Contingency]	CYD	250	$		$
521.2	Sidewalk Ramp Grading	EA	7	$		$
521.3	Sidewalk Grading	FT	1962	$		$
524.1	Class II Granular Material, C.I.P. -Sidewalk	CYD	468	$		$
525.1	21AA Limestone, C.I.P.	CYD	509	$		$
535.1	HMA, 4EL - Pavement Wearing Course	TON	3721	$		$
535.2	HMA, 4EL - Pavement Leveling Course	TON	234	$		$
539.2	Hand Patching, Modified -[Contigency]	TON	1100	$		$
550.1	Concrete Curb or Curb and Gutter - All Types	FT	4206	$		$
550.2	Concrete Curb or Curb and Gutter - All Ty High Early	FT	50	$		$
552.1	4" Concrete Sidewalk	SFT	11166	$		$
553.1	6" Concrete Sidewalk, Ramp, Drive Approach	SFT	2158	$		$
553.2	6" Concrete Drive or Sidewalk - High Early	SFT	113	$		$

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(Also to be entered on page 18)

Company:

Project: Crescents Water Main Replacement and Resurfacing Ph 1 Project
File # 2022-012 RFP 23-19

554.1	8" Concrete Drive or Sidewalk - High Early	SFT	$		$	
554.2	Mountable Curb & Gutter - Central Island	FT	$		$	
555.1	Driveway Opening, Conc, Detail M - High Early	FT	$		$	
555.2	8" Concrete Pavement - Central Island	SFT	$		$	
557.1	Detectable Warning, Cast In Place	FT	$		$	
563.1	Structure Covers	EA	$		$	
566.1	Adjust Structure Cover	EA	$		$	
567.1	Adjust Monument Box or Gate Valve Box	EA	$		$	
584.1	Pavt Mrkg, Polyurea, 4 inch, White	FT	$		$	
584.2	Pavt Mrkg, Polyurea, 6 inch, White	FT	$		$	
585.1	Pavt Mrkg, Polyurea, 6 inch, Yellow	FT	$		$	
586.1	Recessing Pavt Mrkg, Longit	FT	$		$	
586.2	Recessing Pavt Mrkg, Transv	FT	$		$	
587.1	Pavt Mrkg, Polyurea, 12 inch, Crosswalk	FT	$		$	
587.2	Pavt Mrkg, Ovly Cold Plastic, Bike Symbol	EA	$		$	
587.3	Pavt Mrkg, Ovly Cold Plastic, Arrow	EA	$		$	
587.4	Pavt Mrkg, Ovly, 12 inch, Cross Hatch, Yellow	FT	$		$	
584.1	Pavt Mrkg, MMA, Bike Lane, Green	SFT	$		$	
594.1	Pavt Mrkg, Cover, Type R, Black	FT	$		$	
594.2	Pavt Mrkg, Wet Ref, Type R, Tape, 4 inch, White, Temp	FT	$		$	
594.3	Pavt Mrkg, Wet Ref, Type R, Tape, 4 inch, Yellow, Temp	FT	$		$	
599.1	City Posts, 3 inch, White	EA	$		$	
599.2	City Posts, 3 inch, Yellow	EA	$		$	
599.3	Quick Curb	FT	$		$	
599.4	Quick Curb, End Unit	EA	$		$	
702.1	Erosion Control, Inlet Filter	EA	$		$	
703.1	Erosion Control, Silt Fence	FT	$		$	

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(Also to be entered on page 18)

Company:

Project: Crescents Water Main Replacement and Resurfacing Ph 1 Project
File # 2022-012 RFP 23-19

799.1	Tree, 3 inch caliper, Large Shade Trees	EA	$		$	
800.1	Tree, 2 inch caliper, Medium Shade Trees	EA	$		$	
882.1	Turf Establishment	SYD	$		$	
882.2	Mulch Blanket, High Velocity	SYD	$		$	
892.1	Irrigation System, Protection and Maintenance	DLR	$	1.00	$	5,000

TOTAL THIS PAGE 18	$	
TOTAL FROM PAGE 15	$	
TOTAL FROM PAGE 16	$	
TOTAL FROM PAGE 17	$	
TOTAL BASE BID	$	

F. AUTHORIZED NEGOTIATOR / NEGOTIATIBLE ELEMENTS (ALTERNATES)

Include the name, phone number, and e-mail address of persons(s) in your organization authorized to negotiate the agreement with the City.

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

If the Bidder takes exception to the time stipulated in Article III of the Contract, Time of Completion, page C-2, it is requested to stipulate its proposed time for performance of the work.

Consideration for any proposed alternative items or time may be negotiated at the discretion of the City.

G. ATTACHMENTS

General Declaration, Legal Status of Bidder, Conflict of Interest Form, Living Wage Compliance Form, Prevailing Wage Compliance Form and the Non-Discrimination Form should be completed and returned with the proposal. These elements should be included as attachments to the proposal submission.

PROPOSAL EVALUATION

1. The selection committee will evaluate each proposal by the above-described criteria and point system. The City reserves the right to reject any proposal that it determines to be unresponsive and deficient in any of the information requested for evaluation. A proposal with all the requested information does not guarantee the proposing firm to be a candidate for an interview if interviews are selected to be held by the City. The committee may contact references to verify material submitted by the bidder.

2. The committee then will schedule interviews with the selected firms if necessary. The selected firms will be given the opportunity to discuss in more detail their qualifications, past experience, proposed work plan (if applicable) and pricing.

3. The interview should include the project team members expected to work on the project, but no more than six members total. The interview shall consist of a presentation of up to thirty minutes (or the length provided by the committee) by the bidder, including the person who will be the project manager on this contract, followed by approximately thirty minutes of questions and answers. Audiovisual aids may be used during the oral interviews. The committee may record the oral interviews.

4. The firms interviewed will then be re-evaluated by the above criteria and adjustments to scoring will be made as appropriate. After evaluation of the proposals, further negotiation with the selected firm may be pursued leading to the award of a contract by City Council, if suitable proposals are received.

The City reserves the right to waive the interview process and evaluate the bidder based on their proposal and pricing schedules alone.

The City will determine whether the final scope of the project to be negotiated will be entirely as described in this RFP, a portion of the scope, or a revised scope. 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. Any proposal that does not conform fully to these instructions may be rejected.

PREPARATION OF PROPOSALS

Proposals should have no plastic bindings but will not be rejected as non-responsive for being bound. Staples or binder clips are acceptable. Proposals should be printed double sided on recycled paper.

Each person signing the proposal certifies that they are a person in the bidder's firm/organization responsible for the decisions regarding the fees being offered in the Proposal and has not and will not participate in any action contrary to the terms of this provision.

ADDENDA

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

Each bidder should acknowledge in its proposal all addenda it has received on the General Declarations form provided in the Attachments section herein. 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 official written addenda.

SECTION IV - ATTACHMENTS

Attachment A – Sample Standard Contract

Attachment B – General Declarations

Attachment C - Legal Status of Bidder

Attachment D – Prevailing Wage Declaration of Compliance Form

Attachment E – Living Wage Declaration of Compliance Form

Attachment F – Living Wage Ordinance Poster

Attachment G – Vendor Conflict of Interest Disclosure Form

Attachment H – Non-Discrimination Ordinance Declaration of Compliance Form

Attachment I – Non-Discrimination Ordinance Poster

Sample Certified Payroll Report Template

ATTACHMENT A
SAMPLE STANDARD CONTRACT

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

Administrative Use Only
Contract Date: _____

CONTRACT

THIS CONTRACT is between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 East Huron Street, Ann Arbor, Michigan 48104 ("City") Contractor., a Michigan Corporation, ("Contractor")

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 **RFP #23-25 – Earhart Road Improvements Project** in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, all of which are incorporated as part of this Contract:

Non-discrimination and Living Wage
Declaration of Compliance Forms (if applicable)
Vendor Conflict of Interest Form
Prevailing Wage Declaration of Compliance Form (if applicable)
Bid Forms
Contract and Exhibits
Bonds
General Conditions
Standard Specifications
Detailed Specifications
Plans
Addenda

ARTICLE II - Definitions

Administering Service Area/Unit means **Public Services Area / Engineering Unit**

Project means **RFP 23-25 – Earhart Road Improvements Project**

Supervising Professional means the person acting under the authorization of the manager of the Administering Service Area/Unit. At the time this Contract is executed, the Supervising Professional is: **Nicholas Hutchinson, P.E.** whose job title is **City Engineer**. If there is any question concerning who the Supervising Professional is, Contractor shall confirm with the manager of the Administering Service Area/Unit.

Contractor's Representative means _____ whose job title is _____

ARTICLE III - Time of Completion

(A) The work to be completed under this Contract shall begin immediately on the date specified in the Notice to Proceed issued by the City.

(B) The entire work for this Contract shall be completed within __ consecutive calendar days.

(C) Failure to complete all the work within the time specified above, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the City, as liquidated damages and not as a penalty, an amount equal to **$ 1,500.00** for each calendar day of delay in the completion of all the work. If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

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

ARTICLE IV - The Contract Sum

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

__($)

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

ARTICLE V - Assignment

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

ARTICLE VI - Choice of Law

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

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

ARTICLE VII - Relationship of the Parties

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

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

ARTICLE VIII - Notice

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

ARTICLE IX - Indemnification

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

ARTICLE X - Entire Agreement

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

ARTICLE XI – Electronic Transactions

The City and Contractor agree that signatures on this Contract may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this Contract. This Contract may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

FOR CONTRACTOR

By_____

Its:_____

FOR THE CITY OF ANN ARBOR

By_____
Christopher Taylor, Mayor

By_____
Jacqueline Beaudry, City Clerk

Approved as to substance

By_____
Milton Dohoney, Jr.
City Administrator

By_____
Brian Steglitz
Public Services Area Administrator

Approved as to form and content

_____
Atleen Kaur, 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 entitled _____ _____, for RFP No. _____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.

(6) Principal, Surety, and the City agree that signatures on this bond may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this bond. This bond may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

SIGNED AND SEALED this _____ day of _____, 202_.

_____
(Name of Surety Company)

By _____
(Signature)

Its_____
(Title of Office)

Approved as to form:

_____
Stephen K. Postema, City Attorney

_____
(Name of Principal)

By _____
(Signature)

Its _____
(Title of Office)

Name and address of agent:

_____

_____

_____

LABOR AND MATERIAL BOND

(1) _____ of _____(referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan, (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for the use and benefit of claimants as defined in Act 213 of Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq., in the amount of
$ _____, for the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written Contract with the City entitled _____
_____
_____
____, for RFP No. _____; 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.

(5) Principal, Surety, and the City agree that signatures on this bond may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this bond. This bond may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

SIGNED AND SEALED this _____ day of _____, 202_

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

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

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

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

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

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

Section 2 - Order of Completion

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

Section 3 - Familiarity with Work

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

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

Section 4 - Wage Requirements

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

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

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

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

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

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

Section 5 - Non-Discrimination

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

Section 6 - Materials, Appliances, Employees

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

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

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

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

Section 8 - Royalties and Patents

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

Section 9 - Permits and Regulations

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

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

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

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

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

employees of the City. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

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

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

Section 11 - Inspection of Work

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

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

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

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

Section 12 - Superintendence

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

Section 13 - Changes in the Work

The City may make changes to the quantities of work within the general scope of the Contract at any time by a written order and without notice to the sureties. If the changes add to or deduct from the extent of the work, the Contract Sum shall be adjusted accordingly. All the changes shall be

executed under the conditions of the original Contract except that any claim for extension of time caused by the change shall be adjusted at the time of ordering the change.

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

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

Section 14 - Extension of Time

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

(1) When work under an extra work order is added to the work under this Contract;

(2) When the work is suspended as provided in Section 20;

(3) When the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, and which were not the result of its fault or negligence;

(4) Delays in the progress of the work caused by any act or neglect of the City or of its employees or by other Contractors employed by the City;

(5) Delay due to an act of Government;

(6) Delay by the Supervising Professional in the furnishing of plans and necessary information;

(7) Other cause which in the opinion of the Supervising Professional entitles the Contractor to an extension of time.

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

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

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section l3. No claim shall be valid unless so made.

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

(1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;

(2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same; the cost of all material and supplies required of either temporary or permanent character; rental of all power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;

(3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility;

(4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;

(5) Payments of all charges for work under this Section in any one month shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.

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

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

Section 16 - Progress Payments

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

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

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract Sum upon completion of erection of all equipment furnished, but not later than 60 days after the date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than l80 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

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

Section 17 - Deductions for Uncorrected Work

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

Section 18 - Correction of Work Before Final Payment

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

If the Contractor does not remove the condemned work and materials within l0 days after written notice, the City may remove them and, if the removed material has value, may store the material

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

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

Section 19 - Acceptance and Final Payment

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

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

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

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

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

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

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

Section 20 - Suspension of Work

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

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

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

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

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

Section 22 - Contractor's Right to Terminate Contract

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

Section 23 - City's Right To Do Work

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

Section 24 - Removal of Equipment and Supplies

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

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

Section 25 - Responsibility for Work and Warranties

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

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

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

Section 26 - Partial Completion and Acceptance

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

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

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

Section 27 - Payments Withheld Prior to Final Acceptance of Work

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

(1) Defective work not remedied;

(2) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor;

(3) Failure of the Contractor to make payments properly to subcontractors or for material or labor;

(4) Damage to another Contractor.

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

Section 28 - Contractor's Insurance

(1) The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself and the City from all claims for bodily injuries, death or property damage that may arise under this Contract; whether the act(s) or omission(s) giving rise to the claim were made by the Contractor, any subcontractor, or anyone

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

Required insurance policies include:

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

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

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

$1,000,000	Each occurrence as respect Bodily Injury Liability or Property Damage Liability, or both combined.
$2,000,000	Per Project General Aggregate
$1,000,000	Personal and Advertising Injury
$2,000,000	Products and Completed Operations Aggregate, which, notwithstanding anything to the contrary herein, shall be maintained for three years from the date the Project is completed.

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

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

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

(3) Insurance companies and policy forms are subject to approval of the City Attorney, which approval shall not be unreasonably withheld. Documentation must provide and demonstrate an unconditional and un-qualified 30-day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number(s); name of insurance company(s); name and address of the agent(s) or authorized representative(s); name(s), email address(es), and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which may be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified Contractor shall furnish the City with satisfactory certificates of insurance and endorsements prior to commencement of any work. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) and all required endorsements to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies and endorsements to the Administering Service Area/Unit at least ten days prior to the expiration date.

(4) Any Insurance provider of Contractor shall be authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-authorized insurance companies are not acceptable unless approved in writing by the City.

(5) City reserves the right to require additional coverage and/or coverage amounts as may be included from time to time in the Detailed Specifications for the Project.

(6) The provisions of General Condition 28 shall survive the expiration or earlier termination of this contract for any reason.

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

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

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

Section 30 - Damage Claims

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

Section 31 - Refusal to Obey Instructions

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

Section 32 - Assignment

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

Section 33 - Rights of Various Interests

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

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

Section 34 - Subcontracts

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

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

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

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

Section 35 - Supervising Professional's Status

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

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

Section 36 - Supervising Professional's Decisions

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

Section 37 - Storing Materials and Supplies

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

Section 38 - Lands for Work

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

Section 39 - Cleaning Up

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

Section 40 - Salvage

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

Section 41 - Night, Saturday or Sunday Work

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

Section 42 - Sales Taxes

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

Section 43

CONTRACTOR'S DECLARATION

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

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

_____ _____
Contractor Date

By _____
(Signature)

Its _____
(Title of Office)

Past due invoices, if any, are listed below.

Section 44

CONTRACTOR'S AFFIDAVIT

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

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

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

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

_____ _____
Contractor Date

By _____
(Signature)

Its _____
(Title of Office)

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

ATTACHMENT B

GENERAL DECLARATIONS

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

Ladies and Gentlemen:

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

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

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

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

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

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

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

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

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

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

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

SIGNED THIS _____ DAY OF _____, 202_.

_____	_____
Bidder's Name	Authorized Signature of Bidder
_____	_____
Official Address	(Print Name of Signer Above)
_____	_____
Telephone Number	Email Address for Award Notice

ATTACHMENT C

LEGAL STATUS OF BIDDER

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

Bidder declares that it is:

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

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

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

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

_____

_____

_____

_____

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

Authorized Official

_____ **Date** _____**,** 202_

(Print) Name _____ Title _____

Company:
_____

Address:
_____

Contact Phone ( ) _____ Fax ( ) _____

Email _____

ATTACHMENT D

PREVAILING WAGE DECLARATION OF COMPLIANCE

The "wage and employment requirements" of Section 1:320 of Chapter 14 of Title I of the Ann Arbor City Code mandates that the city not enter any contract, understanding or other arrangement for a public improvement for or on behalf of the city unless the contract provides 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. Where the contract and the Ann Arbor City Code 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 1:320 of Chapter 14 of Title I of the Code of the City of Ann Arbor, employees shall be paid a prescribed minimum level of compensation (i.e. Living Wage) for the time those employees perform work on the contract in conformance with section 1:815 of Chapter 23 of Title I of the Code of the City of Ann Arbor.

At the request of the city, any contractor or subcontractor shall provide satisfactory proof of compliance with this provision.

The Contractor agrees:

(a) To pay each of its employees whose wage level is required to comply with federal, state or local prevailing wage law, for work covered or funded by this contract with the City,

(b) To require each subcontractor performing work covered or funded by this contract with the City to pay each of its employees the applicable prescribed wage level under the conditions stated in subsection (a) or (b) above.

(c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.

(d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services in accordance with the terms of the wage and employment provisions of the Chapter 14 of the Ann Arbor City Code. The undersigned certifies that he/she has read and is familiar with the terms of Section 1:320 of Chapter 14 of the Ann Arbor City Code and by executing this Declaration of Compliance obligates his/her employer and any subcontractor employed by it to perform work on the contract to the wage and employment requirements stated herein. The undersigned further acknowledges and agrees that if it is found to be in violation of the wage and employment requirements of Section 1:320 of the Chapter 14 of the Ann Arbor City Code it shall has be deemed a material breach of the terms of the contract and grounds for termination of same by the City.

_____
Company Name

_____
Signature of Authorized Representative Date

_____
Print Name and Title

_____
Address, City, State, Zip

_____
Phone/Email address

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500

9/25/15 Rev 0 PW

ATTACHMENT E

LIVING WAGE ORDINANCE DECLARATION OF COMPLIANCE

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that an employer who is (a) a contractor providing services to or for the City for a value greater than $10,000 for any twelve-month contract term, or (b) a recipient of federal, state, or local grant funding administered by the City for a value greater than $10,000, or (c) a recipient of financial assistance awarded by the City for a value greater than $10,000, shall pay its employees a prescribed minimum level of compensation (i.e., Living Wage) for the time those employees perform work on the contract or in connection with the grant or financial assistance. The Living Wage must be paid to these employees for the length of the contract/program.

Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from compliance with the Living Wage Ordinance. If this exemption applies to your company/non-profit agency please check here [___] *No. of employees__*

The Contractor or Grantee agrees:

(a) To pay each of its employees whose wage level is not required to comply with federal, state or local prevailing wage law, for work covered or funded by a contract with or grant from the City, no less than the Living Wage. The current Living Wage is defined as $15.90/hour for those employers that provide employee health care (as defined in the Ordinance at Section 1:815 Sec. 1 (a)), or no less than $17.73/hour for those employers that do not provide health care. The Contractor or Grantor understands that the Living Wage is adjusted and established annually on April 30 in accordance with the Ordinance and covered employers shall be required to pay the adjusted amount thereafter to be in compliance with Section 1:815(3).

Check the applicable box below which applies to your workforce

[___] Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage without health benefits

[___] Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage with health benefits

(b) To post a notice approved by the City regarding the applicability of the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.

(c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.

(d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.

(e) To take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee covered by the Living Wage Ordinance or any person contracted for employment and covered by the Living Wage Ordinance in order to pay the living wage required by the Living Wage Ordinance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services or agrees to accept financial assistance in accordance with the terms of the Living Wage Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Living Wage Ordinance, obligates the Employer/Grantee to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract or grant of financial assistance.

_____	_____
Company Name	Street Address
_____ _____	_____
Signature of Authorized Representative Date	City, State, Zip
_____	_____
Print Name and Title	Phone/Email address

City of Ann Arbor Procurement Office, 734/794-6500, procurement@a2gov.org Rev. 3/7/23

Attachment F

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2023 - ENDING APRIL 29, 2024

$15.90 per hour
If the employer provides health care benefits*

$17.73 per hour
If the employer does **NOT** provide health care benefits*

Employers providing services to or for the City of Ann Arbor or recipients of grants or financial assistance from the City of Ann Arbor for a value of more than $10,000 in a twelve-month period of time must pay those employees performing work on a City of Ann Arbor contract or grant, the above living wage.

ENFORCEMENT

The City of Ann Arbor may recover back wages either administratively or through court action for the employees that have been underpaid in violation of the law. Persons denied payment of the living wage have the right to bring a civil action for damages in addition to any action taken by the City.

Violation of this Ordinance is punishable by fines of not more than $500/violation plus costs, with each day being considered a separate violation. Additionally, the City of Ann Arbor has the right to modify, terminate, cancel or suspend a contract in the event of a violation of the Ordinance.

* Health Care benefits include those paid for by the employer or making an employer contribution toward the purchase of health care. The employee contribution must not exceed $.50 an hour for an average work week; and the employer cost or contribution must equal no less than $1/hr for the average work week.

The Law Requires Employers to Display This Poster Where Employees Can Readily See It.

For Additional Information or to File a Complaint contact
Colin Spencer at 734/794-6500 or cspencer@a2gov.org

Revised 2/1/2023
2

ATTACHEMENT G

Vendor Conflict of Interest Disclosure Form

All vendors interested in conducting business with the City of Ann Arbor must complete and return the Vendor Conflict of Interest Disclosure Form in order to be eligible to be awarded a contract. Please note that all vendors are subject to comply with the City of Ann Arbor's conflict of interest policies as stated within the certification section below.

If a vendor has a relationship with a City of Ann Arbor official or employee, an immediate family member of a City of Ann Arbor official or employee, the vendor shall disclose the information required below.

1. No City official or employee or City employee's immediate family member has an ownership interest in vendor's company or is deriving personal financial gain from this contract.
2. No retired or separated City official or employee who has been retired or separated from the City for less than one (1) year has an ownership interest in vendor's Company.
3. No City employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any City employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

Conflict of Interest Disclosure*	
Name of City of Ann Arbor employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	( ) Relationship to employee ( ) Interest in vendor's company ( ) Other (please describe in box below)

*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the City, vendor will be exempt from doing business with the City.

I certify that this Conflict of Interest Disclosure has been examined by me and that its contents are true and correct to my knowledge and belief and I have the authority to so certify on behalf of the Vendor by my signature below:		
Vendor Name		**Vendor Phone Number**
Signature of Vendor Authorized Representative	**Date**	**Printed Name of Vendor Authorized Representative**

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500, procurement@a2gov.org

COI – Ver. 1 – 6/9/16

ATTACHMENT H

DECLARATION OF COMPLIANCE

Non-Discrimination Ordinance

The "non discrimination by city contractors" provision of the City of Ann Arbor Non-Discrimination Ordinance (Ann Arbor City Code Chapter 112, Section 9:158) requires all contractors proposing to do business with the City to treat employees in a manner which provides equal employment opportunity and does not discriminate against any of their employees, any City employee working with them, or any applicant for employment on the basis of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight. It also requires that the contractors include a similar provision in all subcontracts that they execute for City work or programs.

In addition the City Non-Discrimination Ordinance requires that all contractors proposing to do business with the City of Ann Arbor must satisfy the contract compliance administrative policy adopted by the City Administrator. A copy of that policy may be obtained from the Purchasing Manager

The Contractor agrees:

(a) To comply with the terms of the City of Ann Arbor's Non-Discrimination Ordinance and contract compliance administrative policy, including but not limited to an acceptable affirmative action program if applicable.

(b) To post the City of Ann Arbor's Non-Discrimination Ordinance Notice in every work place or other location in which employees or other persons are contracted to provide services under a contract with the City.

(c) To provide documentation within the specified time frame in connection with any workforce verification, compliance review or complaint investigation.

(d) To permit access to employees and work sites to City representatives for the purposes of monitoring compliance, or investigating complaints of non-compliance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services in accordance with the terms of the Ann Arbor Non-Discrimination Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Non-Discrimination Ordinance, obligates the Contractor to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract.

_____
Company Name

_____
Signature of Authorized Representative Date

_____
Print Name and Title

_____
Address, City, State, Zip

_____
Phone/Email Address

Questions about the Notice or the City Administrative Policy, Please contact:
Procurement Office of the City of Ann Arbor
(734) 794-6500

ATTACHMENT I

CITY OF ANN ARBOR NON-DISCRIMINATION ORDINANCE

Relevant provisions of Chapter 112, Nondiscrimination, of the Ann Arbor City Code are included below.
You can review the entire ordinance at www.a2gov.org/humanrights.

Intent: It is the intent of the city that no individual be denied equal protection of the laws; nor shall any individual be denied the enjoyment of his or her civil or political rights or be discriminated against because of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight.

Discriminatory Employment Practices: No person shall discriminate in the hire, employment, compensation, work classifications, conditions or terms, promotion or demotion, or termination of employment of any individual. No person shall discriminate in limiting membership, conditions of membership or termination of membership in any labor union or apprenticeship program.

Discriminatory Effects: No person shall adopt, enforce or employ any policy or requirement which has the effect of creating unequal opportunities according to actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight for an individual to obtain housing, employment or public accommodation, except for a bona fide business necessity. Such a necessity does not arise due to a mere inconvenience or because of suspected objection to such a person by neighbors, customers or other persons.

Nondiscrimination by City Contractors: All contractors proposing to do business with the City of Ann Arbor shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All city contractors shall ensure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate inequality based upon any classification protected by this chapter. All contractors shall agree not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of any applicable protected classification. All contractors shall be required to post a copy of Ann Arbor's Non-Discrimination Ordinance at all work locations where its employees provide services under a contract with the city.

Complaint Procedure: If any individual believes there has been a violation of this chapter, he/she may file a complaint with the City's Human Rights Commission. The complaint must be filed within 180 calendar days from the date of the individual's knowledge of the allegedly discriminatory action or 180 calendar days from the date when the individual should have known of the allegedly discriminatory action. A complaint that is not filed within this timeframe cannot be considered by the Human Rights Commission. To file a complaint, first complete the complaint form, which is available at www.a2gov.org/humanrights. Then submit it to the Human Rights Commission by e-mail (hrc@a2gov.org), by mail (Ann Arbor Human Rights Commission, PO Box 8647, Ann Arbor, MI 48107), or in person (City Clerk's Office). For further information, please call the commission at 734-794-6141 or e-mail the commission at hrc@a2gov.org.

Private Actions For Damages or Injunctive Relief: To the extent allowed by law, an individual who is the victim of discriminatory action in violation of this chapter may bring a civil action for appropriate injunctive relief or damages or both against the person(s) who acted in violation of this chapter.

THIS IS AN OFFICIAL GOVERNMENT NOTICE AND
MUST BE DISPLAYED WHERE EMPLOYEES CAN READILY SEE IT.

2017 Rev. 0

Michigan Department
Of Transportation
CP-347 (04/10)

MICHIGAN DEPARTMENT OF TRANSPORTATION
CERTIFIED PAYROLL
COMPLETION OF CERTIFIED PAYROLL FORM FULFILLS THE MINIMUM MDOT PREVAILING WAGE REQUIREMENTS

(1) NAME OF CONTRACTOR / SUBCONTRACTOR (CIRCLE ONE) (2) ADDRESS

(3) PAYROLL NO. (4) FOR WEEK ENDING (5) PROJECT AND LOCATION (6) CONTRACT ID

(a) EMPLOYEE INFORMATION	(b) WORK CLASSIFICATION	(c) Hour Type	(d) DAY AND DATE — HOURS WORKED ON PROJECT	(e) TOTAL HOURS ON PROJECT	(f) PROJECT RATE OF PAY	(g) PROJECT RATE OF FRINGE PAY	(h) GROSS PROJECT EARNED / GROSS WEEKLY EARNED	(i) TOTAL WEEKLY HOURS WORKED ALL JOBS	(j) DEDUCTIONS: FICA	FEDERAL	STATE		OTHER	TOTAL DEDUCT	(k) TOTAL WEEKLY WAGES PAID FOR ALL JOBS
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											
NAME:				0			$0.00							$0.00	$0.00
ETH/GEN: ID #:	GROUP/CLASS #:	S		0											

Attachment I-2

Date _____

I, _____ _____
(Name of Signatory Party) (Title)

do hereby state:

(1) That I pay or supervise the payment of the persons employed by

_____ on the
(Contractor or Subcontractor)

_____; that during the payroll period commencing on the
(Building or Work)

_____ day of _____, _____, and ending the _____ day of _____, _____, all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said

_____ from the full
(Contractor or Subcontractor)

weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948, 63 Start. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145), and described below:

_____

_____

_____

_____

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

☐ – in addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

☐ – Each laborer or mechanic listed in the above referenced payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE	SIGNATURE

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.

STANDARD SPECIFICATIONS

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

Standard Specifications are available online:

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

DETAILED SPECIFICATIONS

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
PROJECT SCHEDULE AND PAYMENT

Description

Examination of Plans, Specifications, and Work Site

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

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

1. The Contractor shall begin the work of this project on **July 17, 2023**, and only upon receipt of the fully executed Contract and Notice to Proceed. Appropriate time extensions shall be granted if the Notice to Proceed is delayed beyond this date.

2. This Contract requires: storm sewer, road widening, road resurfacing, and sidewalk replacement along with turf establishment; and shall be substantially completed on or before: **November 10, 2023**.

3. The following workday, hour and other work restrictions are imposed by the City of Ann Arbor.

   Contractor operations shall be limited by local municipality work time, noise and dust ordinance:

   - Monday through Friday: 7:00 am – 8:00 p.m.
   - Saturday: 7:00 a.m.– 8:00 p.m.; Notice given to City of Ann Arbor no less than 48 hours and no more than 5 days
   - Sunday: Only with written approval from the City of Ann Arbor

   No work shall be performed during Holiday weekends as follows, unless approved by the City of Ann Arbor:

   - Memorial Day, from 3:00 p.m. Friday May 26, 2023, through 7:00 a.m. Tuesday May 30, 2023
   - Fourth of July, from 3:00 p.m. Monday July 3, 2023, through 7:00 a.m. Wednesday July 5, 2023
   - Labor Day, from 8:00 p.m. Friday September 1, 2023 through 7:00 a.m. Tuesday September 5, 2023

No work shall be performed during University of Michigan home football games:

- September 2, 2023
- September 9, 2023
- September 16, 2023
- September 23, 2023
- October 14, 2023
- November 4, 2023
- November 25, 2023

City Council approval is expected on or before **July 3, 2023**. The Contractor shall not begin the work without approval from the Project Engineer, and in no case before the receipt of the Notice to Proceed.

Contractor will be furnished with two (2) copies of the Contract, for his/her execution, before the aforementioned City Council meeting. The Contractor shall properly execute both copies of the Contract and return them, with the required Bonds and Insurance Certificate, to the City within **ten (10) days.**

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

Prior to the start of any construction, the Contractor shall submit a detailed schedule of work for the Engineer's review and approval. Work shall not be started until a schedule is approved in writing by the Engineer. The proposed schedule must fully comply with the scheduling requirements contained in this Detailed Specification. The Contractor shall update the approved work schedule upon request by the Engineer and present it to the Engineer within seven days of said request.

Failure to complete all work as specified herein within the times specified herein, including time extensions granted thereto as determined by the Engineer, shall entitle the City to deduct from the payments due the Contractor, **$1,500.00** in Liquidated Damages, and not as a penalty, for delays in the completion of the work for each and every calendar day beyond the times for each sub-phase, as required by this Detailed Specification.

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.

Working in the Dark

The Contractor shall not work in the dark except as approved by the Engineer and only when lighting for night work is provided as detailed elsewhere in this contract.

The Engineer may stop the work or may require the Contractor to defer certain work to another day if, in the Engineer's opinion, the work cannot be completed within the remaining daylight hours or if inadequate daylight is present to either properly perform or inspect the work.

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

The Contractor is solely responsible for repairing all damages to the work and to the site, including road infrastructures, road subgrades, and any adjacent properties, which are caused as a result of working in the dark.

Failure to complete all work as specified herein within the times specified herein, including time extensions granted thereto as determined by the Engineer, shall entitle the City to deduct Liquidated Damages from the payments due the Contractor, as stated in the contract.

Measurement and Payment

If the construction Contract is not completed within the specified calendar day period including any extensions of time granted thereto, at the sole discretion of the City of Ann Arbor, this Contract may be terminated with no additional compensation due to the Contractor, and the Contractor may be forbidden to bid on future City of Ann Arbor projects for a period of at least three (3) years. If the Engineer elects to terminate the Contract, Contract items paid for on a Lump Sum basis shall be paid up to a maximum percentage equal to the percentage of the Contract work that has been completed.

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
GENERAL CONDITIONS

General

This item shall include all work described and required by the Drawings and specifications for which the item of work "General Conditions" is listed, as well as items of work not listed in the Bid Form including, but not limited to:

1. Scheduling and organization of all work, subcontractors, suppliers, testing, inspection, surveying, and staking.

2. Coordination of, and cooperation with, other contractors, agencies, departments, and utilities.

3. Coordination with City forces to stockpile and load used castings on City vehicles.

4. Protection and maintenance of all existing utilities, including support, protection, capping, repair, replacement, connection or reconnection of existing pipelines, and utilities damaged by the Contractor's operations.

5. Placing, maintaining, and removing additional needed soil erosion and sedimentation controls that are not paid separately.

6. Maintaining the site, and all areas within the Construction Influence Area, in a well-graded and drained state at all times during the course of the project.

7. The continuous maintenance of the temporary road surface within the Construction Influence Area throughout the duration of the construction. This includes any needed grading to maintain the surface in a smooth condition free of potholes, ruts, bumps, or other objectionable conditions.

8. Temporary sheeting, bracing, and shoring of excavations in accordance with the applicable MIOSHA Standards

9. 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 and on sidewalks as directed by the Engineer.

10. Using quantities of dust palliative, maintenance aggregate, and hot patching mixture for use as temporary base, surfacing, and dust control at utility crossings, side roads and driveways.

11. Storing all materials and equipment off lawn areas.

12. Site clean-up on a daily basis during the course of the project's construction.

13. Coordination efforts to furnish various HMA mixtures as directed by the Engineer.

14. Coordination efforts to furnish and operate various-size vehicles/equipment as directed by the Engineer.

15. Dewatering and drainage of excavations as required to maintain a stable, open hole.

16. Disposing of excess excavated materials and debris (excluding debris material removed from cleaning operations).

17. Temporary fill as necessary for equipment access or protection of existing utilities during construction, including restoration to original grades.

18. Temporary removal/relocation, storage, and re-installation/re-setting of existing street name, guide, and regulatory signs, mailboxes, fences, landscape areas, etc. which conflict with the proposed construction, including all fasteners, hardware, and materials required for re-installation/re-setting.

19. Furnishing and operating vacuum-type street cleaning equipment a minimum of once per week or as frequently as directed by the Engineer in order to remove mud, soil, rocks, debris, or any other deleterious materials from paved areas.

20. Furnishing and operating vacuum-type utility structure cleaning equipment.

21. Furnishing and operating both vibratory plate and pneumatic-type (“pogo-stick”) compactors.

22. Furnishing and operating a backhoe during all work activities.

23. Furnishing and operating a jackhammer and air compressor during all work activities.

24. Noise and dust control in accordance with the applicable City of Ann Arbor Ordinances.

25. Mobilization(s) and demobilization(s).

26. Furnishing submittals and certifications for all materials and supplies.

27. Removal and disposal of shrubs, brush, stumps, and trees less than 6-inches in diameter as directed by the Engineer.

28. Trimming of trees to accommodate construction activities as directed by Engineer.

29. The proper off-site disposal of all excavated materials and debris. The Contractor shall dispose of, at the Contractor’s expense, all excavated material. Costs for this work will not be paid for separately.

30. Fencing to protect excavations over 1-foot in depth during non-work hours or as directed by the Engineer. The fencing must be a minimum of 36-inches high, be constructed of orange HDPE material, and reasonably secured to prevent unwanted access.

31. All miscellaneous and incidental items such as overhead, insurance, and permits.

32. Meeting all requirements relating to Debarment Certification, Davis Bacon Act, and Disadvantaged Business Enterprise, and providing the necessary documentation.

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 one 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:

Contract Item (Pay Item)	Pay Unit
General Conditions, Max $_____	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 Contract Documents and as included in this Detailed Specification.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
AUDIO-VISUAL RECORDING

Description

This work shall include providing a recording of the physical, structural, and aesthetic conditions of the construction site and adjacent areas as provided herein.

The audio-visual recording shall be:

1. Of professional quality, providing a clear and accurate audio and visual record of existing conditions.

2. Prepared during the three (3) week period immediately prior to the Preconstruction Meeting.

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 two (2) copies of the completed recording to the Engineer at, or prior to, the Preconstruction Meeting. An index of the recording, which will enable any area of the project to be easily found on the recording, shall be included. This includes indexing the files according to street and Station number as applicable. The Contractor shall retain a third copy of the recording for their own use.

Any portion of the recording determined by the Engineer to be unacceptable for the documentation of existing conditions shall be recorded again, at the Contractor's sole expense, and submitted to the Engineer prior to mobilizing onto the site.

Production

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

1. Format/No Editing

   The audio-visual recording shall be performed using equipment that allows audio and visual information to be recorded simultaneously and in color. The recording shall be provided on USB Drive. The quality of the recording shall be equal to or better than the standard in the industry. The recording shall not be edited.

2. Perspective/Speed/Pan/Zoom

   To ensure proper perspective, the distance from the ground to the camera lens shall not be less than 5-feet and the recording must proceed in the general direction of travel at a speed not to exceed 30-feet per minute (0.34 miles per hour). 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 and date stamp and digital annotation capabilities. The final copies of the recording 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 shall be included in the lower half of the frame in standard station format (i.e. 1+00). Below the stationing, periodic information is to be shown, including project name, name of area shown, direction of travel, viewing direction, etc.

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 recording route. Additional audio commentary shall be provided as necessary during the recording to describe streets, buildings, landmarks, and other details, which will enhance the record of existing conditions.

5. Visibility/Ground Cover

   The recording shall be performed during a time of good visibility. The recording shall not be performed during periods of precipitation or when snow, leaves, or other natural debris obstruct the area being recorded.

Coverage

The audio-visual recording coverage shall include the following:

1. General Criteria

   This general criteria shall apply to all recording 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 or through which they will be transported. The recording shall extend an additional 50-feet outside of all areas. The recording shall include all significant, existing man-made and natural features such as driveways, sidewalks, utility covers, utility markers, utility poles, other utility features, traffic signal structures and features, pubic signs, private signs, fences, landscaping, trees, shrubs, other vegetation, and other similar or significant features.

2. Private Property

   Record all private property that may be utilized by the Contractor in conjunction with this project. These project areas must be disclosed by the Contractor prior to using them for the work of this project.

3. Road Construction Area

   The recording coverage shall:

   a. Extend to 50 feet outside of the right-of-way and easements area as shown on the plans.
   b. Extend 50 feet outside the construction limits on all streets, including side streets.
   c. Include both sides of each street, with each side being recorded separately.

4. Other Areas

   The Contractor shall record, at their sole expense, other areas where, in their opinion, the establishment of a record of existing conditions is warranted. The Contractor shall notify the Engineer in writing of such areas.

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

Measurement and Payment

The completed work shall be paid for at the Contract unit price for the following Contract pay item:

Contract Item (Pay Item)	Pay Unit
Digital Audio-Visual Coverage	Lump Sum

Digital Audio-Visual Coverage shall include all labor, equipment, and materials required to perform the recording and to provide the finished recording the Engineer.

Payment will be made for "Digital Audio-Visual Coverage" following the review and acceptance of the recording by the Engineer. Within 21 days following the receipt of the recording, the Engineer will either accept it and authorize payment, or require that any discrepancies in the recording be addressed prior to making payment.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
PROJECT SUPERVISION

Description

The Contractor shall provide supervision in accordance with Subsection 104.07 of the Michigan Department of Transportation 2020 Standard Specifications for Construction, the City of Ann Arbor Public Services Department Standard Specifications, and as described herein.

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

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

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

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

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

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

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

Duties and Responsibilities

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

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

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

The Project Supervisor shall be responsible for proper and adequate maintenance (emissions, safety, and general operation) of all of the Contractor's, subcontractors' and suppliers' equipment and vehicles. The Project Supervisor shall make all needed diligent and good-faith efforts to ensure that all equipment utilized in the performance of the work is properly maintained, safe, and complies with all legal and environmental requirements of the work as set forth in Section 107.15 of the 2020 MDOT Standard Specifications.

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

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

The Project Supervisor shall coordinate and schedule the work of any independent survey crews that may be retained by the City to witness and reset existing and new geographic/benchmark monuments. Failure to have existing monuments witnessed and reset may result in delays to the Contractor's work. Costs for such delays will be the Contractor's sole responsibility. The Project Supervisor shall also schedule and complete all needed survey request forms that are needed in order to schedule the services of survey personnel to properly layout all elements of the project work in accordance with the City of Ann Arbor Public Services Area Standard Specifications and the Michigan Department of Transportation 2020 Standard Specifications for Construction.

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

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

The Project Supervisor shall submit to the Engineer, an updated, detailed schedule of the proposed work on a weekly basis, and an update of all proposed changes on a daily basis, all in accordance with the Detailed Specification for Project Schedule contained elsewhere herein.

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

Additional Performance Requirements

If, in the sole opinion of the Supervising Professional, the Project Supervisor is not adequately performing the duties as outlined in this Detailed Specification, the following system of notices will be given to the Contractor with the associated penalties:

- First Notice

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

- Second Notice

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

- Third Notice

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

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

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

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:

Contract Item (Pay Item)	Pay Unit
Project Supervision, Max $_____	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 City Standard Specifications and as modified by this Detailed Specification.

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

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

Description

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

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

General

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

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

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

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

Unbalanced Bidding

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

The Contract Completion date will not be extended as a result of the City's investigation of the as-bid amount for this item of work, even if the anticipated contract award date must be adjusted. The only exception will be if the Contractor adequately demonstrates that their costs were appropriate and justifiable. If so, the City will adjust the Contract completion date by the number of calendar days commensurate with the length of the investigation, if the published Notice to Proceed date of the work cannot be met. The Contract unit prices for all other items of work will not be adjusted regardless of an adjustment of the Contract completion date being made.

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:

Contract Item (Pay Item)	Pay Unit
Certified Payroll Compliance and Reporting	Lump Sum

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

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
ALLOWANCE FOR UNFORESEEN SITE CONDITIONS

Description

Allowance for unforeseen site conditions shall be paid under existing contract items where applicable, or under new item(s) at a negotiated price for work necessary for the completion of the project, but not expressly identified in the contract documents. Price paid shall be payment in full for all labor, material, and equipment required for remedying unforeseen physical conditions and shall be based upon an agreement negotiated and approved prior to beginning this Work.

Measurement and Payment

The completed work, as described, will be measured and paid for at the approved price for the following pay item:

Contract Item (Pay Item)	Pay Unit
Allowance for Unforeseen Site Conditions	Dollar

The approved price for this item shall include all labor, material, and equipment costs required to complete the work.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
COORDINATION AND COOPERATION WITH OTHERS
AND
WORK BY OTHERS

Description

The Contractor is reminded as to the requirements of Article 104.08 of the 2020 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, and others not listed specifically, may have overhead and/or underground facilities located within the Right-of-Way/Public Easements:

- The City of Ann Arbor
- University of Michigan (UM)
- Michigan Department of Transportation (MDOT)
- AT&T
- Comcast
- DTE Energy - Detroit Edison Company (Edison)
- DTE Energy - Michigan Consolidated Gas Company (Michcon)
- Fiber Link Inc.
- Light Core (Century Tel)
- MCI Communications
- Windstream Communications

On all projects:

“Three (3) Working Days before you Dig - Call MISS DIG - Toll Free” Phone No. 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, Max $_____”.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
GENERAL CONSTRUCTION NOTES

Description

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

1. All work shall conform to latest revision of the City Standard Specifications.

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

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

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

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

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
PROTECTION OF UTILITIES

Description

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, Max $_____”.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
QUANTITIES AND UNIT PRICES

Contract Drawings / Plans

Bidders shall carefully check and review all Drawings, plans, and specifications, 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.

Bidders shall carefully examine the Bid Form, preliminary layouts, specifications, and the work sites until the Bidder is satisfied as to all local conditions affecting the contract and the detailed requirements of construction. The submission of the bid shall be considered prima facie evidence that the Bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and all requirements of the contract.

Quantities and Unit Prices

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
MATERIALS AND SUPPLIES CERTIFICATIONS

Description

The following materials and supplies shall be certified by the manufacturer or supplier as having been tested for compliance with the Specifications:

- HMA Materials
- Hot-Poured Joint Sealants
- Cements, Coatings, Admixtures and Curing Materials
- Sands and Aggregates
- Steel and Fabricated Metal
- Portland Cement Concrete Mixtures
- Reinforcing Steel for Concrete
- Reinforcing Fibers for Concrete
- Pre-Cast Concrete Products
- Sanitary Sewer Pipe
- Storm Sewer Pipe
- Water Main Pipe
- Corrugated Metal Pipe
- High Density Polyethylene Pipe
- Edge Drain and Underdrain Pipe
- Retaining Wall Materials
- Seed Mixes
- 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, Max $_____”.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
SOIL BORING, PAVEMENT SECTION AND GEOTECHNICAL DATA

Description

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.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
VACUUM TYPE STREET AND UTILITY CLEANING EQUIPMENT

Description

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 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.

The Vac-all or similar equipment shall be approved by the Engineer prior to beginning the work. The equipment used shall have an effective means for preventing any dust resulting from the operation from escaping into the air.

Costs for this work will not be paid for separately but shall be included in the bid price of the Contract Item “General Conditions, Max $_____”.

CITY OF ANN ARBOR

SPECIAL PROVISION
FOR
CONDUIT, DIRECTIONAL BORE

AA:NJB 1 of 2 4/26/23

Description.

This work consists of furnishing and installing underground conduit, in accordance with sections 819 and 820 of the 2020 MDOT Standard Specifications for Construction, and additional requirements as specified herein.

Materials.

Furnish and install underground conduit as specified in the Plans. All conduit installed shall have tracer wire and pull string installed.

1. All conduit used on this project shall be a minimum of Schedule 80.

2. Tracer wire for directional boring installation shall be a 10 AWG solid, PRO-TRACE HDD-CCS PE45, by Pro-line Safety Products Company, or an approved equal. Conductor shall be hard-drawn, 21% IACS, copper clad steel, utilizing an AISI 1065 high carbon steel core (required to meet break load), with rated break load of 1,940 lbs (238,000 psi). Conductor shall be extruded with a 45 mil, high-density, high molecular weight polyethylene (HMW-HDPE) pursuant to ASTM D1248 standard. The color of tracer wire outside jacket shall be orange. Ensure wire connectors are 3M DBR, IDEAL UnderGround, or approved equal, and are watertight to provide electrical continuity.

3. Pull tape shall be a polyester tape providing at a minimum 1250 lb of tensile strength, flat with printed foot markings, pre-lubricated for reduced pulling tension at start of cable pull, and moisture resistant.

Construction.

1. Conduit shall be installed at a typical depth of 36 inches below finished grade. The Contractor may reroute proposed conduit and/or adjust proposed conduit depth to a minimum of 18 inches from grade when proposed conduit installation is near and/or in conflict with an existing underground utility line and as directed by the Engineer. The conduit depth shall be adjusted only in the area of the conflict.

2. Conduit shall enter new rectangular handholes from the bottom of handhole using sweep bend pipes, unless reviewed and approved by the Engineer. Furnish and install Bell Ends on all conduit ends in handholes and signal cabinets.

3. Conduit shall enter new round handholes from wall knock-outs. Mortar around the area where conduits enter handhole wall to seal the connection.

4. All new conduit installed and all existing conduit used under this Contract shall be blown and/or rodded clean to the satisfaction of the Engineer prior to the installation of any cable or wire in that conduit.

5. All conduit installed by use of directional boring shall include the installation of a tracer wire. The conduit tracer wire shall be pulled with, but not in, the bored conduit. For more than one conduit being installed in a single bore, only one conduit tracer wire shall be required.

6. Ensure the tracer wire is accessed/connectorized from each handhole. The tracer wire shall be continuous and unspliced between handholes. Coil and secure 6 feet tracer wire slack at each head end of tracer wire.

7. Perform a continuity test on all tracer wire. If the tracer wire is found to be not continuous after testing, repair or replace the failed segment of the wire. Perform the test using a transmitter and tracer provided by the City of Ann Arbor, or approved equal. Arrange for the test to be witnessed by the Engineer / Signs and Signals.

8. Install pull tape, by hand pulling, blowing, or via vacuum method into each new conduit during conduit installation. Install and secure 6 feet of slacked pull tape in each handhole.

Measurement and Payment.

The completed item will be measured and paid for at the contract unit price using the following pay item:

Pay Item	**Pay Unit**
Conduit, Schedule 80, __ inch	Foot
Cable, Sec, 600 V, 3- ___#	Foot

Conduit, Schedule 80, __ inch includes the cost of installing the type, number, and size of direct bored conduit shown on the plans, and furnishing and installing sweep bend pipe, bell end, tracer wire, pull tape, round handhole wall knock-outs and mortar as specified herein.

Cable, Sec, 600 V, 3- ___# includes the cost of installing the type, number, and size of cable within the conduit, as specified herein.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
MAINTENANCE OF TRAFFIC

Description

Traffic shall be maintained in accordance with the City of Ann Arbor Public Services Department Standard Specifications and as specified in Sections 104.11, 812, and 922 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, the 2011 Michigan Manual of Uniform Traffic Control Devices (MMUTCD), and as described herein.

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

Materials

The materials and equipment shall meet the requirements specified in the corresponding sections of the MDOT 2020 Standard Specifications for Construction and the 2011 MMUTCD.

Maintenance of Local Traffic

Unless otherwise indicated on the plans, all side roads shall not be closed to through traffic except during construction operations of short duration and only upon written approval of the Engineer.

Local access shall be maintained at all times for emergency vehicles, refuse pick-up, mail delivery, school buses, and ingress/egress to public and private properties.

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

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

At times, when it becomes necessary to temporarily obstruct local traffic during the performance of the work, the Contractor shall provide traffic regulator control in conformance with Chapter 6E of the MMUTCD, Sections 6E.01 thru 6E.08. A minimum of two traffic regulators are required. The cost of traffic regulator control shall be included in the contract pay item "Minor Traffic Control, Max $_____".

The Contractor shall use quantities of dust palliative, maintenance aggregate, and cold patching/HMA mixtures for use as temporary base, surfacing, and dust control at utility crossings, side roads and driveways (wherever required to maintain traffic), and where directed by the Engineer to maintain local access. The cost for the use of dust palliative, maintenance aggregate, cold patch and/or hot mix asphalt _EL mixture, as required and directed by the Engineer for maintenance of traffic and local access, shall be included in Contract pay item "General Conditions, Max $_____", and it will not be paid for separately.

The work of maintaining and relocating existing warning, regulatory and/or guide signs; and of removing, salvaging, and reinstalling existing signs and supports is included in the bid price for the contract pay item "Minor Traffic Control, Max $_____".

Mailboxes and newspaper boxes that are in the way of the construction shall be removed and reset immediately in a temporary location approved by the Engineer. Mail and paper delivery shall not be interrupted during the construction. Upon completion of the construction, all mailboxes and newspaper boxes, including their supports, shall be repositioned in their permanent locations as approved by the Engineer. This work shall be included the contract unit price for the contract pay item "General Conditions, Max $_____", and it will not be paid for separately.

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

Each pressure distributor, paver and roller shall be equipped with at least one approved flasher light which shall be mounted on the equipment so as to give a warning signal ahead and behind.

Construction Influence Area (CIA) - The CIA shall include the proposed work areas within the right-of-way of the four proposed construction locations. The CIA shall include the affected portions of the driveways along and contiguous with these roadways.

In addition, the CIA shall include the rights-of-way of all roadway segments used for detours and all locations that contain advance warning and/or regulatory signs, pavement markings, plastic drums, traffic delineators, and all other project related traffic maintenance items.

Police and Fire - The Contractor shall notify local police, fire departments and emergency response units a minimum of three business days (72 hours) prior to the closure of any roads, or traffic shifts causing restricted movements of traffic or restricted access.

Work performed by City of Ann Arbor Signs and Signals Unit - No additional or extra compensation will be paid for any delays caused by City of Ann Arbor Signs and Signals.

Signal Modifications

Signal timing and phasing modifications are not anticipated for construction at this time. This shall be evaluated and if the need arises, the Contractor shall coordinate work with the City ahead of any decided changes in the traffic control.

Sign Removals and Storage

The Contractor shall remove and store the signs as shown on the plans and as directed by the Engineer. After construction is complete, but before opening any roadway to traffic, Signs and Signals will reinstall all signs in their proper, permanent location. To coordinate sign removal and installation/reinstallation, the Contractor shall notify the Signs and Signals Unit at least five (5) working days (Monday-Friday) in advance of when the sign work will need to be completed. It is the responsibility of the Contractor to ensure that City of Ann Arbor Signs and Signals Unit is scheduled, kept apprised of the progress of construction, and notified a second time immediately (4 working hours) prior to the need to complete the sign work. The installation/reinstallation of all signs shall be completed by the City of Ann Arbor Signs and Signals Unit.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
MINOR TRAFFIC CONTROL

Description

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

- Furnishing and operating of miscellaneous signs, warning devices, traffic regulators, flags, paddles, and cones;
- Operating of traffic control signs and barricades paid for separately;
- Operating of additional signs furnished by the City;
- Furnishing and installing meter bags;
- Coordinating with the City to have meter heads removed and reinstalled;
- Maintaining pedestrian traffic;
- Temporarily covering traffic controls;
- Temporarily covering existing signs as directed;
- Any and all other miscellaneous and/or incidental items which are necessary to properly perform the work.

This work shall consist of protecting and maintaining vehicular and pedestrian traffic, in accordance with Sections 104.11 and 812 of the of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction; Part 6 of the 2011 Edition of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD); and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

Materials, Equipment, and Construction Methods

Materials and equipment shall meet the requirements specified in the above designated sections of the MDOT 2020 Standard Specifications for Construction.

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

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

All existing signs, and signs erected by the City of Ann Arbor on this project shall be preserved, protected, and maintained by the Contractor. Existing City owned signs which are damaged by the Contractor during the work will be repaired by the City at the Contractor's expense.

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

The Contractor shall obtain a Traffic Detour or Lane Closure Permit from the City's Public Services – Engineering Unit, at least 48-hours in advance of any proposed lane or street closing. No lane closures shall be permitted July 4, and during the Labor Day and Memorial Day weekends.

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 re-opened to through traffic by 8:00 p.m. unless otherwise specified, directed, or authorized in writing by the Engineer. All major changes in traffic control shall be made either between 9:30 a.m. and 3:30 p.m. or between 7:00 p.m. and 6:30 a.m. to minimize interference with rush-hour traffic. All traffic controls must be in-place and ready for traffic each day by 6:30 a.m. and 3:30 p.m.

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

The Contractor shall 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, its subcontractors or material suppliers, the traffic control devices shall be replaced at the Contractor's expense.

The work for Minor Traffic Control shall include: furnishing and operating of miscellaneous signs and warning devices not paid for separately; operating and moving to multiple project locations of traffic control signs and barricades that are paid for separately; furnishing and operating cones; operating additional signs furnished by the City throughout the life of the Contract; operating pedestrian traffic control devices; maintaining a safe trench during all non-working hours; maintaining access to all drives; covering conflicting existing signs and removal of these covers; moving the traffic control removal of any and all traffic control devices utilized on the project upon completion of the work, and any and all other miscellaneous and/or incidental items which are necessary to properly perform the work.

The Contractor shall maintain vehicular and pedestrian traffic during the work by the use of traffic regulators, channelizing devices, and signs as necessary, as directed by the Engineer, and in accordance with 2011 Edition of the MMUTCD.

Traffic control devices meeting current MDOT and MMUTCD specifications shall be used on this project.

Sufficient signs shall be placed by the contractor to ensure the safety of the workers and the general public in accordance with the current MMUTCD.

Measurement and Payment

Minor Traffic Control will be paid for on a pro rata basis with each progress payment. Measurement will be based on the ratio between work completed during the payment period and the total contract amount. When all the work of this Contract has been completed, the measurement of this item shall be 1.0 Lump Sum.

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

Contract Item (Pay Item)	Pay Unit
Minor Traffic Control, Max $_____	Lump Sum

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
TRAFFIC CONTROL SIGNS AND BARRICADES

Description

This work shall consist of furnishing the traffic control devices for protecting and maintaining vehicular and pedestrian traffic as shown on the Plans and as directed by the Engineer in accordance with Sections 140.11, 812, and 922 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction; Part 6 of the 2011 Edition of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD); and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

Materials

Materials shall meet the requirements specified in the above designated sections of the MDOT 2020 Standard Specifications for Construction and be furnished as directed by the Engineer.

The City will furnish "No Parking" signs to the Contractor at no cost. The Contractor shall furnish the sign support and mounting hardware materials, which materials shall be in accordance with those specified in Section 919 of the MDOT 2020 Standard Specifications for Construction.

Construction Methods

Pedestrian barricades shall extend the full width of the sidewalk; be orange or white in color, with orange and white reflective sheeting; and be fully ADA compliant.

Type I and Type III Barricades shall have standard orange-and-white stripes on both sides of the barricade. Lighted plastic drums shall be sufficiently ballasted to minimize tipping.

"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’s Public Services – Engineering Unit (at no cost to the contractor). This permit shall be obtained a minimum of five (5) business days prior to the posting of “No Parking” signs.

The Contractor shall securely bolt the signs to the sign supports as directed by the Engineer. The Contractor shall imbed the sign supports at least 2-feet into the ground, and there shall be a minimum of 6-feet and maximum of 7-feet of clearance maintained between the bottom of the sign and the ground. The signs are to be placed at intervals no more than 75 feet, and 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 covered by the Contractor, thereby allowing on-street parking, until between 48 and 24 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. To maintain areas of on-street parking available for residents, the Engineer may direct the contractor to cover and uncover temporary “No Parking” signs within the project limits multiple times throughout the course of the project. Such repeated covering and uncovering of signs shall be included in this item of work and shall not be paid for separately.

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

Measurement and Payment

All temporary traffic 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 temporary traffic control devices shall be included in the bid prices for the individual items of work.

For Type III Barricades, Channelizing Devices, Plastic Drums, Portable Changeable Message Signs, and Sidewalk Barricades payment shall be for the maximum quantity used at each project location at any one time.

For Temporary Type B Signs, payment shall be for the quantity used at each project location.

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

Contract Item (Pay Item)	Pay Unit
Lighted Arrow Board	Each
Sign, Portable Changeable Message	Each
“No Parking” signs	Each
Pedestrian Type II Barricade, Temp	Each
Temporary Pedestrian Ramp	Each
Temporary Pedestrian Mat	Each
Barricade Type III - Lighted	Each
Temporary Sign, Type B	Sq Ft
Temporary Sign, Type B, Special	Sq Ft
Plastic Drum - Lighted	Each
Channeling Device, 42 inch	Each

The unit price for this item of work shall include all labor, material, and equipment costs to furnish and one-time set up (per location) as specified in the MDOT and City Standard Specifications for Construction, and as modified by this Detailed Specification. Additional operation of these items is to be included in “Minor Traffic Control, Max $____”.

The item “No Parking” Signs will be measured as the maximum number of signs installed on the project at any one-time. The unit price includes 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.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
PROTECTIVE FENCING

Description

This work shall consist of taking all reasonable measures to protect all existing trees and vegetation designated to remain and be protected within the project limits, the construction influence area, and as directed by the Engineer, in accordance with Sections 201.03.A.2 and Section 808 of the Michigan Department of Transportation 2020 Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein. The work shall also consist of installing protective fencing at the limits of the construction area as shown on the plans or in areas directed by the Engineer.

Materials

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

Means and Methods of Protection

Install protective fence at the limits of the construction area as shown on the plans or as directed by the Engineer.

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

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

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

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

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

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

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

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

Remove tree protection fence when directed by the Engineer.

Measurement and Payment

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

Contract Item (Pay Item)	Pay Unit
Protective Fencing	Foot

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
TREE REMOVAL

Description

This work shall consist of removing existing trees where indicated on the Plans, and as directed by the Engineer. This work shall include cutting and removing trees, their stumps, and roots from the ground, and disposing of all removed materials. All materials needed to accomplish this work are included in this pay item. All work shall be done in accordance with the City of Ann Arbor Public Services Department Standard Specifications, Section 202 of the Michigan Department of Transportation (MDOT) Standard Specifications for Construction (2020 edition) and as directed by the Engineer.

Tree removal on private property within easements shall be performed by the Contractor. The limits of tree removal shall be as directed by the Engineer. The Contractor must clearly mark the trees for removal at least one (1) week prior to the date of their intended removal.

Following the marking of the trees, the Contractor shall schedule a walkthrough with the Engineer, City of Ann Arbor Urban Forestry Coordinator, City of Ann Arbor Forester, and City of Ann Arbor Natural Area Preservation Deputy Manager to review all proposed tree removals.

The removal and disposal of trees greater than 6-inches in diameter shall be paid for as indicated below. The cutting, removal, and disposal of trees less than 6-inches in diameter, bushes, brush, or the trimming of trees will not be paid for separately and shall in included in the item of work “General Conditions Max $____”. Trees greater than 6-inches in diameter that are fallen across the work area and must be removed to permit work shall be paid for under the applicable “Tree Removal _ inch” pay item.

Construction Methods

The Construction Methods shall meet all requirements of the City of Ann Arbor Standard Specifications and MDOT Standard Specifications for Construction (2020 edition). As required, remove and dispose of trees with a diameter of at least 6 inches. Stumps shall be removed using a stump grinder to a depth of at least 8-inches below final grade. Prior to all tree removal, coordinate the required tree inspection walkthrough.

Where trees are identified for monitoring during the removal review walkthrough, do not remove the trees until adjacent sewer trenches are excavated and inspected by the City Forester for roots and health of tree. As determined by the Urban Forestry Coordinator, some trees indicated on the Plans for removal may be saved and left in place. Coordination with the Urban Forestry Coordinator, Forester and Engineer to determine if a tree is removed or not will not constitute an extension of time if the work is delayed. This work shall not be paid for separately and shall be included in the item of work “General Conditions”.

Removal

Cut and fell trees in a manner so as not to damage surrounding areas, overhead utilities, fences, features, and adjacent trees designated to remain. Grub and remove stumps and roots. Backfill all resulting holes or excavations with Engineer approved material and dispose of all debris before ending the day's work.

Burning of any removed materials is strictly prohibited.

All trees removed as part of the work completed for this project shall be removed from the property unless otherwise requested by the City, or private property Owner. All wood requested by the City or the respective property Owner shall be cut into logs approximately 10-feet in length and placed at a location onsite as designated by the Engineer.

Measurement and Payment

This item shall be measured per tree removed and paid for on the basis of unit price each. The tree size will be determined by the average diameter of the tree trunk, measured to the nearest full inch, at a point 4.5-feet above the base of the tree at the ground line. Trees having major limbs lower than 4.5-feet from the ground shall be measured at the smallest diameter below such limbs. Where more than one (1) tree has grown from a common stump, each tree shall be measured as a separate tree. Dead trees fallen across the work area shall be paid for under the tree removal pay item based on their size.

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

Contract Item (Pay Item)	Pay Unit
Tree Removal, 6-inch to 12-inch	Each
Tree Removal, 13-inch to 24-inch	Each
Tree Removal, greater than 24-inch	Each

The items of work listed above shall be paid for by the number of trees actually removed. The unit price for these items of work shall include all labor, material, and equipment costs to perform the work as detailed herein.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
EXPLORATORY EXCAVATION

Description

The use of this Detailed Specification is to compensate the Contractor to locate underground infrastructure, such as culverts, sewers, utilities, and/or to expose the existing pavement section. Use must only be as directed and approved by the Engineer. This Detailed Specification is not to compensate the Contractor for the responsibilities in subsection 107.12 of the 2020 MDOT Standard Specifications for Construction.

This work consists of conducting a vertical exploratory investigation to expose an existing culvert, sewer, utility/utility service, or the existing pavement section in order to verify the location, condition, size, material, alignment and/or composition; allowing the Engineer to document the necessary information; and backfilling the excavation. It includes providing necessary lane, shoulder and/or sidewalk closures required to perform the work.

The intent of “Exploratory Excavation” is not to provide a means for the Contractor to locate each existing utility throughout the project, but for those that appear to be in conflict with the proposed work and their location is unclear or unknown. The Contractor is responsible for “using reasonable care to establish the precise location of the underground facilities in advance of construction” (Public Act 174 of 2013 - Miss Dig Law) as a part of the overall project contract.

Materials

Granular Material Class II ..... Section 902

Construction

The owner of any sewer or utility to be exposed will not take the facilities out of service during the exploratory investigation. Contact utility owners in accordance with subsection 107.12 of the 2020 MDOT Standard Specifications for Construction.

Establish necessary lane, shoulder and/or sidewalk closures required to perform work. Advance the exploratory excavation using vacuum excavation, hand digging, conventional machine excavation, or a combination thereof subject to approval of the Engineer. Allow the Engineer access to document the necessary information. If the technique used to advance the excavation causes any damage to the existing facilities, immediately contact the utility owner and cease all work until Engineer approves of an alternate method.

Take care to protect the exposed culvert, sewer, or utility from damage during construction. Repair or replace culvert, sewer or utility, damaged during exploratory excavation, in accordance with the standard specifications and as approved by the Engineer.

Obtain the Engineer's approval before backfilling the excavation. Complete backfilling no later than 24 hours after approval. Backfill in accordance with subsection 204.03.C of the 2020 MDOT Standard Specifications for Construction. Dispose of excess material in accordance with the standard specifications.

The Contractor is responsible for all costs associated with the repair work and out of service time

of all broken or damaged existing culverts, sewers or utilities resulting from any action by the Contractor. If the exploratory investigation results in damage to utilities, contact the owner of such utility to coordinate the repair.

Backfill excavation with compacted Granular Material Class II. Use material removed during exploratory investigation for backfill only if approved by of the Engineer

Measurement and Payment

The completed work, as described, will be measured and paid for at the approved price for the following pay item:

Contract Item (Pay Item)	Pay Unit
Exploratory Excavation (0-10' deep)	Each

The approved price for this item shall include all labor, material, and equipment costs required to complete the work, including all costs associated with repair or replacement resulting from the Contractor's activities.

Exploratory Excavation, (0-10' deep) will be paid for per each excavation a maximum of 10-feet deep for a 4-foot maximum diameter hole, or as approved by the Engineer. Measure and pay for each 4-foot maximum diameter hole separately. One paid excavation may include multiple utility verifications if the utilities are close in proximity.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
SEWER REMOVAL AND ABANDONMENT

Description

This work shall include removal and abandonment of existing sewers and structures of various size and depth as required by the Plans and as directed by the Engineer. All work shall be done in accordance with Section 203 of the 2020 Michigan Department of Transportation Standard Specifications for Construction, and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

Materials

Granular Material Class II ..... Section 902

Construction

Sewers, manholes, and drainage structures shall be removed and disposed of off-site in such a manner to avoid damaging any new or existing material which is to remain in-place. The hole or trench resulting from the removal of the manhole, sewer, or drainage structure shall be backfilled with Granular Material, CL II, in maximum lifts of 12 inches, and be compacted to 95% of its maximum unit weight, if located within the public rights-of-way, railroad rights-of-way, or within the influence of paved surfaces or structures. Otherwise, backfill shall be Engineer approved native material, compacted to 90% of its maximum unit weight, in lifts of 12 inches or less, unless otherwise noted on the plans. The void left in a structure resulting from sewer removal shall be bulkheaded with bricks and mortar to provide a watertight seal and constructed so that the remaining flow in the manhole is not impeded.

As directed by the Engineer and within two days of their removal, the Contractor shall deliver the removed structure covers to the City of Ann Arbor Public Works Unit located at the W.R. Wheeler Service Center at 4251 Stone School Road, Ann Arbor, MI 48108.

Measurement and Payment

The completed work, as described, will be measured and paid for at the approved price for the following pay item:

Contract Item (Pay Item)	Pay Unit
Sewer Remove, Any Size or Depth	Foot
Sewer Abandon in Place, Any Size or Depth	Foot
Structure Remove, Any Size or Depth	Each

The approved price for this item shall include all labor, material, and equipment costs required to complete the work.

Sewer Abandon in Place, Any Size or Depth includes completely filling the pipe with flowable fill. See Flowable Fill Detailed Specifications for material and installation requirements.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
DRAINAGE STRUCTURES

AA: NJB 1 of 4 4/27/23

Description

This work shall consist of constructing drainage structures as shown on the plans and as directed by the Engineer, in accordance with Section 403 of the Michigan Department of Transportation 2020 Standard Specifications for Construction, and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

Materials

The materials used for this work shall conform to Subsection 403.02 of the Michigan Department of Transportation 2020 Standard Specifications for Construction, except as specified herein.

Storm sewer drainage structures shall be constructed of precast. All sanitary sewer manholes and gate wells (water main valve manholes) shall be constructed of precast reinforced concrete sections.

Precast reinforced concrete bases, bottom sections, manhole risers, grade adjustment rings, concentric cones, eccentric cones, and flat slab tops shall conform to the requirements of ASTM C-478. Joints on precast manholes used on all sanitary sewers shall meet ASTM C-443, rubber O-ring gasket.

Precast manhole tees and radius pipe sections shall conform to requirements for reinforced concrete pipe, ASTM C-76, Class IV. Joints shall conform to adjacent pipe. Tees and radius pipe shall conform to details indicated on drawings offered by the Concrete Pipe Association of Michigan, Inc., or Engineer approved equal.

If precast drainage structures are used, they shall be designed to accommodate HS-20 Live Load requirements as determined by a Professional Engineer licensed by the State of Michigan, regardless of where they are to be installed.

If precast structures are used, the Contractor shall field verify inverts prior to fabricating precast units. No additional payment will be made to the Contractor for precast units that cannot be used due to existing inverts being different than shown on the plans, changes in vertical or horizontal alignment due to conditions found in the field, or similar unforeseen circumstances.

Pre-cast drainage structures, are constructed with pre-cast concrete elements, the Contractor shall submit to the Engineer for review and approval shop drawings in accordance with Section 104.02 of the Michigan Department of Transportation 2020 Standard Specifications for Construction.

Drainage Structure Castings shall be as listed in Structure Cover detailed spec.

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 submittals is required before beginning the work. Resubmittals shall be

reviewed and returned to the General Contractor within 14 calendar days. 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 their schedule.

Concrete brick shall conform to the requirements for concrete building brick, ASTM C-55, Grade N-1.

Plastic coated manhole steps shall be injection molded of copolymer, polypropylene, encapsulating a 1/2-inch grade-60 steel reinforcing bar. Plastic-coated manhole steps shall meet the performance test described in ASTM C-478, Paragraph II, and shall have an impact resistance of 300 ft.-lbs. with only minor deflection and no cracking or breaking. The steps shall resist pull out forces of 1500 lbs.

Construction

The construction methods used shall conform to Section 403.03 of the Michigan Department of Transportation 2020 Standard Specifications for Construction except as specified herein.

Excavation shall be carried out to the depth and width required to permit the construction of the required base. The excavation width shall be greater than the base. The bottom of the excavation shall be trimmed to a uniform horizontal bed and be completely dewatered before any concrete is placed therein. Precast manhole bases and precast bottom sections are allowed.

Concrete brick construction shall only be used to adjust pre-cast structure bases to set structure frame and covers. The brick shall be clean, laid in a full bed of mortar, and thoroughly bonded by completely filling the vertical end grooves with mortar to interlock with the adjacent brick. The mortar beds and joints shall not exceed 3/4-inch thickness. The vertical joints are to be filled with the joints on the inside face rubbed full of mortar and struck smooth as the manhole, inlet or structure is built up. The entire outside face of the structure shall receive a 1/2" thick mortar coat and struck smooth. All masonry materials, sand, and water shall be heated to over 50°F during freezing weather, and the completed work shall be covered and protected from damage by freezing.

Circular precast manhole sections shall be constructed in accordance with the details as shown on the plans. Manhole stack units shall be constructed on level poured-in-place bases, precast concrete bases, or precast concrete bottom sections.

Precast cone sections shall be constructed in accordance with the details as shown on the plans. These units shall be eccentric for all manholes, precast or block. All structures shall be topped with a minimum of one (1) and a maximum of three (3) 2-inch-tall brick or precast adjustment courses.

Manholes, inlets, gate wells, and structures shall be constructed within 2-1/2 inches of plumb.

Frames and cover castings shall be set in full mortar beds and pointed on the structure interior to a smooth, brushed finish. The covers shall be set flush with sidewalk, roadway pavement, or ground surfaces. The Engineer shall be notified prior to the final paving to allow inspection of the

final casting adjustments for all utility structures. In gravel streets, covers shall be set six to eight inches below finished gravel surface.

Sewer pipes shall extend into structures a minimum of 1/2 inch and a maximum of 3 inches.

Flow channels for sewer structures shall be finished in accordance with the details as shown on the plans. All flow channels shall be screeded and floated to a smooth, uniform surface and troweled to a hard surface finish.

Underdrain 6-inch wrapped, fingers 5 ft in length 2 ea, shall conform to the separate special provision, shall be connected to the storm inlet or structure in the curb line, pipe shall have a cored hole in the structure for connection and shall be set in mortar and parged. When replacing an existing structure if there is existing underdrain the existing underdrain shall be tied into the new drainage structure through these new underdrain fingers.

Stubs for future sewer connections shall be furnished and placed by the Contractor as shown on the Plans and as directed by the Engineer. Connections shall be properly supported and braced when not resting on original ground so that any settlement will not disturb the connection. Stubs shall consist of one length of sewer pipe, of the size indicated on the Plans, with a watertight plug.

The excavation shall be kept in a dry condition.

All necessary adjustments for new structures shall be included in the cost of the structure.

Measurement and Payment

The completed work, as described, will be measured and paid for at the approved price for the following pay item:

Contract Item (Pay Item)	Pay Unit
Dr Inlet Structure, 24 inch dia	Each
Dr Structure, __ inch dia	Each
Dr Structure, 48 inch dia, Low Point Inlet	Each
Dr Structure, __ inch dia, Add Depth	Foot
Sewer Bulkhead, __ inch	Each
Sewer Tap, ___inch	Each
Dr Inlet Junction Structure, __ inch dia	Each

Payment for drainage structures includes furnishing the labor, equipment, and materials for all necessary excavation, disposing of surplus excavated material, backfilling, and constructing the structure complete, including 2 runs of 5 ft 6-inch wrapped underdrain, including frame, cover, pipe connections and structure cleaning. A standard depth manhole shall be considered to be 8 feet or less in depth (including sump). Depth of the MH shall be measured from the bottom of the casting to the top of the concrete base footing.

Payment for Drainage Structure Add Depth, includes furnishing the labor, equipment, and materials for all necessary excavation, disposing of surplus excavated material, backfilling, and constructing the structure to a depth greater than 8 feet deep. Measurement for Add Depth shall

be the difference from the bottom of the casting to the top of the concrete base footing minus 8 foot, rounded to the nearest ½ foot.

Payment for Sewer Bulkhead, includes furnishing the labor, equipment, and materials for constructing a bulkhead at an existing structure for pipe diameters 12 inches or greater. Any pipes removed from an existing structure less than 12-inches in diameter shall be repaired as incidental to the pipe removal pay item. Void in the structure shall be filled with brick and mortar to the full thickness of the structure wall and once hardened a cementitious parge coating shall be applied to the inside surface of the repair so that it has a uniform surface to the rest of the structure.

Payment for adjusting of drainage structure covers shall be included in payment for the structure.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
HMA PAVEMENT REMOVAL

Description

This work shall consist of cold milling and/or pavement removal as shown on the plans and as directed by Engineer, in accordance with Sections 204 and 501 of the 2020 MDOT Standard Specifications for Construction, and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

Construction

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

The Contractor shall saw-cut and remove pavement as shown on the Plans, as marked in the field, and as directed by the Engineer.

The removal of HMA pavement from around manholes, structures, and utility covers, and the removal of bituminous curbing, bituminous driveway wedges, bituminous surface on existing curb and gutter, and bituminous surfaces around other miscellaneous unremoved areas shall be paid for as “HMA Pavement Removal, Any Depth.”

If concrete or masonry pavements are encountered beneath the HMA surface being removed, the Engineer will measure each type of additionally encountered pavement at the unit price for the associated type of pavement removal.

Bricks/masonry units, if present, shall be removed, salvaged, and neatly stacked/stockpiled by the Contractor, and later delivered by the Contractor to a City owned facility as directed by the Engineer.

The Contractor shall remove and properly dispose of all excavated material and debris, including all asphalt and concrete. The Contractor shall not stockpile excavated materials overnight on, or adjacent to, the site.

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

In areas where pavement removal is to be performed adjacent to existing pavement that is to remain in place, the pavement shall be saw-cut prior to removal. Backhoe teeth, jackhammers equipped with spike points, milling machines, and backhoe mounted wheel cutters shall not be used.

Damage to adjacent pavement, pavement base, subbase, curb, curb and gutter, sidewalk, utility structures, or other site features, due to removal operations shall be repaired by the Contractor, at the Contractor's expense, as directed by the Engineer.

The Engineer may direct aggregate base materials to be either removed from or added to the job-site, to properly complete the work. Where the Engineer directs the addition of such materials, they shall be paid for as the Item of Work: "21AA Limestone, C.I.P" or "Class II Granular Material, C.I.P." Where the Engineer directs such materials to be removed, it will paid with "Subgrade Undercutting."

Excavated/removal areas shall be adequately protected with barricades or fencing at all times.

The Contractor shall remove the full depth of the pavement unless otherwise shown on the plans or directed by the Engineer.

The Contractor shall construct butt-joints, and trim butt-joints just prior to HMA paving as shown on the Plans, and as directed by the Engineer.

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

Measurement and Payment

The completed work, as described, will be measured, and paid for at the respective Contract unit prices for the following respective pay items:

Contract Item (Pay Item)	Pay Unit
HMA Pavement Removal, Any Depth	Square Yard
Cold Milling, __ inches	Square Yard

All saw-cutting required for removals shall be included in the appropriate item of work and will not be paid for separately.

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

CITY OF ANN ARBOR

DETAILED SPECIFICATION
FOR
HMA PAVEMENT REPAIR

NJB 1 of 1 4/26/2023

Description.
This work consists of repairing areas of failed asphalt pavement by cold milling the existing pavement and placing new hot mix asphalt (HMA) material as directed by the Engineer, and as described herein. Complete pavement repairs after first pass of cold milled surface has been completed and there remains HMA material defect in the remaining HMA base layer. The base HMA layer is further milled by running a second pass as specified by the Engineer on site. The base HMA material is repaired prior to placement of the wearing course HMA.

Materials.
Provide materials in accordance with subsection 501 of the MDOT 2020 Standard Specifications for Construction and as shown on the special detail.

Construction.
Cold mill designated repair locations and place Hand Patching, Modified according to the details on the plans, and in accordance with subsection 501 of the MDOT 2020 Standard Specifications for Construction. The Engineer will designate repair locations after the pavement has been cold milled as shown on the plans. The milling machine must return to the designated repair locations to apply milling for an additional depth to base aggregate approx. 3 inches. Hand Patching, Modified must be placed in the repair area and roller compacted prior to placement of the paving course.

Measurement and Payment. Measure and pay for the completed work, as described, at the respective contract unit prices using the following respective pay items:

Pay Item	**Pay Unit**
Cold Milling HMA Surface, Modified	Square Yard
Hand Patching, Modified	Ton

Measure **Cold Milling HMA Surface, Modified** area by the unit square yard and pay for it at the contract unit price, which price includes the cost for all labor, equipment and materials required to remove, load, haul, and dispose of the cold milled material, and cleaning the cold milled pavement. The Engineer will not pay for material picked up by cleaning after cold milling.

Measure **Hand Patching, Modified** by weight in tons of the material used to perform the work and pay for it at the contract unit price, which prices includes the cost for all labor, equipment and materials to complete the work including providing, placing by hand or other methods, and compacting the HMA mixture.

Return any/all trucks to the plant with unused HMA remaining after the Hand Patching, Modified work is complete. Re-weigh these trucks and provide a weight slip for this material to the Engineer. There will be no payment for any unused HMA material. All weight slips must include the type of mixture (codes are not acceptable), as well as vehicle number, gross weight, tare weight and net weight.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
CONCRETE REMOVAL

Description

This work shall consist of removing and properly disposing of concrete curb, gutter, curb and gutter, integral curb, concrete pavement, sidewalk, sidewalk ramps, drive openings, and drive approach pavements as shown on the plans and as directed by the Engineer, in accordance with Section 204 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

Materials

Granular Material, Class II ..... Section 902

Construction

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

The removal of concrete will include removal and off-site disposal of existing concrete curb, gutter, curb & gutter, integral curb, pavement, sidewalk, sidewalk ramps, drive openings, and drives pavement regardless of pavement depth, type, or material.

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

The Contractor shall excavate, cut, remove stumps, remove brush, grade, and trim as needed and as directed, and shall import, furnish, fill, place, grade, and compact granular material as needed to: construct new concrete items; repair or replace existing concrete items; relocate existing concrete items to their new specified/directed elevations/locations, including all necessary grading at elevation changes of curb and gutter, sidewalks and ramps; and at locations where existing concrete items are to be removed and turf is to be established in its place. If not specifically shown on the Plans, this will be included in the appropriate concrete removal item and not paid for separately.

The Contractor shall coordinate with the City Forester prior to the removal of any tree roots over 2 inches in diameter.

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

Concrete removal outside the edge-of-metal shall be paid for as the appropriate item of either “Remove Concrete Curb or Curb & Gutter - Any Type”, or “Remove Concrete Sidewalk, Ramp, & Drive - Any Thickness”.

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

Excavated/removal areas shall be adequately protected with barricades and/or fencing at all times.

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

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

Sidewalk ramp removal shall be measured and paid for as “Remove Concrete Sidewalk, Ramp, & Drive - Any Thickness”.

Integral curb and gutter that is removed as part of “Remove Concrete Sidewalk, Ramp, & Drive - Any Thickness” shall be measured and paid for by the square yard, along with the pavement removal quantity.

All saw-cutting required for removals shall be included in the appropriate item of work, and will not be paid for separately. Payment for saw-cutting to create or modify Type M openings and to allow for the partial removal of existing drives shall be included in the price of the item of work, “Remove Concrete Sidewalk, Ramp, & Drive - Any Thickness” and will not be paid for separately.

Measurement and Payment

The completed work, as described, will be measured, and paid for at the respective Contract unit prices for the following respective pay items:

Contract Item (Pay Item)	Pay Unit
Remove Concrete Curb or Curb and Gutter, Any Thickness	Foot
Remove Concrete Sidewalk, Ramp, & Drive - Any Thickness	Square Foot

All saw-cutting required for removals shall be included in the appropriate item of work and will not be paid for separately.

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
6-INCH WRAPPED UNDERDRAIN

Description

This work shall consist of furnishing and installing 6-inch diameter geotextile-wrapped, perforated or slotted plastic underdrain pipe, using MDOT 2NS, as directed by the Engineer, for all backfill material. Work shall be performed in accordance with Section 404 of the 2020 edition of the MDOT Standard Specifications, except as specified herein.

Materials

The materials used for this work shall conform to Subsection 404 of the Michigan Department of Transportation 2020 Standard Specifications for Construction, except as specified herein.

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

Construction Methods

The installation of underdrain shall precede all other construction activities including but not limited to pavement milling, pavement pulverization, pavement removal, pavement patching, and curb repair.

The Contractor shall excavate, cut, remove stumps, remove brush, remove pavement, grade, and trim as needed and as directed, and shall import, furnish, fill, place, grade, and compact MDOT 2NS fine aggregate to construct underdrain as specified on the Plans, and as directed by the Engineer.

The trench shall be constructed to have a minimum width of 18-inches and shall be typically excavated to the depth specified in the Plans or directed by the Engineer.

The underdrain shall be installed at the line, grade, and depth specified on the Plans or as directed by the Engineer. Positive drainage shall be maintained on the underdrain slope at a min depth of 3.25 ft from top of curb or 2.75 ft at edge of pavement. The Contractor shall maintain line and grade. The Engineer will not provide line, grade or staking.

Upgrade ends of the pipe shall be closed with suitable plugs to prevent entrance of trench backfill material. All couplings, tees, plugs, and other fittings shall be manufactured and installed so as to prevent any infiltration of trench backfill material.

The Contractor shall tap at least one end of the underdrain into a storm sewer structure, as directed by the Engineer.

In the event of draining to a ditch Contractor shall install a **Underdrain Outlet Ending** as per MDOT Standard Detail R-80-F, Corrugated Metal pipe of sufficient internal diameter as to allow the plastic underdrain pipe to be thread into the CMP, underdrain outlet pipe shall extend into the underdrain trench a minimum of 6 ft, includes metal end section.

During the construction of underdrain runs, the Engineer may direct the Contractor to terminate or modify underdrain construction due to conflicts with buried obstructions There will be no adjustment to the Contract Unit Price due to changes in quantity.

The first lift (bedding) of backfill shall be MDOT 2NS material to a maximum thickness of 3-inches. Subsequent lifts shall be MDOT 2NS material to a maximum thickness of 12-inches.

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

All structures, inlets and manholes shall be maintained free of accumulations of silt, debris, and other foreign matter throughout construction, until the time of final acceptance.

Measurement and Payment

Two 5-foot sections of underdrain,and connecting (tapping) underdrain(s) into drainage structure(s) will not be paid for separately but shall be included in the bid price for the new Storm Structure.

Longer runs of 6-inch underdrain will be called out on the plans and paid for by the foot installed.

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:

CONTRACT (PAY) ITEM	PAY UNIT
6-inch Wrapped Underdrain	Foot
Underdrain, Outlet Ending, 6 inch	Each

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
SIDEWALK GRADING

AA:NJB 1 of 2 4/27/23

Description

Remove miscellaneous structures and materials and complete all earthwork required to construct all sidewalk and ADA compliant sidewalk ramps within the construction limits shown on the plans or stated in this detailed specification. All lines and grades will be as shown on the plans and as directed by the Engineer to comply with ADA requirements. Complete this work according to the MDOT 2020 Standard Specifications for Construction and this detailed specification.

Materials

Furnish and place required subbase and embankment material conforming to the MDOT 2012 Standard Specifications for Construction as necessary to achieve the required typical cross sections. Excavated material, if suitable, may be used as embankment material as approved by the Engineer.

Construction Methods

Complete this work according to applicable sections of the Standard Specifications for Construction. Sidewalk and Ramp Grading includes, but is not limited to, the following work:

1. Strip and stockpile topsoil for use in turf establishment.
2. Furnish, place and compact additional material.
3. Clearing, including trees less than 8 inches in diameter.
4. Remove rocks or boulders less than 0.5 cubic yards in volume.
5. Remove and relocate mailbox posts and mailboxes.
6. Sawcut existing pavement.
7. Match drive and approach grades to new pavement grades.
8. Remove miscellaneous structures and materials.
9. Dispose of excess and unsuitable material according to Section 205.
10. Place embankment and reshape to proposed grades.
11. Excavate material to a depth necessary for construction.
12. Place embankment to a thickness necessary for construction.
13. Excavate for subbase material.

Measurement and Payment

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

Pay Item	Pay Unit
Sidewalk Grading	Feet
Sidewalk Ramp Grading	Each

Sidewalk Grading includes all labor, equipment, and materials necessary to complete the work described. Limits of the sidewalk grading shall include all grading work from **right-of-way to edge of pavement or existing or proposed curb** along the length of sidewalk, necessary to accommodate the grades of the new sidewalk, and retaining wall, as detailed on the plans. Additional limits necessary to accommodate proper slope and drainage along the road right-of-

way shall also be included as directed by the Engineer.

Sidewalk Ramp Grading applies to the ramps that are currently not ADA compliant and trench work is not causing reconstruction of the sidewalk ramp. Sidewalk Ramp Grading applies separately to each quadrant of an intersection where sidewalk is to be removed and graded for ADA compliance. The limits are specified on the plans or as directed by the Engineer.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
MACHINE GRADING
EXCAVATION, EARTH

Description

The pay item “Machine Grading” shall be completed in accordance with Section 205 the Michigan Department of Transportation 2020 Standard Specifications for Construction (MDOT 2020 SSC) and shall include all work indicated in the MDOT 2020 SSC, shown on the plans, and as specified herein, with the exception that “Subgrade Undercutting, ___ Backfill,” “Excavation, Earth,” “Class II Granular Material, C.I.P.”, “21AA Limestone, C.I.P.”, “Tree Removals, __ inch”, and “Turf Establishment” shall be paid for separately when separate pay items for the respective items are included in the proposal. “Machine Grading“ shall include all the work specified herein for which there is no separate pay item.

“Excavation, Earth” shall include excavation and removal of soil to provide subgrade elevations. This shall include the roadway, and swale, and incidental cross-section removal of existing Materials establish planned subgrades, or in the case of planned swale to the limit of the limits for a 4-inch topsoil layer as part of Turf Establishment. This pay item shall exclude excavation and removal incidental to utility installation, which shall be paid for separately.

Areas that are deemed by the Engineer to require subgrade undercutting with engineered backfill to provide a stable subgrade shall be paid for as “Subgrade Undercutting, ___ Backfill”.

The following abbreviated table of contents for Section 205 (Roadway Earthwork) of the MDOT 2020 SSC is provided for reference. It is not a complete table of contents for all Section 205 work required to complete the project.

SECTION/TITLE **PAGE**

Soils Information

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

Materials

All materials and mixtures shall meet the requirements as specified in Section 205 of the MDOT 2020 Standard Specifications for Construction, except as specified herein.

General Provisions

The contractor shall:

1. Grade around mailboxes, trees, light poles, power poles, and the like, which are to remain in place. The Contractor shall be responsible for any damage caused to such structures.

2. Maintain the work in a finished condition until it is accepted by the Engineer.

Removal of Trees and Vegetation

The Contractor shall remove and properly dispose of off-site all vegetation; brush; roots; and stumps, as shown on the plans and as directed by the Engineer as required to complete the project. Unless the size of the tree is otherwise provided in the Tree Removal pay items, this work will be paid for be paid for as “Machine Grading, Swale” and will not be paid for separately.

Removal and Salvaging of Topsoil

The removal, salvaging and stockpiling of topsoil, and all related work, shall be performed in accordance with Section 205.03.A.1 (Removing and Salvaging Topsoil) of the MDOT 2020 SSC.

Miscellaneous Removals

“Machine Grading” includes the removal of any surface feature located within the grading limits which must be removed and for which there is no specific pay item established in the proposal for its removal.

Protection of Grade

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

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

The Contractor shall conduct his/her operations and provide the necessary equipment to ensure

the satisfactory completion of the work without damaging the foundation, roadway embankment or subgrade. This may require the transporting and movement of materials over additional distances.

Protection of Utilities and Vaults/Structures

Utility lines, vaults, and structures may become exposed at, above, or below, the foundation or subgrade elevation during machine grading or subgrade undercutting operations. If this occurs, the Contractor shall protect facilities and excavate around, above and/or below the utility lines, as directed, to complete the machine grading or subgrade undercutting operations. Payment, at contract unit prices, for “Machine Grading” or “Subgrade Undercutting” or “Exploratory Excavation,” whichever applies, will be considered as payment in full for this work. The contractor shall protect vaults and structures and not undermine or damage facilities.

Removal of Cable, Conduits, and Pipe

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

Subgrade Construction

Subgrade is defined as the final earth grade which extends from grading limit to grading limit. The subgrade shall be constructed by performing earth excavation and roadway embankment work in accordance with Section 205.03.G (Earth Excavation) and Section 205.03 H (Roadway Embankment) of the MDOT 2020 SSC, as shown on the plans, and as specified herein.

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

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

The subgrade shall be graded to accommodate all subbases and aggregate bases wherever used, all roadway pavements, other similar structures, topsoil and any other features which the subgrade supports.

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

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

Proof Rolling

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

Subgrade Undercutting

“Subgrade Undercutting” shall be performed on the foundation or subgrade in accordance with Section 205.03.E (Subgrade Undercutting) of the MDOT 2020 SSC, as shown on the plans, as specified herein, and as directed by the Engineer.

Rock Excavation

Rock excavation shall be performed in accordance with Section 205.03.B (Rock Excavation) of the MDOT 2020 SSC, as shown on the plans, and as directed by the Engineer.

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

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

Lowering Structures

All structures shall be lowered prior to Machine Grading, paid for as part of “Adjust Structure Cover” or “Adjust Monument Box or Gate Valve Box”.

Structure and Sewer Cleanliness

All sewers, and structures, including manholes, gate wells, valve boxes, inlet structures and curbs shall be protected from damage and contamination by debris and construction materials.

Structures shall be maintained clean of construction debris and properly covered at all times during the construction. The Contractor shall immediately clean any structures and/or sewers that become contaminated with construction debris. The Contractor shall be responsible for all direct and indirect damages which are caused by sewers or structures which have been made unclean or have been damaged by the Contractor.

Contractor's Calculations

Existing and proposed cross sections are provided in the plans. The Contractor shall perform his/her own computations and is responsible to inspect the site to determine his/her own estimate of the quantities of work involved.

Deviations between the existing contours and the existing and proposed cross-sections shown on the plans shall not be cause for additional compensation.

Construction Method

The Contractor shall construct earth grades as required to develop the typical and/or detailed cross-section(s) as shown on the Plans, as detailed in the Specifications, and as directed by the Engineer. This shall include, but not be limited to, the excavation of miscellaneous concrete and miscellaneous HMA pavement, soil, rocks of any size, stumps, trees less than 6-inches, logs, and bricks; the removal and proper disposal off-site of surplus excavated material; the scarifying, plowing, disking, moving and shaping of earth; the trimming, grading, compaction and proof-rolling of the prepared subgrade; the importing, furnishing, placement and compaction of embankment and/or fill materials; the full depth saw-cutting of pavement at the removal limits; the grading of sideslopes; general restoration in accordance with the Detailed Specifications elsewhere herein and the general items of the work as specified herein. Road subbase and base materials shall be paid for separately.

The Contractor shall remove, add to, re-shape, re-grade, and re-compact the existing roadbed materials, and shall construct the roadway to the cross-section(s) as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. The Contractor shall use blade graders, maintainers, vibratory rollers, and/or other equipment as necessary, and as detailed in the Specifications and as directed by the Engineer, for this work. Use of each specific piece of equipment is subject to the approval of the Engineer.

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

Signs in the grading limits shall be salvaged and provided to City as directed by the Engineer.

The Contractor shall move excavated and/or imported materials longitudinally and/or transversely where necessary, and as directed by Engineer.

The Contractor shall keep the work well graded and drained at all times.

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

The Contractor is solely responsible for the maintenance and protection of the subgrade. Further, any damage to the subgrade which, in the opinion of the Engineer, is caused as a result of the Contractor's operation(s), or its subcontractors' or suppliers' operation(s), shall be repaired by the Contractor at the Contractor's expense. This includes any additional earthwork and/or maintenance materials as directed by the Engineer, for the purposes of the Contractor's maintenance and protection of the subgrade. The Contractor shall not be entitled to any additional compensation for the implementation of these procedures.

The Contractor shall perform all rough and/or finish grading and compaction to the grades shown on the Plans, as detailed in the Specifications, and as directed by the Engineer.

The Contractor shall proof roll all graded and compacted surfaces in the presence of the Engineer as detailed in the Specifications. The Engineer will monitor the proof rolling operation to locate deleterious and/or uncompacted materials and will direct undercuts, as necessary.

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 coordinate with the City Forester prior to the removal of any tree roots 2-inch or larger in size.

Measurement and Payment

Measurement for payment for the item “Machine Grading” shall be measured as the site area of disturbance within the limits of the work. The measurement shall exclude areas protected by tree fence and any area outside the limits of disturbance provided in the plans.

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:

Contract Item (Pay Item)	Pay Unit
Machine Grading	Square Yard
Machine Grading, Swale	Square Yard
Excavation, Earth	Cubic Yard

Machine Grading or Machine Grading, Swale shall be paid for one time per square yard regardless of any re-working that may be necessary.

The pay item **Machine Grading** shall include all the work specified herein, the complete the fine grading of the aggregate prior to the placement of HMA.

The pay item **Machine Grading, Swale** shall include all the work specified herein, the fine grading of the area which had Earth Ex, or prior pavement removal in the case of a lane narrowing including prior curb and gutter removal in preparation for turf establishment. Area which will receive a new sidewalk shall have the Machine Grading effort covered in the Sidewalk Grading, Ft pay item and shall not be paid for twice under this pay item.

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.

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
SUBGRADE UNDERCUTTING

Description

This work includes removal of unsuitable subgrade material(s) in the areas and limits identified by the Engineer and backfill with Class II Granular Material in accordance with the 2020 MDOT Standard Specifications for Construction, and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

Materials

Materials will be in accordance with those specified in Section 902 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction.

Construction

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

Backfill areas of Subgrade Undercutting with Granular Material Class II or such other such material as directed by the Engineer, to be paid for as “Class II Granular Material, C.I.P.” The backfill material shall be compacted to not less than 95% of its maximum unit weight as determined by the AASHTO T-180 test.

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

Measurement and Payment

These items of work shall be measured for payment by calculating the volume of the undercut excavation prior to the placement of backfill. The completed work as measured for these items of work will be paid for at the Contract Unit Price for the following Contract (Pay) Item:

Contract Item (Pay Item)	Pay Unit
Subgrade Undercutting	Cubic Yard

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
SUBBASE AND AGGREGATE BASE

Description

This work shall consist of constructing subbase and/or aggregate base courses, on either a prepared subgrade or subbase as indicated on the Plans or where directed by the Engineer. This work shall be performed in accordance with Sections 301, 302, 306, and 307 of the 2020 MDOT Standard Specification for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

Materials

The material used for this work shall meet the requirements of Sections 301, 302, 306, 307 and 902 of MDOT 2020 Standard Specification for Construction, except that the aggregate base shall be 21AA limestone (permanent and temporary applications) and any subbase shall be Class II Granular Material.

Construction Method

Subbase and aggregate base courses shall not be placed when there are indications that the mixture may become frozen before the maximum unit weight is obtained, and in no case shall they be placed on a frozen subbase or subgrade.

The subbase and subgrade shall be shaped to the crown and grade specified on the plans and maintained in a smooth condition. The top of the subbase shall be placed to within ½-inch below and ½-inch above plan grade. The top of the aggregate base shall be placed to within ½-inch below and ¼-inch above plan grade. Variations within this tolerance shall be gradual. If, in the opinion of the Engineer, the Contractor's equipment is causing or will cause any ruts in or damage to the subbase or subgrade, the equipment shall not be permitted on the subbase or subgrade.

Should the subgrade, subbase or aggregate base become damaged due to the Contractor's equipment or by local traffic, the subgrade, subbase, or aggregate base course shall be restored to the condition required by the Specifications without additional compensation to the Contractor.

No pavement course, concrete curb and gutter, or concrete driveway opening shall be placed until the subbase has been compacted to not less than 95%, and aggregate base course to not less than 98% of their respective maximum dry densities and approved by the Engineer.

Base course aggregate shall be handled and/or stockpiled on-site in a manner that minimizes segregation. Base course aggregate shall be deposited from trucks or through a spreader in a manner that will minimize segregation of material and that is approved by the Engineer. The re-handling of base course aggregate by the Contractor will not be considered sufficient cause to allow the material to become segregated. The Contractor may be required to wet the materials prior to and/or during placement to minimize segregation and to aid in compaction of the material should it be necessary.

Aggregate base courses shall be placed in uniform layers such that when compacted, they have the thicknesses shown on the Plans, or as directed by the Engineer. The loose measure of any layer shall not be more than 9-inches or less than 4-inches.

All structures, including manholes, valve boxes, inlet structures and curbs shall be protected from damage and contamination by debris and construction materials. Structures shall be maintained clean of construction debris and properly covered at all times during the construction.

The Contractor may be charged for the cleaning (by others) of accumulated construction debris in the utility structures, and damages resulting from the uncleaned structures.

Measurement and Payment

Where granular materials are used as base, as subbase, or as fill for excavations in Machine Grading areas, items of work "21AA Limestone, C.I.P." and " Class II Granular Material, C.I.P." shall be measured and paid accordingly.

Where granular materials are used as fill for undercuts at locations other than Machine Grading areas, item of work shall be paid in accordance with "Class II Granular Material, C.I.P."

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

Contract Item (Pay Item)	Pay Unit
Class II Granular Material, C.I.P.	Cubic Yard
21AA Limestone, C.I.P.	Cubic Yard

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
HMA PAVING

Description

This work include the paving of Hot Mix Asphalt (HMA) pavement base, leveling, and top courses as shown on the plans and as directed by the Engineer, in accordance with Section 501 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

Materials and Equipment

The mixes are shown on the plans.

All equipment shall conform to Section 501.03.A of the 2020 MDOT Standard Specifications for Construction, except as modified herein.

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

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

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

Each pressure distributor, paver and roller shall be equipped with at least one approved flasher light which shall be mounted on the equipment so as to give a warning signal ahead and behind.

Reclaimed Asphalt Pavement (RAP) in HMA Mixtures
The use of Reclaimed Asphalt Pavement (RAP) in HMA mixtures shall be in accordance with Section 501.02.A.2 of the 2020 MDOT Standard Specifications for Construction, and the City of Ann Arbor Standard Specifications.

Construction Methods

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

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

Cleaning and Bond Coat Application

Cleaning and bond coat application shall be performed in accordance with Sections 501.03.C and 501.03.D of the 2020 MDOT Standard Specifications for Construction, except as modified herein, and as directed by the Engineer.

The bond coat shall be applied at a minimum rate of 0.05 gallons/SY. Before placing the bond coat, the existing pavement surface shall be thoroughly cleaned in accordance with the "Vacuum Type Street and Utility Cleaning Equipment" Detailed Specification. The Contractor shall also thoroughly clean all joints, cracks, and edges to a minimum depth of 1-inch with compressed air, vac-all type equipment, or other approved mechanical or hand methods, to remove all dirt, debris, and all foreign material.

HMA Placement

Placement shall conform to Section 501.03.F of the 2020 MDOT Standard Specifications, except as modified herein, and as directed by the Engineer.

HMA placement shall not commence until the aggregate base course or the adjacent, underlying layer of pavement section has been approved by the Engineer.

The top course shall be placed with a ¼-inch lip at the gutter edge of metal. All HMA thickness dimensions are compacted-in-place.

The pay item "HMA Approach" shall include the work to pave driveway approaches, as indicated on the plans.

The pay item "HMA, ____" shall include the work to pave the roadway, side streets, intersections, etc. to the limits shown on the plans.

Paving Operation Scheduling

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

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

Rate of Paver Operation

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

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

Longitudinal and Transverse Joints

Longitudinal and transverse joints shall conform to Section 502.03.F of the 2020 MDOT Standard Specifications for Construction and as specified herein. For mainline HMA paving, the width of the mat for each pass of the paver shall be not less than 10.5-feet, nor greater than 15-feet, except as noted in the plans and as directed by the Engineer. The Engineer will direct the layout of all HMA longitudinal joints during construction.

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

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

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

Feather Joints

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

Butt Joints

Construction of butt joints, where directed by the Engineer, shall conform to Sections 501.03.C.3 and 501.03.C.4 of the 2020 MDOT Standard Specifications for Construction, except as modified herein.

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

Rakers

The Contractor shall provide a minimum of two (2) rakers during the placement of all top and leveling courses.

Faulty Mixtures

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

Measurement and Payment

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

Corrective action shall be enforced as described in Division 5 of the 2020 MDOT Standard Specifications for Construction and will be based on the City's testing reports.

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

in the item of work “General Conditions, Max $_____”.

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

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

Contract Item (Pay Item)	**Pay Unit**
HMA, ____	Ton
HMA Approach	Ton
Hand Patching	Ton

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
CONCRETE CURB, SIDEWALK, DRIVE APPROACH, AND PAVEMENT

Description

This work shall consist of constructing concrete items including curb, gutter, curb and gutter, sidewalks, drive approaches, and drive openings, all of any type and/or dimensions, all of either regular, and/or high-early concrete, in accordance with Sections 801, 802, and 803 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, except as specified herein, as shown on the Plans, as described in this Detailed Specification, and as directed by the Engineer.

The Contractor is responsible to construct all sidewalks, sidewalk ramps, curbs, and all other concrete items within ADAAG (ADA Accessibility Guidelines) compliance. All sidewalks and curb ramps must be constructed in accordance with MDOT Standard Plan R-28 latest version of standard plan/detail in place at time of the bid letting.

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

Materials

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

Item Description	Concrete Mixture	MDOT Section
All Items Except High Early	3500	1004
All High Early Items	4500	1004

Patterned concrete pavement shall be a stamped brick or similar pattern. The contractor shall submit a sample pattern to the Engineer for approval.

Construction Method

General

Curb, gutter, curb and gutter, sidewalk, sidewalk ramps, drive openings, and drives shall be replaced the same day they are removed unless otherwise prohibited by the required construction.

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

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

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

The Contractor shall excavate, cut, remove stumps, remove brush, remove pavement, grade, and trim as needed and as directed, and shall import, furnish, fill, place, grade, and compact Class II granular material and 21AA Aggregate material as needed to: construct new concrete items; to repair or replace existing concrete items; to relocate existing concrete items to their new specified/directed elevations/locations, including all necessary grading at elevation changes of curb and gutter, sidewalks and ramps; and at locations where existing concrete items are to be removed and turf is to be established in its place.

At locations where the subgrade, subbase or base becomes either disturbed, saturated or otherwise damaged, and where directed by the Engineer, the Contractor shall remove a minimum thickness layer of the subgrade, subbase or base, and replace it with approved 21AA Aggregate material, compacted in place of: 4-inch for 4” Sidewalk, and 6-inch for 6” Sidewalk Ramps, Drives Approaches, and 8” Pavement; to a width 6 inches greater to either side of the finished concrete product.

The Contractor shall coordinate with the City Forester prior to the removal of any tree roots over 2 inches in diameter.

High-early concrete shall be used in areas as directed by Engineer.

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

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

The Contractor shall perform full-depth saw cutting at removal limits, including those necessary to construct 2-foot wide Type L and M drive openings, and including those necessary to provide for the partial removal of existing drive approaches and pavement, as shown on the Plans, as directed by the Engineer, and as marked for removal.

The subbase and adjacent concrete shall be sufficiently wet-down with water prior to placing concrete, to prevent water loss from the new concrete, and to form a better bond between old and new concrete. If a cold-joint becomes necessary, the existing concrete surface(s) shall be cleaned with compressed air to expose the aggregate in the concrete.

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

Where concrete items are placed in areas adjacent to existing pavement that is beyond the general resurfacing (pavement removal and/or milling) limits, the adjacent pavement area shall be backfilled and permanently patched within 48-hours of obtaining 80% of design strength. The backfill material shall be MDOT 21AA aggregate compacted in place to 95%, up to the elevation

of the proposed bottom of pavement. The pavement patching material(s) shall be as specified and as directed by the Engineer.

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

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

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

Restoration

The Contractor shall restore all disturbed areas to better than or equal to their original condition within two calendar days from the date of concrete obtains 80% design strength. All restoration work and materials shall be in accordance with the City of Ann Arbor Standard Specifications for Construction.

Contraction Joints in Sidewalk

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

Expansion Joints in Sidewalks

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

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

Expansion Joints in Curb and Gutter

¾-inch wide expansion joints shall be placed at all street returns, at all expansion joints in an abutting pavement, at each side of all driveways (at radius points), elsewhere at 300-foot maximum intervals, and as directed by the Engineer. Expansion joint material shall extend to the full depth of the joint. After installation, the top shall not be above the concrete nor be more than ½-inch below it. No reinforcing steel shall extend through expansion joints.

Plane of Weakness Joints in Curb and Gutter

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

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

Measurement and Payment

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

A deduction in length for catch basins and inlet castings will be made to measurements of Curb and Gutter. Curb, gutter, or curb and gutter shall be paid as "Concrete Curb or Curb & Gutter – All Types".

Restoration work, including backfilling behind the curb ready for topsoil, compacting, HMA patching adjacent to concrete items, will be paid for separately. Restoration HMA will be paid for separately under HMA _, topsoil, seed and mulch will be paid of separately under Turf Establishment.

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

Payment for the removal of HMA pavement and aggregate base to provide space for concrete formwork and vibratory plate compactor shall be included in the price for the item of work, “HMA Pavement Removal, Any Depth”.

Pay item: 4 inch Concrete Sidewalk, shall be placed on 4 inches of Class II sand subbase paid for separately as “Class II Granular Material, C.I.P.- CYD”

Pay items: 6” Concrete Sidewalk, Ramp, Drive Approach, 6” Concrete Drive or Sidewalk - High Early, 8” Concrete Pavement, 8” Concrete Pavement – High Early, shall be placed on 6 inches of Class II sand subbase course paid for separately as “Class II Granular Material, C.I.P.- CYD”.

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

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

Contract Item (Pay Item)	**Pay Unit**
Concrete Curb or Curb and Gutter, All Types	Foot
4” Concrete Sidewalk	Square Foot
6” Concrete Sidewalk, Ramp, Drive Approach	Square Foot
6” Concrete Drive or Sidewalk - High Early	Square Foot
8” Concrete Pavement	Square Foot
8” Concrete Pavement – High Early	Square Foot
Driveway Opening, Conc, Detail M	Foot
Driveway Opening, Conc, Detail M - High Early	Foot
4" Patterned Concrete Pavement - Central Island	Square Foot
8" Concrete Pavement - Central Island	Square Foot

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
CONCRETE DURABILITY

Description

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

Materials

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

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

*Fine and coarse aggregates shall consist of natural aggregates as defined in the Michigan Department of Transportation 2020 Standard Specifications for Construction Section 902.02.A.1.

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

Alkali-Silica Reactivity

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

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

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

Method 1

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

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

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

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

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

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

Method 2

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

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

For either Method 1 or 2, if the Contractor intends to change any component material supplied after the mix design has been approved all concrete work will be suspended with no cost to the project or extensions of time, unless approved, until evaluation of the new mixtures and testing of the

new materials demonstrates that it is resistant to excessive expansion due to ASR.

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

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

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

Air Entrainment

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

Paver Placement

During production, the plastic concrete material shall be tested for acceptance at a point ahead of the paver. The air content of the concrete mixture that the Contractor shall provide shall be known as the Acceptance Air Content (AAC). The Contractor shall also provide additional entrained air in the concrete mixture to account for the air loss which occurs in the concrete mixture experienced during transportation, consolidation, and placement of the concrete. The "air loss" shall be added to the air content of the concrete mixture as established on the approved concrete mix design. The AAC for the project will be 6.0% plus an amount equal to the air loss.

For up to the first four loads, the air content measured on-site prior to placement shall be at least 8.0% and no more than 12.0%. To establish the initial AAC on the first day of paving, the air content of the first load shall be tested at the plant. After initial testing at the plant the Contractor shall provide at least two (2) sample sets to determine the actual air loss during placement. A sample set shall consist of two (2) samples of concrete from the same batch, one (1) taken at the point of discharge and the other from the in-place concrete behind the paver. The air loss from the two (2) sample sets shall be averaged and added to 6.0% to establish the AAC (rounded to the next

higher 0.5%). After the testing and adjustment procedure(s) have been completed, the project acceptance air tests shall be taken prior to placement. The Contractor shall provide concrete to the jobsite that has an air content of plus 2.0%, or minus 1.0%, of the AAC.

After the AAC has been established, it shall be verified and/or adjusted through daily checks of the air loss through the paver. The Contractor shall check the air loss through the paver a minimum of two times a day. A Revised AAC shall be required to be established by the Contractor if the average air loss from two (2) consecutive tests deviates by more than 0.5% from the current accepted air loss. The testing operations performed by the Contractor to establish a revised AAC shall be performed to the satisfaction of the Engineer. The Contractor shall be solely responsible for any delays and/or costs that occur to the project while establishing revised AACs.

Construction Methods

Aggregate Control

Gradation Control

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

Moisture Control

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

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

Mixing

Central Mix Plants

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

Drum Mix Plants

After all solid materials are assembled in the mixer drum; the mixing time shall be a minimum of 60 seconds and a maximum of five (5) minutes. The mixing time may be decreased if the ASTM C-94 11.3.3 mixer efficiency tests show that the concrete mixing is satisfactory. The Engineer may require an increase in the minimum mix time if the mixer efficiency test determines that the concrete is not being mixed satisfactorily. The minimum mixing time shall start after the mixer is

fully charged. Mixers shall be operated at the speed recommended by the manufacturer as mixing speed. The mixer shall be charged so that a uniform blend of materials reached the mixer throughout the charging cycle. Any additional slump water required shall be added to the mixing chamber by the end of the first 25% of the specified mixing time. Mixers shall not be used if the drum is not clean or if the mixing blades are damaged or badly worn.

Ribbon Mixers

After all solid materials are assembled in the mixer; the mixing time shall be a minimum of 30 seconds and a maximum of 2.5 minutes. The mixing time may be decreased if the ASTM C-94 11.3.3 mixer efficiency tests show that the concrete mixing is satisfactory. The Engineer may require an increase in the minimum mix time if the mixer efficiency test determines that the concrete is not being mixed satisfactorily. The minimum mixing time shall be indicated by an accurate timing device which is automatically started when the mixer is fully charged. Mixers shall be operated at the speed recommended by the manufacturer as mixing speed. The mixer shall be charged so that a uniform blend of materials reached the mixer throughout the charging cycle. After any additional slump water is added to the mixing chamber the mixing shall continue for a minimum of 10 seconds. Mixers shall not be used if the mixer is not clean or if the mixing blades are damaged or badly worn.

Truck Mixers

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

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

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

The Engineer may inspect mixer units at any time to assure compliance with certification requirements, and removal of inspection ports may be required. Should the Engineer question the quality of mixing, the Engineer may check the slump variation within the batch. Should the slump variation between two (2) samples taken, one (1) after approximately 20% discharge and one (1) after approximately 90% discharge of the batch, show a variation greater than ¾-inch (20 mm) or 25% of the average of the two, whichever is greater, the Engineer may require the mixing to be increased, the batch size reduced, the charging procedure be modified or the unit removed from the work.

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

Curing

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

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

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

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

Compliance with Standards

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

Acceptance sampling and testing will be performed using the sampling method and testing option selected by the Engineer. Acceptance testing will be performed at the frequency specified by the Engineer. Quality control measures to insure job control are the responsibility of the Contractor. The Engineer's testing and/or test results will not relieve the Contractor from his/her responsibilities to produce, deliver, and place concrete that meets all project requirements. The Engineer's test results are for acceptance purposes only.

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

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

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

Measurement and Payment

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
CONCRETE PLACEMENT AND PROTECTION

Description

This work shall consist of furnishing all labor, material, and equipment needed to furnish, place, and protect all concrete material in accordance with the requirements of this detailed specification.

Materials

The concrete shall meet the requirements of Sections 1001 and 1004 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction.

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

Construction

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

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

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

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

Concrete shall only be placed when the rate of surface evaporation at the site is less than 0.20 pounds per square foot per hour, according to Figure 706-1 of the MDOT 2020.

Standard Specifications for Construction. The Contractor shall provide approved equipment for determining the relative humidity and wind velocity at the site.

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

Concrete curing shall be performed in accordance with Subsection 602.03.M of the MDOT 2020 Standard Specifications for Construction. Curing operations shall take precedence over texturing operations and continued concrete placement. All curing compound applied shall provide uniform coverage over the entire surface being protected. The placement of curing compound shall be free of spots, blotches, or uncovered or non-uniformly covered areas. Should any areas be determined to exist by the Engineer, the curing compound shall be immediately re-applied by the Contractor at no additional cost to the project.

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

Concrete shall be protected from weather and temperature according to the requirements of Subsection 602.03.T MDOT 2020 Standard Specifications for Construction. Concrete shall not be placed when the temperature of the plastic concrete mixture itself is greater than 90°F. In conditions where low temperature protection is required, the Contractor shall cover the concrete with insulated blankets, or other means as approved by the Engineer, to protect the concrete from damage. The concrete shall remain protected until it has reached a compressive strength of at least 1,000 psi, or as directed by the Engineer.

Measurement and Payment

All costs associated with the conformance to the requirements as described herein will not be paid for separately but shall be considered to be included in the respective items of work.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
DETECTABLE WARNING, CAST IN PLACE

Description

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

Materials

The detectable warning tiles shall be colored as Federal Number 22144 (variously referred to as "Clay Red" or "Brick Red"). The detectable warning tiles shall meet the following material properties, dimensions, and tolerances using the most current test methods:

1. Water Absorption: Not to exceed 0.35% when tested in accordance with ASTM-D570.

2. Slip Resistance: 0.80 minimum combined wet/dry static coefficient of friction on top domes and field area, when tested in accordance with ASTM C1028.

3. Compressive Strength: 18,000 psi minimum, when tested in accordance with ASTM D695.

4. Tensile Strength: 10,000 psi minimum, when tested in accordance with ASTM D638.

5. Flexural Strength: 24,000 psi minimum, when tested in accordance with ASTM D790.

6. Chemical Stain Resistance: No reaction to 1% hydrochloric acid, urine, chewing gum, soap solution, motor oil, bleach, calcium chloride, when tested in accordance with ASTM D543 or D1308.

7. Wear Depth: 300 minimum, when tested in accordance with ASTM C501.

8. Flame Spread: 25 maximum, when tested in accordance with ASTM E84.

9. Gardner Impact: 50 in.-lbs. minimum, when tested in accordance with Geometry "GE" of ASTM D5420.

10. Accelerated Weathering of Tile when tested by ASTM-G155 or ASTM G151 shall exhibit the following result-$\Delta E<6.0$ as well as no deterioration, fading or chalking of surface when exposed to 3000 hours minimum exposure.

11. Wheel Loading: The cast in place tile shall be mounted on a concrete platform with a ½" airspace at the underside of the tile top plate then subjected to the specified maximum load of 10,400 lbs., corresponding to an 8,000 lb individual wheel load and a 30% impact factor. The tile shall exhibit no visible damage at the maximum load of 10,400 lbs using AASHTO-HB17 single sheet HS20-44 loading "Standard Specifications for Highways and Bridges."

12. Salt and Spray Performance of Tile and Adhesive System when tested to ASTM-B117 not to show any deterioration or other defects after 100 hours of exposure.

Construction Methods

Installer's Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for this Project.

The contractor shall follow manufacturer specifications for installation, except where they conflict with MDOT Standard Detail R-28 latest version in place at the time of bidding, or other project requirements.

Measurement and Payment

The completed work, as described, will be measured, and paid for at the Contract unit price for the following pay item:

Contract Item (Pay Item)	Pay Unit
Detectable Warning, Cast In Place	Foot

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

Unit length will be measured in place, taken at the mid-point of the 2 ft tile, following the arc of the tiles if placed in a radius.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
STRUCTURE COVERS

TCA 1 of 2 3/3/23

Description

This work shall consist of replacing and furnishing frames and covers for utility (storm, sanitary, and water) structures as shown on the plans and as directed by the Engineer, in accordance with Section 403 of the 2020 MDOT Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

Materials

Provide materials meeting the requirements of subsection 403.02 and section 908 of the MDOT 2020 Standard Specifications. Provide frames and covers conforming to the model(s) shown in the table below, or equivalent approved by the Engineer.

Type of Casting	Use	EJ No.
Frame and Cover	Sanitary	1040AGS
Manhole Frame and Cover	Storm and Water	1040 w/ Type A Cover Type M1
Curb Inlet/Catch Basin Frame and Cover	Barrier curb & gutter	7045Z w/ 7045M1 Sinusoidal Grate
Curb Inlet/ Double Catch Basin Frame and Cover	Low point Barrier curb and gutter	7034Z w/7030 M2 Cubic Grate
Curb Inlet/Catch Basin Frame and Cover	Mountable curb & gutter	7065 w/ 7045M1 Sinusoidal Grate
Flat Inlet Frame and Cover	Driveway	5000 w/ Type M2 Sinusoidal Grate
Inlet/Catch Basin Frame and Cover	Beehive	1040Z O2 6” Tall, Black coated
Valve Box and Cover	Water Valve	8560 Screw Type 3 Piece Valve Box Set D

Frames and covers shall have machined bearing surfaces and City of Ann Arbor custom logo. Each cover shall have the word "SANITARY", “STORM”, “WATER”.

Construction

All work shall be performed in accordance with subsection 403.03 of the MDOT 2020 Standard Specifications.

The Contractor shall store materials on site and/or at locations arranged by the Contractor, subject to the approval of the Engineer. The Contractor shall not store materials or equipment, including metal castings and steel plates, on any lawn areas.

Measurement and Payment

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

Contract Item (Pay Item)	Pay Unit
Structure Covers	Each

Payment for this item of work shall include all labor, materials and equipment needed to furnish and install the structure cover.

Payment for the frame shall be paid for as part of “Adjust Structure Cover”.

Payment for a gate-valve box includes the cover and is included in the appropriate gate-valve box item.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
STRUCTURE COVER ADJUSTMENTS

TCA 1 of 3 3/7/23

Description

This work shall consist of adjusting, replacing, and pointing structures, handholes, valve wells or boxes, and monument boxes of concrete and concrete block masonry; the replacing, salvaging and transporting of existing metal covers, and/or castings; including all excavation, backfilling, patching and the removal and proper disposal off-site of all excavated material and debris, as shown on the plans and in accordance with Division 4 and section 818 of the 2020 MDOT Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

Materials

Materials shall meet the requirements of sections 403 and 1004 of the 2020 edition of the MDOT Standard Specifications, except that concrete shall be MDOT 4500 per Section 1004 of the 2020 MDOT Standard Specifications.

Construction

A new frame (casting) shall be included in the cost of the work. The cover may be reused as directed by the Engineer. If the Engineer directs for a cover to be replaced, it shall be paid for as “Structure Cover”. All City of Ann Arbor castings and covers not being reused shall be delivered to the City Utilities Department yard at 4251 Stone School Road (Wheeler Center) at the Contractor’s expense.

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

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

The pointing of structures is included in all adjustments.

A thermoplastic concrete form may be used for a cast-in-place concrete structure riser/collar, as approved by the Engineer.

This item includes the final adjustment of castings of any type (including drop inlets) to their respective finished elevations, up or down. All materials required to make the adjustments shall be included in this item of work. All underground structure covers shall be adjusted such that their finished surface elevation is within ¼-inch of the finished surface sections, grades, slopes, and elevations, as shown on the Plans, and as directed by the Engineer. The work shall be verified by the use of a 10-foot straight-edge placed parallel with the pavement centerline. Structures not meeting the ¼-inch tolerance shall be readjusted and finish patched, as directed by the Engineer, at the Contractor's expense.

The Contractor shall coordinate with the Engineer and applicable non-City utilities for manholes and valves adjustments during this project.

All structure covers, utility covers, valve boxes or monument boxes shall be backfilled with MDOT 4500 concrete from the depth of excavation necessary for adjustment, up to an elevation 2-inches below the top flange of the adjusted casting, as shown on the Plans. This work shall be included in the respective items of work, and will not be paid for separately.

Round Concrete Collar

Contractor may use a skid-steer with attached hydraulically mechanical circular core saw system to saw pavement full depth and adjust the casting, as approved by the Engineer. In which case, all structure covers, utility covers, valve boxes or monument boxes shall be backfilled with MDOT 4500 concrete from the depth of excavation necessary for adjustment, up to grade, such that their finished surface elevation is within 1/4-inch of the finished surface sections, grades, slopes, and elevations, as shown on the Plans, and as directed by the Engineer.

The collar shall be round, with the structure cover centered in the collar. The diameter of the collar must be no more than 4 feet, except where approved by the Engineer. Four (4) joints shall be tooled in a cross pattern. The Engineer may also require the concrete collar to be treated with black color hardener.

Lowering Structures

Prior to cutting the subgrade, or Machine grading aggregate base, the Contractor shall remove structure covers, lower the structures by removing the frame and chimney, adjustment rings, to a point between 8 inches and 12 inches below the proposed grade, and cover the structures with a steel plate. Structures shall not be raised prior to placing roadway embankment.

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

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

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

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

This item includes the final adjustment of existing structure frame and covers, up or down, to their finished elevations. This also includes the replacement of the top half of the water boxes and monument boxes where required and shall be included in this item of work.

Gate valve box tops and covers shall be reused, except when broken or directed by the Engineer. New tops and covers will be provided by the City.

Frame and covers for monument boxes will be provided by the City.

The Contractor shall transport new castings and covers to the site from the City Utilities Department yard at 4251 Stone School Road (Wheeler Center).

Any City casting and/or cover not being reused on the project shall be delivered to the Wheeler Center at the Contractor's expense.

Measurement and Payment

The completed work, as described, will be measured and paid for at the approved price for the following pay item:

Contract Item (Pay Item)	Pay Unit
Adjust Structure Cover	Each
Adjust Monument Box or Gate Valve Box	Each

The approved price for this item shall include all labor, material, and equipment costs required to complete the work as specified herein.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
PAVEMENT MARKING

Description

This work consists of providing and placing permanent pavement markings in accordance with the Michigan Manual of Uniform Traffic Control Devices (MMTUTCD), lasted version published at time of advertisement. Provide pavement markings that conform to the Plans, the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, MDOT Pavement Marking Standard Plans, City of Ann Arbor Special Details, and as specified herein.

Materials

Provide materials in accordance with Sections 811 and 920 of the MDOT 2020 Standard Specifications for Construction. Provide the Material Safety Data Sheets to the Engineer for required materials and supplies. Dispose of unused material and containers in accordance with the federal Resource Conservation Recovery Act (RCRA) of 1976 as amended, and 1994 PA 451, Part 111 Hazardous Waste Management. Provide samples of permanent marking materials upon request.

Construction Methods

The preparation and placement of permanent markings shall conform to Section 811 of the MDOT 2020 Standard Specifications, the Plans, and as specified herein.

Measurement and Payment

Completed work, as described, will be measured, and paid for at Contract unit prices for the following Contract (pay) items:

Contract Item (Pay Item)	Pay Unit
Pavt Mrkg, Polyurea, __-inch, White	Foot
Pavt Mrkg, Polyurea, __-inch, Yellow	Foot
Recessing Pavt Mrkg, Longit	Foot
Recessing Pavt Mrkg, Transv	Square Foot
Pavt Mrkg, Polyurea, 12-inch Crosswalk	Foot
Pavt Mrkg, Polyurea, 24-inch Stop Bar	Foot
Pavt Mrkg, Polyurea, _____ Sym	Each
Pavt Mrkg, Polyurea, _____ Legend	Each
Pavt Mrkg, Ovly Cold Plastic, Direction Arrow Sym, Bike	Each
Pavt Mrkg, Ovly Cold Plastic, Bike, Small Sym	Each
Pavt Mrkg, Ovly Cold Plastic, Sharrow Symbol	Each

Guide lines are included in “Recessing Pavt Mrkg, Longit”.

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the MDOT 2020 Standard Specifications for Construction and as modified by this Detailed Specification.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
SPECIAL PAVEMENT MARKING

Description

This work consists of furnishing and installing wet night retroreflective (WR) beads and/or elements, liquid applied pavement marking materials, and Endurablend Polymer Cement surfacing bike lane pavement markings.

All work shall be consistent with the City of Ann Arbor Standard Specifications and the 2020 MDOT Standard Specifications for Construction, except as specified herein.

Materials

Wet Night Retroreflective Beads and/or Elements. Select WR beads and/or elements from one of the following Manufacturers or a Department approved alternative that meets the requirements in Table 1:

3M Corporation
Potter's
Industries
Swarco
Flex-o-Lite

Table 1: WR Markings

Average Initial Retroreflectivity at 30 meter geometry in mcd/lux/m^2		
Test Method	Colo	
	White	Yellow
Dry (ASTM E 1710)	700	500
Wet Recovery (ASTM E 2177)	250	200

Ship the material to the job site in sturdy containers marked in accordance with subsection 920 of the MDOT Standard Specifications for Construction.

Submit to the Engineer prior to the start of work:

a. The Manufacturer's recommended application rate of the beads/elements and the liquidapplied pavement marking binder to be used on the project. If the Manufacturer's recommended application rate differs from the specified rate in Table 811-1 of the Standard Specifications for Construction, the Manufacturer's recommended rate supersedes the table values.

b. Certification from the Manufacturer that when applied according to their application recommendations the beads and/or elements meet the requirements shown in Table 1 above.

Binder. Provide a liquid pavement marking product of the binder type specified in the contract documents from section 811 of the Qualified Products List or as specified by special provision, or use an alternative binder as approved by the Engineer.

The Endurablend bike lane pavement marking material must be comprised with green pigment and anti- skid abilities. The polymer cement surfacing shall be manufactured by Pavement Surface Coatings of Hanover New Jersey, and no material substitutions will be allowed.

1. Pigmented Resin. Transpo Color-Safe Bike Lane Green must be used as the pigment or approved equal. The approved color pigmented resin shall comply with FHWA green color guidelines for bike lanes.

2. Anti-Skid Aggregate. Anti-skid aggregates shall be provided by the pavement marking supplier. Aggregate shall have a minimum Hardness of 7.0 per Mohs Scale.

Construction

Place the binder and beads and polymer surface coatings in accordance with the Manufacturers' recommendations and sections 811 and 920 of the Standard Specifications for Construction except as noted above.

Construction of bike lane pavement markings shall be in accordance with manufacturer application and installation procedures, MDOT 2020 Standard Specifications for Construction, and Engineer.

All pavement marking areas shall be laid out by the contractor and then reviewed by the Engineer. Marking layout shall be approved by the Engineer prior to placement of material.

Surface preparation shall include cleaning of the pavement surface using high pressure water, compressed air or sandblasting and shall conform to ASTM D4263. All surface damage shall be corrected by the Contractor at the Contractor's expense, as directed by the Engineer. Manufacturer recommended pavement and air temperatures must be followed.

All markings on concrete surfaces shall receive a base coat application and shall be included in the pay item. Marking layout, material mixing, base coat application, and pigmented coat application shall comply with the manufacturer's installation procedures.

The Contractor shall protect the pavement markings from damage and allow them to fully cure prior to allowing traffic to drive over markings. Any damage shall be corrected by the Contractor at the Contractor's expense.

Measurement and Payment

The completed work, as described, will be measured and paid for at contract unit prices using the following pay items:

Pay Item	Pay Unit
Pavt Mrkg, Methyl Methacrylate, Green	Square Foot

The unit price for these items of work shall include all labor, material, and equipment costs to perform all the work.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
TEMPORARY PAVEMENT MARKING

Description

This work consists of furnishing, installing, and disposing of temporary symbol special pavement markings in accordance with the contract and as directed by the Engineer. Where temporary special pavement markings are required in this contract, use Type R temporary wet reflective special markings if the markings applied during the project require removal during the life of the contract.

Materials

Temporary Special Markings - Wet Reflective, Type R, Tape. Provide Type R temporary special markings from the Qualified Products List (subsection 922.06.A.1 of the Standard Specifications for Construction). Apply and remove tape in accordance with the manufacturer's instructions. The tape must remain flexible and conform to the texture of the pavement surface during use. All curved arrows, curved legends, and curved symbols must be precut or fabricated prior to placement in the field.

Construction

Install the temporary pavement markings in accordance with the Michigan Department of Transportation (MDOT) Pavement Marking Standard Plan PAVE-900 Series.

Temporary Special Markings - Wet Reflective, Type R, Tape. Between April 15 and November 1, place Type R wet reflective tape in accordance with the manufacturer's specifications for existing temperature and pavement conditions.

Fabricate symbols prior to placement in the field.

Replace Type R wet reflective tape that fails, as directed by the Engineer. The Engineer will not pay for special markings that fail due to improper installation per the manufacturer's specifications. The Engineer will document the failure and meet with the Contractor and/or supplier to discuss reason for failure. Payment will be as determined by the Engineer. Unless documented in the Inspector's Daily Report (IDR) the Engineer will otherwise assume marking failure is a result of damage by traffic. The Engineer will pay for marking failure due to traffic or not clearly documented in an IDR at the contract unit price.

Measurement and Payment

The completed work, as described, will be measured and paid for at contract unit prices using the following pay items:

Pay Item	Pay Unit
Pavt Mrkg, Cover, Type R, Black	Foot
Pavt Mrkg, Wet Reflective, Type R Tape, 4 inch White, Temp	Foot
Pavt Mrkg, Wet Reflective, Type R Tape, 4 inch Yellow, Temp	Foot

The unit price for these items of work shall include; labor, equipment and materials necessary to provide, place, maintain (as noted), remove, and properly dispose of the temporary pavement marking.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
VERTICLE DELINEATORS

AA:NJB 1 of 1 4/27/23

Description

This work shall consist of fabricating, shipping and installing permanent signs, vertical delineators, and plastic curb. Work shall be in accordance with Sections 810 and 919 of MDOT 2020 Standard Specifications

Materials

Signs are to be fabricated in accordance with Section 919.02 Traffic Signs of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction and the 2011 Michigan Manual of Uniform Traffic Control Devices (MMUTCD).
The plans indicate the signs to be fabricated.

Materials for traffic signs include steel posts and hardware needs to install signs.

R1-6 base shall be manufactured by Qwick Kurb, Inc, model number L60 in yellow color. End sections shall be model number L61. The assembly shall include L65 reflective arcs, a reboundable flex boot with bolt in construction, with a 224 sq. in. reflective crosswalk marker panel MDOT sign R1-6. All pavement mounting hardware shall be stainless steel meeting the dimensional and strength capacity of the manufacturer's recommendation.

City Post shall be manufactured by Pexco. Model shall be 36-inch white or yellow City Post Surface Mount Model SM, 3" OF Flexible, Embedded Anchor Cup 2-inch diameter, 4-inch deep, Model P/N 800BASE213. Sheeting color for posts shall be white on the white posts and yellow on the yellow posts AR1000.

Construction

Signs shall be installed per manufacturer's specifications at locations determined by the Engineer.

Measurement and Payment

The completed work will be measured and paid for the following pay items:

Contract Item (Pay Item)	Pay Unit
City Posts, 3-inch, (color)	Each
Quick Curb	Foot
Quick Curb, End Unit	Each

The approved price for this item shall include all labor, material, and equipment costs required to complete the work.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
SOIL EROSION CONTROL

Description

This work includes furnishing, placing, maintaining and removing soil erosion and sedimentation control measures, including but not limited to, silt fence and fabric filters at all drainage structures as shown on the plans and as directed by Engineer, in accordance with Section 208 of the 2020 MDOT Standard Specifications for Construction and the City of Ann Arbor Public Services Department Standard Specifications, except as modified herein.

Filters in existing and proposed inlets, as well as silt fence downstream of construction area, shall be installed in order to minimize the erosion of soil and the sedimentation of water courses. The related work includes cleaning as required during the performance of the project work, removing and disposing of accumulated sediment, and replacement of filters if required by the Engineer so as to provide a properly working inlet filter and a well-drained site.

Materials

Inlet filters shall be in accordance with:

a. REGULAR FLOW SILTSACK® manufactured by ACF Environmental (800) 448-3636;
b. FLEXSTORM® Style FX manufactured by Advanced Drainage Systems, Inc. (800) 821-6710;
c. CATCH-ALL® manufactured by Price & Company (866) 960-4300;
d. or Engineer approved equal.

Silt fence shall be in accordance with Section 208 of the 2020 MDOT Standard Specifications for Construction.

Methods of Construction

The Contractor shall install, maintain, clean, and re-install and/or replace inlet filters and silt fence in accordance with the manufacturer's specifications and as directed by the Engineer at no additional cost. The Contractor shall dispose of debris off-site.

Measurement and Payment

The completed work of Soil Erosion Control will be paid for at the Contract unit price for the following Contract items (pay items):

Contract Item (Pay Item)	Pay Unit
Erosion Control, Inlet Filter	Each
Erosion Control, Silt Fence	Feet

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
RESTORATION

Description

This item of work shall conform to Division IX, Section II, “Clean-Up & Restoration” of the Public Services Area Standard Specifications, and Sections 816 and 917 of Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, except as specified herein.

Site Clean-Up shall include the removal of all surplus materials from the site including, but not limited to, tools, dirt, rubbish, wooden stakes, construction debris, and excess excavated material; the restoration of all woodland, hardscaped, and landscaped areas; replacement of furniture, fixtures, fences, and similar features disturbed by the work; sweeping/cleaning of road surfaces, drives, and sidewalks; removal of temporary fill, and cleaning culverts.

Turf Establishment includes placing topsoil, seed, fertilizer, and mulch on all disturbed areas as approved directed by the Engineer.

High Velocity Mulch Blankets shall be placed on restored areas as shown on the plans and as directed by the Engineer.

Spray Mulch Anchoring shall be permissible only if specifically shown on the plans or approved by the Engineer.

Materials

The materials shall meet the requirements specified in Sections 816.02 and 917 the Michigan Department of Transportation (MDOT) 2020 Standard Specifications as designated, as specified herein, and as approved by the Engineer:

- Topsoil – 4-inches in depth. See Section 917.06.
- Turf Grass seed mixture shall be THM. See Table 816-1 for description and rate of application, and Table 917-2 for purity, germination, and proportions.
- Fertilizers shall be a Class A. See Section 816.03.B for rate of application, and Section 917.09.B.1 for composition requirements.
- Water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances.
- Mulch - Mulch seeded areas with the appropriate materials for the site conditions to promote germination and growth of seed and to mitigate soil erosion and sedimentation.
- High Velocity Mulch Blankets as specified in Section 917.14
- Spray Mulch Anchoring as specified in Section 914.14

Construction, Maintenance, and Acceptance

Turf Establishment, Mulching, and Mulch Blankets shall be in constructed in conformance with section 816 of the MDOT 2020 Standard Specifications.

It is the responsibility of the Contractor to establish a dense area of permanent grasses, sedges, rushes and forbs, free from mounds and depressions prior to final acceptance and payment of this project. Any portion of a seeded area that fails to show a uniform germination shall be reseeded. Such reseeding shall be at the Contractor's expense and shall continue until a dense lawn is established. The Contractor is responsible for restoring all areas disturbed by his construction.

The Contractor shall maintain all seeded areas until they have been accepted by the Engineer. Maintenance shall begin immediately after the seed is in place and continue until final acceptance with the following requirements:

Seeded areas shall be protected and maintained by watering, mowing, and reseeding as necessary, until the period of time when the final acceptance and payment is made by the Engineer for the project, to establish a uniform, weed-free, stand of the specified grasses, sedges, rushes and forbs. Maintenance includes furnishing and installing additional topsoil and reseeding all as may be required to correct all settlement and erosion until the date of final acceptance.

Damage to seeded areas resulting from erosion shall be repaired by the Contractor at the Contractor's expense. Scattered bare spots in seeded areas will not be allowed over three (3) percent of the area nor greater than 6"x 6" in size.

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

Site Clean-Up must be performed upon the completion of each sub-phase of work (as described in the Detailed Specification for Project Schedule), and not as one single operation at the completion of the entire project.

Measurement and Payment

Measurement and payment for this item of work shall conform to Division IX, Section 2, Item No. 891, Clean-Up & Restoration of the Public Services Area Standard Specifications except as modified herein.

Contract Item (Pay Item)	Pay Unit
Turf Establishment	Square Yard
High Velocity Mulch Blankets	Square Yard
Spray Mulch Anchoring	Square Yard
Site Clean-Up	Lump Sum

The completed work for “Site Clean-Up” will be paid for on a lump sum (LS) basis. Partial payment of Site Clean-Up may be paid as work progresses for areas that are complete, as determined by

the Engineer. The sum of partial payments shall not exceed 50% of the total amount until the work on the entire project is complete and ready for final acceptance.

"Turf Establishment" will be measured by area in square yards and shall include the installation of subsequent fertilizer, seed and mulch. This pay item will be paid for at the contract unit price which shall be payment in full for all labor, materials, and equipment needed to accomplish this work as detailed herein.

After initial placement of the topsoil and seed mixture(s), 50 percent of the total quantity placed for "Turf Establishment" will be certified for payment. The remaining 50 percent of the total quantities will be held by the Engineer until such time as all seeded areas have been established and accepted by the Engineer.

High Velocity Mulch Blankets, and Spray Mulch Anchoring will be measured by square yards of area covered. Payment shall include all labor, equipment, and materials necessary to complete installation per the manufacturers' requirements.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
PROTECTING AND PRESERVING IRRIGATION SYSTEMS

Description

This work shall consist of all labor, materials, and equipment necessary to investigate, locate, save and protect from damage, ensure continued and proper operation during the performance of the project work, re-establish operation as necessary, and, upon completion of all project work, ensure that all existing sprinkler systems located within the project limits, or those affected by the project, are functioning in a satisfactory manner as determined by the Engineer.

Materials

None specified.

Construction

The Contractor shall be aware that properties located within the project limits have underground sprinkler systems that irrigate both private property and portions of the public right-of-way. The irrigation systems have been installed by a variety of private installers and may utilize several different materials and/or suppliers of the various components. Portions of the existing irrigation systems have been installed under paved areas, extend into landscaped islands, or may be required to be located within such areas at the conclusion of the project's construction.

The Contractor shall perform the necessary investigations to determine the precise location of the irrigation systems and all affected components prior to the commencement of construction operations. The Contractor shall determine all impacts to the systems that will result pursuant to the project's construction and take all necessary actions to ensure that the sprinkler systems will remain functional during the project's construction. The Contractor shall re-establish the sprinkler systems in such a manner at appropriate intermediate and final project milestones that the original functionality of the system is maintained to the greatest extent possible.

The Contractor shall contact all property owners prior to the commencement of the work to determine the impacts to their irrigation systems and coordinate with them to ensure satisfactory operation of the irrigation systems during construction.

All work shall be approved by the Engineer and the affected property owner(s) at the conclusion of the project's work.

This is an allowance type item. This allowance is not for solving problems caused by the Contractor's neglect, errors, omissions, or other deeds of the Contractor's own fault. Protecting existing irrigation systems where it is not necessary to remove it to complete the work is included in the contract unit price for the pay item General Conditions, Max $_____.

The Contractor is required to present a detailed scope of work and detailed costs for any work contemplated under the irrigation system allowance to the Engineer. No work is to begin until scope and costs have been finalized and approved by the Engineer in writing.

Thereafter, if the approved price for this work is more or less than the allowance amount in the Contract, the Contract Price shall be adjusted accordingly by Change Order. The payment shall

be made on the basis of the actual approved amount without additional charge or markups for overhead, insurances, bonds, or any other incidental expenses. The Contractor shall be responsible for all coordination involved and for the timely completion of the work to fit his/her schedule.

Measurement and Payment

The completed work, as described, will be measured and paid for at the approved price for the following pay item:

Contract Item (Pay Item)	Pay Unit
Irrigation System, Protection and Maintenance, Allowance	Dollar

The approved price for this item shall include all labor, material, and equipment costs required to complete the work.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
TREES AND PLANTINGS

Description

This work shall consist of planting trees or shrubs, and placement of shredded bark mulch at the locations shown on the plans or as directed by the Engineer. Work shall be in accordance with Sections 815, 816 and 917 of the 2020 Michigan Department of Transportation Standard Specifications for Construction with the following amendments or additions.

Watering, removing weeds, and completing all necessary tasks to maintain a healthy stand of plants, and Balled and Burlapped (B&B) Trees shall be included in this work. Extent of work shall include a two year warranty and maintenance period, including but not limited to the following:

1. Watering
2. Weed Control
3. Mulching
4. Disease and Insect Control
5. Pruning
6. Fertilizer Application
7. Removal of Tree Support and Tags

The Contractor shall attend a site walkthrough to review final plantings within the project area.

Tree drip irrigation bags are in addition to planting specifications 815, 816 and 917 of the 2020 Michigan Department of Transportation Standard Specifications.

Materials

All planting methods and materials shall conform to Sections 815, 816 and 917 and the planting details shown on the plans. In addition, tree planting shall include and Tree Drip Irrigation Bags and Watering and Cultivating. Tree and plant types shall be as shown on the Drawings or as directed by the Engineer.

Tree Drip Irrigation Bags shall be Treegator Original 20-gallon slow release watering bags, or approved substitution.

Fertilizer shall be slow release, at minimum 50% derived from a natural, organic source, 12-0-6 or approved substitution.

The Contractor shall submit a minimum size sample of ½-gallon sized container of structural soil and topsoil for approval prior to installation.

The Contractor shall submit to the ENGINEER sources for all plant material.

Construction Methods

The construction methods shall be in accordance with the 2020 Michigan Department of Transportation Standard Specifications for Construction Section 815.03 unless otherwise stated in this special provision.

All open tree pits shall be excavated to the full extent of their dimensions as shown in the details SD-L-1, SD-L-2.

Watering and Cultivating shall follow the schedule in the 2020 Michigan Department of Transportation Standard Specifications for construction Section 815 with the adjustment of filling the tree drip irrigation bags with water and using the fertilizer as dictated in this special provision. For each watering and cultivating visit, verification in the form of a report of maintenance activities and certified payroll covering visits, shall be provided to the OWNER by the end of each month that the visits have taken place.

Measurement and Payment

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

Contract Item (Pay Item)	Pay Unit
Tree, 3 inch caliper, Large Shade Trees	Each
Tree, 2 inch caliper, Medium Shade Trees	Each

Measurement and payment for the item Trees and Plantings shall include excavation, backfill, topsoil, shredded bark mulch, tree drip irrigation bags, water, and all other equipment necessary, and as described herein, for a complete installation. Warranty and maintenance for two seasons shall also be included in the prices provided under this allowance.

The final inspection of all planting work under the Contract will be made by the Contractor and Engineer at the end of the maintenance and establishment periods. Before final acceptance is given, the terms of the establishment shall be met and the site shall be cleared of all debris, soil and containers.

Species shall be a mix of shade trees see list on plan sheet 33 of 74.

CITY OF ANN ARBOR
SPECIAL PROVISION
FOR
STREET LIGHT ASSEMBLY

AA:NJB 1 of 2 4/27/23

Description.

This work consists of furnishing and installing street light assemblies at the locations shown in the plans. Each street light assembly includes pole, mast arm, luminaire, wiring, enclosure box, hardware and all associated material required to complete the work. Fixtures shall be cobra head unless specified otherwise on the plans. All work should be completed in accordance with sections 818, 819, 901, 918, and 921 of the 2020 MDOT Standard Specifications for Construction, and additional requirements as specified herein.

Materials.

Provide materials conforming to Buy America provisions and in accordance with sections 818, 819, 901, 918, and 921 of the 2020 MDOT Standard Specifications for Construction and the following requirements of this special provision:

1. Pole
    A. The pole shaft shall be round tapered fiberglass with a .14” per foot taper. The hand hole shall be 2.5” x 5” with a cover. The hand hole area and hardware attachment areas shall be reinforced. The poles shall be designed with have a maximum deflection of 15% under full wind loading conditions. The post shall be non-conductive and chemically inert.
    B. The pole shall include an anchor base, with an 11.5 inch bolt circle.
    C. Unless specified otherwise, the pole shall be 30-foot in length, and have a smooth black finish.
2. Enclosure Box
    A. The enclosure box shall be constructed of polymer concrete; nominal dimensions of 11” W x 18” L x 12” D with open bottom.
    B. The box cover shall be solid and marked: STREET LIGHTING
    C. Minimum design load shall be 15,000 pounds
3. Mast Arm
    A. The mast arm shall be constructed of tapered aluminum, with a span of 68” and rise of 24”
    B. The mast arm shall be attached to the pole with a bracket and hardware specifically intended for use with the specified mast arm and pole.
4. Luminaire
    A. The luminaire shall consist of a die cast aluminum housing with a clear glass lens; mountable to mast arm with a 2-3/8” OD.
    B. The light shall be nominal 60W (250W equivalent) surge protected LED, Color temperature 3000K, rated for 100,000 hours continuous operation at ambient temperatures -40F to 95F.

5. Foundation
    A. Cast in place using 4,000 psi concrete.
    B. Min 24” diameter, Min 6 ft deep
    C. Anchor shall be as per pole manufacturer’s recommendation.
    D. Conduit shall come into the foundation a min of 24-inch below grade and using a conduit pipe the same diameter of that use on the project, with a sweeping bend shall come up at the center point of the foundation.

Construction.

Complete this work in accordance with sections 818, 819, 918, and 921 of the 2020 MDOT Standard Specifications for Construction, as shown the plans, and per this special provision.

1. Obtain shop drawing approval from the Engineer prior to installation of units.
2. Mount the street light assemblies per manufacturer’s requirements and as specified, in locations directed by the Engineer.

Measurement and Payment.

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

Pay Item	**Pay Unit**
Street Light Assembly	Each
Light Std Fdn	Each

Street Light Assembly includes all labor, equipment, and materials required to furnish and install a new street light as specified herein.

Light Std Fdn includes all labor, equipment, and materials required to excavate, form, furnish concrete, vibrate, furnish conduit, and sweeps and install, furnish anchor bolts and install, and finish concrete surface for a finished foundation ready for use with the new street light, as specified herein.

CITY OF ANN ARBOR
SPECIAL PROVISION
FOR
ELECTRICAL AND COMMUNICATION HANDHOLES

AA:MGN 1 of 2 06/2021

Description.

This work shall consist of furnishing and installing electrical handholes, traffic signal handholes and communication handhole assemblies at the locations shown in the Plans, or as directed by the Engineer. All work shall be completed in accordance with the current National Electric Code (NEC), Sections 818 and 819 of the Michigan Department of Transportation 2020 Standard Specifications for Construction, except as specified herein.

Materials.

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

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

Methods of Construction.

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

The Pay Item Electrical Handhole Assembly, Complete shall include:

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

The Pay Item Communication Handhole Assembly, Complete shall include:

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

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

Measurement and Payment.

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

Contract Item (Pay Item)	**Pay Unit**
Electrical Handhole Assembly, Complete _x__	Each
Communication Handhole Assembly, Complete	Each

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

APPENDIX 1

Soil Boring Report

GEOTECHNICAL INVESTIGATION REPORT

PROPOSED EARHART ROAD WATERMAIN
ANN ARBOR, MICHIGAN
MSG PROJECT NO.: ANNA0039

DECEMBER 7, 2021

PREPARED FOR:

CITY OF ANN ARBOR

301 E. HURON STREET
PO BOX 8647
ANN ARBOR, MICHIGAN 48104

PREPARED BY:

THE MANNIK & SMITH GROUP, INC.

2365 S. HAGGERTY ROAD
CANTON, MICHIGAN 48188

December 7, 2021

Mr. Igor Kotlyar, PE
Planning Services
City of Ann Arbor
301 E. Huron Street
PO Box 8647
Ann Arbor, Michigan 48104

RE: Geotechnical Investigation Report
Proposed Earhart Road Watermain
MSG Project Number: ANNA0039

Dear Mr. Kotlyar:

This report presents the results of our geotechnical investigation for the proposed watermain on Earhart Road in Ann Arbor, Michigan. We completed this investigation in accordance with our contract with the City of Ann Arbor dated May 15, 2020.

We trust that this report addresses your project needs. We appreciate the opportunity to work with you on this very important project. Please contact us if you have any questions or if we can be of further assistance.

Sincerely,
The Mannik & Smith Group, Inc.

Michael Schlenke, EIT
Geotechnical Engineer

Ibraheem Shunnar, PE
Principal/Vice President

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Appendices

1.0 INTRODUCTION

The Mannik & Smith Group, Inc., (MSG) was retained by the City of Ann Arbor to conduct a geotechnical investigation to support the design of a watermain on Earhart Road within the city limits. The approximate site location is depicted in Figure 1 Site Location Map in Appendix A. This geotechnical investigation was performed in general accordance with our contract with the City of Ann Arbor dated May 15, 2020.

2.0 SUBSURFACE INVESTIGATION

2.1 Field Exploration

The subsurface investigation consisted of performing a total of four (4) soil borings, designated SB-01 to SB-04. Borings were planned to be advanced to 10 feet below ground surface, except Boring SB-01. Boring SB-01 was extended to 15 feet due to the presence of soft soils. The number of borings, the approximate locations, and the boring depths were determined by City engineers. The boring locations were field located by MSG. A Soil Boring Location Plan is presented in Figures 2a and 2b in Appendix A.

The drilling operations for this investigation were performed on November 5th and 12th, 2021. The soil borings were performed using a track-mounted Geoprobe 7822DT drill rig. The borings were advanced by hydraulically pushing 3.25-inch diameter steel casing. Upon completion, the boreholes were backfilled using soil cuttings and bentonite chips, and were capped with cold patch asphalt.

During drilling operations, Standard Penetration Test (SPT) and soil sampling was conducted in accordance with ASTM D1586 procedures ("Standard Method for Penetration Tests and Split Barrel Sampling of Soils") and was completed at a 2.5 foot interval. The Standard Penetration Test resistance (N-value) is presented graphically in the Soil Boring Logs, included in Appendix B.

Collected soil samples were labeled with the soil boring designation and a unique sample number. The samples were sealed in glass jars in the field to protect the soil and maintain the soil's natural moisture content. All samples were transferred to MSG's laboratory for further analysis.

The soil samples collected from this investigation will be retained in our laboratory for a period of 30 days after the date of submission of the final report, after which they will be discarded unless we are notified otherwise.

Whenever possible, groundwater level observations were made during the drilling operations and are shown in the Soil Boring Logs. In addition, prior to backfilling, each open borehole was observed again for groundwater. During drilling, the depth at which free water was observed, where drill cuttings became saturated or where saturated samples were collected, was indicated as the groundwater level during drilling. In pervious soils (granular soils), the indicated water levels are considered relatively reliable when solid or hollow-stem augers are used for drilling. In cohesive soils, groundwater observations are not necessarily indicative of the static water table due to low permeability rates of the soils and due to the sealing off of natural paths of groundwater during drilling operations. It should be noted that seasonal variations and recent rainfall conditions may influence the groundwater table significantly.

2.2 Laboratory Testing

Each split-spoon recovered from the borings was visually examined. This examination was performed to verify conditions identified within field boring logs and to select samples for further laboratory evaluation.

Representative soil samples were subjected to laboratory tests consisting of the pocket penetrometer test, unconfined compression test (ASTM D2166), and natural moisture content (ASTM D2216). A brief description of each test performed by MSG is provided in Laboratory Test Procedures in Appendix C.

All soil samples were classified in general accordance with the Unified Soil Classification System (USCS). The USCS group symbol determined from the visual-manual classification is shown in parentheses at the end of the sample description for each layer shown on the Soil Boring Logs.

The results of the soil classification and the laboratory test results are included on the Soil Boring Logs and soil laboratory test data, which are presented in Appendices B and C, respectively. Also included in Appendix B are General Soil Sample Notes, and a Boring/Well Log Key that illustrates the soil classification criteria and terminology used on the Soil Boring Logs.

3.0 SUBSURFACE CONDITIONS

3.1 Subsurface Classification

The subsurface soil and groundwater conditions encountered in the borings drilled at the site are presented in the Soil Boring Logs contained in Appendix B.

The following sections describe the subsurface conditions in terms of major soil strata for the purposes of geotechnical exploration. The soil boundaries indicated are inferred from non-continuous sampling and observations of the drilling operations and/or sampling resistance. The subsurface conditions discussed in the following sections and those shown on the boring logs represent an evaluation of the subsurface conditions based on interpretation of the field and laboratory data using normally accepted geotechnical engineering judgement and common engineering practice standards. The subsurface conditions described herein may vary beyond the boring locations and at different times of the year. A generalized soil profile of the subsurface conditions encountered across the site of the proposed site improvements, beginning at the ground surface and extended downward is as follows:

Surficial Materials – Asphalt

All boring locations were covered with a layer of approximately 7 to 8 inches of asphalt. Five inches of aggregate base was observed only at SB-01.

Stratum 1 – Fill (SM, SP)

Very loose to dense fill sand was encountered beneath the asphalt in borings SB-01, SB-02, and SB-04. The material was brown and was described as silty or gravelly sand. The depth to which it was encountered varied from 3.5 to 10 feet below grade.

Stratum 2 – Silty and Clayey Sand (SM)

Native brown silty and/or clayey sand was encountered in all borings except SB-02. It was encountered from the bottom of fill to the terminus of the borehole in borings SB-01 and SB-04. It was observed from bottom of asphalt to 3.5 feet below grade in SB-03.

Stratum 3 – Silty and/or Sandy Clay (CL)

Very stiff to hard silty and sandy clay was encountered in boring SB-03 from 3.5 feet below grade to the terminus of the borehole.

3.2 Groundwater Observations

Groundwater was not encountered in any of the borings during drilling operations. Typically, the level where the soil color changes from brown to gray is generally indicative of the long term groundwater level. Water levels reported are accurate only for the time and date the borings were drilled. The borings were backfilled and sealed the same day that they were completed. Long term monitoring of the boreholes was not included as part of the scope of our subsurface investigation.

It should be noted that the elevation of the natural groundwater table is likely to vary throughout the year depending on the amount of precipitation, runoff, evaporation, and percolation in the area, as well as the water level in any surface water bodies in the vicinity. Long term monitoring with monitoring wells or piezometers would be necessary to accurately assess the groundwater levels and fluctuation patterns at the site.

4.0 ANALYSES AND RECOMMENDATIONS

4.1 Site Preparation

The following are our recommendations for the site soil preparation based on the geotechnical investigation performed for this project. These recommendations should be incorporated into the project specifications.

Before proceeding with construction, surface soils, vegetation, topsoil, root systems, refuse, asphalt, concrete including any existing abandoned buried foundations, and other deleterious materials should be stripped from the proposed development/construction areas. Cohesive soils are moisture sensitive and could become unstable if proper site water controls are not implemented and/or if they are subject to construction traffic. Every effort should be taken to minimize disturbance during compaction or over excavation. Where possible, free standing water should be diverted away from the construction perimeters or pumped out using a sump to accommodate the proper compaction techniques.

Generally, areas exposed by stripping operations on which subgrade preparations are to be performed should be compacted in place to 98 percent of Standard Proctor or 95 percent of Modified Proctor within 2 percent optimum moisture content (OMC).

Existing abandoned utilities or underground structures within the proposed location were not identified but may be present. If such utilities are present, they should be removed and relocated or abandoned in place. If abandoned in place, it is recommended that the utility pipe be filled with cement grout to mitigate the potential for collapse in the future. Should the utility lines be removed from the site, the resultant trench excavations should be backfilled with well-compacted granular material, placed and compacted in accordance with the recommendations of Section 4.2.

4.2 Fill Placement and Engineered Fill Requirements

All fill operations shall meet the requirements of the City of Ann Arbor. All fill should consist of inorganic soil that is free from all deleterious materials and construction debris. Fill materials should not be placed in a frozen condition or upon frozen subgrades. Proper drainage should be maintained during and after fill placement to prevent water from impacting compaction efforts or long-term fill integrity. In utility trenches, granular backfill material should extend at least two pipe diameters above the pipe's crown. Compacted on-site material can be used as a backfill for the balance of the trench excavation, if approved by the project engineer.

The actual lift thickness suitable for fill placement is dependent upon the soil type, compaction equipment, and the compaction specification. In general, fill should be placed in nine (9)-inch loose thickness lifts (eight (8)-inch compacted); assuming appropriately weighted and ballasted compaction equipment is utilized. In confined areas where hand operated compaction equipment is required, four (4)-inch and six (6)-inch loose thickness lifts should be utilized for hand operated vibratory plate compactors and hand operated vibratory drum rollers weighing at least 1,000

pounds, respectively. Sand fills should be compacted using smooth vibratory rollers. Clay fills should be compacted using a sheep foot compactor. The geotechnical engineer, as part of the construction monitoring, should review the equipment utilized for compaction to confirm suitability relative to the specified loose lift thickness. If necessary, the geotechnical engineer will recommend a revised lift thickness suitable to the equipment performing compaction.

The soil should be compacted to 98 percent of the Standard Proctor or 95 percent of Modified Proctor maximum dry density within two (2) percent of the optimum moisture content. A qualified geotechnical consultant should be retained to monitor all fill placement in order to assure that materials are placed according to their suitability, and compaction requirements are achieved. In-place soil moisture/density testing should be performed during fill placement activities to assure proper fill compaction. Areas that do not achieve compaction requirements after initial placement should be re-compacted to meet project requirements.

4.3 Excavations and Slope

Familiarity with applicable local, state and federal safety regulations, including current OSHA excavation and trench safety is vital. Therefore, it should be a requisite for both the Owner and Contractor with the Contractor by and large being responsible for the safety of the site. Activities at the site, such as utilities or building demolition and site preparation, may require excavations at significant depths below the ground surface. Slope height, slope inclination, and excavation depth (including utility trench excavations) should in no case exceed those specified in local, state, or federal safety (OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926 Subpart P) regulations. Such regulations are strictly enforced and, if not followed, the Owner, Contractor, or earthwork or utility Subcontractors could be liable for substantial penalties.

The overburden soils encountered during our investigation were generally composed of silty and clayey sand. Based upon the data obtained, we anticipate OSHA will classify site clay soils as **Type C** soil. Flatter slopes will be required if seepage conditions occur during construction. For permanent excavations and slopes, the grades should be no steeper than 4(H):1(V) without further geotechnical review of the finalized grading plan. If any excavation, including a utility trench, is extended to a depth of more than 20 feet, OSHA requires that a Professional Engineer design the side slopes of such excavations. However, we recommend that any excavation extending to a depth of more than 5 feet below existing grade be done under the supervision of a qualified engineer.

Table 4.2.1
ALLOWABLE SLOPES

SOIL TYPE	H:V	SLOPE ANGLE
Stable Rock	Vertical	90°
Type A	¾:1	53°
Type B	1:1	45°
Type C	1 ½ : 1	34°

5.0 CONSTRUCTION CONSIDERATIONS

5.1 Groundwater Control

Groundwater was not observed during the on-site drilling activities. Typically, the groundwater elevation fluctuates and is higher during the winter and spring and lower in summer and early fall. The amount and type of dewatering required during construction will be further impacted by the weather, groundwater levels at the time of construction, the effectiveness of the Contractor's techniques in preventing surface water runoff from entering open excavations, and

their ability to lower the groundwater table. The Contractor should be prepared to address general water infiltration (i.e. pumping water from prepared sumps).

6.0 GENERAL QUALIFICATIONS AND LIMITATIONS

The evaluations, conclusions and recommendations in this report are based on our interpretation of the field and laboratory data obtained during the geotechnical investigation, our understanding of the project and our experience during previous work, with similar sites and subsurface conditions. Data used during this exploration included:

- Four (4) exploratory borings performed during this investigation;
- Observations of the project site by our staff;
- Results of laboratory soil testing; and,
- Results of the geotechnical analyses.

The subsurface conditions discussed in this report and those shown on the boring logs represent an estimate of the subsurface conditions based on interpretation of the boring data using normally accepted geotechnical engineering judgments. Although individual test borings are representative of the subsurface conditions at the boring locations on the dates shown, they are not necessarily indicative of subsurface conditions at other locations or at other times. MSG is not responsible for independent conclusions, opinions, or recommendations made by others based upon information presented in this report.

We strongly recommend the final project plans and specifications be reviewed by MSG's geotechnical engineer to confirm that the geotechnical aspects are generally consistent with the recommendations of this report. In particular, the specifications for excavation should be prepared and/or reviewed by MSG's Geotechnical Engineer of Record.

This report and evaluation reflects only the geotechnical aspects of the subsurface conditions at the site. Review and evaluation of environmental aspects of subsurface conditions are beyond the scope of this report.

APPENDIX A

FIGURE 1 – SITE LOCATION MAP

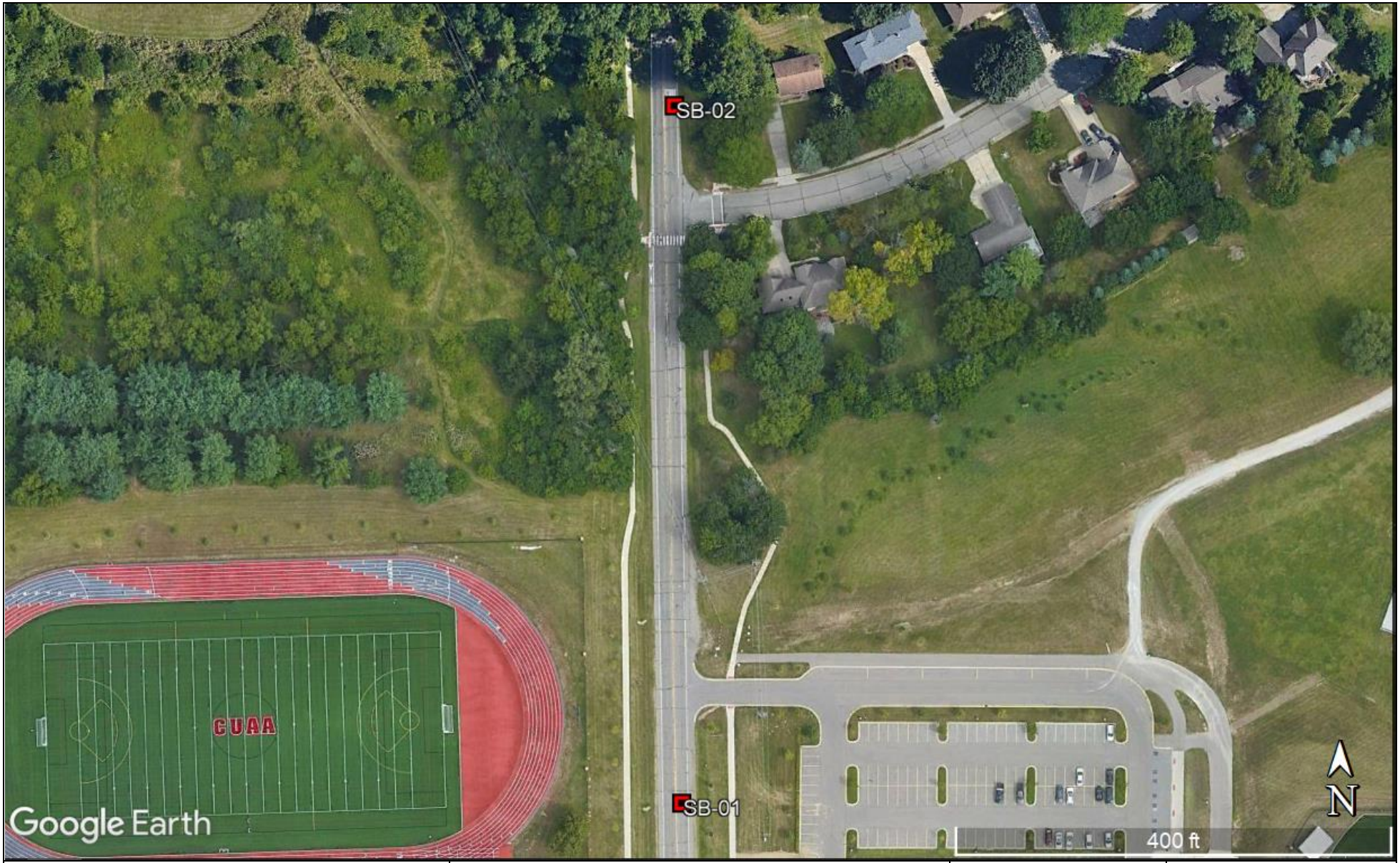
FIGURE 2A-B – SOIL BORING LOCATION PLANS

Mannik Smith GROUP
2365 Haggerty Road South
Canton, Michigan 48188
Tel: 734-397-3100
Fax: 734-397-3131
www.MannikSmithGroup.com

Figure 1: Site Location Map
Platt and Earhart Improvements Project
Ann Arbor, Michigan
MSG Job No. ANNA0039

Notes:
Map adapted from Google Earth

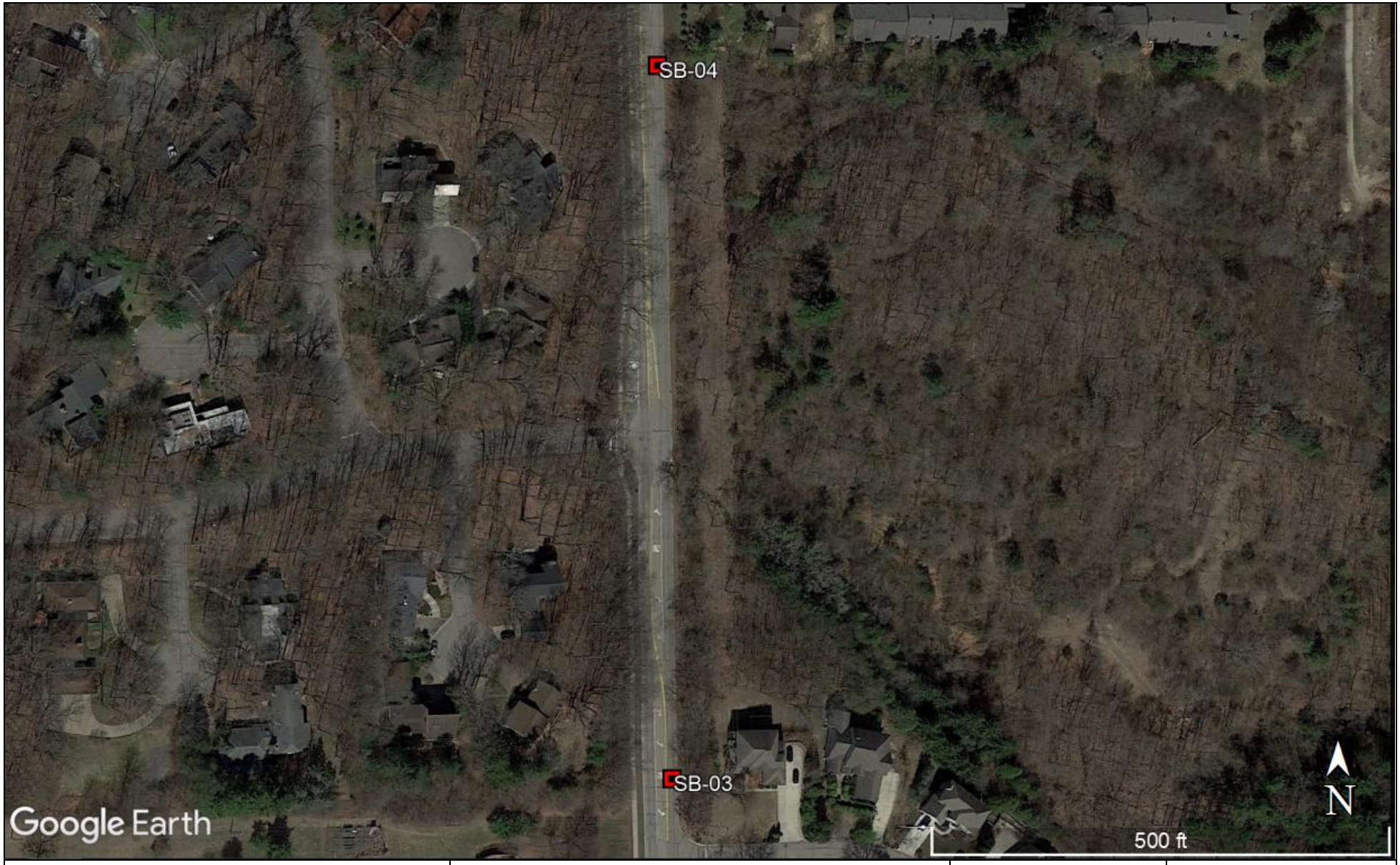
N



2365 Haggerty Road South
Canton, Michigan 48188
Tel: 734-397-3100
Fax: 734-397-3131
www.MannikSmithGroup.com

Figure 2a: Soil Boring Location Plan
Platt and Earhart Improvements Project
Ann Arbor, Michigan
MSG Job No. ANNA0039

Notes:
Map adapted from Google Earth



2365 Haggerty Road South
Canton, Michigan 48188
Tel: 734-397-3100
Fax: 734-397-3131
www.MannikSmithGroup.com

Figure 2b: Soil Boring Location Plan
Platt and Earhart Improvements Project
Ann Arbor, Michigan
MSG Job No. ANNA0039

Notes:
Map adapted from Google Earth

APPENDIX B
SOIL BORING LOGS

The Mannik & Smith Group, Inc.
2365 Haggerty Road South, Canton, MI 48188
ph: (734) 397-3100 fax: (734) 397-3131
www.manniksmithgroup.com

BORING ID: SB-01

CLIENT City of Ann Arbor
PROJECT NAME Platt and Earhart Improvements Project
PROJECT NUMBER ANNA0039
PROJECT LOCATION Earhart Rd & Platt Rd, Ann Arbor, MI
DATE STARTED 11/5/21 **COMPLETED** 11/5/21
BORING COORDINATES N/A
DRILLING METHOD 3.25" direct push casing w/ 2" split spoon
GROUND ELEVATION
DRILLING CONTRACTOR MSG
TOTAL DEPTH 15.0 FT **BACKFILL** Bentonite Chip/Cold Patch
DRILL RIG Geoprobe 7820DT **HAMMER TYPE** Automatic
LOGGED BY JI **CHECKED BY** ISS
DRILLER JDF
REMARKS N/A

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (FEET)	SAMPLE TYPE NUMBER	BLOW COUNTS	SPT N VALUE	RECOVERY % (RQD)	DRY DENSITY (PCF)	UNCONF. COMP. STRENGTH (PSF)	MOISTURE CONTENT (%)
	ASPHALT (7 inches)	0							
	AGGREGATE BASE (5 inches)								
	Loose to very loose, brown silty SAND, trace gravel and clay, damp (FILL)		SS 1	7-3-3	6	33			7
		5	SS 2	1-1-1	2	11			5
	Very loose to loose, brown clayey SAND, trace gravel, moist (SC)		SS 3	1-0-0	0	45			8
		10	SS 4	0-0-0	0	45			11
	@13.5' some gravel	15	SS 5	1-1-4	5	45			13
	Bottom of borehole at 15.0 feet.								

▲ SPT N VALUE ▲ (10 20 30 40)
◇ UNCONF. COMP. STRENGTH (PSF) ◇ (2000 4000 6000 8000)
ATTERBERG LIMITS PL MC LL (20 40 60 80)
□ DRY DENSITY (PCF) □ (100 110 120 130)

LEGEND:

WATER LEVEL AT TIME OF DRILLING N/A
WATER LEVEL AT END OF DRILLING N/A
WATER LEVEL AFTER DRILLING N/A

D = UCS TEST PERFORMED ON DISTURBED SAMPLE
P = POCKET PENETROMETER TEST
T = TORVANE SHEAR TEST

AASHTO R18

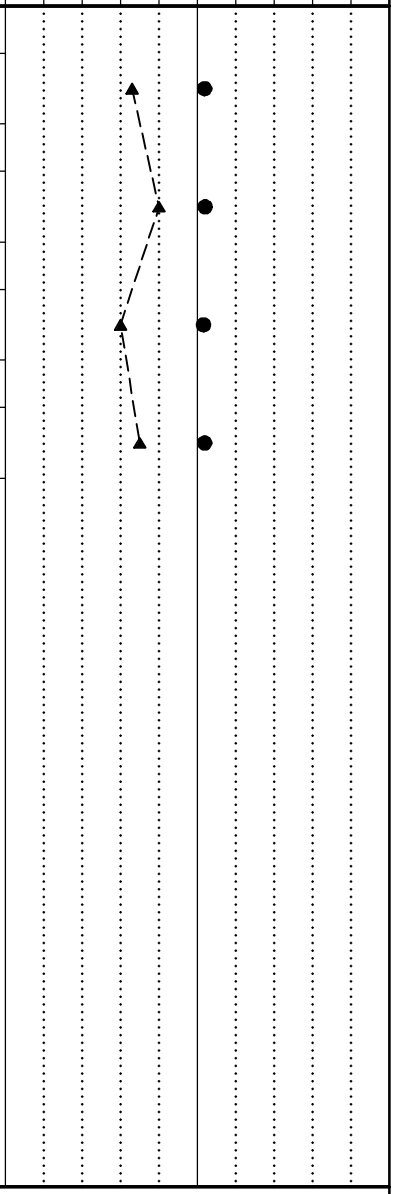
GEOTECH STANDARD LOG - GINT STD US LAB.GDT - 12/3/21 17:03 - C:\USERS\MSCHIENKE\DESKTOP\ANNA0039.GPJ

The Mannik & Smith Group, Inc.
2365 Haggerty Road South, Canton, MI 48188
ph: (734) 397-3100 fax: (734) 397-3131
www.manniksmithgroup.com

BORING ID: SB-02

CLIENT City of Ann Arbor
PROJECT NAME Platt and Earhart Improvements Project
PROJECT NUMBER ANNA0039
PROJECT LOCATION Earhart Rd & Platt Rd, Ann Arbor, MI
DATE STARTED 11/5/21 **COMPLETED** 11/5/21
BORING COORDINATES N/A
DRILLING METHOD 3.25" direct push casing w/ 2" split spoon
GROUND ELEVATION
DRILLING CONTRACTOR MSG
TOTAL DEPTH 10.0 FT **BACKFILL** Bentonite Chip/Cold Patch
DRILL RIG Geoprobe 7820DT **HAMMER TYPE** Automatic
LOGGED BY JI **CHECKED BY** ISS
DRILLER JDF
REMARKS N/A

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (FEET)	SAMPLE TYPE NUMBER	BLOW COUNTS	SPT N VALUE	RECOVERY % (RQD)	DRY DENSITY (PCF)	UNCONF. COMP. STRENGTH (PSF)	MOISTURE CONTENT (%)
	ASPHALT (8 inches)	0							
	Dense, brown silty SAND, some gravel, dry (FILL)		SS 1	28-18-15	33	67			4
			SS 2	20-20-20	40	67			4
		5	SS 3	28-15-15	30	45			3
	Dense, brown gravelly SAND, dry (FILL)	10	SS 4	30-15-20	35	67			4
	Bottom of borehole at 10.0 feet.								



LEGEND:

WATER LEVEL AT TIME OF DRILLING N/A
WATER LEVEL AT END OF DRILLING N/A
WATER LEVEL AFTER DRILLING N/A

D = UCS TEST PERFORMED ON DISTURBED SAMPLE
P = POCKET PENETROMETER TEST
T = TORVANE SHEAR TEST

AASHTO R18

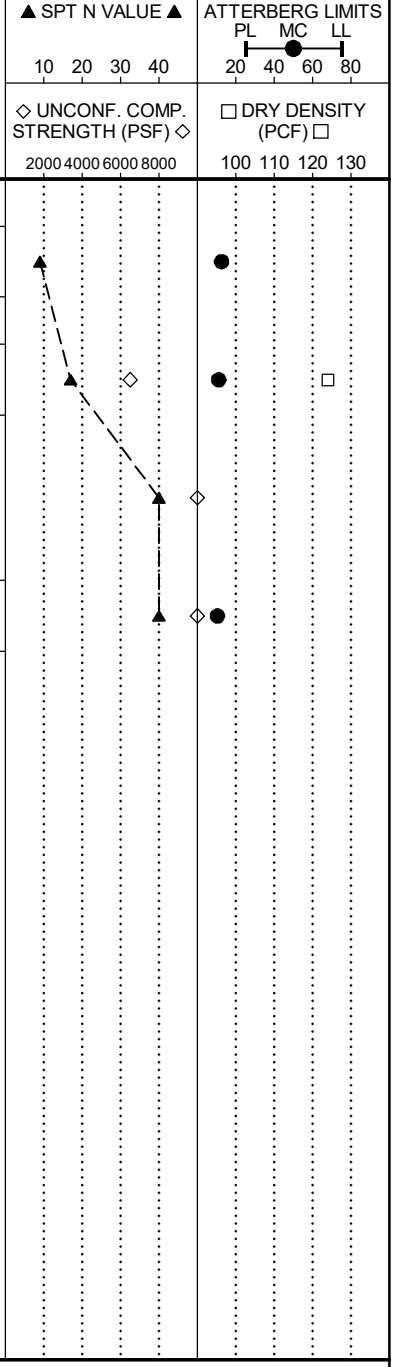
GEOTECH STANDARD LOG - GINT STD US LAB.GDT - 12/3/21 17:03 - C:\USERS\MSCHIENKE\DESKTOP\ANNA0039.GPJ

The Mannik & Smith Group, Inc.
2365 Haggerty Road South, Canton, MI 48188
ph: (734) 397-3100 fax: (734) 397-3131
www.manniksmithgroup.com

BORING ID: SB-03

CLIENT City of Ann Arbor
PROJECT NAME Platt and Earhart Improvements Project
PROJECT NUMBER ANNA0039
PROJECT LOCATION Earhart Rd & Platt Rd, Ann Arbor, MI
DATE STARTED 11/12/21 **COMPLETED** 11/12/21
BORING COORDINATES N/A
DRILLING METHOD 3.25" direct push casing w/ 2" split spoon
GROUND ELEVATION
DRILLING CONTRACTOR MSG
TOTAL DEPTH 10.0 FT **BACKFILL** Bentonite Chip/Cold Patch
DRILL RIG Geoprobe 7820DT **HAMMER TYPE** Automatic
LOGGED BY JI **CHECKED BY** ISS
DRILLER JDF
REMARKS N/A

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (FEET)	SAMPLE TYPE NUMBER	BLOW COUNTS	SPT N VALUE	RECOVERY % (RQD)	DRY DENSITY (PCF)	UNCONF. COMP. STRENGTH (PSF)	MOISTURE CONTENT (%)
	ASPHALT (8 inches)	0							
	Loose, brown clayey SAND, trace gravel, moist (SC)		SS 1	3-4-5	9	78			13
	Very stiff, brown sandy CLAY, trace gravel, damp (CL)	5	SS 2	3-7-10	17	78	124	6500[D]	11
	Hard, brown silty CLAY, little sand, trace gravel, damp (CL)		SS 3	10-15-25	40	100		9000+[P]	
		10	SS 4	10-20-20	40	100		9000+[P]	10
	Bottom of borehole at 10.0 feet.								



LEGEND:

WATER LEVEL AT TIME OF DRILLING N/A
WATER LEVEL AT END OF DRILLING N/A
WATER LEVEL AFTER DRILLING N/A

D = UCS TEST PERFORMED ON DISTURBED SAMPLE
P = POCKET PENETROMETER TEST
T = TORVANE SHEAR TEST

AASHTO R18

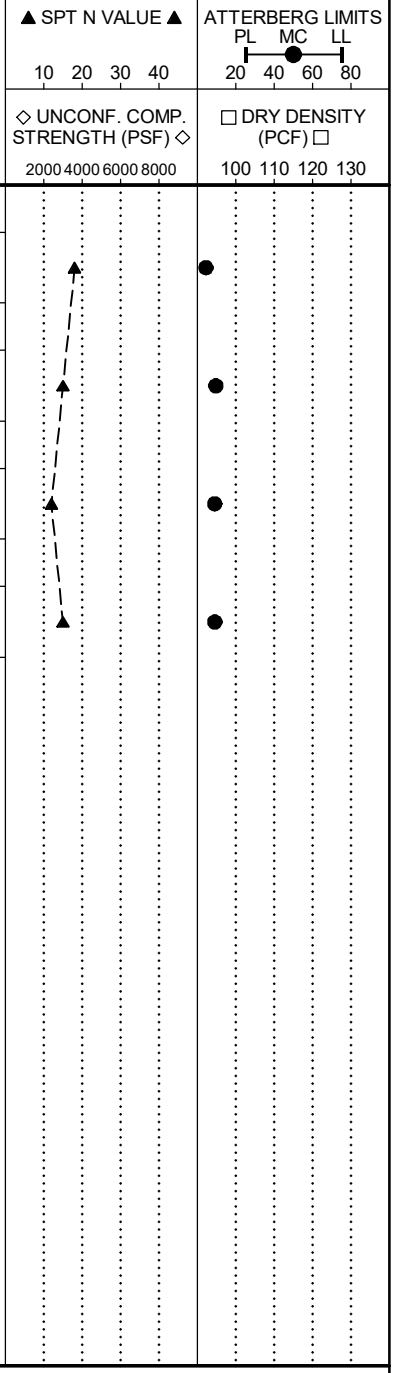
GEOTECH STANDARD LOG - GINT STD US LAB.GDT - 12/3/21 17:03 - C:\USERS\MSCHIENKE\DESKTOP\ANNA0039.GPJ

The Mannik & Smith Group, Inc.
2365 Haggerty Road South, Canton, MI 48188
ph: (734) 397-3100 fax: (734) 397-3131
www.manniksmithgroup.com

BORING ID: SB-04

CLIENT City of Ann Arbor
PROJECT NAME Platt and Earhart Improvements Project
PROJECT NUMBER ANNA0039
PROJECT LOCATION Earhart Rd & Platt Rd, Ann Arbor, MI
DATE STARTED 11/5/21 **COMPLETED** 11/5/21
BORING COORDINATES N/A
DRILLING METHOD 3.25" direct push casing w/ 2" split spoon
GROUND ELEVATION
DRILLING CONTRACTOR MSG
TOTAL DEPTH 10.0 FT **BACKFILL** Bentonite Chip/Cold Patch
DRILL RIG Geoprobe 7820DT **HAMMER TYPE** Automatic
LOGGED BY JI **CHECKED BY** ISS
DRILLER JDF
REMARKS N/A

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (FEET)	SAMPLE TYPE NUMBER	BLOW COUNTS	SPT N VALUE	RECOVERY % (RQD)	DRY DENSITY (PCF)	UNCONF. COMP. STRENGTH (PSF)	MOISTURE CONTENT (%)
	ASPHALT (7 inches)	0							
	Medium dense, brown silty SAND, trace gravel and clay, damp (FILL)		SS 1	25-12-6	18	55			4
	Medium dense, brown clayey SAND, trace gravel, damp (SC)	5	SS 2	6-7-8	15	100			10
	Medium dense, brown silty fine SAND, trace to little clay, damp (SM)		SS 3	7-5-7	12	78			9
		10	SS 4	10-7-8	15	89			9
	Bottom of borehole at 10.0 feet.								



LEGEND:

WATER LEVEL AT TIME OF DRILLING N/A
WATER LEVEL AT END OF DRILLING N/A
WATER LEVEL AFTER DRILLING N/A

D = UCS TEST PERFORMED ON DISTURBED SAMPLE
P = POCKET PENETROMETER TEST
T = TORVANE SHEAR TEST

AASHTO R18

GEOTECH STANDARD LOG - GINT STD US LAB.GDT - 12/3/21 17:03 - C:\USERS\MSCHIENKE\DESKTOP\ANNA0039.GPJ

APPENDIX C

SOIL LABORATORY TEST DATA

The Mannik & Smith Group, Inc.
2365 Haggerty Road South, Canton, MI 48188
ph: (734) 397-3100 fax: (734) 397-3131
www.manniksmithgroup.com

SUMMARY OF LABORATORY RESULTS

AASHTO R18

CLIENT City of Ann Arbor **PROJECT NAME** Platt and Earhart Improvements Project

PROJECT NUMBER ANNA0039 **PROJECT LOCATION** Earhart Rd & Platt Rd, Ann Arbor, MI

Boring No. / Sample No.	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Class-ification	Water Content (%)	Bulk Density (pcf)	Satur-ation (%)	Specific Gravity
SB-01 / SS-1	1.0							6.8			
SB-01 / SS-2	3.5							5.1			
SB-01 / SS-3	6.0							8.2			
SB-01 / SS-4	8.5							10.5			
SB-01 / SS-5	13.5							13.3			
SB-02 / SS-1	1.0							3.8			
SB-02 / SS-2	3.5							4.0			
SB-02 / SS-3	6.0							3.2			
SB-02 / SS-4	8.5							3.8			
SB-03 / SS-1	1.0							12.6			
SB-03 / SS-2	3.5							11.1	137.6		
SB-03 / SS-4	8.5							10.4			
SB-04 / SS-1	1.0							4.5			
SB-04 / SS-2	3.5							9.6			
SB-04 / SS-3	6.0							9.0			
SB-04 / SS-4	8.5							9.1			

LAB SUMMARY - GINT STD US LAB.GDT - 12/3/21 17:15 - C:\USERS\MSCHIENKE\DESKTOP\ANNA0039.GPJ

UNCONFINED COMPRESSION TEST

The Mannik & Smith Group, Inc.
2365 Haggerty Road South, Canton, MI 48188
ph: (734) 397-3100 fax: (734) 397-3131
www.manniksmithgroup.com

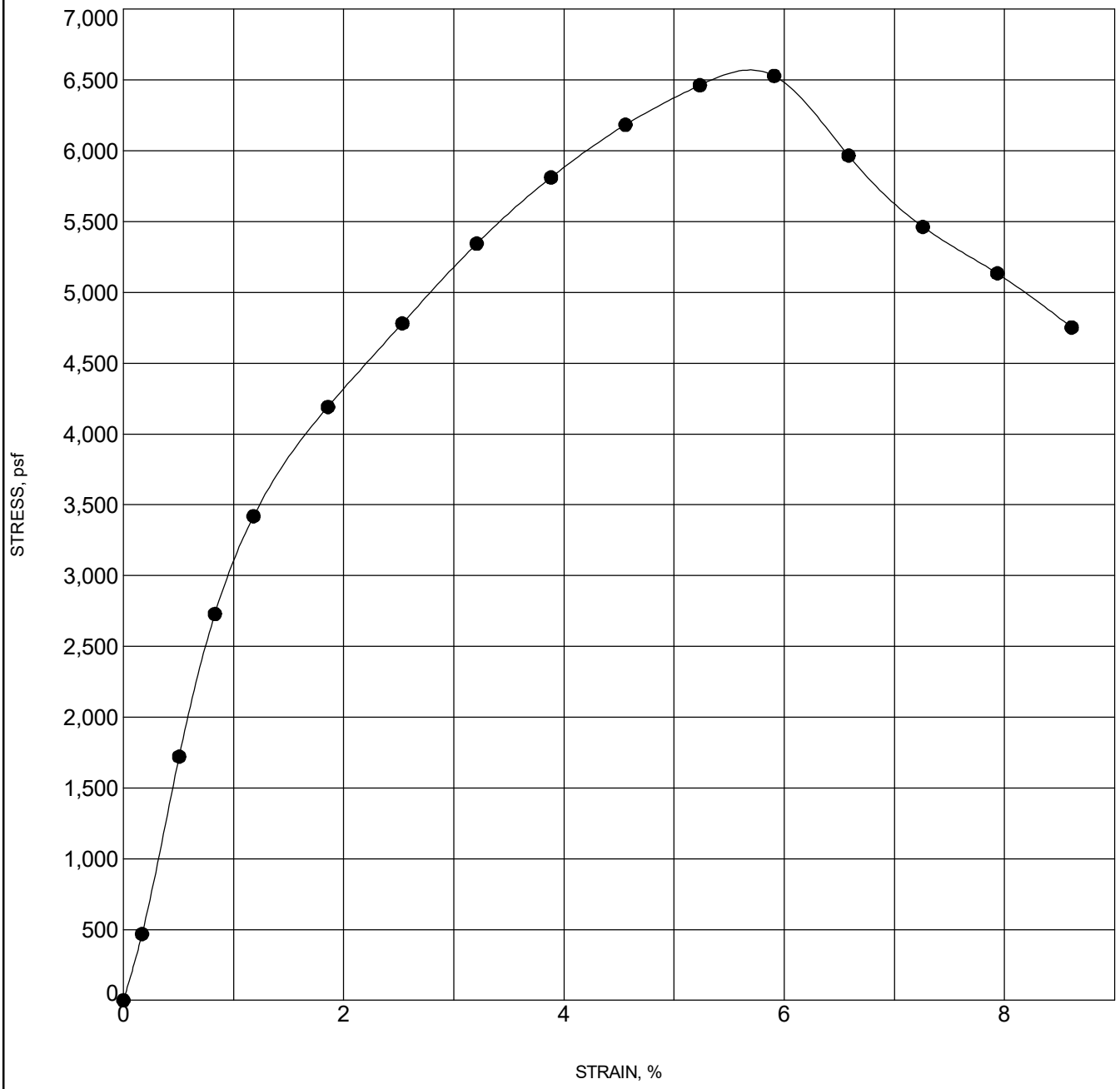
AASHTO R18

CLIENT City of Ann Arbor

PROJECT NAME Platt and Earhart Improvements Project

PROJECT NUMBER ANNA0039

PROJECT LOCATION Earhart Rd & Platt Rd, Ann Arbor, MI



Specimen Identification	Classification	γ_d	MC%
● SB-03 / SS-2 3.5		124	11

UNCONFINED - GINT STD US LAB.GDT - 12/3/21 17:09 - C:\USERS\MSCHIENKE\DESKTOP\ANNA0039.GPJ

MATERIALS TESTING CONSULTANTS

GEOTECHNICAL DATA PACKAGE

CITY OF ANN ARBOR EARHART ROAD RESURFACING

ANN ARBOR, MICHIGAN

Prepared For:

CITY OF ANN ARBOR PUBLIC SERVICES

ANN ARBOR, MICHIGAN

Prepared By:

MATERIALS TESTING CONSULTANTS, INC.

February 2023

MTC Project No. 231047

February 17, 2023
Project No. 231047

City of Ann Arbor – Public Services – Engineering
301 E. Huron St., 4th Floor
Ann Arbor, MI 48104

Attention: Nicholas Bayley, P.E.

Reference: Geotechnical Data Package
City of Ann Arbor – Earhart Road Resurfacing
Ann Arbor, Michigan

Dear Mr. Bayley:

We have completed a geotechnical investigation for the above-referenced project. The purpose of this investigation has been to identify the general subsurface soil conditions in the vicinity of the proposed construction. This work has been performed as described in the email request from Mr. Nicholas Bayley, P.E. of the City of Ann Arbor on January 6, 2023, and in accordance with our active City of Ann Arbor contract for 2021 Geotechnical and Environmental Services.

Presented herein are descriptions of our understanding of the design considerations, the geotechnical investigation, encountered conditions and engineering recommendations. The Appendix contains the report limitations and data collected during this investigation.

PROJECT LOCATION AND INFORMATION

The proposed construction is shown on Figure Nos. 1 and 2. The area of investigation is generally located along Earhart Road from US-23 to the southern intersection between Greenhills Drive and Earhart Road. We understand that investigated road will be resurfaced by the City of Ann Arbor.

INVESTIGATION METHODOLOGY

Hand auger soil borings and sampling along with field engineering reconnaissance were used to investigate the subsurface conditions. Seven borings were drilled to depths of 5 ft below the existing ground surface. Boring locations are shown on Figure Nos. 1 and 2. Investigation procedures, soil classification information and boring logs are provided in the Appendix.

MTC staked the approximate boring locations in the field per locations provided by Mr. Nicholas Bayley, P.E. of the City of Ann Arbor by email on January 6, 2023. Boring elevations were approximated by GPS. The elevations used in this report are given in feet and are based

on NAVD 88 datum, with boring coordinates based on the Michigan State Plane South coordinate system. If more precise location and elevation data are desired, a registered professional land surveyor should be retained to locate the borings and determine their ground elevations.

Borings were drilled and other sampling was conducted solely to obtain indications of subsurface conditions as part of a geotechnical exploration program. No services were performed to evaluate subsurface environmental conditions.

Laboratory

Soil samples were reviewed by one of our engineers and technically classified according to the methods of ASTM D2488 "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)". Calibrated penetrometer tests were performed on cohesive samples to obtain an indication of unconfined compressive strength values.

The estimated values for resilient modulus, Mr, have been provided based on the visual classification of the soil and Table 12-2 in the Michigan DOT User Guide for Mechanistic Empirical Pavement Design, Interim Edition dated March 2015. Other data including results from FWD testing, local knowledge, or from past ME pavement performance on similar subgrade materials may also be of use in estimating resilient modulus if they are available. Typically, recommendations based on visual classification are given as a range of values for various assumptions regarding compaction, moisture content and roadway type. Generally, more conservative values of resilient modulus should be used on high traffic roads with a higher cost to early failure, in areas of high soil moisture/high water table and in areas of variable soil, utility trenches, etc. Conversely, less conservative (higher range) values are typically used on lower traffic roads with drier and more uniform soils.

INVESTIGATION RESULTS

Regional Geology

The *Map of the Surface Formations of the Southern Peninsula of Michigan,* published by the State of Michigan, indicates the site is in an area of moraines. Soil conditions typically are found to range from clay and silt to sand and gravel with possible cobble and boulder in this type of geologic area. The *Map of Bedrock Topography of the Southern Peninsula of Michigan* indicates bedrock to be between els 600 and 650 ft, on the order of 250 to 300 ft below existing grades.

Site Conditions:

At the time of our field work, the area of investigation was covered with asphalt pavement. Earhart Road, in general, sloped down from north to south with elevations ranging from 870 to 903 ft.

Pavement along Earhart Road was generally observed to be in fair to poor condition. Occasional transverse cracking and mild block and alligator cracking were observed along Earhart Road, as well as occasional potholes. Cracks were generally unsealed.

Subsurface Conditions

The investigation, in general, encountered 4 1/4 to 6 1/2 inches of HMA and 11 to 35 inches of natural aggregate base at the surface, with the exception of Boring SB-4 which encountered 8 inches of crushed limestone aggregate base and 10 inches natural aggregate base. Beneath the pavement sections, Borings SB-1, SB-2 and SB-3 generally encountered granular fill consisting of brown poorly graded sand with varying amounts of silt and gravel (SP, SP-SM) to depths ranging from 1.9 to 3.2 ft (els 882.7 to 899.7 ft), while Borings SB-4, SB-5, and SB-7 generally encountered fill, consisting of stiff to very stiff lean clay (CL) and appearing to contain occasional to frequent wood debris and root fragments, to depths ranging from 3.0 to 5.0 ft (els 865.2 to 887.6 ft).

Beneath the pavement section and fill, the subgrade generally consisted of very stiff to hard lean clay (CL) to the explored depths of 5.0 ft (els 865.2 to 898.0 ft).

Generally, groundwater was not encountered in the borings, with exception of Boring SB-6, which encountered groundwater within the aggregate base at a depth of 3.0 ft (el 877.9 ft). We have considered that this groundwater is perched on top of a clay layer.

Groundwater levels may fluctuate due to seasonal variations such as precipitation, snowmelt, nearby river or lake levels and other factors that may not be evident at the time of measurement. Groundwater levels may be different at the time of construction.

This section has provided a generalized description of the encountered subsurface soil conditions. The boring logs located in the Appendix should be reviewed for detailed soil descriptions. Some variation between boring locations may be expected.

CLOSURE

In this data package, descriptions of the geotechnical investigation and encountered conditions have been presented. The limitations of this study are described in the Appendix.

We appreciate the opportunity to provide this service to you on this project. Should you have any questions or require further assistance, please contact our office.

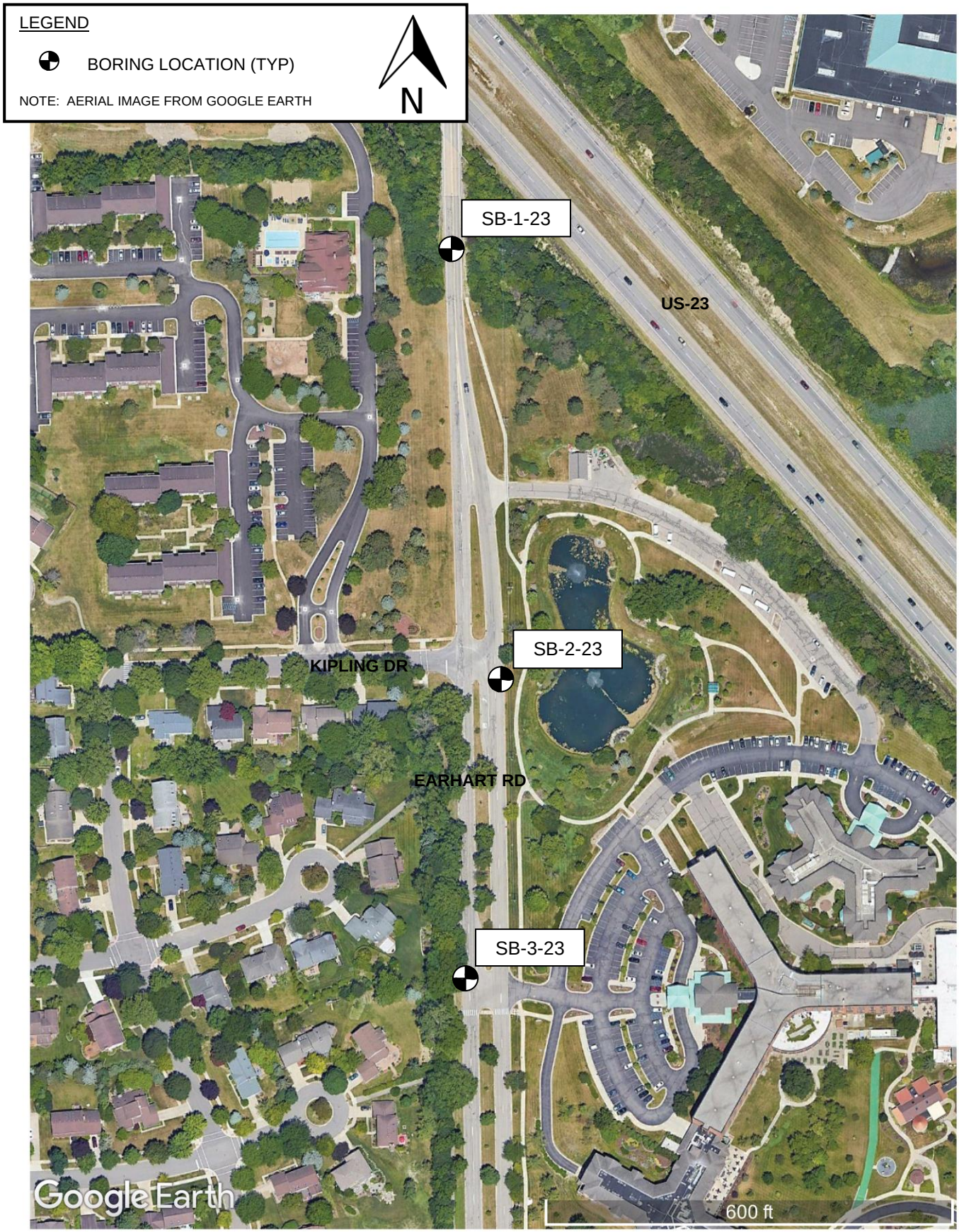
Sincerely,

MATERIALS TESTING CONSULTANTS, INC.

Ryan D. Starcher, E.I.T.
Project Engineer

Robert J. Warren, P.E.
Project Manager

Attachments: Figure Nos. 1 and 2 - Boring Location Plans
Table 1 – Summary of Investigation Results
Appendix
- Limitations
- Test Drilling and Sampling Procedures
- Boring Log Terminology and Classification Outline
- Boring Logs
- Summary of Laboratory Test Data



TITLE: BORING LOCATION PLAN			PROJECT: EARHART ROAD RESURFACING
SCALE: SHOWN	DATE: 2/17/2023	PROJECT NO.: 231047	MTC MATERIALS TESTING CONSULTANTS
FIG. NO.: 1	DR. BY: JV	REV. BY: RW	

TITLE: BORING LOCATION PLAN			PROJECT: EARHART ROAD RESURFACING
SCALE: SHOWN	DATE: 2/17/2023	PROJECT NO.: 231047	MTC MATERIALS TESTING CONSULTANTS
FIG. NO.: 2	DR. BY: JV	REV. BY: RW	

Table 1 - Summary of Investigation Results

Street Name	Limits	Borings	Asphalt Thickness (inches)	Base Thickness and Description	Subgrade Soils	Estimated Resilient Modulus, psi	Laboratory Results - Moisture, %
Earhart Road	US-23 to Glacier Hills Drive North	SB-1-23	6 1/4	24" Natural Agg.	SB-1: Poorly graded sand (SP) to 3.2 ft (Fill), Lean clay (CL) to 5 ft	SP: 5,500 - 7,500 CL: 3,700 - 5,100	CL: 12.2
Earhart Road	Glacier Hills Drive North to Glazier Way	SB-2-23 to SB-4-23	4 1/4 to 5	11 to 12" Natural Agg. SB-4: 8" Crushed Limestone, 10" Natural Agg.	SB-2, SB-3: Poorly graded sand with silt (SP-SM) to depths of 1.9 to 4.2 ft (Fill), Lean clay (CL) to 5 ft SB-4: Lean clay (CL) to 3 ft (Fill), Lean clay (CL) to 5 ft	SP-SM: 5,900 - 8,100 CL: 3,700 - 5,100	CL: 12.5 to 18.7
Earhart Road	Glazier Way to Greenhills Drive	SB-5-23 to SB-7-23	4 1/2 to 6	17 to 19" Natural Agg. SB-6: 35" Natuarl Agg.	SB-5, SB-7: Lean clay (CL) to 3 to 5 ft (Fill), Lean clay (CL) to 5 ft SB-6: Lean clay (CL) to 5 ft	CL: 3,700 - 5,100	CL: 14.1 to 17.4

APPENDIX

- Limitations
- Test Drilling and Sampling Procedures
- Boring Log Terminology and Classification Outline
- Boring Logs
- Summary of Laboratory Test Data

Soil Variations

The recommendations in this report are based upon the data obtained from the soil borings. This report does not reflect variations which may occur between these borings, and which would not become evident until construction. If variations then become evident, it would be necessary for a re-evaluation of recommendations of this report, after performing on-site observations.

Warranties

We have prepared this report in accordance with generally accepted soil and foundation engineering practices. We make no other warranties, either expressed or implied, as to the professional advice provided under the terms of our agreement and included in this report. This report is prepared exclusively for our client and may not be relied upon by other parties without written consent from our office.

Boring Logs

In the process of obtaining and testing samples and preparing this report, we follow reasonable and accepted practice in the field of soil engineering. Field logs maintained during drilling describe field occurrences, sampling locations, and other information. The samples obtained in the field are subjected to additional testing in the laboratory and differences may exist between the field logs and the final logs. The engineer reviews the field logs and laboratory test data, and then prepares the final boring logs. Our recommendations are based on the contents of the final logs.

Review of Design Plans and Specifications

In the event that any changes in the design of the building or the location, however slight, are planned, our recommendations shall not be considered valid unless modified or approved in writing by our office. We recommend that we be provided the opportunity to review the final design and specifications in order to determine whether changes in the original concept may have affected the validity of our recommendations, and whether our recommendations have, in fact, been implemented in the design and specifications.

TEST DRILLING AND SAMPLING PROCEDURES

Test Drilling Methods:

_____ Hollow stem auger, ASTM D6151
_____ Mud rotary, ASTM D5783
_____ Casing advancer, ASTM D5872
_____ Rock coring, ASTM D2113
__X__ Core/Hand Auger

Note: Cone penetration test data can be used to interpret subsurface stratigraphy and can provide data on engineering properties of soils. The ASTM procedure does not include a procedure for determining soil classification from CPT testing. Soil classifications shown on CPT logs are based on published procedures and are not based on physical ASTM soil classification tests.

Sampling Methods:

_____ SPT, ASTM D1586, Auto hammer (140 lb., 30" drop, 2" OD split spoon sampler)
__X__ Grab Samples

Note: The number of hammer blows required to drive the SPT sampler 12 inches, after seating 6 inches, is termed the soil N-value and provides an indication of the soil's relative density and strength parameters at the sample location. SPT blow counts in 6 inch increments are recorded on the boring logs.

Drill Rig:

_____ CME 55 LC (ATV)
_____ CME 750 Rubber tired (ATV)
_____ CME 45 Truck
_____ Geoprobe Direct Push
_____ Geoprobe Rotary Sonic

Boreholes Backfilled With:

__X__ Excavated soil
_____ Cement bentonite grout
_____ Piezometer or Monitoring Well (see notes on logs)
__X__ Concrete or asphalt patch where appropriate

Sample Handling and Disposition:

__X__ Samples labeled, placed in jars, returned to MTC Laboratory
__X__ Discard after 60 days

BORING LOG TERMINOLOGY AND ASTM D 2488 CLASSIFICATION OUTLINE

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE-GRAINED SOILS (major portions retained on No. 200 sieve): includes (1) clean gravel and sands and (2) silty or clayey gravels and sands. Condition is rated according to relative density as determined by laboratory tests or standard penetration resistance tests.

Descriptive Terms	Relative Density	SPT Blow Count
Very loose	0 to 15 %	< 5
Loose	15 to 35 %	5 to 10
Medium dense	35 to 65 %	10 to 30
Dense	65 to 85 %	30 to 50
Very dense	85 to 100 %	> 50

Per ASTM D2487, the following conditions must be met based on laboratory testing to justify the label 'well graded' in a soil description.

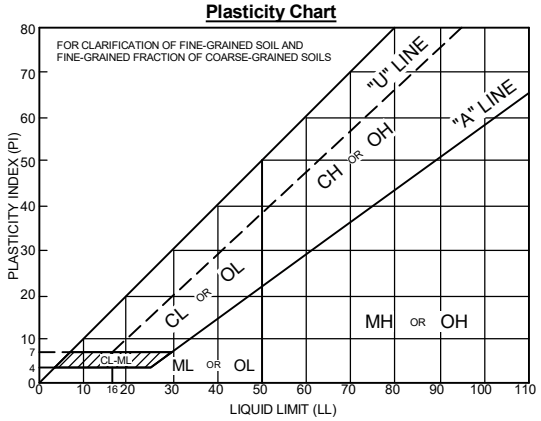
Gravel: $C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3

Sand: $C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3

FINE-GRAINED SOILS (major portions passing on No. 200 sieve): includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings, SPT blow count, or unconfined compression tests.

Descriptive Terms	Unconfined Compressive Strength TSF	SPT Blow Count
Very soft	< 0.25	< 2
Soft	0.25 to 0.5	2 to 4
Medium stiff	0.5 to 1.0	4 to 8
Stiff	1.0 to 2.0	8 to 15
Very stiff	2.0 to 4.0	15 to 30
Hard	> 4.0	> 30

Plasticity Chart



MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LESS THAN 15% FINES	GW		WELL-GRADED GRAVELS WITH OR WITHOUT SAND
			GP		POORLY-GRADED GRAVELS WITH OR WITHOUT SAND
		GRAVELS WITH 15% OR MORE FINES	GM		SILTY GRAVELS WITH OR WITHOUT SAND
			GC		CLAYEY GRAVELS WITH OR WITHOUT SAND
	SANDS MORE THAN HALF COARSE FRACTION IS FINER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 15% FINES	SW		WELL-GRADED SANDS WITH OR WITHOUT GRAVEL
			SP		POORLY-GRADED SANDS WITH OR WITHOUT GRAVEL
			SP-SM		POORLY-GRADED SANDS WITH SILT WITH OR WITHOUT GRAVEL
		SANDS WITH 15% OR MORE FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OL		ORGANIC SILTS OR CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CH		INORGANIC CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OH		ORGANIC SILTS OR CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
HIGHLY ORGANIC SOILS			PT/OL		PEAT AND OTHER HIGHLY ORGANIC SOILS

GENERAL NOTES

1. Classifications are based on the United Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.

2. "Grades with" or "Grades without" may be used to describe soil when characteristics vary within a stratum.

3. Preserved soil samples will be discarded after 60 days unless alternate arrangements have been made.

GROUNDWATER OBSERVATIONS:

During - indicates water level encountered during the boring
End- indicates water level immediately after drilling
Date and Depth - Measurements at indicated date

SAMPLE TYPES AND NUMBERING

S	SPT, split barrel sample, ASTM D1586
U	Shelby tube sample, ASTM D1587
R	Rock core run
*S	Other than 2" split barrel sample
L	SPT with liner, ASTM D1586
A	Auger cuttings
G	Geoprobe liner

MINOR COMPONENT QUANTIFYING TERMS

Less than 5%	TRACE
5 to 10%	FEW
15 to 25%	LITTLE
30 to 40%	SOME
50 to 100%	MOSTLY

GRAIN SIZE

BOULDER	>12"
COBBLE	12" to 3"
COARSE GRAVEL	3" to 0.75"
FINE GRAVEL	0.75" to No. 4
COARSE SAND	No. 4 to No. 10
MEDIUM SAND	No. 10 to No.40
FINE SAND	No. 40 to No. 200

LOG OF BORING

Project No.: 231047
Boring No.: SB-1-23
Sheet: 1 of 1

Project: Earhart Road Resurfacing
Client: City of Ann Arbor
Location: Ann Arbor, Michigan
Drill Type: Hand Auger
Crew Chief: Field Eng.: JV Rev. By: RW
Coordinates: N=289909.3 E=13308436.0 (MI South ift)
Elevation: 903.0 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch.

Date Begin: 02/02/2023 Date End: 02/02/2023

Tooling	Type	Dia.	Groundwater, ft.	
Casing	Hand Auger	3 1/4"	During	None
Sampler			End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer				

Depth Drilled: 5.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Dyn. Cone Eq. "N": ASTM STP 399	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
902.8	0.25					6 1/4" HMA				Fill: 0' to 3.2'
902.5	0.50					0.5				
902.3	0.75					24" Natural Aggregate Base				
902.0	1.00	A-1								
901.8	1.25									
901.5	1.50									
901.3	1.75									
901.0	2.00									
900.8	2.25									
900.5	2.50					2.5				
900.3	2.75				SP	Brown poorly graded SAND; mostly coarse to fine sand, few coarse to fine gravel, moist, Fill				
900.0	3.00									
899.8	3.25	A-2				3.2				
899.5	3.50	A-3				Gray lean CLAY; mostly clayey fines, moist	4.5+			
899.3	3.75					Grades brown with few medium to fine sand at 3.5'				
899.0	4.00									
898.8	4.25				CL					
898.5	4.50									
898.3	4.75	A-4					3.5	12.2		
898.0	5.00					5.0				
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 231047
Boring No.: SB-2-23
Sheet: 1 of 1

Project: Earhart Road Resurfacing
Client: City of Ann Arbor
Location: Ann Arbor, Michigan
Drill Type: Hand Auger
Crew Chief: Field Eng.: JV Rev. By: RW
Coordinates: N=289276.4 E=13308514.2 (MI South ift)
Elevation: 886.9 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch.

Date Begin: 02/02/2023 Date End: 02/02/2023

Tooling	Type	Dia.	Groundwater, ft.	
Casing	Hand Auger	3 1/4"	During	None
Sampler			End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer				

Depth Drilled: 5.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Dyn. Cone Eq. "N": ASTM STP 399	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
886.7	0.25					4 1/2" HMA (0.4)				Fill: 0' to 4.2'
886.4	0.50									
886.2	0.75	A-1				11" Natural Aggregate Base (1.3)				
885.9	1.00									
885.7	1.25									
885.4	1.50				SP-SM	Brown poorly graded SAND with silt; mostly medium to fine sand, few silty fines, moist, Fill (1.8)				
885.2	1.75	A-2								
884.9	2.00									
884.7	2.25	A-3				Brown poorly graded SAND with silt and gravel; mostly coarse to fine sand, little coarse to fine gravel, few silty fines, moist, Fill				
884.4	2.50									
884.2	2.75									
883.9	3.00									
883.7	3.25									
883.4	3.50									
883.2	3.75									
882.9	4.00									
882.7	4.25					(4.2)				
882.4	4.50	A-4				Gray lean CLAY; mostly clayey fines, moist	3.25	14.6		
882.2	4.75				CL					
881.9	5.00					(5.0)				
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 231047
Boring No.: SB-3-23
Sheet: 1 of 1

Project: Earhart Road Resurfacing
Client: City of Ann Arbor
Location: Ann Arbor, Michigan
Drill Type: Hand Auger
Crew Chief: Field Eng.: JV Rev. By: RW
Coordinates: N=288835.5 E=13308463.5 (MI South ift)
Elevation: 894.8 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch.

Date Begin: 02/02/2023 Date End: 02/02/2023

Tooling	Type	Dia.	Groundwater, ft.	
Casing	Hand Auger	3 1/4"	During	None
Sampler			End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer				

Depth Drilled: 5.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Dyn. Cone Eq. "N": ASTM STP 399	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
894.6	0.25					5" HMA				Fill: 0' to 1.9'
894.3	0.50					0.4				
894.1	0.75	A-1				12" Natural Aggregate Base				
893.8	1.00									
893.6	1.25									
893.3	1.50					1.4				
893.1	1.75	A-2			SP-SM	Brown poorly graded SAND with silt; mostly fine sand, few silty fins, few coarse to fine gravel, moist, Fill				
892.8	2.00					1.9				
892.6	2.25					Brown lean CLAY; mostly clayey fines, few fine sand, moist				
892.3	2.50									
892.1	2.75									
891.8	3.00									
891.6	3.25									
891.3	3.50	A-3			CL		3.0	18.7		
891.1	3.75									
890.8	4.00									
890.6	4.25									
890.3	4.50									
890.1	4.75									
889.8	5.00					5.0				
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 231047
Boring No.: SB-4-23
Sheet: 1 of 1

Project: Earhart Road Resurfacing
Client: City of Ann Arbor
Location: Ann Arbor, Michigan
Drill Type: Hand Auger
Crew Chief: Field Eng.: IA Rev. By: RW
Coordinates: N=288001.0 E=13308536.1 (MI South ift)
Elevation: 890.6 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch.

Date Begin: 01/24/2023 Date End: 01/24/2023

Tooling	Type	Dia.	Groundwater, ft.	
Casing	Hand Auger	3 1/4"	During	None
Sampler			End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer				

Depth Drilled: 5.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Dyn. Cone Eq. "N": ASTM STP 399	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
890.4	0.25					4 1/4" HMA 0.4				Fill: 0' to 3.0'
890.1	0.50									
889.9	0.75	A-1				8" Crushed Limestone Aggregate Base 1.0				
889.6	1.00									
889.4	1.25					10" Natural Aggregate Base 1.9				
889.1	1.50	A-2								
888.9	1.75									
888.6	2.00									
888.4	2.25	A-3			CL	Dark brown lean CLAY; mostly clayey fines, few coarse to fine sand, trace coarse to fine gravel, moist, Fill with organic odor and wood and root fragments 3.0	2.75	17.8		
888.1	2.50									
887.9	2.75									
887.6	3.00									
887.4	3.25				CL	Gray lean CLAY; mostly clayey fines, few coarse to fine sand, trace coarse to fine gravel, moist 5.0				
887.1	3.50									
886.9	3.75									
886.6	4.00									
886.4	4.25	A-4					2.5	12.5		
886.1	4.50									
885.9	4.75									
885.6	5.00									
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 231047
Boring No.: SB-5-23
Sheet: 1 of 1

Project: Earhart Road Resurfacing
Client: City of Ann Arbor
Location: Ann Arbor, Michigan
Drill Type: Hand Auger
Crew Chief: Field Eng.: IA Rev. By: RW
Coordinates: N=287552.9 E=13308478.0 (MI South ift)
Elevation: 890.5 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch.

Date Begin: 01/24/2023 Date End: 01/24/2023

Tooling	Type	Dia.	Groundwater, ft.	
Casing	Hand Auger	3 1/4"	During	None
Sampler			End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer				

Depth Drilled: 5.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Dyn. Cone Eq. "N": ASTM STP 399	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
890.3	0.25					4 1/2" HMA				Fill: 0' to 4.0'
890.0	0.50					0.4				
889.8	0.75	A-1				19" Natural Aggregate Base				
889.5	1.00									
889.3	1.25									
889.0	1.50									
888.8	1.75									
888.5	2.00					1.9				
888.3	2.25					Gray lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist, Fill with occasional wood and root fragments				
888.0	2.50	A-2					3.5	15.5		
887.8	2.75									
887.5	3.00				CL					
887.3	3.25									
887.0	3.50									
886.8	3.75									
886.5	4.00					4.0				
886.3	4.25					Gray lean CLAY with sand; mostly clayey fines, little coarse to fine sand, moist				
886.0	4.50				CL					
885.8	4.75									
885.5	5.00	A-3				5.0	2.5	17.4		
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 231047
Boring No.: SB-6-23
Sheet: 1 of 1

Project: Earhart Road Resurfacing
Client: City of Ann Arbor
Location: Ann Arbor, Michigan
Drill Type: Hand Auger
Crew Chief: Field Eng.: IA Rev. By: RW
Coordinates: N=286896.5 E=13308580.0 (MI South ift)
Elevation: 880.9 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch.

Date Begin: 01/24/2023 Date End: 01/24/2023

Tooling	Type	Dia.	Groundwater, ft.	
Casing	Hand Auger	3 1/4"	During	3.0
Sampler			End	3.3
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer				

Depth Drilled: 5.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Dyn. Cone Eq. "N": ASTM STP 399	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
880.7	0.25					4 1/2" HMA				Fill: 0' to 3.3'
880.4	0.50					0.4				
880.2	0.75					35" Natural Aggregate Base				
879.9	1.00									
879.7	1.25	A-1								
879.4	1.50									
879.2	1.75									
878.9	2.00									
878.7	2.25									
878.4	2.50									
878.2	2.75									
877.9	3.00									
877.7	3.25					Grades wet at 3.0'				
877.4	3.50	A-2				3.3				
877.2	3.75					Brown lean CLAY; mostly clayey fines, few coarse to fine sand, trace coarse to fine gravel, moist	3.0	17.0		
876.9	4.00									
876.7	4.25				CL					
876.4	4.50						2.5			
876.2	4.75									
875.9	5.00	A-3				5.0		17.1		
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

LOG OF BORING

Project No.: 231047
Boring No.: SB-7-23
Sheet: 1 of 1

Project: Earhart Road Resurfacing
Client: City of Ann Arbor
Location: Ann Arbor, Michigan
Drill Type: Hand Auger
Crew Chief: Field Eng.: IA Rev. By: RW
Coordinates: N=286487.6 E=13308511.8 (MI South ift)
Elevation: 870.2 ft Datum: NAVD 88 (GPS Observation)
Notes:

Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch.

Date Begin: 01/24/2023 Date End: 01/24/2023

Tooling	Type	Dia.	Groundwater, ft.	
Casing	Hand Auger	3 1/4"	During	None
Sampler			End	NA
Core			Seepage	
Tube			Date	Depth, ft.
SPT Hammer				

Depth Drilled: 5.0 ft.

Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100%

QP = Calibrated Penetrometer (tons/sq. ft.)

Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Dyn. Cone Eq. "N": ASTM STP 399	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
870.0	0.25					6 1/2" HMA				Fill: 0' to 5.0'
869.7	0.50					0.5				
869.5	0.75					17" Natural Aggregate Base				
869.2	1.00									
869.0	1.25	A-1								
868.7	1.50									
868.5	1.75									
868.2	2.00					2.0				
868.0	2.25					Gray lean CLAY; mostly clayey fines, few coarse to fine sand, trace coarse to fine gravel, moist, Fill				
867.7	2.50	A-2					2.75	14.1		
867.5	2.75									
867.2	3.00									
867.0	3.25									
866.7	3.50				CL					
866.5	3.75									
866.2	4.00									
866.0	4.25	A-3				Grades with frequent wood and root fragments	1.5	15.9		
865.7	4.50									
865.5	4.75									
865.2	5.00					5.0				
						End of Boring				

* Visual estimate following ASTM D 2488 unless laboratory testing has been performed. Stratification changes are approximated between samples.

SUMMARY OF LABORATORY TEST DATA

Boring Number	Sample No.*	Sample Depth (ft)	Sample Description (USCS Symbol)	Natural Moisture Content (%)
SB-1-23	A-4	4.5-4.75	CL	12.2
SB-2-23	A-4	4.25-4.5	CL	14.6
SB-3-23	A-3	3.25-3.5	CL	18.7
SB-4-23	A-3	2.0-2.25	CL	17.8
SB-4-23	A-4	4.0-4.25	CL	12.5
SB-5-23	A-2	2.25-2.5	CL	15.5
SB-5-23	A-3	4.75-5.0	CL	17.4
SB-6-23	A-2	3.25-3.5	CL	17.0
SB-6-23	A-3	4.75-5.0	CL	17.1
SB-7-23	A-2	2.25-2.5	CL	14.1
SB-7-23	A-3	4.0-4.25	CL	15.9

* A –Hand Auger Sample

PROJECT NO.: 231047

PAGE: 1 OF 1