

PUBLIC IMPROVEMENT REQUEST FOR PROPOSAL

RFP# 26-17

S MAPLE RD, ARBORDALE ST, SHERWOOD ST, AND SHERWOOD CIR IMPROVEMENTS

City of Ann Arbor
ENGINEERING UNIT / PUBLIC SERVICES AREA



Due Date: March 11, 2026 by 11:00 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 firm to provide construction services for the S Maple Rd, Arbordale St, Sherwood St, and Sherwood Cir 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 Monday, March 2, 2026 at 5:00 p.m. (local time), and should be addressed as follows:

Scope of Work/Proposal Content questions shall be e-mailed to Jacob Dykman, Project Manager, JDykman@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 pre-proposal conference for this project will be held on **Friday, February 27, 2026 at 10:00 a.m. at Ann Arbor City Hall, 4th Floor Conference Room, located at 301 East Huron Street, Ann Arbor, Michigan 48107.** A virtual meeting option is available and a link to the meeting can be received by emailing Jacob Dykman at JDykman@a2gov.org.

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 verified in writing by the Financial Service Area, Procurement Unit. 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 Wednesday, March 11, 2026 by 11:00 a.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. 26-17 – S Maple Rd, Arbordale St, Sherwood St, and Sherwood Cir Improvements”** 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 and time 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 B – General Declarations**
- **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.sam.gov.

For the purposes of this RFP the Construction Type of both Heavy and 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	Feb. 27, 2026, 10:00 a.m. (Local Time)
Written Question Deadline	March 2, 2026, 5:00 p.m. (Local Time)
Addenda Published (if needed)	Week of March 2, 2026
Proposal Due Date	March 11, 2026, 11:00 a.m. (Local Time)
Selection/Negotiations	March 2026
Expected City Council Authorizations	April 2026

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 of Ann Arbor 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 strongly encourages potential vendors to bring forward tested, emerging, innovative, and environmentally preferable products and services that are best suited to the City's environmental principles. This includes products and services such as those with lower greenhouse gas emissions, high recycled content, without toxic substances, those with high reusability or recyclability, those that reduce the consumption of virgin materials, and those with low energy intensity.

As part of its environmental commitment, the City reserves the right to award a contract to the most responsive and responsible bidder, which includes bids that bring forward products or services that help advance the City's environmental commitment. In addition, the City reserves the right to request that all vendors report their annual greenhouse gas emissions, energy consumption, miles traveled, or other relevant criteria in order to help the City more fully understand the environmental impact of its procurement decisions.

U. 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.

V. 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

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 provide 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 1:324.5 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. 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 evidence of a bidder's safety program (link to information on bidder's publicly available web-site preferred) and evidence of a safety-training program for employees addressing potential hazards of the proposed job site. Bidders 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 environmental record, including findings of violations and penalties imposed by government agencies.

E. Schedule of Pricing/Cost – 20 Points

The following pages contain separate bid tabulation forms for each area of the Project, in addition to a Project Wide section that applies to the Work as a whole. The Project Wide items are not separated by area and shall be completed once. Costs associated with Project Wide shall be distributed as necessary to cover the full duration and requirements of both areas of construction.

Project Wide

Page 16 includes the complete schedule of bid items and estimated quantities for the Project Wide items. The Contractor shall provide unit prices. Pricing shall include all labor, materials, equipment, mobilization, overhead, profit, incidentals, and all other costs necessary to fully complete the Work associated with Area I & II in accordance with the Contract Documents.

Area I – Maple Water Pressure District Improvements

Pages 17 to 19 include the complete schedule of bid items and estimated quantities for Area I of the Project, identified as the Maple Water Pressure District Improvements. The Contractor shall provide unit prices. Pricing shall include all labor, materials, equipment, mobilization, overhead, profit, incidentals, and all other costs necessary to fully complete the Work associated with Area I in accordance with the Contract Documents.

Area II – Arbordale Street, Sherwood Street, and Sherwood Circle Improvements

Pages 20 to 22 include the complete schedule of bid items and estimated quantities for Area II of the Project, consisting of improvements within Arbordale Street, Sherwood Street, and Sherwood Circle. The Contractor shall provide unit prices. Pricing shall include all labor, materials, equipment, mobilization, overhead, profit, incidentals, and all other costs necessary to fully complete the Work associated with Area II in accordance with the Contract Documents.

Bidders are advised to carefully review all quantities, specifications, and plan sheets associated with each area prior to submitting pricing. The total bid amount shall reflect the combined cost of Area I, Area II, and the Project Wide section.

An electronic version of the bid form can be obtained by contacting Jacob Dykman at JDykman@a2gov.org.

PROJECT WIDE ITEMS

Company:

Project: S MAPLE RD, ARBORDALE ST, SHERWOOD ST, AND SHERWOOD CIR IMPROVEMENTS
File # 2025-011 RFP 26-17

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>Total Price</u>
01000.00	General Conditions, Max. \$215,000	LS	1	\$ _____	\$ _____
01001.00	Project Supervision, Max. \$110,000	LS	1	\$ _____	\$ _____
01002.00	Project Clean-Up and Restoration	LS	1	\$ _____	\$ _____
01021.00	Erosion Control, Inlet Protection, Fabric Drop	Ea	42	\$ _____	\$ _____
01030.00	Tree Protection Fence	Ft	2,519	\$ _____	\$ _____
01040.00	Minor Traffic Control, Max. \$100,000	LS	1	\$ _____	\$ _____
01041.00	Traffic Regulator Control	LS	1	\$ _____	\$ _____
01050.00	Sign, Type B, Temp, Prismatic, Furn & Oper	Sft	705	\$ _____	\$ _____
01051.00	Sign, Type B, Temp, Prismatic, Special, Furn & Oper	Sft	94	\$ _____	\$ _____
01052.00	Temporary "No Parking" Sign	Ea	155	\$ _____	\$ _____
01060.00	Lighted Arrow, Type A, Furn & Oper	Ea	2	\$ _____	\$ _____
01070.00	Sign, Portable, Changeable Message, Furn & Oper	Ea	2	\$ _____	\$ _____
01080.00	Plastic Drum, High Intensity, Lighted, Furn & Oper	Ea	212	\$ _____	\$ _____
01081.00	Channelizer Cone, High Intensity, 42 In., Furn & Oper	Ea	15	\$ _____	\$ _____
01092.00	Barricade, Type III, High Intensity, Double Sided, Lighted, Furn & Oper	Ea	33	\$ _____	\$ _____
01100.00	Pedestrian Type II Barricade, Temp, Furn & Oper	Ea	24	\$ _____	\$ _____
01102.00	Temporary Pedestrian Ramp, Furn & Oper	Ea	4	\$ _____	\$ _____
01112.00	Pavt Mrkg Cover, Type R, Black	Ft	439	\$ _____	\$ _____
01127.00	Pavt Mrkg, Wet Reflective, Type R, Tape, 6 In., White, Temp	Ft	1,362	\$ _____	\$ _____
01128.00	Pavt Mrkg, Wet Reflective, Type R, Tape, 6 In., Yellow, Temp	Ft	1,125	\$ _____	\$ _____

TOTAL FOR PROJECT WIDE ITEMS
 (Also to be entered on Page 23)

\$ _____

AREA I: MAPLE WATER PRESSURE IMPROVEMENTS

Project: S MAPLE RD, ARBORDALE ST, SHERWOOD ST, AND SHERWOOD CIR IMPROVEMENTS
File # 2025-011 RFP 26-17

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>Total Price</u>
02000.01	Tree, Rem, 6 In. - 12 In.	Ea	4	\$ _____	\$ _____
02020.00	HMA, Any Thickness, Rem	Syd	2,822	\$ _____	\$ _____
02025.00	Concrete Pavt, Any Thickness, Rem	Syd	571	\$ _____	\$ _____
02030.00	Curb, Gutter, and Curb and Gutter, Any Type, Rem	Ft	366	\$ _____	\$ _____
02040.00	Sidewalk, Sidewalk Ramp, and Driveway Approach, Any Thickness, Rem	Sft	1,152	\$ _____	\$ _____
03000.00	Machine Grading	Syd	1,750	\$ _____	\$ _____
03001.71	DS_Grading Roadway	Syd	1,106	\$ _____	\$ _____
03030.01	Exploratory Excavation, SD-TD-1, (0-10' Deep)	Ea	5	\$ _____	\$ _____
03030.02	Exploratory Excavation, SD-TD-1, Additional Depth	Ft	5	\$ _____	\$ _____
04061.00	Sanitary Structure Cover, Adjust	Ea	2	\$ _____	\$ _____
06160.01	Storm Structure Cover	Ea	1	\$ _____	\$ _____
06160.02	Storm Structure Cover, Adjust	Ea	4	\$ _____	\$ _____
06183.02	Underdrain, Edge, 6 In.	Ft	240	\$ _____	\$ _____
07000.02	6 In., PC 350 DIP w/polywrap, SD-TD-1	Ft	10	\$ _____	\$ _____
07000.03	8 In., PC 350 DIP w/polywrap, SD-TD-1	Ft	699	\$ _____	\$ _____
07000.05	12 In., PC 350 DIP w/polywrap, SD-TD-1	Ft	66	\$ _____	\$ _____
07011.01	8 In. 90° DIP Bend	Ea	1	\$ _____	\$ _____
07011.02	8 In. 45° DIP Bend	Ea	5	\$ _____	\$ _____
07020.03	8 In. X 6 In. DIP Reducer	Ea	2	\$ _____	\$ _____
07020.09	12 In. X 8 In. DIP Reducer	Ea	1	\$ _____	\$ _____
07020.10	12 In. X 10 In. DIP Reducer	Ea	1	\$ _____	\$ _____
07030.13	12 In. X 12 In. X 8 In. DIP Tee	Ea	1	\$ _____	\$ _____
07049.02	Gate Valve in Box, 8 In.	Ea	1	\$ _____	\$ _____
07050.04	Gate Valve in Box, 12 In.	Ea	2	\$ _____	\$ _____
07060.02	Gate Valve in Well, 8 In.	Ea	1	\$ _____	\$ _____
07061.71	DS_Check Valve in Well, 8 in.	Ea	1	\$ _____	\$ _____
07061.72	DS_Check Valve in Well, 10 in.	Ea	1	\$ _____	\$ _____
07071.02	Tapping Sleeve & Valve in Well, 8 In.	Ea	1	\$ _____	\$ _____

TOTAL THIS PAGE 17
 (Also to be entered on Page 19)

\$ _____

07091.00 Water Structure Cover, Adjust	Ea	1	\$ _____	\$ _____
07100.00 Fire Hydrant Assembly, Complete	Ea	1	\$ _____	\$ _____
07102.00 Fire Hydrant Assembly, Rem	Ea	2	\$ _____	\$ _____
07110.01 Sacrificial Anode, 17-pound	Ea	11	\$ _____	\$ _____
07110.02 Sacrificial Anode, 32-pound	Ea	2	\$ _____	\$ _____
07130.01 Temporary Water Main Line Stop, 8 In. or less	Ea	2	\$ _____	\$ _____
07130.02 Temporary Water Main Line Stop, 10 In.	Ea	1	\$ _____	\$ _____
07130.03 Temporary Water Main Line Stop, 12 In.	Ea	1	\$ _____	\$ _____
07130.06 Temporary Water Main Line Stop, 20 In.	Ea	1	\$ _____	\$ _____
07131.70 Temporary Water Main Line Stop, Additional Rental Day, 10 In or less	Ea	6	\$ _____	\$ _____
07131.71 Temporary Water Main Line Stop, Additional Rental Day, 12 In.	Ea	2	\$ _____	\$ _____
07131.72 Temporary Water Main Line Stop, Additional Rental Day, 20 In.	Ea	2	\$ _____	\$ _____
07140.03 Water Main Pipe, 8 In. Dia., Abandon	Ft	178	\$ _____	\$ _____
07140.05 Water Main Pipe, 12 In. Dia., Abandon	Ft	86	\$ _____	\$ _____
07150.03 Water Main Pipe, 8 In. Dia., Rem	Ft	46	\$ _____	\$ _____
07150.05 Water Main Pipe, 12 In. Dia., Rem	Ft	67	\$ _____	\$ _____
07160.03 Gate Valve in Box, 8 In. Dia., Abandon	Ea	1	\$ _____	\$ _____
07190.04 Gate Valve in Well, 10 In. Dia., Rem	Ea	1	\$ _____	\$ _____
08000.00 Subbase, CIP	Cyd	150	\$ _____	\$ _____
08010.03 Aggregate Base, 8 In., 21AA, CIP	Syd	660	\$ _____	\$ _____
08060.00 HMA Hand Patch	Ton	5	\$ _____	\$ _____
08061.71 HMA Curb	Ft	271	\$ _____	\$ _____
08070.14 HMA, 4EL	Ton	535	\$ _____	\$ _____
08071.00 HMA Approach	Ton	63	\$ _____	\$ _____
08080.03 Conc Pavt, Non-Reinf, 8 In.	Syd	54	\$ _____	\$ _____
08090.01 Joint, Contraction, Cp	Ft	180	\$ _____	\$ _____
08090.71 Joint, Contraction, Crg	Ft	82	\$ _____	\$ _____
08091.71 Lane Tie, Epoxy Anchored	Ea	230	\$ _____	\$ _____
08100.03 Conc Pavt With Integral Curb, Non-Reinf, 8 In.	Syd	519	\$ _____	\$ _____
08110.00 Conc, Curb or Curb & Gutter, All Types	Ft	66	\$ _____	\$ _____
08120.01 Conc, Driveway Opening, Type M	Ft	79	\$ _____	\$ _____
08130.01 Conc, Sidewalk, 4 In.	Sft	551	\$ _____	\$ _____
08131.01 Conc, Sidewalk, Drive Approach, or Ramp, 6 In.	Sft	1,114	\$ _____	\$ _____

TOTAL THIS PAGE 18
(Also to be entered on Page 19)

\$ _____

08200.14 Pavt Mrkg, Polyurea, 6 In., Yellow	Ft	258	\$ _____	\$ _____
08210.01 Pavt Mrkg, Thermopl, 4 In., White	Ft	702	\$ _____	\$ _____
08251.00 Recessing Pavt Mrkg, Longit	Ft	258	\$ _____	\$ _____
10000.01 Tree, Medium, B&B	Ea	10	\$ _____	\$ _____
10030.00 Fence, Rem	Ft	35	\$ _____	\$ _____
10060.00 Turf Restoration	Syd	423	\$ _____	\$ _____

TOTAL THIS PAGE 19 \$ _____

TOTAL FROM PAGE 17 \$ _____

TOTAL FROM PAGE 18 \$ _____

TOTAL FOR AREA I \$ _____
(Also to be entered on Page 23)

AREA II: ARBORDALE STREET, SHERWOOD STREET, AND SHERWOOD CIRCLE IMPROVEMENTS

Project: S MAPLE RD, ARBORDALE ST, SHERWOOD ST, AND SHERWOOD CIR IMPROVEMENTS
File # 2025-011 RFP 26-17

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>Total Price</u>
02000.01	Tree, Rem, 6 In. - 12 In.	Ea	1	\$ _____	\$ _____
02020.00	HMA, Any Thickness, Rem	Syd	13,442	\$ _____	\$ _____
02021.71	DS_Concrete Curb and Gutter Reveal	Syd	984	\$ _____	\$ _____
02022.00	HMA Patch, Rem	Syd	64	\$ _____	\$ _____
02030.00	Curb, Gutter, and Curb and Gutter, Any Type, Rem	Ft	3,383	\$ _____	\$ _____
02040.00	Sidewalk, Sidewalk Ramp, and Driveway Approach, Any Thickness, Rem	Sft	4,043	\$ _____	\$ _____
03000.00	Machine Grading	Syd	7,000	\$ _____	\$ _____
03001.71	DS_Grading Roadway	Syd	7,000	\$ _____	\$ _____
03001.72	DS_Grading Sidewalk, Ramp, & Driveway Approach	Syd	608	\$ _____	\$ _____
03022.00	Subgrade Undercutting, Type III	Cyd	200	\$ _____	\$ _____
04061.00	Sanitary Structure Cover, Adjust	Ea	19	\$ _____	\$ _____
06000.01	12 In., CL IV RCP Storm Sewer, SD-TD-1	Ft	749	\$ _____	\$ _____
06000.02	15 In., CL IV RCP Storm Sewer, SD-TD-1	Ft	121	\$ _____	\$ _____
06030.04	Storm Sewer Tap, 12 In. Dia.	Ea	6	\$ _____	\$ _____
06050.01	Storm Manhole, 48 In. Dia. (0-8' deep)	Ea	2	\$ _____	\$ _____
06050.02	Storm Manhole, 48 In. Dia. , Additional Depth	Ft	1	\$ _____	\$ _____
06050.07	Storm Manhole, 84 In. Dia. (0-8' deep)	Ea	1	\$ _____	\$ _____
06060.01	Storm Inlet-Junction, 36 In. Dia., (0-8' deep)	Ea	2	\$ _____	\$ _____
06070.01	Storm Single Inlet, 24 In. Dia., (0-8' deep)	Ea	24	\$ _____	\$ _____
06070.02	Storm Single Inlet, 24 In. Dia., Additional Depth	Ft	4	\$ _____	\$ _____
06080.01	Storm High Capacity Inlet, 48 In. Dia., (0-8' deep)	Ea	10	\$ _____	\$ _____
06100.01	Storm Manhole Over Existing ("Doghouse"), 48 In. Dia.	Ea	1	\$ _____	\$ _____
06100.02	Storm Manhole Over Existing ("Doghouse"), 60 In. Dia.	Ea	1	\$ _____	\$ _____
06100.03	Storm Manhole Over Existing ("Doghouse"), 72 In. Dia.	Ea	1	\$ _____	\$ _____
06110.71	DS_Storm Sewer Pipe, 6 In. Dia., Abandon	Ft	35	\$ _____	\$ _____
06120.03	Storm Sewer Pipe, 12 In. Dia., Rem	Ft	793	\$ _____	\$ _____
06120.04	Storm Sewer Pipe, 15 In. Dia., Rem	Ft	54	\$ _____	\$ _____
06120.07	Storm Sewer Pipe, 24 In. Dia., Rem	Ft	37	\$ _____	\$ _____

TOTAL THIS PAGE 20
 (Also to be entered on Page 22)

\$ _____

06140.00 Storm Sewer Structure, Rem	Ea	2	\$ _____	\$ _____
06150.00 Storm Sewer Drop Structure, Rem	Ea	32	\$ _____	\$ _____
06160.01 Storm Structure Cover	Ea	6	\$ _____	\$ _____
06160.02 Storm Structure Cover, Adjust	Ea	17	\$ _____	\$ _____
06182.02 Underdrain, Edge, 6 In.	Ft	384	\$ _____	\$ _____
06191.71 DS_Curb Drain, 6 In., Open Cut	Ft	1,797	\$ _____	\$ _____
06200.71 DS_Curb Drain, PVC Tap	Ea	2	\$ _____	\$ _____
06210.71 DS_Curb Drain, PVC Clean Out	Ea	6	\$ _____	\$ _____
07000.01 4 In., PC 350 DIP w/polywrap, SD-TD-1	Ft	2	\$ _____	\$ _____
07000.02 6 In., PC 350 DIP w/polywrap, SD-TD-1	Ft	24	\$ _____	\$ _____
07000.03 8 In., PC 350 DIP w/polywrap, SD-TD-1	Ft	3,558	\$ _____	\$ _____
07000.05 12 In., PC 350 DIP w/polywrap, SD-TD-1	Ft	466	\$ _____	\$ _____
07011.02 8 In. 45° DIP Bend	Ea	22	\$ _____	\$ _____
07011.03 8 In. 22.5° DIP Bend	Ea	2	\$ _____	\$ _____
07011.04 8 In. 11.25° DIP Bend	Ea	12	\$ _____	\$ _____
07013.02 12 In. 45° DIP Bend	Ea	2	\$ _____	\$ _____
07013.03 12 In. 22.5° DIP Bend	Ea	4	\$ _____	\$ _____
07020.02 8 In. X 4 In. DIP Reducer	Ea	1	\$ _____	\$ _____
07020.03 8 In. X 6 In. DIP Reducer	Ea	5	\$ _____	\$ _____
07020.09 12 In. X 8 In. DIP Reducer	Ea	2	\$ _____	\$ _____
07030.04 8 In. X 8 In. X 4 In. DIP Tee	Ea	1	\$ _____	\$ _____
07030.06 8 In. X 8 In. X 8 In. DIP Tee	Ea	12	\$ _____	\$ _____
07030.13 12 In. X 12 In. X 8 In. DIP Tee	Ea	2	\$ _____	\$ _____
07030.15 12 In. X 12 In. X 12 In. DIP Tee	Ea	2	\$ _____	\$ _____
07060.02 Gate Valve in Well, 8 In.	Ea	12	\$ _____	\$ _____
07060.04 Gate Valve in Well, 12 In.	Ea	2	\$ _____	\$ _____
07080.71 DS_Excavate & Backfill For Water Service Tap and Lead	Ft	564	\$ _____	\$ _____
07100.00 Fire Hydrant Assembly, Complete	Ea	5	\$ _____	\$ _____
07102.00 Fire Hydrant Assembly, Rem	Ea	2	\$ _____	\$ _____
07110.01 Sacrificial Anode, 17-pound	Ea	8	\$ _____	\$ _____
07110.02 Sacrificial Anode, 32-pound	Ea	3	\$ _____	\$ _____
07130.01 Temporary Water Main Line Stop, 8 In. or less	Ea	2	\$ _____	\$ _____
07131.00 Temporary Water Main Line Stop, Additional Rental Day	Ea	2	\$ _____	\$ _____

TOTAL THIS PAGE 21
(Also to be entered on Page 22)

\$ _____

07140.01 Water Main Pipe, 4 In. Dia., Abandon	Ft	154	\$ _____	\$ _____
07140.02 Water Main Pipe, 6 In. Dia., Abandon	Ft	3,064	\$ _____	\$ _____
07140.03 Water Main Pipe, 8 In. Dia., Abandon	Ft	627	\$ _____	\$ _____
07141.00 Gate Valve in Box, 6 In. Dia., Abandon	Ea	5	\$ _____	\$ _____
07180.01 Gate Valve in Well, 4 In. Dia., Abandon	Ea	1	\$ _____	\$ _____
07180.02 Gate Valve in Well, 6 In. Dia., Abandon	Ea	4	\$ _____	\$ _____
07180.03 Gate Valve in Well, 8 In. Dia., Abandon	Ea	2	\$ _____	\$ _____
08000.00 Subbase, CIP	Cyd	1,960	\$ _____	\$ _____
08010.02 Aggregate Base, 6 In., 21AA, CIP	Syd	228	\$ _____	\$ _____
08010.03 Aggregate Base, 8 In., 21AA, CIP	Syd	7,000	\$ _____	\$ _____
08070.14 HMA, 4EL	Ton	2,767	\$ _____	\$ _____
08100.71 DS_Sidewalk Retaining Wall, Integral, 6 In to 18 In. Height	Sft	18	\$ _____	\$ _____
08110.00 Conc, Curb or Curb & Gutter, All Types	Ft	3,104	\$ _____	\$ _____
08120.01 Conc, Driveway Opening, Type M	Ft	467	\$ _____	\$ _____
08130.01 Conc, Sidewalk, 4 In.	Sft	952	\$ _____	\$ _____
08131.01 Conc, Sidewalk, Drive Approach, or Ramp, 6 In.	Sft	3,263	\$ _____	\$ _____
08140.71 DS_Speed Hump	Syd	80	\$ _____	\$ _____
08141.71 DS_Raised Crosswalk	Syd	161	\$ _____	\$ _____
08150.00 Detectable Warning Surface	Ft	135	\$ _____	\$ _____
08190.78 DS_Pavt Mrkg, Polymer Cement Surface, 12 In., Crosswalk	Ft	168	\$ _____	\$ _____
08190.79 DS_Pavt Mrkg, Polymer Cement Surface, Speed Hump Chevron	Ea	20	\$ _____	\$ _____
08200.09 Pavt Mrkg, Polyurea, 24 In., Stop Bar	Ft	116	\$ _____	\$ _____
08200.10 Pavt Mrkg, Polyurea, 12 In., Crosswalk	Ft	981	\$ _____	\$ _____
08200.13 Pavt Mrkg, Polyurea, 6 In., White	Ft	158	\$ _____	\$ _____
08200.15 Pavt Mrkg, Polyurea, Lt Turn Arrow Sym	Ea	1	\$ _____	\$ _____
08200.17 Pavt Mrkg, Polyurea, Rt Turn Arrow Sym	Ea	1	\$ _____	\$ _____
08200.25 Pavt Mrkg, Polyurea, Only	Ea	2	\$ _____	\$ _____
08251.00 Recessing Pavt Mrkg, Longit	Ft	158	\$ _____	\$ _____
08252.00 Recessing Pavt Mrkg, Transv	Sft	1,881	\$ _____	\$ _____
08300.71 DS_Raised Device Delineator	Ea	20	\$ _____	\$ _____
10060.00 Turf Restoration	Syd	500	\$ _____	\$ _____
TOTAL THIS PAGE 22			\$ _____	
TOTAL FROM PAGE 20			\$ _____	
TOTAL FROM PAGE 21			\$ _____	
TOTAL FOR AREA II (Also to be entered on Page 23)			\$ _____	

TOTAL FOR PROJECT WIDE ITEMS

\$ _____

TOTAL FOR AREA I

\$ _____

TOTAL FOR AREA II

\$ _____

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

Detailed Specifications

DS-1 to DS-47

Appendix 1 – Geotechnical Report

APPENDIX 1-1 to
APPENDIX 1-81

Project Plans

Arbordale Sherwood Water Main

Sheets 1 to 51

Maple Water Pressure
District Improvements

Sheets 1 to 23

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:

CONTRACT

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

("Contractor")

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

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

ARTICLE I - Scope of Work

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

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

ARTICLE II - Definitions

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

Project means **[Insert Title of Bid and Bid Number]**

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: **[Insert the person's name]** whose job title is **[Insert job**

title]. 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 _____ **[Insert name]** whose job title is **[Insert job title]**.

ARTICLE III - Time of Completion

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

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

ARTICLE IV - The Contract Sum

Choose one only.

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

Or

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

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

ARTICLE V - Assignment

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

ARTICLE VI - Choice of Law

This Contract shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this 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.

[Signatures on next page]

[INSERT CONTRACTOR NAME HERE]

CITY OF ANN ARBOR

By: _____

Name: _____

Title: _____

Date: _____

By: _____

Name: Milton Dohoney Jr.

Title: City Administrator

Date: _____

Approved as to substance:

By: _____

Name: Jordan Roberts

Title: Public Services Area
Administrator

Date: _____

Approved as to form:

By: _____

Name: Atleen Kaur

Title: City Attorney

Date: _____

(Signatures continue on following page)

CITY OF ANN ARBOR

By: _____

Name: _____

Title: Mayor _____

Date: _____

By: _____

Name: _____

Title: City Clerk _____

Date: _____

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)

(Name of Principal)
By _____
(Signature)
Its _____
(Title of Office)

Approved as to form:

Name and address of agent:

Atleen Kaur, City Attorney

LABOR AND MATERIAL BOND

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

(Name of Principal)
By _____
(Signature)
Its _____
(Title of Office)

Approved as to form:

Atleen Kaur, City Attorney

Name and address of agent:

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

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

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

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

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

Section 2 - Order of Completion

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

Section 3 - Familiarity with Work

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

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

Section 4 - Wage Requirements

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

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

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

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

If the Contractor is a "covered employer" as defined in Chapter 23 of the Ann Arbor City Code, the Contractor agrees to comply with the living wage provisions of Chapter 23 of the Ann Arbor City Code. The Contractor agrees to pay those employees providing Services to the City under this 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 I3. No claim shall be valid unless so made.

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

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

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

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

Section 16 - Progress Payments

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

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

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

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

Section 17 - Deductions for Uncorrected Work

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

Section 18 - Correction of Work Before Final Payment

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

If the Contractor does not remove the condemned work and materials within 10 days after written notice, the City may remove them and, if the removed material has value, may store the material

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

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

Section 19 - Acceptance and Final Payment

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

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

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

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

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

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

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

Section 20 - Suspension of Work

The City may at any time suspend the work, or any part by giving 5 days notice to the Contractor in writing. The work shall be resumed by the Contractor within 10 days after the date fixed in the

written notice from the City to the Contractor to do so. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of the suspension.

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

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

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

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

Section 22 - Contractor's Right to Terminate Contract

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

Section 23 - City's Right To Do Work

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

Section 24 - Removal of Equipment and Supplies

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

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

Section 25 - Responsibility for Work and Warranties

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

The Contractor shall guarantee the quality of the work for a period of one year. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of one year. At the end of one year after the Contractor's receipt of final payment, the complete work, including equipment and materials furnished and installed under the contract, shall be inspected by the Contractor and the Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. The Contractor shall assign all manufacturer or material supplier warranties to the City prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

Section 26 - Partial Completion and Acceptance

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

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

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

Section 27 - Payments Withheld Prior to Final Acceptance of Work

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

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

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

Section 28 - Contractor's Insurance

- (1) The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself and the City from all claims for bodily injuries, death or property damage that may arise under this Contract; whether the act(s) or omission(s) giving rise to the claim were made by the Contractor, any subcontractor, or anyone employed by them directly or indirectly. Prior to commencement of any work under this contract, Contractor shall provide to the City documentation satisfactory to the City, through City-approved means (currently myCOI), demonstrating it has obtained the required policies and endorsements. The certificates of insurance endorsements and/or copies of

policy language shall document that the Contractor satisfies the following minimum requirements. Contractor shall add registration@mycoitracking.com to its safe sender's list so that it will receive necessary communication from myCOI. When requested, Contractor shall provide the same documentation for its subcontractor(s) (if any).

Required insurance policies include:

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

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

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

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

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>

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 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 \$17.08/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 \$19.04/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

Attachment F

CITY OF ANN ARBOR LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2025 - ENDING APRIL 29, 2026

\$17.08 per hour

If the employer provides health care benefits*

\$19.04 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**



ATTACHMENT 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.	<input type="checkbox"/> Relationship to employee <hr/> <input type="checkbox"/> Interest in vendor’s company <input type="checkbox"/> Other (please describe in box below)

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

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

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.

MICHIGAN DEPARTMENT OF TRANSPORTATION CERTIFIED PAYROLL

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

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

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

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
PROJECT SCHEDULE AND PAYMENT

AA:NJB/JDD

1 of 4

2/4/26

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 **May 4, 2026**, 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 water main, storm sewer improvements, resurfacing, sidewalk, and ramp replacement along with turf establishment; and shall be substantially completed on or before **November 23, 2026**.
3. The work under this Contract shall consist of three (3) phases.
 - a. **Phase 1:** Work on Durango Drive, Breckenridge Drive, Country Village Court, and South Maple Road. All road and utility work shall be completed on these streets no later than **July 13, 2026**.
 - b. **Phase 2:** Work on Sherwood Street and Sherwood Circle. These streets shall be base paved no later than **September 8, 2026**. Work on Phase 2 can begin no earlier than **July 6, 2026**, with the approval of the Project Engineer.
 - c. **Phase 3:** Excavation Work on Arbordale Street until after base pavement has been placed on Phase 2. Arbordale Street, Sherwood Street, and Sherwood Circle shall be fully paved with all associated pavement markings ready for use by the public no later than **November 23, 2026**.

4. 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 prior to the work and no more than 5 days
- Sunday: Only with written approval from the City of Ann Arbor.

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

- Memorial Day, May 25, 2026
- Independence Day, July 3, 2026 (Observed)
- Labor Day, September 1, 2026
- Thanksgiving Day, November 26, 2026

NOTE: The University of Michigan will be hosting home football games on the following dates:

- September 5, 2026
- September 12, 2026
- September 19, 2026
- September 26, 2026
- October 17, 2026
- October 24, 2026
- November 7, 2026
- November 21, 2026

Additionally, Michigan Stadium will be hosting concerts on the following dates:

- July 24, 2026
- July 25, 2026

The contractor should be aware of these dates and recognize potential road closures and detours may cause significant delays to material delivery. No extension of contract will be allowed due to delays caused by Stadium events or UofM Football.

City Council approval is expected on or before **April 20, 2026**. 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 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, **\$2,000.00** 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
PAVEMENT PROTECTION IN THE SURREY PARK NEIGHBORHOOD

AA:JDD

1 of 1

2/13/26

a. Description. This detailed specification outlines the special care that is needed while performing work in the Surrey Park Neighborhood. The goal of this detailed specification is to protect the 2" asphalt pavement beyond the designated construction zone in section C of this detailed specification.

b. Materials. None specified.

c. Construction. The Contractor shall provide rubber-tracked equipment to perform the necessary work in the Surrey Park Neighborhood. The Contractor shall limit the amount of dry steering of trucks, excavators, and other construction equipment required to perform the work. The construction zone will be defined as the following limits:

- Durango Drive from Keystone Lane to north end of ROW
- Breckenridge Drive from South Maple Road to 40 feet west of Durango Drive measured from the center of the Breckenridge Drive and Durango Drive intersection

Materials shall not be stockpiled directly on asphalt pavement outside of the construction zone. No parking of construction vehicles shall occur outside of the construction zone.

d. Damage and Responsibility. The Contractor is solely responsible for all damage caused by construction outside of the construction zone.

Repairs shall include but are not limited to:

- Full depth pavement repair
- Saw-cut removal and replacement at the damaged asphalt limits
- Subgrade recompaction and/or replacement if deemed necessary by the PSAA

Surface patching alone will not be accepted where base or subgrade damage has occurred. Repairs shall restore the pavement to equal or better condition than prior to construction. The PSAA reserves the right to inspect equipment loads, halt operations causing visible distress of the pavement, and require additional protection measures to be taken. Failure to comply may result in suspension of work with no compensation of the Contractor.

e. Measurement and Payment. No separate payment will be made for pavement protection measures. All costs associated with compliance with this detailed specification shall be considered incidental to the Contract.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
COLD MILLING FOR CONCRETE CURB AND GUTTER REVEAL

AA:NJB

1 of 1

2/6/26

a. Description. This work consists of cold milling existing concrete curb and gutter areas overlaid with HMA material to reveal the edge-of-metal of the curb and gutter in advance of the rest of the roads cold milling. The idea being it will allow for a condition inspection in advance of the curb repair effort. Work to be done in accordance with section 501 of the Michigan Department of Transportation 2020 Standard Specifications for Construction, as directed by the PSAA, and as described herein.

b. Materials. None specified.

c. Construction. Perform localized cold milling along the concrete gutter pan overlaid with HMA to reveal the edge-of-metal of the existing concrete curb and gutter. Perform this work in accordance with subsection 501.03 of the MDOT 2020 Standard Specifications for Construction, and as directed by the Engineer at the location designated by the Engineer. Perform subsequent handwork and/or necessary machine work to remove HMA overlay material from the gutter pan and dispose of this material properly.

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

Pay Item	Pay Unit
DS_Concrete Curb and Gutter Reveal.....	Syd

Measure **DS_Concrete Curb and Gutter Reveal** by square yards of gutter pan revealed, unit price includes the cost for all labor, equipment and materials required to remove, load, haul, and dispose of the cold milled material, and sweeping of the cold milled surface. This operation must be completed in advance of the road milling. Removal of overlay HMA in the gutter pan at the same time as general road milling is paid for under that roadway HMA removal pay item.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
GRADING ROADWAY

AA: NJB/JDD

1 of 2

2/18/26

a. Description. The pay item “Grading Roadway” shall be used to for effort to excavate existing road base over the water main side of the half roadway in preparation for placement of subbase and aggregate base. This includes motor grading and compact of existing subbase, and fine grading of the aggregate base in preparation for placing HMA base and concrete material. Effort shall be in accordance with 2025 Standard Specification Article 10, Section III.H., except as specified herein.

b. Materials. None specified.

c. Construction. The Contractor shall excavate existing road base material to such a depth as to allow for the placement of new subbase and aggregate base materials as shown in the cross section. Proof-rol, grade and compact the existing subbase, and fine grading the new aggregate base, between edge of metal to edge of metal, where curb and gutter exist or 12 inches past proposed edge of pavement. This shall include, but not be limited to, the excavation of miscellaneous concrete and miscellaneous HMA pavement, soil, rocks of any size, and bricks; the removal and proper disposal off-site of surplus excavated material; the scarifying, of existing aggregate base, the trimming, grading, compaction and proof-rolling of the prepared subgrade; the full depth saw-cutting of pavement at the removal limits. Road subbase and base materials furnished and placed shall be paid for separately.

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

The Contractor shall remove and dispose of all bricks, if present, as directed by the PSAA.

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

The Contractor shall move exiting salvage longitudinally and/or transversely where necessary, and as directed by PSAA.

The Contractor shall keep all areas of the work graded and well drained.

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 PSAA, 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 PSAA, 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 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.

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

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

<u>Pay Item</u>	<u>Pay Unit</u>
DS_Grading Roadway.....	Square Yard

The pay item **DS_Grading Roadway** shall be measured by length and width in square yards, or portion thereof, where this work effort is provided.

CITY OF ANN ARBOR
 DETAILED SPECIFICATION
 FOR
GRADING SIDEWALKS, SIDEWALK RAMPS, AND DRIVEWAYS

AA:DAD/AMW

1 of 1

12/07/23

a. Description. Remove miscellaneous structures and materials, and complete all earthwork required to construct new and replacement sidewalks, sidewalk ramps and driveway approaches to the lines and grades shown on the plans and/or as directed by the PSAA. Complete this work according to the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, this detailed specification, and as directed by the PSAA.

b. Materials. Provide materials in accordance with subsection 205.02 of the MDOT 2020 Standard Specifications for Construction as necessary to achieve the required cross section(s). The Contractor may use excavated material, if suitable, as embankment with approval by the PSAA.

c. Construction. Complete this work, as applicable, according to subsection 205.03 of the MDOT 2020 Standard Specifications for Construction. Grading for sidewalks, sidewalk ramps and driveway approaches includes, but is not limited to, the following work:

1. Stripping and stockpiling topsoil for use in turf establishment as approved.
2. Removing rocks or boulders less than 0.5 cubic yards in volume.
3. Excavating material to a depth necessary for construction.
4. Disposing of excess and unsuitable material according to section 205 of the MDOT 2020 Standards Specifications for Construction.
5. Shaping, grading, and compacting the subgrade to proposed grades to prepare it for embankment, subbase or aggregate base bedding materials or for an aggregate surface course.
6. Furnishing and placing embankment material to the grades necessary for construction.
7. Shaping, grading, and compacting embankment to proposed grades to prepare it for subbase or aggregate base bedding materials or for an aggregate surface course.
8. Matching new sidewalk, sidewalk ramp, and driveway approach grades with existing grades as required.
9. Removal of shrubs, brush, and trees less than 6" diameter (DBH) as shown on the plan sheets or as directed by PSAA;

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

Pay Item	Pay Unit
DS_Grading, Sidewalk, Ramp & Driveway Approach.....	Square Yard

Measure “**DS_Grading, Sidewalk, Ramp & Driveway Approach**” areas in place by the unit square foot and pay for them at their respective contract unit prices, which prices include the costs for all labor, equipment and materials necessary to complete the work.

CITY OF ANN ARBOR
 DETAILED SPECIFICATION
 FOR
STORM SEWER ABANDONMENT

AA:JDD

1 of 2

2/10/26

a. Description. This work shall consist of furnishing all labor, tools, equipment, and material to abandon storm sewer pipe. This work shall be performed in accordance with the 2025 Public Services Standard Specifications and Article 10, Section II.AA., as shown on the plans, and as specified herein.

b. Materials. Provided flowable fill material, as directed by the PSAA, meeting the following requirements in the 2025 Standard Specifications Article 5, Section II.P Table G, shown below.

Table G Acceptable Mixtures for Flowable Fill		
Mixture	Ingredients	
FF Mix Number One: Cement Stabilized Fly Ash Mixture (Class F Fly Ash)	Portland Cement	100 lbs. / yd ³
	Fly Ash (Class F)	2000 lbs. / yd ³
	Water	Sufficient water to produce the desired flowability (approx.. 80 gal / yd ³)
FF Mix Number Two: Controlled Density Fill Mixture (Class F Fly Ash)	Portland Cement	50 lbs. / yd ³
	Fly Ash (Class F)	500 lbs. / yd ³
	Granular Material	2600 lbs. / yd ³
	Water	Sufficient water to produce the desired flowability (approx.. 50 gal / yd ³)
FF Mix Number Three: Controlled Density Fill Mixture (Class C Fly Ash)	Fly Ash (Class C)	300 lbs. / yd ³
	Granular Material	2600 lbs. / yd ³
	Water	Sufficient water to produce the desired flowability (approx.. 50 gal / yd ³)

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
STORM SEWER ABANDONMENT

AA:JDD

2 of 2

2/10/26

c. **Construction.** The contractor shall perform the work in accordance with the 2025 Public Services Standard Specifications and Article 10, Section II.AA, as shown on the plans.

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

Pay Item

Pay Unit

DS_Storm Sewer Pipe, 6 In., Abandon.....Ft

Measure **DS_Storm Sewer Pipe, 6 In., Abandon** by lineal foot of the complete filling of the sewer with flowable fill at the contract unit price, which includes all labor equipment, and materials necessary to complete the work.

CITY OF ANN ARBOR
 DETAILED SPECIFICATION
 FOR
CURB DRAIN OPEN CUT

AA:NJB

1 of 2

2/18/26

- a. **Description.** This work shall consist of furnishing all labor, tools, equipment, and material to install curb drain in an open cut trench. This work shall be performed in accordance with the 2025 Public Services Standard Specifications Article 4 and Article 10, Section II.Q., as shown on the plans, and as specified herein.
- b. **Materials.** Open-cut curb drain pipe, service leads, fittings, and curb drain cleanouts shall be SDR 26 polyvinyl chloride (PVC) pipe 6-inch conforming to current ASTM D3034, (Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings). Pipe shall have an integral wall bell and spigot.
- c. **Construction.** Where curb drain is located in the same trench as another utility, the Contractor shall install curb drain as the utility trench is backfilled. No extra will be paid to re-excavate the trench and place new backfill in a utility trench.

For curb drain located in the roadway, terminate curb drain with a cleanout in the greenbelt. Contractor shall install a bend, no more than 45 degrees, extend the pipe to 2 feet behind the curb and install a cleanout, as specified, on the end of the curb drain.

One 6-inch wye and a service lead stub shall be provided for each lot that is served by the curb drain, final location to be determined by the Engineer. The wye should be placed at the 10 or 2 o'clock position of the receiving pipe. Install the service lead to 2 feet behind the curb and cap the pipe. Mark the end of the lead with a 1-inch x 1-inch (minimum cross section) metal marker, such as a form pin, at a point immediately in front of the service connection to 1 foot below the finish ground surface. Do not rest the marker on any portion of the service connection or cap.

- d. **Measurement and Payment** The completed work as measured will be paid for at the contract unit prices for the following Contract items (pay items):

<u>Pay Item</u>	<u>Pay Unit</u>
DS_Curb Drain, 6 In., Open Cut.	Linear Foot
DS_Curb Drain, PVC Tap.	Each
DS_Curb Drain, PVC Clean Out.	Each

DS_Curb Drain, 6 In. Open Cut shall be measure by the lineal foot from the connection to the downstream storm structure to the cleanout, and from the curb drain main to the cap of service leads. Work shall include wyes and caps, and connection to existing sump pump leads behind the curb where no curb drain previously existed. Payment shall include all labor, material and equipment needed to install curb drain in the roadway including, but not limited to excavation, main and service lead installation, wye, caps, backfill, and post installation CCTV.

DS_Curb Drain, PVC Tap shall be paid by each tap made to an exiting drainage structure at the downstream end. Connection to new drainage structures are incidental to the drainage structure furnish and install unit price. Payment shall include all labor, material and equipment needed to tap an existing structure and parge around the new pipe opening.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
CURB DRAIN OPEN CUT

AA:NJB

2 of 2

2/18/26

DS_Curb Drain, PVC Clean Out shall be paid for by each clean out installed at the upstream terminus end of each curb drain run. Treaded caps of the same diameter of the pipe shall be used to provide a water tap but removal cap. The clean outs are installed 1 ft below finish grade and shall include a metal mass so that the caps can be located using a metal detector in the future. Payment shall include all labor, material and equipment needed to complete the clean out.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
CHECK VALVE IN WELL

AA:NJB

1 of 4

2/18/26

Description. Work includes furnishing and installing two check valve assemblies at the pressure-district boundary to allow flow from the adjacent lower pressure district under rare fire-flow conditions. Provide one 8-inch and one 10-inch assembly, located approximately 1,000 feet apart, as shown on the plans.

Materials. 1.01 SUMMARY

- a. Each assembly shall include a low-headloss check valve, reducer, drains, supports, and appurtenances installed in a valve well precast.
- b. Basis of Design: Cla-Val 586 Series Pivoting Disc Check Valve. The 586 features a two-piece, expanded-area body and a pivoting disc for reduced headloss and stable operation; furnished access points to allow for future installation of a top or bottom mounted closing control. <https://www.awwa.org/AWWA-Articles/awwa-comment-period-on-awwa-c508-swing-check-valves-for-waterworks-service>
- c. Entire Vault Coordination: JETT Pump & Valve, LLC shall coordinate the entire vault system (vault size/geometry, valve orientation and clearances, piping layout and penetrations, supports, casting/ladders/access, drainage approach, rigging paths, and integration of all appurtenances). No vault layout will be accepted unless prepared by JETT.
- d. Contact Point: Matthew Karam, JETT Pump & Valve, LLC, 248-673-2530 or email mkaram@jettump.com

1.02 REFERENCES

- a. AWWA C508 – Swing-Check Valves for Waterworks Service (iron-body, waterworks check valves; scope includes potable water systems and acceptance testing).
- b. AWWA C550 – Protective Interior Coatings for Valves and Hydrants (fusion-bonded epoxy or equal).
- c. NSF/ANSI/CAN 61 – Drinking Water System Components—Health Effects.
- d. NSF/ANSI/CAN 372 – Drinking Water System Components—Lead Content.
- e. City of Ann Arbor Public Services Standard Specifications and Standard Details, latest published

1.03 ADMINISTRATIVE REQUIREMENTS

- a. Basis of Design: Cla-Val 586 Series. Equal products (if permitted) must demonstrate equivalency by certified headloss curves and functional features matching the 586.
- b. Entire Vault System Coordination: All valve selection, control option (top-mounted dashpot 586CT or bottom-mounted buffer 586CB), vault layout, dimensions, and appurtenance placement shall be coordinated through JETT Pump & Valve, LLC and submitted as a single, consolidated package.

1.04 SUBMITTALS

- a. Product Data: Manufacturer's data sheets, certified headloss curves, pressure class, materials, coatings, flange drilling, and orientation limitations (horizontal or vertical with flow up where applicable).
- b. Compliance Certificates: Written confirmation of AWWA C550 coating and NSF/ANSI/CAN 61 and 372 certifications for wetted materials.
- c. Shop Drawings (prepared by JETT): Dimensioned valve well plan/sections showing vault geometry; valve orientation; rigging and maintenance clearances; discharge point; casting and ladders; supports; pipe penetrations and boots; groundwater/drainage provisions.
- d. O&M Manuals: Manufacturer installation/operation/maintenance, including recommended lubrication/inspection intervals for pivot components.

1.05 QUALITY ASSURANCE

- a. Products: New, free of defects; manufactured and tested per referenced standards. Acceptance, seat/shell testing, and performance shall comply with AWWA C508 as applicable to iron-body waterworks check valves.
- b. Coatings/Materials: Interior/exterior coatings per AWWA C550; potable-water contact components certified to NSF/ANSI/CAN 61 and 372.

1.06 DELIVERY, STORAGE, AND HANDLING

Deliver valves in closed position with protective end covers; store to prevent coating damage and contamination; handle per manufacturer instructions and O&M.

PART 2 – PRODUCTS**2.01 MANUFACTURER AND MODEL**

Basis of Design: Cla-Val 586 Series Pivoting Disc Check Valve, sizes 8-inch and 10-inch. The 586 provides a two-piece body with ~40% expanded cross-sectional flow area (relative to the disc mass), reducing headloss vs. conventional hinged-disc designs; available with top- or bottom-mounted closing control features.

2.02 PERFORMANCE AND DESIGN REQUIREMENTS

- a. Service: Potable water; district interconnect with infrequent reverse-direction flow during fire events. Normal adjacent system pressure approximately 35–40 psi (design to minimize added headloss).
- b. Headloss: Provide valves with published, certified headloss curves. Submittals shall demonstrate equal or lower headloss than the 586 at project design flows.
- c. Orientation: Suitable for horizontal; final orientation per coordinated vault drawings.
- d. Pressure Class and Ends: Flanged ends, ANSI Class 125/150 (or 250/300 where noted); Cla-Val 586 available in 125/150 and 250/300 class constructions—match system pressure class shown on the Drawings.
- e. Testing/Acceptance: Seat and shell testing per AWWA C508, as applicable.

2.03 MATERIALS AND CONSTRUCTION

- a. Body: Ductile iron, two-piece, interior and exterior fusion-bonded epoxy per AWWA C550, color per manufacturer standard.
- b. Disc/Seat: Manufacturer's standard stainless steel metal-to-metal seating with field-replaceable seat rings, or resilient-seated option if indicated on the Drawings; double O-ring seals at body split as furnished.
- c. Pivot/Bearings: Off-center pivot with stabilizing design to minimize turbulence in full-open position; provide lubrication/grease fittings if required by manufacturer.
- d. Closing Control shall have access ports for the potential of future installation of dampening devices.
- e. Potable Water Compliance: Materials and coatings as necessary to maintain NSF/ANSI/CAN 61 and 372 compliance.
- f. Dresser coupling one side, to allow for dismantling of the check valve without excavation.
- g. Reducer with mechanical restraint
- h. Assemble and coatings should be sufficient for prolonged submerged operation.

2.04 DISCHARGE POINT AND APPURTENANCES

- a. Discharge point: Provide 2-inch NPT drain tapping downstream of each check valve with ball valve and hose connection; route to vault sump as coordinated by JETT.
- b. Lifting/Supports: Provide lifting lugs/eyes and pipe supports per coordinated vault drawings.

PART 3 – EXECUTION

3.01 EXAMINATION

Do not start vault construction or valve installation until JETT-prepared vault drawings (layout, dimensions, appurtenances, drainage) are approved. Field-verify elevations and clearances.

3.02 INSTALLATION

- a. Install valves plumb and level, oriented with flow arrow; for horizontal installations, unless manufacturer specifically approves otherwise.
- b. Install isolation gate valves, paid for separately, will be located on both sides of each check valve outside of the new well as indicated on the plans. No bypass is planned at the check valves.
- c. Entire Vault System: Construct vault strictly in accordance with JETT's coordinated package, including:
 - 1) Precast concrete modular unit well, with interior clearances for full valve removal and disc service using standard rigging;
 - 2) Access (Casting, ladders) and working room;
 - 3) Pipe penetrations/boots, supports, and rigging paths;
 - 4) Drainage: provide sump recess for a temporary submersible pump to removed acuminated water

- 5) Any manufacturer-recommended environmental limitations incorporated into the layout.
- d. Coordinate any deviation in writing through JETT prior to work.
- e. Anchor, support, and gasket per manufacturer and coordinated drawings; repair any coating damage with coating compatible with AWWA C550.

3.03 FIELD QUALITY CONTROL

- a. Hydrostatic and leakage testing per AWWA C508, where applicable; verify drip-tight shutoff at seat.
- b. Operate each valve through full travel; verify unrestricted opening.

3.04 COMMISSIONING

- a. Provide start-up assistance and on-site or virtual training through JETT Pump & Valve, LLC addressing inspection points, lubrication (pivot pins), and annual maintenance per manufacturer O&M.
- b. Submit redlined as-builts showing final vault dimensions, valve orientation, elevations, drainage routing, and appurtenance locations per the coordinated package.

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

<u>Pay Item</u>	<u>Pay Unit</u>
DS_Check Valve in Well, 8 In.....	Each
DS_Check Valve in Well, 10 In.....	Each

Measure **DS_Check Valve in Well, __ In** of each assemble complete and commissioned pay for at their respective contract unit prices, which prices include the costs for all labor, equipment and materials necessary for check valve and well to be placed in service. The City will pay for restoration of the area disturbed during the placement of the check valve and well under separate pay items.



Series 586

Pivoting Disc Check Valve



Series 586CT Pivoting Disc Check Valve with Top Mounted Control

Series 586CB Pivoting Disc Check Valve with Bottom Mounted Control



Product Advantages

- Two accessory openings - one in each body half
- Double o-ring seals - each side of body seat
- Field replaceable seat and disc rings
- Metal-to-metal seating
- Precise pivot clearance for easy centering, no sticking
- Available in standard sizes 3 through 14-inches - For larger sizes, consult factory

The Cla-Val Series 586 Pivoting Disc Check Valve provides superior flow characteristics with lower head loss than any other comparable hinged disc check valve. The two-piece body design allows for a 40% expanded cross sectional flow area, compensating for the disc mass. The valve is available with top mounted or bottom mounted closing control features to meet a variety of applications. The Model 586CT features a top mounted control for slow opening and controlled closing. The Model 586CB features a bottom mounted control for unrestricted opening and controlled closing.

The unique disc design offers minimal resistance to flow when pivoting and stabilizing in the full open position. The longer laying length minimizes turbulence and cavitation. The off-center pivoting disc provides the least possible flow resistance while minimizing water column reversal and slamming during shutdown due to the short travel distance to the shut-off position.

The weight distribution of the pivoting disc enables it to fall into unrestricted into shut-off position, while a slight pressure differential will cause the disc to open. Because of the very low head loss, the Cla-Val Pivoting Disc Check Valve reduces power consumption and improves pumping efficiency.

Note:

Standard offering is two-part epoxy coating interior and exterior.

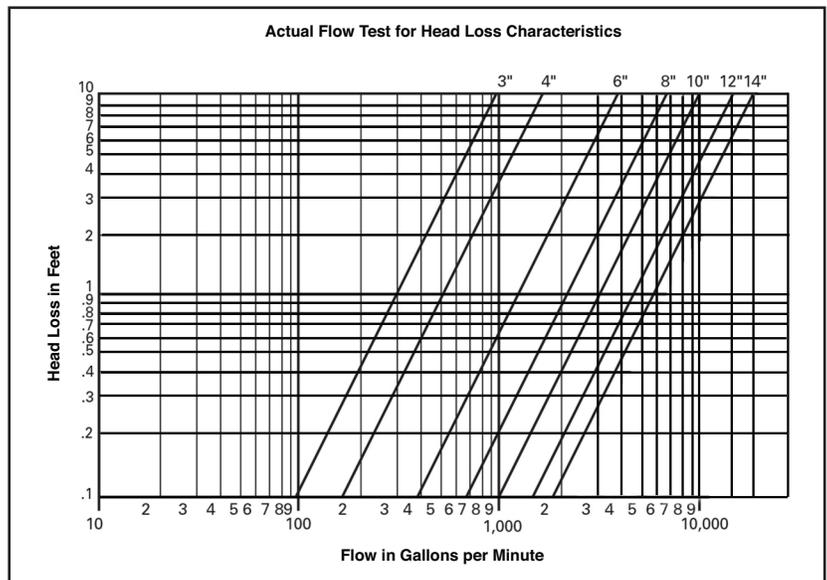
Approvals & Certifications

- 125/150 & 250/300 Class Valves, 3" through 14" meets the Federal Mandate Limiting Lead in Drinking Water
- Meets AWWA standards for metal-to-metal seating

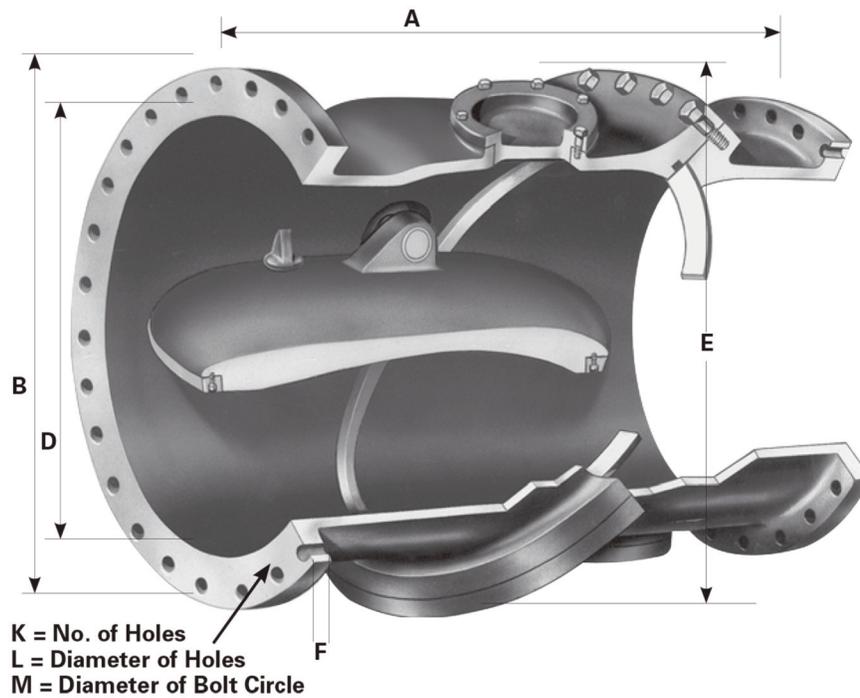
Certified Independent Laboratory Testing

- Certified flow test conducted at independent test research Laboratory
- Figure shown is based on certified tests on valves sizes 8 and 14-inches. Actual field conditions may vary

Note: When comparing similar published data, it is recommended that only certified flow test data be used



Series 586 Pivoting Disc Check Valve Dimensions



Series 586: 125/150# Flange Main Valve Dimensions

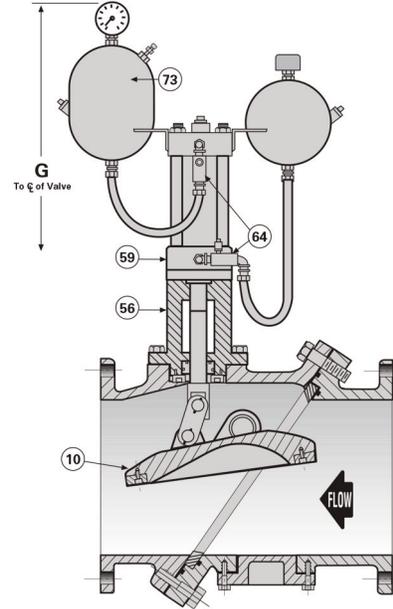
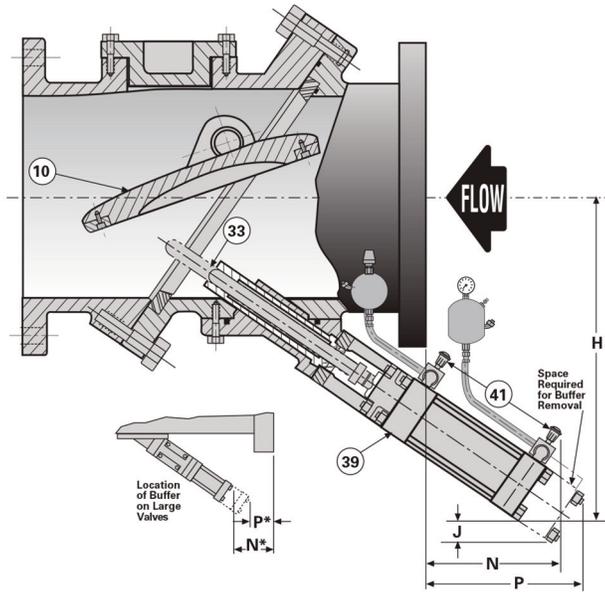
Size (inches)	A	B	D	E	F	G	K	L	M	Weight (lbs.)
3	9.5	7.5	3.0	8.5	.75	9.0	4	.75	6.0	55
4	11.5	9.0	4.0	9.75	.938	11.0	8	.75	7.5	82
6	15.0	11.0	6.0	13.75	1.0	17.5	8	.875	9.5	164
8	19.5	13.5	8.0	15.5	1.125	22.0	8	.875	11.75	265
10	24.5	16.0	10.0	18.0	1.188	25.5	12	1.0	14.25	510
12	24.0	19.0	12.0	21.0	1.25	27.0	12	1.0	17.0	650
14	30.0	21.0	14.0	25.0	1.375	33.0	12	1.125	18.75	1044

Series 586: 250/300# Flange Main Valve Dimensions

Size (inches)	A	B	D	E	F	G	K	L	M	Weight (lbs.)
3	12.5	8.25	3.0	8.5	1.125	9.0	8	.875	5.625	65
4	11.5	10.0	4.0	9.75	1.25	11.0	8	.875	7.875	93
6	15.0	12.5	6.0	13.75	1.438	17.5	12	.875	10.625	199
8	19.5	15.0	8.0	15.5	1.625	22.0	12	1.0	13.0	357
10	24.5	17.5	10.0	18.0	1.875	25.5	16	1.125	15.25	573
12	24.0	20.5	12.0	21.0	2.0	27.0	16	1.25	17.75	693
14	30.0	23.0	14.0	25.0	2.125	33.0	20	1.25	20.25	1179

Available in standard sizes 3 through 14-inches. For larger sizes, consult factory.

125/150 & 250/300 Pivoting Disc Check Valve: 3 thru 14-inches



Top and Bottom Control Dimensions

Valve Size (inches)	G	H	N	J	P
3	consult factory				
4	consult factory				
6	21.375	13.375	8.625	2.75	11.5
8	28.625	14.75	7.75	3.625	11.0
10	30.625	16.5	5.0	4.125	9.0
12	31.875	17.875	7.125	5.125	11.0
14	35.875	19.75	4.75	5.376	9.0

Note: Dimensions are the same for both 125/150 and 250/300 Class Valves and for 586CB and 586CT configurations.

Operating Principles

Model 586CT

This valve is highly recommended when slow open and full control closure of the disc (10) is essential. Slow gradual opening and control closing of the valve disc will prevent or greatly reduce surge pressures (water hammer) that can cause damage to the pipeline each time the pump starts and stops or during power failure.

Slow Gradual Opening

Slow gradual opening is accomplished as the piston inside the cylinder (59) moves upwards pushing oil through the upper control valve (64).

Fully Controlled Closing

1st Stage: Closing control occurs as the piston moves downward pushing oil through the lower control valve (64). **2nd Stage:** Final control stage occurs as the piston approaches the bottom of the cylinder and enters the internal cushion chamber, built into the cap of the cylinder.

By simply regulating each flow control valve (64), a slow gradual opening of the disc (10) can be achieved as well as variable control closing of the disc. Closing time adjustments can be made in the field to best suit your installation. This is a desirable feature because times for opening and closing computed during design of a pump station and pipeline may not coincide with actual field conditions.

Model 586CB

This unique bottom mounted control component arrangement allows the valve disc (10) to open fully without interference and to close freely for approximately 90% of its stroke. After the disc is 90% closed, it comes in contact with the buffer rod (33), at this point final control speed of the last 10% (adjustable) of closing is established.

The flow control valve (41) on the cylinder (39) is easily adjusted to allow slow closure to suit pipeline flow conditions. This prevents or minimizes slamming which greatly reduces pressure surges.

This valve is recommended where rapid flow reversal (caused by a hydro-pneumatic surge tank or a critical slope of discharge pipeline) is so fast that a free closing check valve cannot shut prior to reverse flow and therefore slams. The bottom mounted control component will stop the disc at approximately 90% (adjustable) of closure and control close the disc to shut-off without slamming. This is accomplished with minimal pressure rise. The control component is self contained. Auxiliary equipment is not required.

Such control strategies have been used successfully for decades to eliminate slamming of the valve disc and resultant water hammer.

Series 586 Pivoting Disc Check Valve Technical Data

Materials

Valve Body:

Ductile Iron - ASTM GR 536 65-45-12

Disc:

3 - 10-inches Bronze Alloy C90700
12 - 14-inches Ductile Iron - ASTM GR 536 65-45-12

Seat Ring and Disc Ring:

Bronze ASTM B16 C360000

Pivot Pins:

Stainless Steel ASTM A582 T303

Pivot Pin Bushing:

11 - 14-inches Stainless Steel A269 T304

Exterior Paint:

2-Part Epoxy - FDA Approved for Potable Water Contact



Typical Applications

Cla-Val 586 Pivoting Disc Check Valves are used anywhere a quick, responsive and quiet closure is desired and in the majority of pump applications, including the following;

- Vertical Turbine Pumps
- Booster Pump Stations in High Rise Buildings
- House Pump Applications



Purchase Specifications

The valve body shall be two-piece ductile iron unit. The two body halves and body seat shall be o-ring sealed and bolted together in a manner to sandwich the body seat on a 55° angle. Each body half must have an access covered hole for internal inspection and each body half and disc fully machined to accept future attachments of a bottom control device or a top mounted control device. The seat ring and disc ring must be of the design that permits replaceability in the field without need for special tools or machining. The pivot pins in the body and the bushings in the disc lugs must be stainless steel of different hardness to prevent galling. The bushings shall be press-fit to prevent wear. An indicator shall be provided to show the position of the disc. The area throughout the valve body must be equal to full pipe area. The area through the seat section shall be 40% larger than the inlet and outlet of the valve to achieve low head loss.

The valve must be available in two configurations:

- (A) The first with a bottom device for unrestricted opening and controlled closing;
- (B) The second with a top mounted device for slow opening and controlled closing.



586CB

Configuration (A) Model 586CB: For unrestricted opening and positive non-slam closing, the valve must have a bottom mounted control component. The control component shall be designed to contact the disc during the last 10% (adjustable) of closure and control the final closing of the valve to prevent water hammer. The rate of closure to be externally adjustable and variable.



586CT

Configuration (B) Model 586CT: For slow open and non-slam closing, a top mounted control component must be provided with slow opening and full control closing features to prevent surge and water hammer. Control component must have (2) control closing flow rates. (1) 90% primary adjustable rate (2) 10% adjustable slow rate during final disc closure. The control component must be a self contained oil system, separate and independent from the water line media. The oil reservoir for closing cycle shall be open to atmosphere with an air breather cap to prevent dust and other media from contaminating the oil. The oil reservoir for opening cycle must be hermetically sealed to contain pressure if necessary (air over oil) and be equipped with a pressure gauge and pneumatic air valve.

The pivoting disc check valve shall be as provided by Cla-Val, Newport Beach, CA.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
EXCAVATE AND BACKFILL FOR WATER SERVICE TAP AND LEAD

AA:TCA

1 of 1

2/13/26

a. Description. This work shall consist of furnishing all labor, tools, equipment, and material to excavate and backfill trenches for City to transfer water service leads in accordance with 2025 Public Services Standard Specifications Article 3 and Article 10, Section II.K., as shown on the plans, and as specified herein.

b. Materials. Provide materials in accordance with the 2025 Standard Specifications Article 10, Section II.I.

c. Construction. After water main testing is completed, and as directed by the Engineer, the contractor shall excavate a safe trench for City personnel to install a new water service lead for each water service to be connect to the new water main. Long transfers shall be from the new water main to the existing lead on the old water main or to a new or existing curb stop box, as specified on the plans. Short transfers shall be where the existing water services crosses the new water main.

Contractor shall excavate a safe, 5.5 feet deep trench where applicable for each service transfer. The entirety of the new water main shall be exposed within the trench to allow the City to attach tapping equipment around the pipe.

Excavations shall be efficiently planned to accommodate for traffic control and rework. Leads that are within 5 feet of one another shall share an excavation.

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

<u>Pay Item</u>	<u>Pay Unit</u>
DS_Excavate and Backfill for Water Service Tap and Lead.....	Ft

Long transfers shall be measured as the lineal length from the new water main to the old water main or to the curb stop and box, where specified.

Short transfers shall be paid as 5 feet.

Long and short transfers that share a trench shall be paid for as the length of the long transfer.

CITY OF ANN ARBOR
 DETAILED SPECIFICATION FOR
ACCEPTANCE OF HMA MIXTURES

AA: NJB

1 of 7

2/13/26

a. Description. This detailed specification provides sampling and testing requirements for local agency projects using the roller method and the nuclear density gauge testing. Provide the hot mix asphalt (HMA) mixture in accordance with the requirements of the standard specifications, except were modified herein.

b. Materials. Provide aggregates, mineral filler (if required), and asphalt binder to produce a mixture proportioned within the master gradation limits shown in the contract, and meeting the uniformity tolerance limits in Table 1.

Table 1: Uniformity Tolerance Limits for HMA Mixtures

Parameter		Top and Leveling Course		Base Course		
Number	Description	Range 1 (a)	Range 2	Range 1 (a)	Range 2	
1	% Binder Content	-0.30 to +0.40	±0.50	-0.30 to +0.40	±0.50	
2	% Passing	# 8 and Larger Sieves	±5.0	±8.0	±7.0	±9.0
		# 30 Sieve	±4.0	±6.0	±6.0	±9.0
		# 200 Sieve	±1.0	±2.0	±2.0	±3.0
3	Crushed Particle Content (b)	Below 10%	Below 15%	Below 10%	Below 15%	
1. This range allows for normal mixture and testing variations. The mixture must be proportioned to test as closely as possible to the Job-Mix-Formula (JMF). 2. Deviation from JMF.						

Parameter number 2 as shown in Table 1 is aggregate gradation. Each sieve will be evaluated on one of the three gradation tolerance categories. If more than one sieve is exceeding Range 1 or Range 2 tolerances, only the one with the largest exceedance will be counted as the gradation parameter.

The master gradation should be maintained throughout production; however, price adjustments will be based on Table 1. Aggregates which are to be used in plant-mixed HMA mixtures must not contain topsoil, clay, or loam.

c. Construction. Submit a Mix Design and a JMF to the Engineer. Do not begin production and placement of the HMA until receipt of the Engineer’s approval of the JMF. Maintain the binder content, aggregate gradation, and the crushed particle content of the HMA mixture within the Range 1 uniformity tolerance limits in Table 1. For mixtures meeting the definition of top or leveling course, field regress air void content to 3.5 percent with liquid asphalt cement unless specified otherwise on HMA application estimate. For mixtures meeting the definition of base course, field regress air void content to 3.0 percent with liquid asphalt cement unless specified otherwise on HMA application estimate.

Ensure all persons performing Quality Control (QC) and Quality Assurance (QA) HMA field sampling are “Local Agency HMA Sampling Qualified” samplers. At the pre-production or preconstruction meeting, the Engineer will determine the method of sampling to be used. Ensure all sampling is done in accordance with *MTM 313 (Sampling HMA Paving Mixtures)* or *MTM 324 (Sampling HMA Paving Mixtures Behind the Paver)*. Samples are to be taken from separate hauling load.

CITY OF ANN ARBOR
DETAILED SPECIFICATION FOR
ACCEPTANCE OF HMA MIXTURES

AA: NJB

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2/13/26

For production/mainline type paving, obtain a minimum of two samples, each being 20,000 grams, each day of production, for each mix type. The Engineer will sample and maintain possession of the sample. Sampling from the paver hopper is prohibited. Each sample will be divided into two 10,000 gram parts with one part being for initial testing and the other part being held for possible dispute resolution testing. Obtain a minimum of three samples for each mix type regardless of the number of days of production.

Obtain samples that are representative of the day's paving. Sample collection is to be spaced throughout the planned tonnage. One sample will be obtained in the first half of the tonnage and the second sample will be obtained in the second half of the tonnage. If planned paving is reduced or suspended, when paving resumes, the remaining sampling must be representative of the original intended sampling timing.

Ensure all persons performing testing are Bit Level One certified or Bit QA/QC Technician certified.

Ensure daily test samples are obtained, except, if the first test results show that the HMA mixture is in specification, the Engineer has the option of not testing additional samples from that day.

At the pre-production or preconstruction meeting, the Engineer and Contractor will collectively determine the test method for measuring asphalt content (AC) using *MTM 319 (Determination of Asphalt Content from Asphalt Paving Mixtures by the Ignition Method)* or *MTM 325 (Quantitative Extraction of Bitumen from HMA Paving Mixtures)*. Back calculation will not be allowed for determining asphalt content.

Ensure all labs performing local agency acceptance testing are qualified labs per the *HMA Production Manual and the Michigan Quality Assurance Procedures Manual*, and participate in the MDOT round robin process, or they must be *AASHTO Materials Reference Laboratory (AMRL)* accredited for *AASHTO T30 or T27*, and *AASHTO T164 or T308*. Ensure on non-National Highway System (NHS) routes, Contractor labs are made available, and may be used, but they must be qualified labs as previously stated. Contractor labs may not be used on NHS routes. Material acceptance testing will be completed by the Engineer within 30 calendar days, except holidays and Sundays, for projects with less than 5,000 tons (plan quantity) of HMA and within 7 calendar days, except holidays and Sundays, for projects with 5,000 tons (plan quantity) or more of HMA, after the Engineer has obtained the samples. QA test results will be provided to the Contractor after the Engineer receives the QC test results. Failure on the part of the Engineer or the laboratory to provide QA test results within the specified time frame does not relieve the Contractor of their responsibility to provide an asphalt mix within specifications.

The correlation procedure for ignition oven will be established as follows. Asphalt binder content based on ignition method from *MTM 319*. Gradation (*ASTM D5444*) and Crushed particle content (*MTM 117*) based on aggregate from *MTM 319*. The incineration temperature will be established at the pre-production meeting. The Contractor will provide a laboratory mixture sample to the acceptance laboratory to establish the correction factor for each mix. Ensure this sample is provided to the Engineer a minimum of 14 calendar days prior to production.

CITY OF ANN ARBOR
DETAILED SPECIFICATION FOR
ACCEPTANCE OF HMA MIXTURES

AA: NJB

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2/13/26

For production/mainline type paving, the mixture may be accepted by visual inspection up to a quantity of 500 tons per mixture type, per project (not per day). For non-production type paving defined as driveways, approaches, and patching, visual inspection may be allowed regardless of the tonnage.

The mixture will be considered out-of-specification, as determined by the acceptance tests, if for any one mixture, two consecutive tests per parameter, (for Parameter 2, two consecutive aggregate gradations on one sieve) are outside Range 1 or Range 2 tolerance limits. If a parameter is outside of Range 1 tolerance limits and the second consecutive test shows that the parameter is outside of Range 2, then it will be considered to be a Range 1 out-of-specification. Consecutive refers to the production order and not necessarily the testing order. Out-of-specification mixtures are subject to a price adjustment per the Measurement and Payment section of this special provision.

Contractor operations will be suspended when the mixture is determined to be out-of-specification, but contract time will continue to run. The Engineer may issue a Notice of Non-Compliance with Contract Requirements (Form 1165), if the Contractor has not suspended operations and taken corrective action. Submit a revised JMF or proposed alterations to the plant and/or materials to achieve the JMF to the Engineer. Effects on the Aggregate Wear Index (AWI) and mix design properties will be taken into consideration. Production and placement cannot resume until receipt of the Engineer's approval to proceed.

Pavement in-place density will be measured using one of two approved methods. The method used for measuring in-place density will be agreed upon at a pre-production or preconstruction meeting.

Pavement in-place density tests will be completed by the Engineer during paving operations and prior to traffic staging changes. Pavement in-place density acceptance testing will be completed by the Engineer prior to paving of subsequent lifts and being open to traffic.

Option 1 - Direct Density Method

Use of a nuclear density gauge requires measuring the pavement density using the Gmm from the JMF for the density control target. The required in-place density of the HMA mixture must be 92.0 to 98.0 percent of the density control target. Nuclear density testing and frequency will be in accordance with the *MDOT Density Testing and Inspection Manual*.

Option 2 - Roller Method

The Engineer may use the Roller Method with a nuclear or non-nuclear density gauge to document achieving optimal density as discussed below.

Use of the density gauge requires establishing a rolling pattern that will achieve the required in-place density. The Engineer will measure pavement density with a density gauge using the Gmm from the JMF for the density control target.

Use of the Roller Method requires developing and establishing density frequency curves, and meeting the requirements of Table 2. A density frequency curve is defined as the measurement and documentation of each pass of the finished roller until the in-place density results indicate a decrease in

CITY OF ANN ARBOR
 DETAILED SPECIFICATION FOR
ACCEPTANCE OF HMA MIXTURES

AA: NJB

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value. The previous recording will be deemed the optimal density. The Contractor is responsible for establishing and documenting an initial or QC rolling pattern that achieves the optimal in-place density. When the density frequency curve is used, the Engineer will run and document the density frequency curve for each half day of production to determine the number of passes to achieve the maximum density. Table 5, located at the end of this special provision, can be used as an aid in developing the density frequency curve. The Engineer will perform density tests using an approved nuclear or non-nuclear gauge per the manufacturer’s recommended procedures.

Table 2: Minimum Number of Rollers Recommended Based on Placement Rate

Average Laydown Rate, Square Yards per Hour	Number of Rollers Required (a)	
	Compaction	Finish
Less than 600	1	1 (b)
601 - 1200	1	1
1201 - 2400	2	1
2401 - 3600	3	1
3601 and More	4	1

a. Number of rollers may increase based on density frequency curve.
 b. The compaction roller may be used as the finish roller also.

After placement, roll the HMA mixture as soon after placement as the roller is able to bear without undue displacement or cracking. Start rolling longitudinally at the sides of the lanes and proceed toward the center of the pavement, overlapping on successive trips by at least half the width of the drum. Ensure each required roller is 8 tons minimum in weight unless otherwise approved by the Engineer.

Ensure the initial breakdown roller is capable of vibratory compaction and is a maximum of 500 feet behind the paving operations. The maximum allowable speed of each roller is 3 miles per hour (mph) or 4.5 feet per second. Ensure all compaction rollers complete a minimum of two complete rolling cycles prior to the mat temperature cooling to 180 degrees Fahrenheit (F). Continue finish rolling until all roller marks are eliminated and no further compaction is possible. The Engineer will verify and document that the roller pattern has been adhered to. The Engineer can stop production when the roller pattern is not adhered to.

d. Measurement and Payment. The completed work, as described, will be measured and paid for using applicable pay items as described in subsection 501.04 of the Standard Specifications for Construction, or the contract, except as modified below.

Base Price. Price established by the Department to be used in calculating incentives and adjustments to pay items and shown in the contract.

If acceptance tests, as described in section c. of this special provision, show that a Table 1 mixture parameter exceeds the Range 1, but not the Range 2, tolerance limits, that mixture parameter will be subject to a 10 percent penalty. The 10 percent penalty will be assessed based on the acceptance tests only unless the Contractor requests that the 10,000 gram sample part retained for possible dispute resolution testing be tested. The Contractor has 4 calendar days from receipt of the acceptance test

CITY OF ANN ARBOR
DETAILED SPECIFICATION FOR
ACCEPTANCE OF HMA MIXTURES

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results to notify the Engineer, in writing, that dispute resolution testing is requested. The Contractor's QC test results for the corresponding QA test results must result in an overall payment greater than QA test results otherwise the QA tests will not be allowed to be disputed. The Engineer has 4 calendar days to send the dispute resolution sample to the lab once dispute resolution testing is requested. The dispute resolution sample will be sent to an independent lab selected by the Local Agency, and the resultant dispute test results will be used to determine the penalty per parameter, if any. Ensure the independent lab is a MDOT QA/QC qualified lab or an AMRL HMA qualified lab. The independent lab must not have conflicts of interest with the Contractor or Local Agency. If the dispute testing results show that the mixture parameter is out-of-specification, the Contractor will pay for the cost of the dispute resolution testing and the contract base price for the material will be adjusted, based on all test result parameters from the dispute tests, as shown in Table 3 and Table 4. If the dispute test results do not confirm the mixture parameter is out-of-specification, then the Local Agency will pay for the cost of the dispute resolution testing and no price adjustment is required.

If acceptance tests, as described in section c. of this special provision, show that a Table 1 mixture parameter exceeds the Range 2 tolerance limits, the 10,000 gram sample part retained for possible dispute resolution testing will be sent, within 4 calendar days, to the MDOT Central Laboratory for further testing. The MDOT Central Laboratory's test results will be used to determine the penalty per mixture parameter, if any. If the MDOT Central Laboratory's results do not confirm the mixture parameter is out-of-specification, then no price adjustment is required. If the MDOT Central Laboratory's results show that the mixture is out-of-specification and the Engineer approves leaving the out-of-specification mixture in place, the contract base price for the material will be adjusted, based on all parameters, as shown in Table 3 and Table 4.

In the case that the Contractor disputes the results of the test of the second sample obtained for a particular day of production, the test turn-around time frames given would apply to the second test and there would be no time frame on the first test.

The laboratory (MDOT Central Laboratory or independent lab) will complete all Dispute Resolution testing and return test results to the Engineer, who will provide them to the Contractor, within 13 calendar days upon receiving the Dispute Resolution samples.

In all cases, when penalties are assessed, the penalty applies to each parameter, up to two parameters, that is out of specification.

CITY OF ANN ARBOR
 DETAILED SPECIFICATION FOR
ACCEPTANCE OF HMA MIXTURES

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Table 3: Penalty Per Parameter

Mixture Parameter out-of-Specification per Acceptance Tests	Mixture Parameter out-of-Specification per Dispute Resolution Test Lab	Price Adjustment per Parameter
No	N/A	None
Yes	No	None
	Yes	Outside Range 1 but not Range 2: decrease by 10%
		Outside Range 2: decrease by 25%

The quantity of material receiving a price adjustment is defined as the material produced from the time the first out-of-specification sample was taken until the time the sample leading to the first in-specification test was taken.

Each parameter of Table 1 is evaluated with the total price adjustment applied to the contract base price based on a sum of the two parameter penalties resulting in the highest total price adjustment as per Table 4. For example, if three parameters are out-of-specification, with two parameters outside Range 1 of Table 1 tolerance limits, but within Range 2 of Table 1 limits and one parameter outside of Range 2 of Table 1 tolerance limits and the Engineer approves leaving the mixture in place, the total price adjustment for that quantity of material is 35 percent.

Table 4: Calculating Total Price Adjustment

Cost Adjustment as a Sum of the Two Highest Parameter Penalties		
Number of Parameters Out-of-Specification	Range(s) Outside of Tolerance Limits of Table 1 per Parameter	Total Price Adjustment
One	Range 1	10%
	Range 2	25%
Two	Range 1 and Range 1	20%
	Range 1 and Range 2	35%
	Range 2 and Range 2	50%
Three	Range 1, Range 1 and Range 1	20%
	Range 1, Range 1 and Range 2	35%
	Range 1, Range 2 and Range 2	50%
	Range 2, Range 2 and Range 2	50%

CITY OF ANN ARBOR
 DETAILED SPECIFICATION FOR
ACCEPTANCE OF HMA MIXTURES

AA: NJB

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Table 5: Density Frequency Curve Development

Tested by: _____ Date/Time: _____

Route/Location:		Air Temp:
Control Section/Job Number:		Weather:
Mix Type:	Tonnage:	Gauge:
Producer:	Depth:	Gmm:

Roller #1 Type: _____

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Roller #2 Type: _____

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Roller #3 Type: _____

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Summary: _____

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
HOT MIX ASPHALT (HMA) PAVING

AA:DAD/AMW

1 of 3

01/15/24

a. Description. This work consists of constructing hot mix asphalt (HMA) pavement base, leveling, and top courses in accordance with section 501 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, except as modified herein, and as directed by the Engineer.

b. Materials. None specified.

c. Construction.

1. Equipment: All equipment shall conform to subsection 501.03.A of the MDOT 2020 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 airflow, 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.

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

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

Apply bond coat at a rate of 0.10 gallons per square yard. Before placing the bond coat, the thoroughly clean the existing pavement surface. The Contractor shall also thoroughly clean all joints, cracks, and edges to a minimum depth of one inch with compressed air, vac-all type equipment, or other approved mechanical or hand methods, to remove all dirt, debris, and all foreign material.

3. HMA Placement: Placement shall conform to subsection 501.03.F of the MDOT 2020 Standard Specifications for Construction, except as modified herein, and as directed by the Engineer.

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

The Engineer must approve the final structure adjustments prior to the issuance of the "Permit to Place" for the top course.

Place the top course with a ¼" lip along the edge of the curb and gutter/edge of metal.

All HMA thickness dimensions are compacted-in-place.

4. Paving Operation Scheduling: The Contractor shall schedule the paving operation to avoid leaving longitudinal cold joints "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.

5. Rate of Paver Operation: Maintain a paving machine rate of travel so that HMA placement and paving operation is continuous; resulting in no transverse cold joints. The rate of travel; however, shall never exceed 50 feet per minute.

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

6. Longitudinal and Transverse Joints: These joints shall conform to subsection 502.03.F of the MDOT 2020 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, or 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.

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

8. Butt Joints: Construction of butt joints, where directed by the Engineer, shall conform to subsections 501.03.C.3 and 501.03.C.4 of the MDOT 2020 Standard Specifications for Construction, except as modified herein.

When the Engineer specifies or directs placement of a butt joint, 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 saw cut 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.

9. Rakers: The Contractor shall provide a minimum of two asphalt rakers during the placement of all wearing and leveling courses.

10. Faulty Mixtures: The Contractor and Engineer shall carefully observe the paving operation for signs of faulty mixtures. The Contractor, at its sole expense, shall remove or correct points of weakness in the surface 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. The Engineer will not pay for separately any costs associated with meeting the above requirements, and will include them in the HMA work item(s) the Contractor was performing at the time of discovery of the faulty mixture.

d. Measurement and Payment. The contract includes no separate pay items for measurement and payment of the costs associated with meeting the requirements of this detailed specification. The Contractor shall include these costs in the unit prices bid for the HMA items in the contract.

The Contractor shall return any/all trucks to the plant with unused HMA remaining after the work is complete, and these trucks shall be re-weighed and the corrected weight slip provided to the Engineer. There will no payment 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
SIDEWALK RETAINING WALLS

AA:NJB

1 of 2

2/12/26

- a. **Description.** This work consists of constructing concrete retaining walls adjacent to sidewalks in accordance with the requirements and special details included herein, and as directed by the PSAA.
- b. **Materials.** Provide concrete Grade 3500, unless otherwise directed by the PSAA, meeting the requirements of subsection 602.03 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction.
- c. **Construction.** Construct retaining walls in accordance with special details includes herein. Curb face exposure shall be 6 inches to 18 inches.

The Contractor shall excavate, cut, remove stumps, remove brush, remove pavement, grade, and trim as needed and as directed, and shall furnish, place, grade, and compact any materials needed to perform the work.

Complete all subgrade work prior to placing concrete items, unless directed or approved by the PSAA.

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

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

The Contractor shall maintain on-site at all times, a sufficient quantity of adequate materials to protect concrete items. The PSAA 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 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.

- d. **Measurement and Payment.** Measure and pay for the completed work, as described, at the contract unit price using the following pay items:

<u>Pay Item</u>	<u>Pay Unit</u>
------------------------	------------------------

DS_Sidewalk Retaining Wall, Integral, 6 inch to 18 inch Height	Square Foot
--	-------------

Measure **DS_Sidewalk Retaining Wall, Integral, __ inch to __ inch Height** exposed vertical face areas in place by the unit square foot and pay for them at their respective contract unit prices, which prices include the costs for all labor, equipment and materials necessary to complete the work. The

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
CONCRETE RAISED DEVICES

AA:NJB

1 of 2

2/1/25

a. Description. This work consists of constructing concrete raised devices on HMA roads in accordance with 2025 Standard Specifications, Article 10 (Construction Specifications), Section III (Street Construction and Repair), K (Concrete Pavement Construction), the details in the plan set, and MDOT 2020 Standard Specifications and Special Detail R-41, except as modified herein.

b. Material. Provided materials meeting the requirements specified in 2025 AA Standard Specifications Article Specifications Article 5 (Streets), II (Materials Standards)

Use Concrete MDOT Grade 3500

Use MDOT Grade 40 deformed lane tie bars

Polyurethane Joint Sealer

The Contractor is solely responsibility for providing specific concrete mix designs and submitting them to the Engineer for approval 5 day prior to the placement of the concrete.

Raised Device Delineator

All materials for the Delineator shall be manufactured by Carsonite. The model includes the Survivor polypropylene post, 66 inch length, with metal U-channel anchor, sheeting, and all associated hardware that includes, but not limited to, bolts.

The Raided Delineator Post shall be yellow 3.5 inches half round polymer post with yellow 12 inch long reflective sheet sticker applied from the top of the post.

Post anchors shall be driven into the soil at each end of the raised devise. Anchor shall be driven 1 inch below finish grade.

c. Construction. Concrete speed management devices shall be laid out by the PSAA and contractor shall saw cut the full depth of the existing pavement with longitudinal saw cut at the device's phase limits for removal and placement. Remove phase existing pavement and shape base aggregate to maintain a minimum of 9 inch concrete thickness, compacted to 95% of its maximum dry density.

Place form at the device phase limit(s) and place device with 9 inch thickness, follow the detail plan for the surface elevation on the approach and decent. Broom finish and place curing compound.

Contractor shall sweep up saw cut slurry water so that it does not track through the project.

In the event that existing pavement does not hold a saw cut edge, contractor shall place concrete up to jagged edge and strike a straight tool joint in the fresh concrete.

Sufficient barrels shall be placed to protect the work while allowing local residential traffic to travel the one lane section while the device cures.

Upon satisfactory concrete beam test results the contractor shall start on the next phase of device placement.

CONCRETE RAISED DEVICES

AA:NJB

2 of 2

2/1/2025

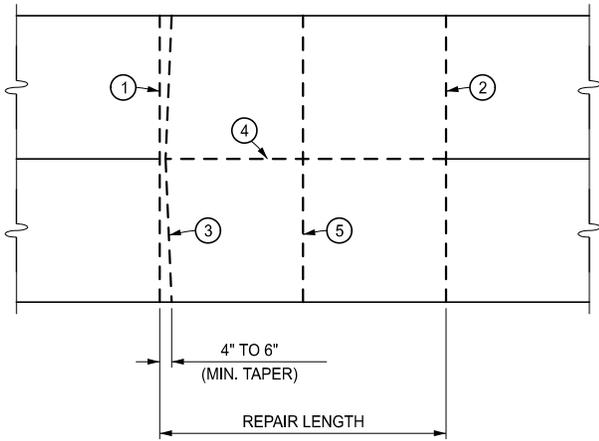
d. Measurement and Payment. Measure and pay for the completed work, as described, at the contract unit price using the following pay item:

Pay Item	Pay Unit
DS_Speed Hump.....	Square Yard
DS_Speed Table	Square Yard
DS_Raised Crosswalk.....	Square Yard
DS_Raised Device Delineator	Each

Measure **DS_Speed Hump” DS_Speed Table”, DS_Raised Crosswalk”** areas in place by the unit square yards and pay for them at their respective contract unit prices, which prices include the costs for all labor, equipment, MDOT 21 AA aggregate base, compaction effort, concrete, curing compound, forms and materials, joint sealing, to complete the work.

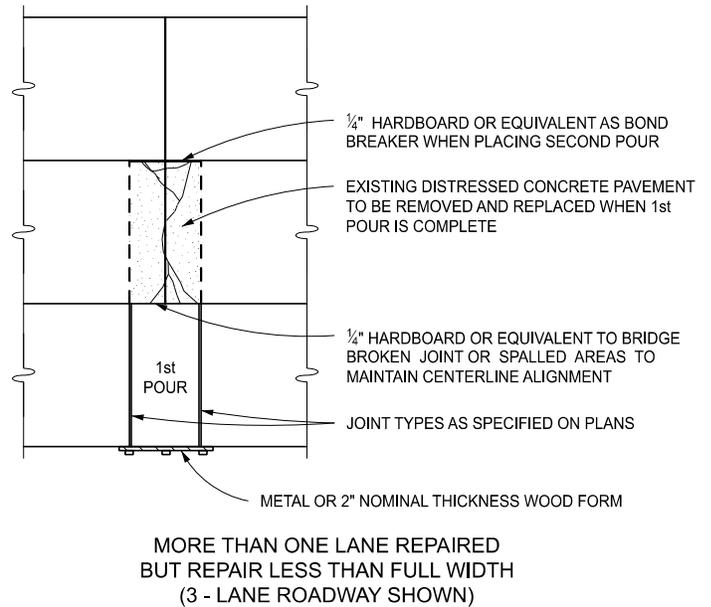
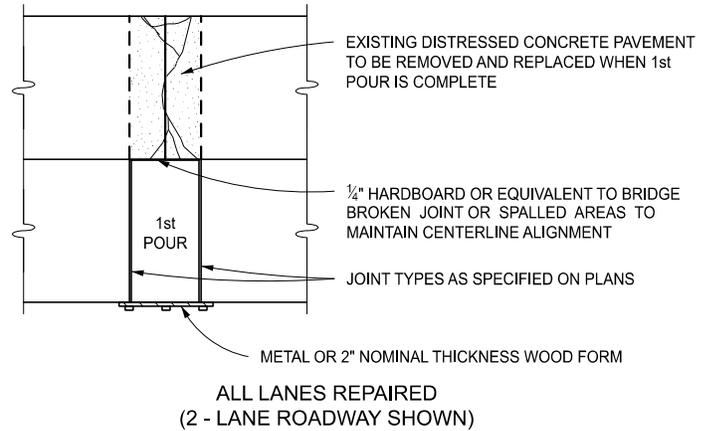
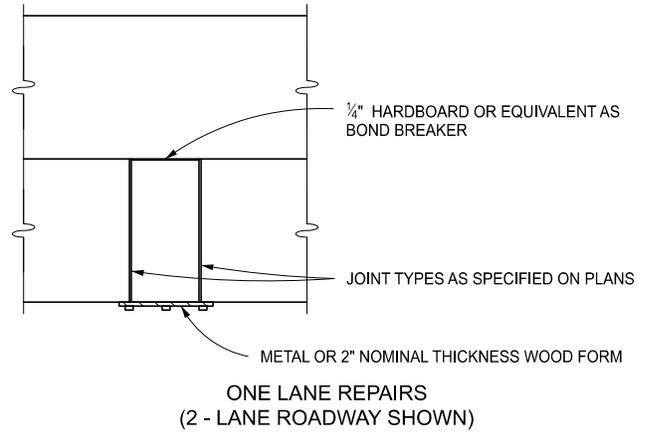
Measure **DS_Raised Device Delineator”** are measured in place by the each, and pay for them at their respective contract unit prices, which prices include the costs for all labor, equipment, to furnish and install the signs with anchor complete.

Saw cutting and removing exiting pavement will be paid for separately under pay item “**HMA, Any Thickness, Rem.**



SAWING DIAGRAM FOR FULL DEPTH CAST IN PLACE REPAIRS

- ① & ② THESE SAW CUTS SHALL BE FULL DEPTH AND PERPENDICULAR TO THE EDGE OF THE ROADWAY, WITHIN A TOLERANCE OF 1". OVERCUTTING IS ALLOWED INTO ADJACENT SHOULDERS AND WITHIN THE LIMITS OF A SUBSEQUENT REPAIR TO THE ADJACENT LANE. OUTSIDE THESE LIMITS, OVERCUTTING IS NOT ALLOWED INTO ADJACENT NON-REINFORCED CONCRETE PAVEMENTS AND IS RESTRICTED TO 3" INTO ADJACENT REINFORCED CONCRETE PAVEMENTS.
 - ③ THIS FULL DEPTH SAW CUT IS MADE TO FACILITATE OPENING A TRENCH ACROSS THE SLAB TO RELIEVE COMPRESSION IN THE PAVEMENT PRIOR TO REMOVAL OF THE FAILED AREA. THIS SAW CUT MAY BE OMITTED PROVIDED NO SPALLING OF THE REMAINING CONCRETE OCCURS. IF SPALLING DOES OCCUR, THE CONTRACTOR WILL BE REQUIRED TO MAKE THIS SAW CUT ON SUBSEQUENT REPAIRS. WHEN THIS SAW CUT IS USED AND THE ADJACENT LANE IS NOT REPAIRED, NO OVERCUTTING INTO THAT LANE SHALL BE MADE.
 - ④ THIS LONGITUDINAL FULL DEPTH SAW CUT IS MADE BETWEEN LANES OR BETWEEN ANY COMBINATION OF THE FOLLOWING: LANE, RAMP, CURB, CONCRETE SHOULDER, OR PARTIAL LANE WIDTH REPAIR.
 - ⑤ IF REQUIRED, INTERMEDIATE SAW CUTS MAY BE MADE TO REMOVE A SECTION OF PAVEMENT LANE WHICH IS OVER 5'-0" IN LENGTH, TO PERMIT LOADING INTO THE HAULING UNITS.
- ADDITIONAL SAW CUTS, AT CONTRACTOR'S EXPENSE, MAY BE MADE INSIDE THE REPAIR LIMITS TO REDUCE 5'-0" BY 12'-0" OR LESS SLABS INTO SMALLER PIECES TO FACILITATE REMOVAL.



FORMING NOTES:

STAKES USED TO HOLD HMA FILLER OR HARDBOARD IN PLACE DURING CONCRETE PLACEMENT SHALL BE REMOVED BEFORE SCREEDING THE CONCRETE.

ADJACENT LANE REPAIRS MAY BE CAST INTEGRALLY, WHEN APPROVED BY THE ENGINEER.

FORMING REQUIREMENTS FOR CAST-IN-PLACE REPAIRS 12'-0" OR LESS

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT



DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
CONCRETE PAVEMENT REPAIR

(SPECIAL DETAIL)
FHWA APPROVAL

09/18/2023
PLAN DATE

R-44-G

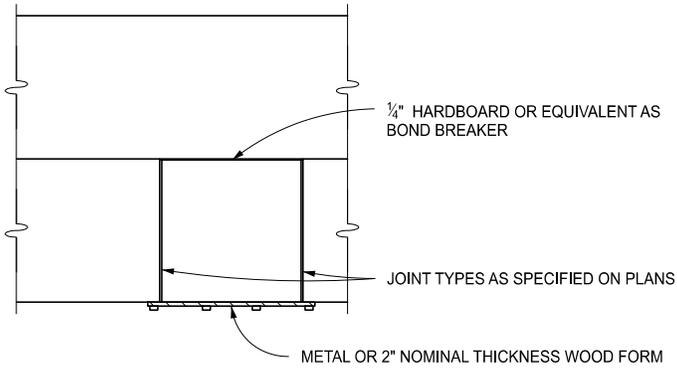
SHEET
1 OF 7

FORMING NOTES:

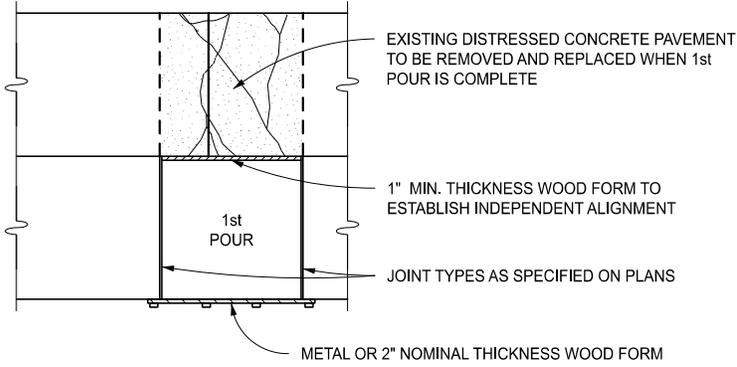
WHERE REPAIRS LONGER THAN 12'-0" ARE REQUIRED, A NEW GRADE MUST BE ESTABLISHED ALONG THE OLD PAVEMENT INNER JOINT LINE INDEPENDENT OF THE OLD PAVEMENT SURFACE, SO THAT SCREEDING MAY BE DONE PERPENDICULAR TO THE CENTERLINE AND INDEPENDENT OF THE OLD PAVEMENT GRADE.

STAKES USED TO HOLD HMA FILLER OR HARDBOARD IN PLACE DURING CONCRETE PLACEMENT SHALL BE REMOVED BEFORE SCREEDING THE CONCRETE.

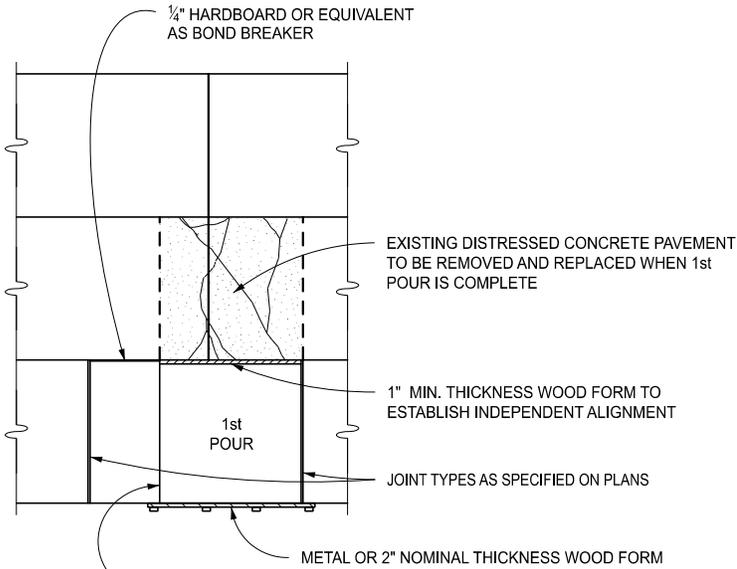
ADJACENT LANE REPAIRS MAY BE CAST INTEGRALLY, WHEN APPROVED BY THE ENGINEER.



ONE LANE REPAIRS
(2 - LANE ROADWAY SHOWN)



ALL LANES REPAIRED
(2 - LANE ROADWAY SHOWN)

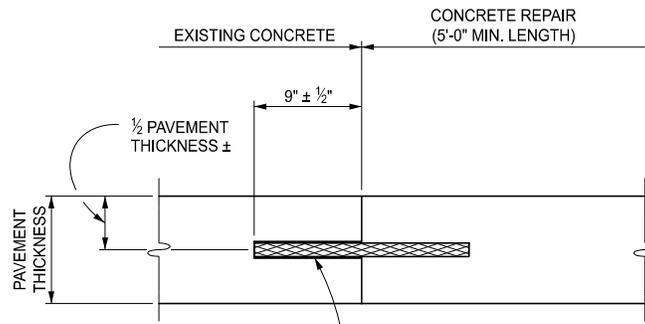


WHEN OFFSET IS GREATER THAN 6'-0" PLACE (C2) JOINT IN LINE WITH ADJACENT LANE REPAIR JOINT.

MORE THAN ONE LANE REPAIRED
BUT REPAIRS ARE OFFSET
(3 - LANE ROADWAY SHOWN)

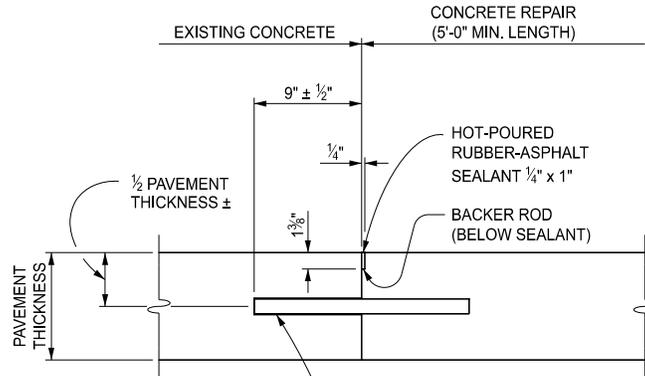
FORMING REQUIREMENTS FOR
CAST-IN-PLACE REPAIRS GREATER THAN 12'-0"

 DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR CONCRETE PAVEMENT REPAIR		R-44-G	SHEET 2 OF 7
	(SPECIAL DETAIL) FHWA APPROVAL	09/18/2023 PLAN DATE		



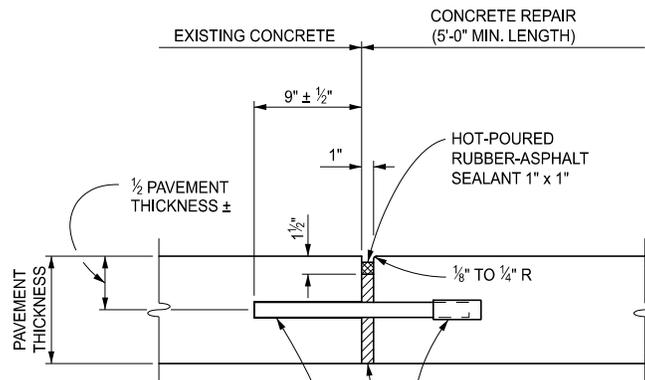
* DRILL 1 3/8" DIAMETER HOLE INTO EXISTING CONCRETE PAVEMENT AND GROUT-IN-PLACE #9 x 1'-6" LONG EPOXY COATED DEFORMED BARS

TIED JOINT, Trg



* DRILL 1 3/8" DIAMETER HOLE INTO EXISTING CONCRETE PAVEMENT AND GROUT-IN-PLACE 1 1/4" DIAMETER x 1'-6" LONG EPOXY COATED BARS

CONTRACTION JOINT, Crg



* DRILL 1 3/8" DIAMETER HOLE INTO EXISTING CONCRETE PAVEMENT AND GROUT-IN-PLACE 1 1/4" DIAMETER x 1'-6" LONG EPOXY COATED BARS

* EXPANSION CAP
* FIBER JOINT FILLER

EXPANSION JOINT, Erg

* SEE SHEET 3 OF 6 FOR BAR SPACING AND SHEET 6 OF 6 FOR NOTES.

CAST-IN-PLACE REPAIR JOINTS USING GROUTED DOWEL OR DEFORMED BARS



DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

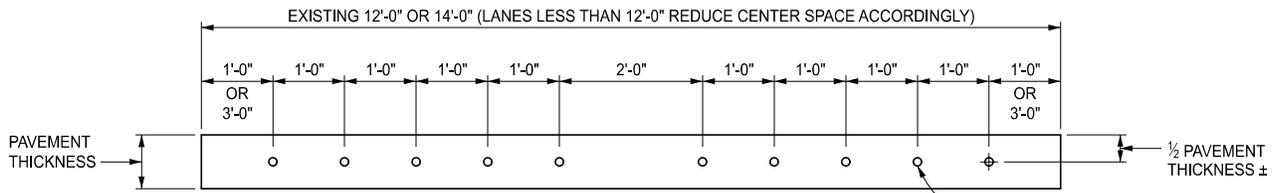
STANDARD PLAN FOR
CONCRETE PAVEMENT REPAIR

(SPECIAL DETAIL)
FHWA APPROVAL

09/18/2023
PLAN DATE

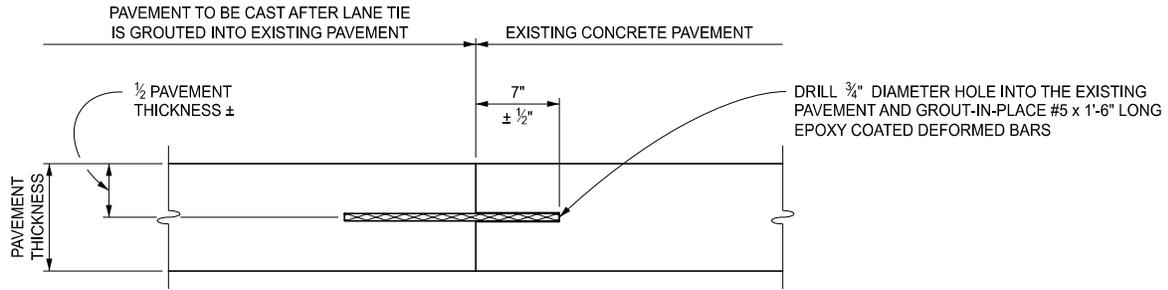
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3 OF 7

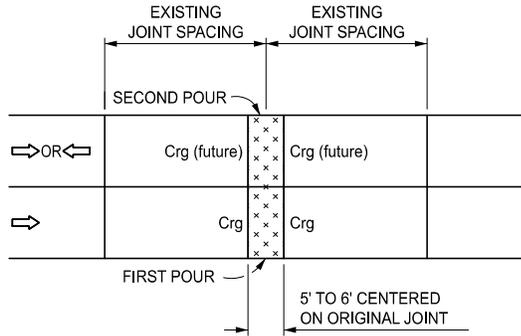


NOTE:
 THE HOLE SPACING MAY BE ADJUSTED 1" HORIZONTALLY, RAISED 1/2", OR LOWERED 1/2" FROM THE ABOVE LOCATIONS TO AVOID DRILLING INTO THE REINFORCEMENT.

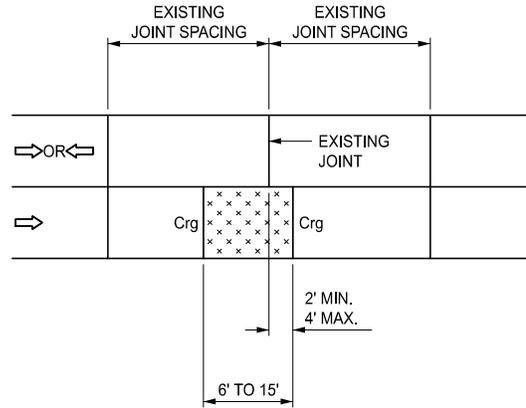
DOWEL OR DEFORMED BAR SPACING FOR CONCRETE REPAIRS



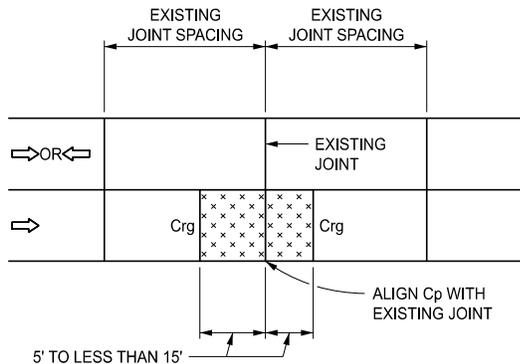
EPOXY ANCHORED LANE TIE



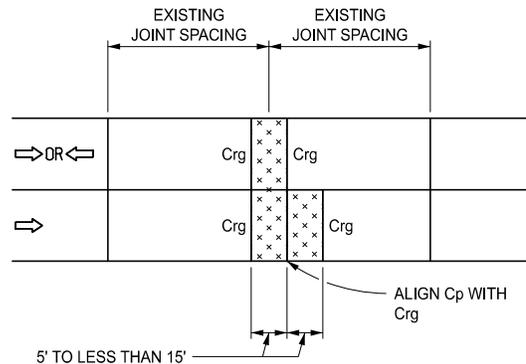
SINGLE LANE OR FULL WIDTH REPAIR



REPAIR LENGTH 6' - 15' WITH ONE JOINT NEAR AN EXISTING JOINT (SINGLE LANE REPAIR)



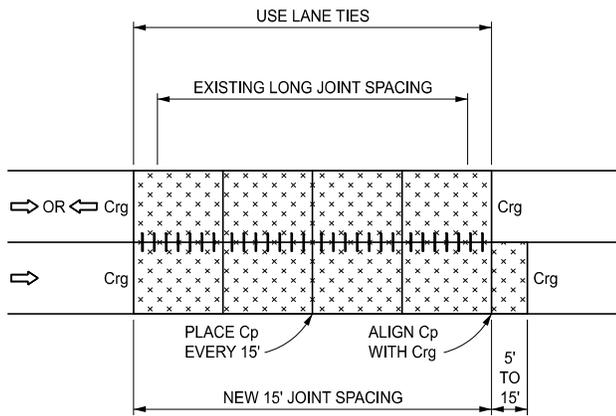
REPAIR LENGTHS OVER 15' WITH Cp JOINT (SINGLE LANE REPAIR)



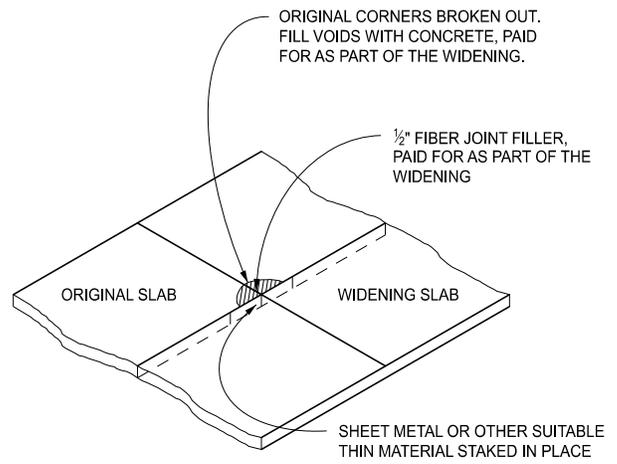
OFFSETTING LANE REPAIRS WITH Cp JOINT

MDOT
 Michigan Department of Transportation
 DEPARTMENT DIRECTOR
 BRADLEY C. WIEFERICH, PE

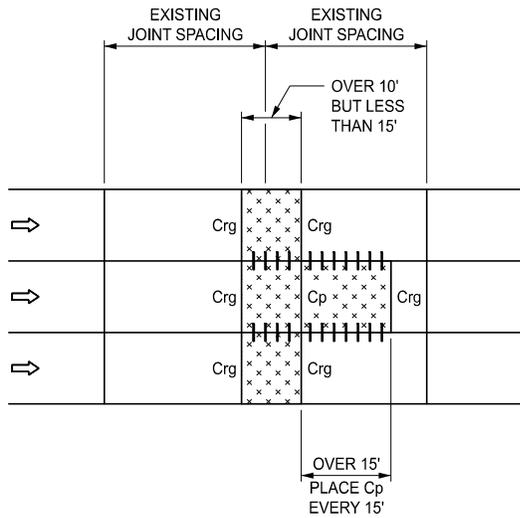
STANDARD PLAN FOR CONCRETE PAVEMENT REPAIR		R-44-G	SHEET 4 OF 7
(SPECIAL DETAIL) FHWA APPROVAL	09/18/2023 PLAN DATE		



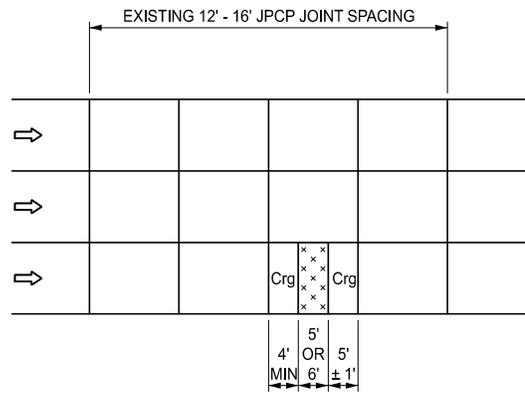
LONG REPAIR SHOWING Cp JOINT ALIGNMENTS AND LANE TIES



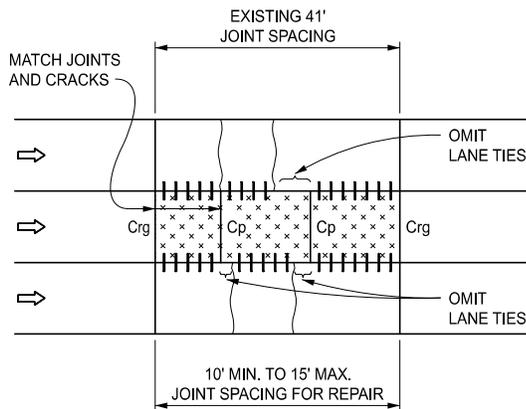
JOINT PATCH ADJACENT TO WIDENING SLAB



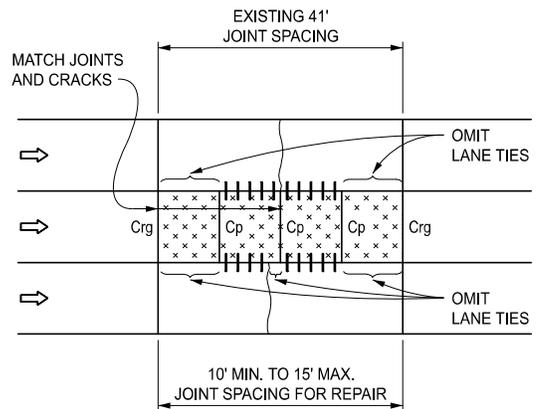
FULL WIDTH MULTI-LANE REPAIRS WITH OFFSET IN ONE LANE



REPAIR OF 12' - 16' JPCP WITH ONLY ONE MID-PANEL CRACK
 (IF THE PANEL HAS MORE THAN ONE MID-PANEL CRACK OR IF THE JOINT SPACING IS 12' REPLACE ENTIRE PANEL)
 (SINGLE LANE OR FULL WIDTH REPAIR)

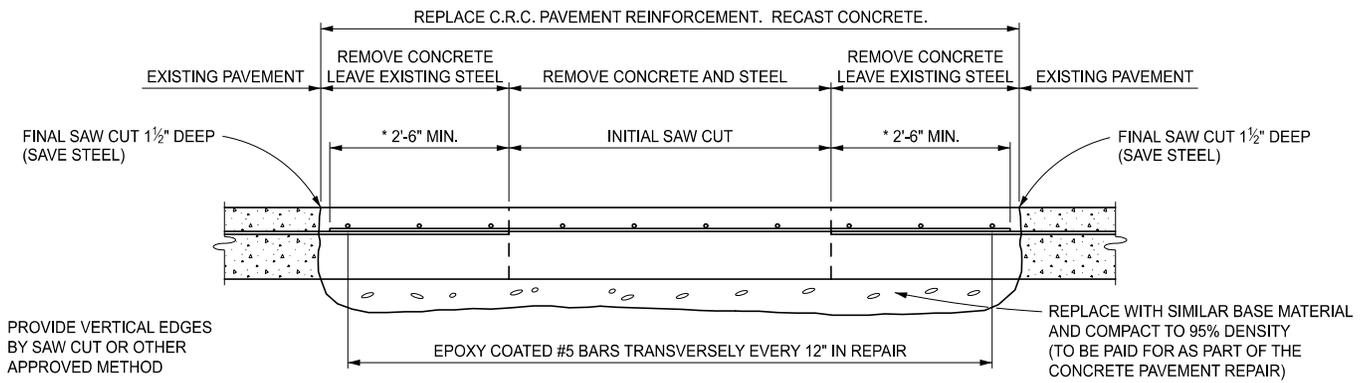


TWO CRACK PANEL REPAIR



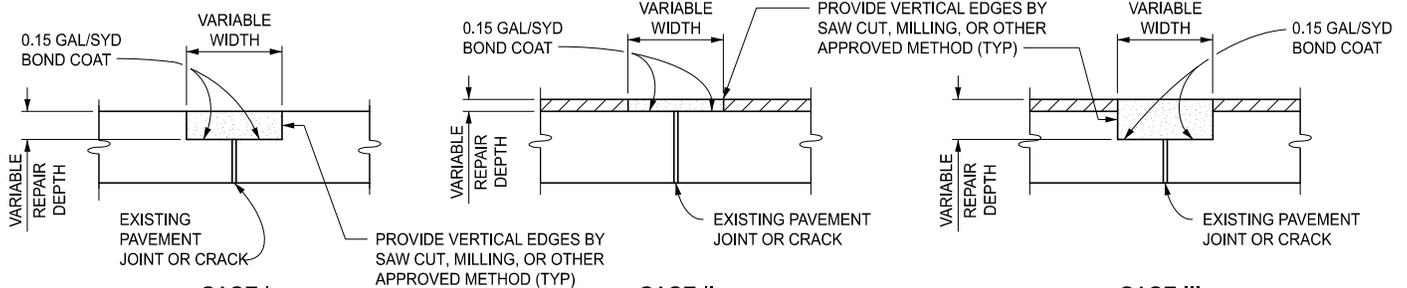
MID PANEL CRACK REPAIR

 DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR CONCRETE PAVEMENT REPAIR		R-44-G	SHEET 5 OF 7
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* NOTE: IF EXISTING REINFORCEMENT LAPS ARE ENCOUNTERED IN THIS AREA, FINAL SAW CUT MUST BE MOVED BACK TO PROVIDE MINIMUM 2'-6" LAP OF PAVEMENT REINFORCEMENT.

REPAIRING CONTINUOUSLY REINFORCED CONCRETE



CASE I
HMA REPAIR OF CONCRETE PAVEMENT
REMOVE LOOSE DETERIORATED CONCRETE. (NOT TO EXCEED PAVEMENT THICKNESS)

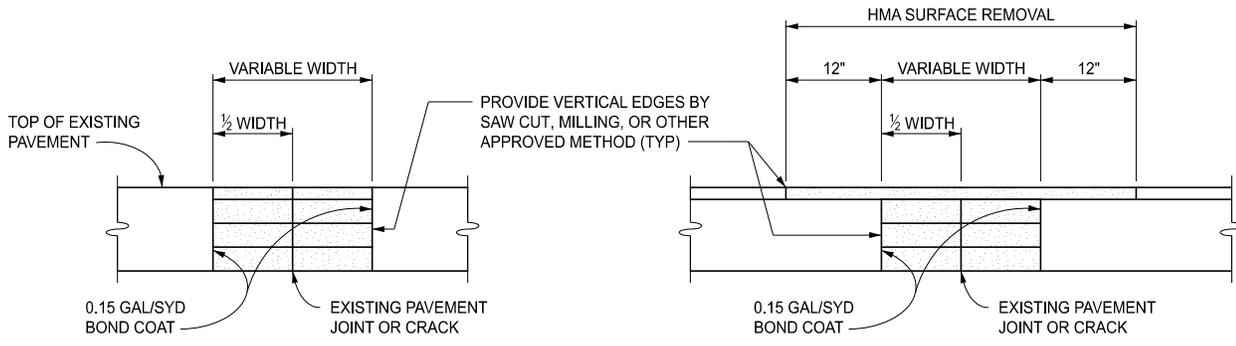
CASE II
HMA REPAIR OF CONCRETE PAVEMENT WITH HMA SURFACE
REMOVE HMA OVERLAY TO CONCRETE SURFACE.

CASE III
HMA REPAIR OF CONCRETE PAVEMENT WITH HMA SURFACE
REMOVE HMA OVERLAY AND LOOSE DETERIORATED CONCRETE. (NOT TO EXCEED PAVEMENT THICKNESS)

FOR CASES I, II, & III, THE REMOVED MATERIAL SHALL BE REPLACED WITH A HMA TOP COURSE MIXTURE, OR OTHER APPROVED MIXTURE. THE HMA SHALL BE COMPACTED WITH A MACHINE VIBRATOR OR APPROVED ROLLER WITH BASE LIFT THICKNESSES NOT TO EXCEED 3" AND WITH THE TOP LIFT THICKNESS NOT TO EXCEED 2". THE FINAL SURFACE OF THE REPAIR SHALL BE FLUSH WITH THE EXISTING PAVEMENT SURFACE.

SURFACE REPAIR FOR JOINT OR CRACK (TRANSVERSE OR LONGITUDINAL)

DETAIL 7



CASE IV
FULL DEPTH HMA REPAIR OF CONCRETE PAVEMENT
REMOVE THE DETERIORATED CONCRETE FULL DEPTH. COMPACT LOOSE EXISTING BASE. REPLACE AND COMPACT WITH HMA ANY LOST BASE.

CASE V
FULL DEPTH HMA REPAIR OF CONCRETE PAVEMENT WITH HMA SURFACE
REMOVE EXISTING HMA DETERIORATED CONCRETE PAVEMENT FULL DEPTH. COMPACT LOOSE EXISTING BASE. REPLACE AND COMPACT WITH HMA ANY LOST BASE.

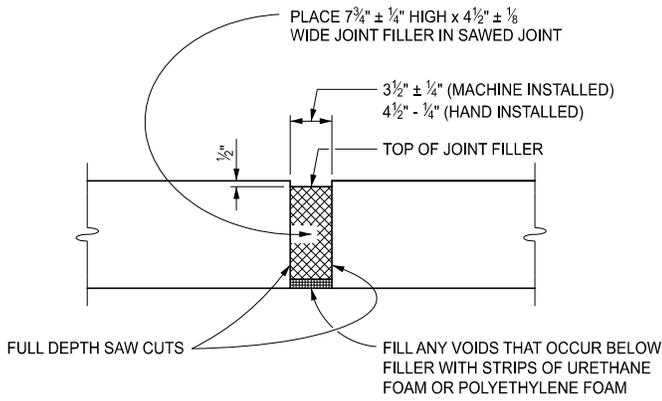
FOR CASES IV, & V, THE REMOVED MATERIAL SHALL BE REPLACED WITH A HMA TOP COURSE MIXTURE, OR OTHER APPROVED MIXTURE. THE HMA SHALL BE COMPACTED WITH A MACHINE VIBRATOR OR APPROVED ROLLER WITH BASE LIFT THICKNESSES NOT TO EXCEED 3" AND WITH THE TOP LIFT THICKNESS NOT TO EXCEED 2". THE FINAL SURFACE OF THE REPAIR SHALL BE FLUSH WITH THE EXISTING PAVEMENT SURFACE.

FULL DEPTH REPAIR FOR JOINT OR CRACK (TRANSVERSE OR LONGITUDINAL)

DETAIL 8

DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

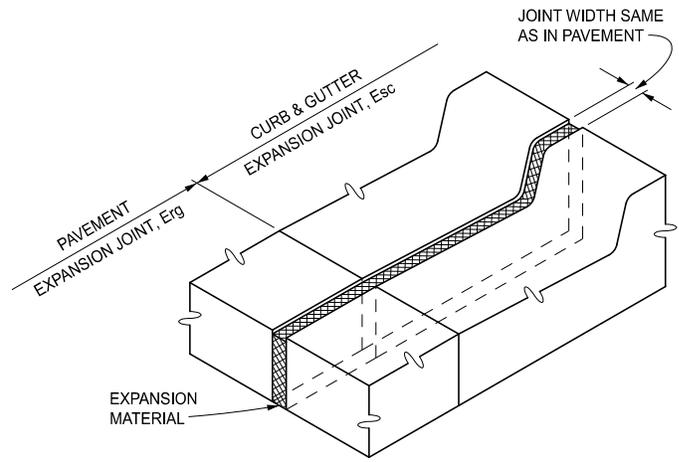
STANDARD PLAN FOR CONCRETE PAVEMENT REPAIR			
(SPECIAL DETAIL)	09/18/2023	R-44-G	SHEET 6 OF 7
FHWA APPROVAL	PLAN DATE		



NOTES:
 WHEN PRESSURE RELIEF JOINT IS TO BE CONSTRUCTED THROUGH CONCRETE SHOULDER, TRENCHING BELOW CONCRETE MAY BE NECESSARY TO ALLOW ROOM FOR $7\frac{3}{4}''$ FILLER.

PRESSURE RELIEF JOINT

THIS DETAIL ALSO APPLIES TO HMA SURFACED CONCRETE PAVEMENT REQUIRING PRESSURE RELIEF JOINTS



CURB, GUTTER, AND CURB FACE SHALL BE SAWED AS DEEP AS THE EXISTING PAVEMENT THICKNESS. THE REMAINING CONCRETE SHALL BE CHIPPED OUT AND EXPANSION MATERIAL OF SUFFICIENT THICKNESS SHALL BE PLACED IN SAWED JOINT TO FILL THE GAP AS DIRECTED BY THE ENGINEER.

EXPANSION JOINT, Esc

NOTES:

CONCRETE PAVEMENT REPAIRS (INCLUDING JOINT TYPES) OR PRESSURE RELIEF DETAILS SHALL BE AS SPECIFIED ON THE PLANS OR IN THE LOG OF PROJECT.

IF THE EXISTING PAVEMENT HAS A HMA SURFACE, THE SAW CUTS SHALL EXTEND THROUGH THE UNDERLYING PORTLAND CEMENT CONCRETE.

SAW OVERCUTS IN ADJACENT LANE, SHOULDER, RAMP, AND GUTTERS THAT WILL REMAIN IN PLACE, SHALL BE CLEANED AND THEN SEALED WITH HOT-POURED RUBBER-ASPHALT.

WHEN THE CONCRETE PAVEMENT REPAIR IS CONSTRUCTED IN PREPARATION FOR AN OVERLAY, Crg JOINT RESERVOIRS AND SEALANTS SHALL BE OMITTED AND EXPANSION JOINTS (Erg) SHALL HAVE THE FIBER JOINT FILLER KEPT FLUSH TO THE PAVEMENT SURFACE.

EXPANSION CAPS SHALL BE ACCORDING TO STANDARD PLAN R-40-SERIES.

TRANSVERSE CONTRACTION Cp AND EXPANSION E2 JOINTS SHALL BE ACCORDING TO STANDARD PLAN R-39-SERIES.

DOWEL AND DEFORMED BARS USED IN Trg, Crg, AND Erg JOINTS SHALL BE EPOXY COATED ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS.

DOWEL BARS AND DEFORMED BARS FOR TIED JOINTS SHALL BE GROUTED INTO EXISTING PAVEMENT WITH A GROUT SELECTED FROM THE PREQUALIFIED MATERIALS LISTED IN THE DEPARTMENT'S "MATERIALS SOURCE GUIDE" UNDER ADHESIVE SYSTEMS FOR GROUTING DOWEL BARS AND TIE BARS FOR FULL-DEPTH CONCRETE PAVEMENT REPAIRS.

THE BACKER ROD SHALL MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

THE SAME TYPE JOINT SHALL EXTEND ACROSS ADJACENT LANE REPAIRS.

AFTER GROUTING IN-PLACE, RC-250 OR AN APPROVED BOND BREAKER SHALL BE APPLIED TO THAT PORTION OF Crg AND Erg DOWEL BARS THAT EXTEND INTO THE CAST CONCRETE.

REPAIRED CONCRETE PAVEMENTS REQUIRE THAT 1" OF Erg EXPANSION JOINTS BE DISTRIBUTED THROUGHOUT A GIVEN 1000' SECTION.

WHERE THERE ARE NO REPAIR LOCATIONS WITHIN A 1000' LENGTH, NO EXPANSION SPACE WILL BE PROVIDED.

EXPANSION JOINT FILLER SHALL EXTEND THE FULL DEPTH OF THE REPAIR AND BE FLUSH WITH THE EXISTING PAVEMENT SURFACE. PRIOR TO SEALING, THE JOINT FIBER FILLER AT THE PAVEMENT SURFACE SHALL BE REMOVED BY CUTTING 1" WIDE AND $1\frac{1}{2}''$ DEEP TO PERMIT THE PLACEMENT OF THE HOT-POURED RUBBER ASPHALT SEALANT. HOLES IN EXPANSION JOINT FILLER SHALL BE $1\frac{1}{2}''$ MAXIMUM DIAMETER AND SHALL BE ALIGNED TO FIT DRILLED HOLES IN CONCRETE.

Erg JOINTS SHALL BE CONSTRUCTED ONLY WHEN THEY EXTEND ACROSS ALL LANES, RAMPS, OR SHOULDERS.

WHEN Erg JOINTS ARE PLACED ADJACENT TO CONCRETE CURB AND GUTTER THAT IS NOT REQUIRED TO BE REMOVED, AN Esc JOINT SHALL BE CONSTRUCTED IN THE CURB AND GUTTER.

JOINT RESERVOIRS FOR THE HOT-POURED RUBBER-ASPHALT SEALANT SHALL BE ABRASIVE BLAST CLEANED, FOLLOWED BY A FINAL CLEANING OF OIL-FREE COMPRESSED AIR PRIOR TO SEALING.

LANE TIES (TO ADJACENT PAVEMENT LANE, WHEN REQUIRED) SHALL BE SPACED ACCORDING TO STANDARD PLAN R-41-SERIES, EXCEPT THAT THE FIRST LANE TIE ADJACENT TO A TRANSVERSE JOINT SHALL BE INSTALLED AT A DISTANCE OF 1'-8" FROM THE JOINT. WHEN BOTH SIDES OF A LONGITUDINAL JOINT ARE POURED INTEGRALLY, LANE TIES SHALL BE STRAIGHT DEFORMED EPOXY COATED BARS CAST-IN-PLACE AS SPECIFIED ON STANDARD PLAN R-41-SERIES. WHEN ADJACENT LANES ARE CAST SEPARATELY, LANE TIES SHALL BE GROUTED-IN-PLACE AS SPECIFIED ON THIS PLAN. THE GROUT SHALL BE SELECTED FROM THE PREQUALIFIED MATERIALS LISTED IN THE DEPARTMENT'S "MATERIALS SOURCE GUIDE", UNDER LANE TIES.

THE MONTH AND YEAR OF CASTING AND STATION NUMBER (IF REMOVED) SHALL BE STENCILED ON EACH CONCRETE REPAIR.

ALL REPAIRS WILL BE JOINTED PLAIN CONCRETE PAVEMENT.



DEPARTMENT DIRECTOR
 BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
CONCRETE PAVEMENT REPAIR

(SPECIAL DETAIL)
 FHWA APPROVAL

09/18/2023
 PLAN DATE

R-44-G

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CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
PAVEMENT MARKING, POLYMER CEMENT

AA: NJB

1 of 3

1/15/25

a. Description.

This work consists of installing a polymer cement surface system (PCSS) on a prepared substrate in accordance with these specifications, the plans, and/or as directed by the PSAA. Complete this work in accordance with this Detailed Specification, PAVE-900 Series pavement marking standard plans, and as shown on the plans, and as directed by the PSAA.

b. Materials.

Provide materials in accordance with the MDOT 2020 Standard Specifications and as specified herein.

Select pavement marking material system in the approved FHWA white from one of the following or approved equal:

Ennis-Flint PPG., CycleGripMMAX
Pavement Surface Coatings LLC, Endurablend
GAF Materials LLC, StreetBond SB Pro

Ensure all materials are shipped to the job site in sturdy containers plainly marked per section 920 of the MDOT 2020 Standard Specifications for Construction and the contract.

Provide technical data regarding material type and application rate from the marking manufacturer to the Engineer prior to starting work.

c. Construction.

1. Place the marking material in accordance with this Detailed Specification and the manufacturer's recommendations.
2. Surface preparation requirements depend on surface conditions.

Prepare new hot mix asphalt (HMA) surfaces open to traffic for 10 days or less, with no oil drips, residue, debris, or temporary or permanent markings, by cleaning the marking area with compressed air.

PAVEMENT MARKING, POLYMER CEMENT

AA:NJB

2 of 3

1/15/2025

Prepare new Portland cement concrete (PCC) surfaces and PCC surfaces free of oil drips, residue, and debris, temporary, or permanent markings, by removing the curing compound from the area required for pavement markings.

Prepare existing HMA or PCC surfaces that do not have existing markings, but may have oil drip areas, debris, or both, by scarifying the marking area using non-milling grinding teeth or shot blasting. The Engineer will allow the use of water blasting to scarify the marking area on PCC surfaces.

Prepare existing HMA or PCC surfaces with existing markings by completely removing the markings.

Conduct grinding, scarifying, sandblasting, shot blasting, or other operations in such a manner that the finished pavement surface is not damaged and does not exhibit a pattern that will mislead or misdirect the road user. Use vacuum-type equipment or equivalent to collect and contain debris generated by this operation.

When surface preparation is complete, broom the pavement surface, and follow with compressed air cleaning to remove all residue and debris resulting from the preparation work. Control and minimize airborne dust and similar debris generated by surface preparation and cleanup to prevent a hazard to motor vehicle operation or nuisance to adjacent property.

Do not damage transverse and longitudinal joint sealers on HMA and PCC surfaces when performing removal and cleaning work.

Weather Limitations:

Follow manufacturer recommended pavement and air temperatures. Place PCSS only when all the following conditions are met:

- The pavement surface is dry.
- Ambient and substrate temperatures are 50° F and rising and expected to remain above 50° F for 6 hours
- There is no forecast of temperatures below 35° F within 24 hours from the time of placement.
- The weather is not foggy or rainy. When rain appears imminent, all placement operations shall cease, and the work shall not resume until the threat of rain has passed.

When the ambient temperature is below 50° F, but will remain above 40° F during paving and the substrate temperatures are 50° F and rising, place the PCSS with the approval of Engineer and add manufacturer approved accelerators to the mix.

PAVEMENT MARKING, POLYMER CEMENT

AA:NJB

3 of 3

1/15/2025

Take care when placing the PCSS if the substrate temperature exceeds 130° F. Closely monitor application temperatures of the substrate above 130° F for performance during the course of application. Any observable defects occurring as a result of extreme temperature should be cause for immediate halting of placement operations.

Where the ambient paving air temperature is going to exceed 90° F consider use of cold water and ice for the blending operation. Where the provision of cold water or replacing the part of the water requirement with ice is not possible, then use a retarder with the mix.

Curing and Opening to Traffic:

The Contractor shall take care to protect the PCSS surface markings from traffic until the area is sufficiently cured. Curing time will vary depending on ambient and surface temperatures. Do not open the PCSS to traffic until it has reached sufficient compressive strength and vehicular traffic will not damage the surface. Obtain approval for opening from a representative of the manufacturer, the installer, or the Engineer. The Contractor at its expense shall correct any damage to the PCSS surface resulting from failure to protect it or open it to traffic without approval or proper cure.

d. Measurement and Payment.

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

Pay Item	Pay Unit
Pavt Mrkg, Polymer Cement Surface, 12 In., Crosswalk.....	Ft
Pavt Mrkg, Polymer Cement Surface, Speed Hump Chevron.....	Ea

Removal of curing compound and removal of existing pavement markings will be measured and paid for separately under pay item "Recessing Pavt Mrkg, Transv, SF".

CITY OF ANN ARBOR
DETAILED
SPECIFICATION FOR

SOIL BORING, PAVEMENT SECTION AND GEOTECHNICAL DATA

1 of 1

1/29/26

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/all conclusions it may draw from the data.

GEOTECHNICAL INVESTIGATION REPORT

MAPLE ROAD / DURANGO DRIVE PAVEMENT &
PEAR STREET AT APPLE STREET RETAINING WALL

ANN ARBOR, MICHIGAN

MSG PROJECT No.: 401.2300021.009

MARCH 2025

PREPARED FOR:

CITY OF ANN ARBOR

301 E. HURON, 4TH FLOOR

PO Box 8647

ANN ARBOR, MICHIGAN 48104

PREPARED BY:

THE MANNIK & SMITH GROUP, INC.

2365 HAGGERTY ROAD SOUTH

CANTON, MICHIGAN 48188





March 14, 2025

Ms. Francisca Chan, PE

City of Ann Arbor

301 E. Huron, 4th Floor

PO Box 8647

Ann Arbor, Michigan 48104

**RE: Geotechnical Investigation Report
Maple Road / Durango Drive Pavement & Pear Street at Apple Street Retaining Wall
Ann Arbor, Michigan
MSG Project Number: 401.2300021.009**

Dear Ms. Chan:

This report presents the results of our geotechnical investigations in Ann Arbor, Michigan; the first along Maple Road and Durango Drive, and the second for the proposed retaining wall along Pear Street at Apple Street. We completed this investigation in accordance with our contract with the City of Ann Arbor fully executed on May 2, 2023 as well as our proposal and agreement for professional services dated February 21, 2025 and revised February 25, 2025.

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.

Kevin D. Brown, PE
Geotechnical Engineer

Ibraheem Shunnar, PE
Principal



**TECHNICAL SKILL.
CREATIVE SPIRIT.**

EXECUTIVE SUMMARY

The Mannik & Smith Group, Inc., (MSG) was retained by the City of Ann Arbor to conduct geotechnical investigations for two projects in Ann Arbor, Michigan. This project consists of completing pavement cores and geotechnical drilling along southbound Maple Road between Jade Court and Banyan Court (approximately 250 linear feet) and along Durango Drive near Surrey Park Apartments north and south of Breckenridge Drive (approximately 300 linear feet). In addition, the project includes a boring for a short retaining wall proposed at Pear Street near Apple Street.

The subsurface investigation consisted of performing a total of four (4) pavement cores and soil borings for locations at Maple Road and Durango Drive and one (1) soil boring for geotechnical investigation at Pear Street near Apple Street. Drilling operations were performed on March 4, 2025.

Approximately 2 inches of asphalt were encountered along Durango Drive and 8 inches of concrete were encountered along Maple Road. Approximately 4 to 7 inches of silty sand with gravel fill was encountered below the pavement as a base material. Stratum 1 consisted of medium stiff to hard lean clay below the pavement and aggregate material, extending to depths ranging from 5.5 to 7 feet below grade. Stratum 2 consisted of loose silty sand below Stratum 1 in boring SB-02, extending to a depth of 7 feet below grade. At Pear Street, approximately 8 inches of topsoil was encountered at the surface; Stratum 1 below the topsoil consisted of loose silty sand to a depth of 5.5 feet below grade. Groundwater was not encountered in any of the borings during drilling operations.

Based on our review of the subsurface soil conditions, we have developed a design soil profile for this project. See Section 4.1 for additional details. Based upon our review of the existing soil conditions in the project area, the pavement design may use an estimated modulus for subgrade reaction of 140 pounds per cubic inch (pci) and 200 pci for well-compacted engineered fill.

The anticipated excavations will be situated above the anticipated groundwater table. However, the Contractor should be prepared to address general water infiltration.

Based upon the data obtained, we anticipate OSHA will classify very stiff to hard clay soils as Type A soil, which will require maximum temporary excavation slopes of 0.75(H):1(V). We anticipate OSHA will classify site sand soils as Type C soil, which will require maximum temporary excavation slopes of 1.5(H):1(V). We recommend that any excavation extending to a depth of more than 5 feet below existing grade, requiring temporary shoring, or extending into bedrock be done under the supervision of a qualified engineer.

This summary briefly discusses major findings covered within the body of the report. The intent of this executive summary is to provide a general summary. The report must be read carefully in its entirety before using any recommendations described herein.

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APPENDICES

Appendix A	Figure 1 – Site Location Map
	Figure 2 – Soil Boring Location Plan
Appendix B	Soil Boring Logs
Appendix C	Soil Laboratory Test Data
Appendix D	Pavement Core Photographs

1.0 INTRODUCTION

1.1 General

The Mannik & Smith Group, Inc., (MSG) was retained by the City of Ann Arbor to conduct geotechnical investigations for two projects in Ann Arbor, Michigan. The first is to support the design of a proposed project along Maple Road and Durango Drive near Surrey Park Apartments, and the second is to support the design of a proposed retaining wall along Pear Street near Apple Street. The location map is depicted as Figure 1 in Appendix A. These geotechnical investigations were performed in general accordance with our contract with the City of Ann Arbor fully executed on May 2, 2023 as well as our proposal and agreement for professional services dated February 21, 2025 and revised February 25, 2025.

1.2 Project Information and Site Conditions

This project consists of completing pavement cores and geotechnical drilling along southbound Maple Road between Jade Court and Banyan Court (approximately 250 linear feet) and along Durango Drive near Surrey Park Apartments north and south of Breckenridge Drive (approximately 300 linear feet). In addition, the project includes a boring for a short retaining wall proposed at Pear Street near Apple Street.

2.0 SUBSURFACE INVESTIGATION

2.1 Field Exploration

The subsurface investigation consisted of performing a total of four (4) pavement cores and soil borings for locations at Maple Road and Durango Drive. Locations at Durango Drive were designated as SB-01 and SB-02, and locations at Maple Road were designated as SB-03 and SB-04. One (1) soil boring for geotechnical investigation at Pear Street near Apple Street investigation was designated as SB-05. Details of the field investigation are highlighted in Table 2.1-1.

Table 2.1-1 Summary of Field Investigation

Maple Road and Durango Drive			Pear Street near Apple Street		
Location ID	Boring Depth (ft)	Pavement Core	Location ID	Boring Depth (ft)	Pavement Core
SB-01 to SB-04	7.0	Yes	SB-05	5.5	No

The number of borings and the approximate locations were determined by City engineers. The boring locations were field marked by MSG personnel, and the soil boring as-drilled coordinates were estimated from existing site features using Google Earth™. Elevations at the boring locations were estimated using Google Earth™. A Soil Boring Location Plan is presented in Figure 2 in Appendix A.

Drilling operations were performed on March 4, 2025. All borings were advanced using a track-mounted Geoprobe 7822DT drill rig. The borings were advanced by hydraulically pushing 3.25-inch diameter steel casing. Where applicable, the pavement was first cored to the full depth of the pavement. Upon completion of the borings, the boreholes were backfilled using soil cuttings and bentonite chips. Where pavement cores were performed, the holes were capped with a cold asphalt patch following completion of each location.

Standard Penetration Tests (SPT) were conducted in accordance with ASTM D1586 (“Standard Method for Penetration Tests and Split Barrel Sampling of Soils”) procedures and were generally completed at continuous intervals to the bottom of the borings. Soil samples were recovered using the split-spoon sampling procedure. All soil samples were

sealed in glass jars in the field to protect the soil and maintain the soil's natural moisture content, and the jars were labeled with the soil boring designation and a unique sample number. 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 made during the drilling operations and are shown in the Soil Boring Logs. 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 particular, in pervious soils (granular soils), water levels are considered relatively reliable when solid or hollow-stem augers are used for drilling. It should be noted that seasonal variations and recent rainfall conditions may influence the groundwater table significantly.

Soil boring logs are included in Appendix B. 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.

2.2 Laboratory Testing

Each sample recovered from the borings was examined and visually classified. This examination was performed to verify conditions identified within field boring logs, to select samples for further laboratory evaluation, and to perform visual-manual classification of samples not subject to further laboratory testing. During the examination process, the geotechnical engineer finalized the soil boring logs.

Representative soil samples were subjected to laboratory tests consisting of pocket penetrometer tests, sieve analysis (ASTM D422), natural moisture content (ASTM D2216) and unconfined compression test (ASTM D2166). 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.

3.0 SUBSURFACE CONDITIONS

3.1 Subsurface Soils

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 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 various times of the year. A generalized soil profile of the subsurface conditions encountered across the site, beginning at the ground surface and extended downward, is as follows:

3.1.1 MAPLE ROAD & DURANGO DRIVE

Surficial Material

A Photographs of the pavement cores are provided in Appendix D. Approximately 2 inches of asphalt were encountered along Durango Drive (borings SB-01 and SB-02) and 8 inches of concrete were encountered along Maple Road (borings SB-03 and SB-04). Approximately 4 to 7 inches of silty sand with gravel fill was encountered below the pavement as a base material.

Stratum 1 – Clay (CL)

Lean clay was encountered below the surface material and extended to depths ranging from 5.5 to 7 feet below grade at the maximum termination depth of the borings. The clay stratum was typically encountered as follows:

- Medium stiff to stiff lean clay in borings SB-03 and SB-04 up to depths of about 2.5 to 4 feet below grade; the standard penetration number ranged from 7 to 15 and averaged 12. In boring SB-02, a layer of medium stiff sandy lean clay was encountered between 4 and 5.5 feet below grade with a standard penetration number of 7.
- Very stiff to hard lean clay was encountered up to depths ranging from 4 to 7 feet below grade; the standard penetration number ranged from 18 to 40 and averaged 28.

Stratum 2 – Sand (SM)

Loose silty sand was encountered below Stratum 1 in boring SB-02 and extended to the termination depth of the boring at 7 feet below grade. The standard penetration number was 10.

3.1.2 PEAR STREET AT APPLE STREET

Surficial Material - Topsoil

Approximately 8 inches of topsoil was encountered at boring location SB-05.

Stratum 1 – Sand (SM)

Loose silty sand was encountered in SB-05 topsoil. This material extended to a depth of 5.5 feet below grade. The standard penetration number ranged from 5 to 7 and averaged 6.

3.2 Groundwater Observations

Groundwater was not encountered in any of the borings during drilling operations. 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, and the elevation and quantity of the perched groundwater, is likely to vary throughout the year depending on the amount of precipitation, runoff, evaporation and percolation in the area, as well as on the water level in the surface water bodies in the vicinity affecting the groundwater flow pattern. 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

The following sections discuss in detail the results of our analyses and geotechnical recommendations for the design and construction of the proposed projects.

4.1 Design Soil Profile and Soil Modulus

Based on our review of the subsurface soil conditions, we have developed the following design soil profiles for these projects. These soil profiles will be used in the completion of our analysis.

Table 4.1-1 Design Soil Profile

Location	Layer No	Soil Description	Depth (ft)	Total Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)
Maple/Durango	1a	M. Stiff to Stiff Clay	1.0-2.5	130	1500	0
	1b	V. Stiff to Hard Clay	2.5-5.5	135	4000	0
	2	Loose Silty Sand	5.5-7.0	125	0	28
Pear/Apple	1	Loose Silty Sand	1.0-5.5	120	0	28

Based upon our review of the existing soil conditions in the project areas, the pavement design may use an estimated modulus of subgrade reaction of 140 pci for existing clay soils. For a subgrade composed of well-compacted engineered fill, a modulus of subgrade reaction of 200 pci may be used. The recommended modulus for subgrade reaction assumes the soil conditions encountered in the borings are representative of the soil conditions within the proposed pavement areas. This also assumes site preparation recommendations presented in Section 4.2 is followed to provide subgrade conditions suitable for pavement support.

4.2 Site Preparation

Before proceeding with construction, asphalt, concrete including any existing abandoned buried foundations, and other deleterious materials should be stripped from the proposed construction areas. The bearing soils should be observed by a geotechnical engineer and visually checked for suitability as a bearing soil. Depending on the time of year of construction and the Contractor's Means and Methods at controlling surface water, it may be possible that additional site subgrade material within development/construction areas will be considered unsuitable and/or unstable and will be required to be stripped during site preparation activities. Stormwater should be diverted away from the construction perimeters or pumped out using a sump to accommodate the proper compaction techniques.

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 Maximum Dry Density (MDD) within 2 percent of the Optimum Moisture Content (OMC). Soft, loose, or saturated soils that are difficult to compact may require an undercut and replacement with engineered fill for stabilization.

It is recommended that the prepared subgrade for pavement areas be proof-rolled to detect any unstable areas. Proof-rolling should be accomplished by making a minimum of two complete passes in each of two perpendicular directions with a fully loaded tandem-axle dump truck, or other approved pneumatic-tired vehicle, with a minimum weight of 20 tons. If proof-rolling reveals the presence of unstable areas within the subgrade, certain remedial measures will be required to stabilize the subgrade. The on-site Geotechnical Engineer or their designated representative should determine required undercut depths if necessary. If an undercut and replacement with engineered fill fails to stabilize the subgrade, use of granular backfill with geogrid stabilization may be required. Undercuts may be reduced 6 inches if geogrid and granular backfill is utilized. Granular soils at the subgrade surface may be reworked in place in order to pass a proof-roll. The actual undercut depths and/or subgrade remediation measures required should be determined by the on-site Geotechnical Engineer or a designated representative.

4.3 Fill Placement and Engineered Fill Requirements

All new 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. All fine-grained fill soils should be checked for plasticity index and liquid limit before placement. Cohesive fill materials should have a liquid limit less than 40 percent and plasticity index less than 20 percent (i.e., non-expansive). On site clay soils observed appear to be suitable for re-use as fill.

Coarse crushed granular material is recommended as fill for utility trench backfill, undercut areas, and as aggregate base material for pavement areas. The granular material shall consist of natural aggregate materials that meet the gradation requirements of MDOT 21AA or engineer approved equivalent. Typical lift thickness utilized for this material is 8 inches. In utility trenches, granular backfill material should extend at least two pipe diameters above the pipe's crown. As an alternative to imported granular fill, excavated soil material may be recompacted back in place so long as the excavated soil material is determined to be suitable.

Fill should be compacted to 98 percent of the Standard Proctor or 95 percent of Modified Proctor MDD and should be compacted within 2 percent of OMC. Fill materials should be placed in horizontal lifts and adequately keyed into stripped and scarified subgrade soils and adjacent fill. A qualified geotechnical consultant should be retained to monitor fill placement in order to assure compaction requirements are achieved. Soil density testing should be performed during fill placement activities to assure proper fill compaction. A commonly used testing criterion is one test per 2,500 square feet per lift in areas to support proposed structures and one test per 5,000 square feet in parking lots, driveways, exterior slabs, etc., with a minimum of three tests per lift. Areas that do not achieve compaction requirements after initial placement should be recompacted to meet project requirements.

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 a 9-inch loose lift thickness (8-inch compacted); assuming appropriately weighted and ballasted compaction equipment is utilized. In confined areas where hand operated compaction equipment is required, 4-inch and 6-inch loose lift thickness 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.

To minimize corrosion of existing metallic utilities, topsoil, organic soils, existing fill soils, and mixtures of sand and clay should not be placed adjacent to metallic utilities. In addition, buried utilities of different metallic materials should be electrically isolated from each other to minimize galvanic corrosion.

4.4 Lateral Earth Pressure

Lateral earth pressures (horizontal stresses) are developed during soil displacements (strains). Lateral earth pressure for design is determined utilizing an earth pressure coefficient to relate horizontal stress to vertical stress. Three separate earth pressure coefficients are used to determine lateral earth pressure: at-rest; active; and passive.

Applied horizontal stress can be determined by multiplying the appropriate earth pressure coefficient by the applied vertical stress. Earth pressure coefficients are a direct function of the internal friction of a soil. Laboratory testing to determine internal friction angles for soil was not performed. However, index laboratory and field data obtained can be utilized to approximate earth pressure coefficients based upon empirical relationships. Lateral earth pressure coefficients for soils encountered during this investigation are provided in Table 4.4-1.

Table 4.4-1 Recommended Lateral Earth Parameters

Soil Parameters	Engineered Granular Soil	Existing Soils	
		Stiff Lean Clay	Loose Sand
Total Unit Weight (pcf)	125	135	130
Internal Friction Angle (°)	30.0	25.0	28
At-rest Pressure Coefficient, K_0	0.50	0.6	0.55
Active Pressure Coefficient, K_a	0.30	0.4	0.35
Passive Pressure Coefficient, K_p	3.0	2.5	2.8
Concrete/Soil Friction Coefficient	0.5	0.0	0.5
Concrete/Soil Adhesion Factor	0.0	0.2	0.0

For retaining walls, to minimize lateral earth pressures, MSG recommends the zone adjacent to any walls be backfilled with granular fill. To provide effective drainage, a zone of free-draining gravel (similar to MDOT 6AA gravel) should be used directly adjacent to the walls with a minimum thickness of 18 inches. This granular zone should drain to weepholes or a pipe drainage system to prevent hydrostatic pressures from developing against the walls.

The type of backfill beyond the free-draining granular zone will govern the magnitude of the pressure to be used for structural design. Clean granular soil is recommended as the backfill material against retaining structures to minimize lateral earth pressure. Lateral earth pressure coefficients for engineered fill are provided in Table 4.4-1.

The coefficients of friction between concrete and soil subgrade were also provided in the table above. These coefficients can be used for evaluating the factor of safety against sliding of foundations. The recommended minimum safety factor against sliding is 1.5. Passive pressure resistance of the top 3 feet below final grade should generally be neglected in designing the retaining walls to resist sliding failure due to the freeze-thaw cycle that can significantly weaken soils and the potential for the material to be removed at a future date for installation of utilities or other construction-related activities.

Any additional lateral earth pressure due to surcharge loading conditions including, but not limited to, floor loads, column loads, sloping backfill, traffic loading, and construction loads, should be incorporated into the wall design. MSG should be retained to perform other detailed geotechnical evaluations for retaining walls, as necessary, including but not limited to, settlement and global stability. A detailed geotechnical evaluation and structural design of retaining walls is beyond the scope of this report.

5.0 CONSTRUCTION CONSIDERATIONS

5.1 Groundwater Control

Groundwater was not encountered in any other boring during or after drilling operations. We anticipate the long-term groundwater table is situated at a depth below the explored soil borings. Perched water may be possible. Typically, the groundwater elevation fluctuates and is higher during the winter and spring and lower in summer and early fall. It should be noted that groundwater seepage will have a significant impact on construction activities.

The anticipated excavations will be situated above the anticipated groundwater table. However, the Contractor should be prepared to address general water infiltration (i.e., pumping water from prepared sumps). 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.

5.2 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. It is our recommendation that any excavation in excess of 5 feet in depth should be designed by a professional engineer.

The overburden soils encountered during our investigation were generally composed medium stiff to very stiff cohesive soil. Based upon the data obtained, we anticipate OSHA will classify very stiff to hard clay soils as Type A soil, which will require maximum temporary excavation slopes of 0.75(H):1(V). We anticipate OSHA will classify site sand soils as Type C soil, which will require maximum temporary excavation slopes of 1.5(H):1(V). Flatter slopes will be required if seepage conditions occur during construction. 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, requiring temporary shoring, or extending into bedrock be done under the supervision of a qualified engineer.

6.0 GENERAL QUALIFICATIONS AND LIMITATIONS

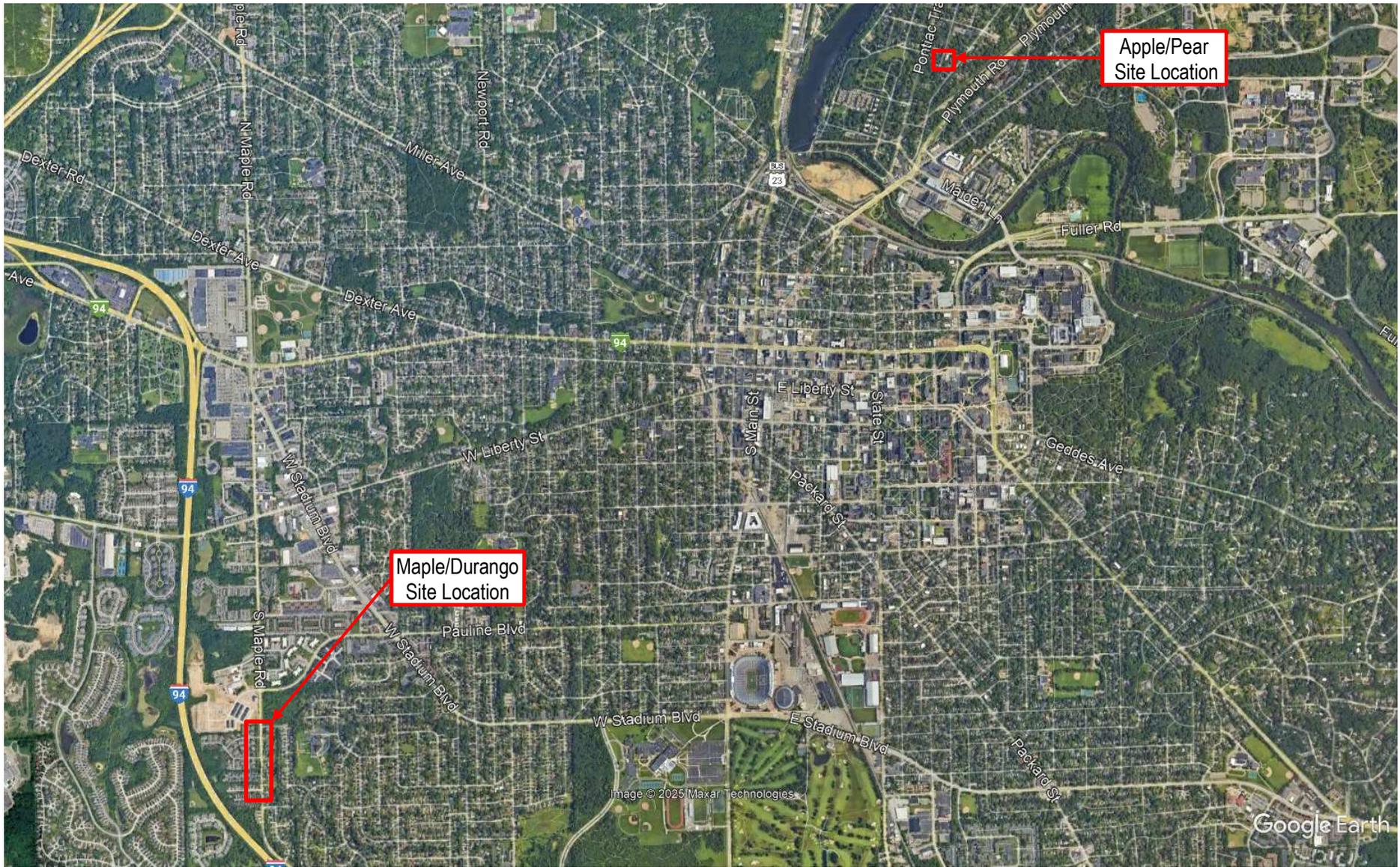
The evaluations, conclusions and recommendations in this report are based on our interpretation of the field and laboratory data obtained during the geotechnical investigation, our understanding of the project and our experience during previous work, with similar sites and subsurface conditions. Data used during this exploration included:

- Four (4) pavement cores and five (5) soil 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 consistent with the recommendations of this report. In particular, the specifications for excavation and foundation construction should be prepared and/or reviewed by MSG's Geotechnical Engineer of Record. In addition, we recommend site subgrade preparation, fill compaction activities, and foundation installation activities should be monitored by MSG's geotechnical engineer or his/her representative.

This report and evaluation reflect 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.

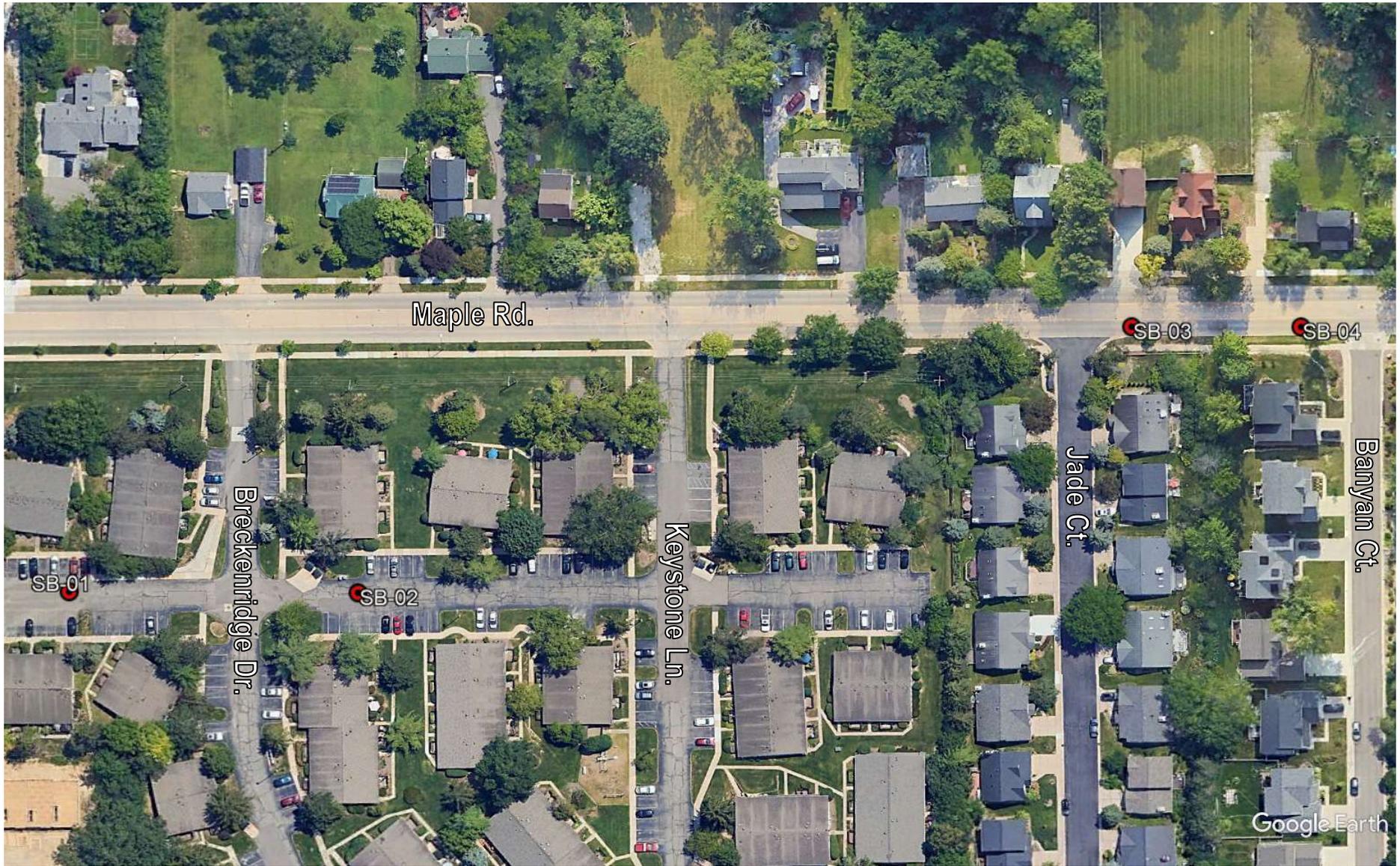



2365 Haggerty Road South
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 www.MannikSmithGroup.com

Figure 1: Site Location Map
 Maple Rd / Durango Dr & Pear St at Apple St Retaining Wall
 Ann Arbor, Michigan
 MSG Project Number: 401.2300021.009

No Scale
 Map Adapted from
 Google Earth 2025©





2365 Haggerty Road South
 Canton, Michigan 48188
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 Fax: 734-397-3131
 www.MannikSmithGroup.com

Figure 2a: Soil Boring Location Map (Maple Rd. / Durango Dr.)

Maple Rd / Durango Dr & Pear St at Apple St Retaining Wall
 Ann Arbor, Michigan

MSG Project Number: 401.2300021.009

No Scale
 Map Adapted from
 Google Earth 2025©



GENERAL SOIL SAMPLE NOTES

Unless noted, all terms utilized herein refer to the Standard Definitions presented in ASTM D653.

Standard Penetration Test (ASTM D1586): A 2.0-inch outside-diameter (O.D.), 1-3/8-inch inside-diameter (I.D.) split barrel sampler is driven into undisturbed soil by means of a 140-pound weight falling freely through a vertical distance of 30 inches. The sampler is normally driven three successive 6-inch increments. The total number of blows required for the final 12 inches of penetration is the Standard Penetration Resistance (N).

COHESIVE SOILS			COHESIONLESS SOILS	
Consistency	Approximate Range of N	Unconfined Compressive Strength (psf)	Density Classification	Approximate Range of N
Very Soft	0 – 1	Below 500	Very Loose	0 – 4
Soft	2 – 4	500 – 1,000	Loose	5 – 10
Medium Stiff	5 – 8	1,000 – 2,000	Medium Dense	11 – 30
Stiff	9 – 15	2,000 – 4,000	Dense	31 – 50
Very Stiff	16 – 30	4,000 – 8,000	Very Dense	Over 50
Hard	31 – 50	8,000 – 16,000		
Very Hard	Over 50	Over 16,000		

CLASSIFICATION

The major soil constituent is the principal noun, i.e. sand, silt, gravel. The second major soil constituent and other minor constituents are reported as follows:

Second Major Constituent (percent by weight)	Minor Constituents (percent by weight)
Trace – 1% to 11%	Trace – 1% to 11%
Adjective – 12% to 35% (clayey, silty, etc.)	Little – 12% to 22%
And – Over 35%	Some – 23% to 33%

PARTICLE SIZES

Boulders	- Greater than 12 inches (305 mm)
Cobbles	- 3 inches (76.2 mm) to 12 inches (305 mm)
Gravel:	Coarse - 3/4 inches (19.05 mm) to 3 inches (76.2 mm)
	Fine - No. 4 (4.75 mm) to 3/4 inches (19.05 mm)
Sand:	Coarse - No. 10 (2.00 mm) to No. 4 (4.75 mm)
	Medium - No. 40 (0.425 mm) to No. 10 (2.00 mm)
	Fine - No. 200 (0.074 mm) to No. 40 (0.425 mm)
Silt	- 0.005 mm to 0.074 mm
Clay	- Less than 0.005 mm

If clay content is sufficient so that clay dominates soil properties, clay becomes the principal noun with the other major soil constituent as modifier: i.e., silty clay. Other minor soil constituents may be included in accordance with the classification breakdown for cohesionless soils: i.e., silty clay, trace sand, little gravel.

If sand particle size is greater than 11% by weight of the total sample weight, the adjective (i.e., fine, medium or coarse) is added to the soil description for the sand portion of the sample, provided sand is the major or second major constituent.

SAMPLE DESIGNATIONS

AS	Auger Sample - directly from auger flight	ST	Shelby Tube Sample - 3-inch diameter unless otherwise noted
BS	Miscellaneous Samples - Bottle or Bag	PS	Piston Sample - 3-inch diameter unless otherwise noted
MC	Macro-Core Sample - 2.25-inch O.D., 1.75-inch I.D., 5 feet long polyethylene liner	RC	Rock Core - NX core unless otherwise noted
LB	Large-Bore (Micro-Core) Sample - 1-inch diameter, 2 feet long polyethylene liner	CS	CME Continuous Sample - 5 feet long, 3-inch diameter unless otherwise noted
SS	Split Spoon Sample - 1-inch or 2-inch O.D.	HA	Hand Auger
LS	Split Spoon (SS) Sampler with 3 feet long liner insert	DP	Drive Point
NR	No Recovery	CM	Coring Machine

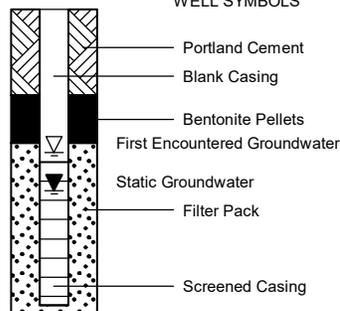
MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LESS THAN 15% FINES	GW		WELL-GRADED GRAVELS WITH OR WITHOUT SAND
		GRAVELS WITH 15% OR MORE FINES	GP		POORLY-GRADED GRAVELS WITH OR WITHOUT SAND
			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
		SANDS WITH 15% OR MORE FINES	SP		POORLY-GRADED SANDS WITH OR WITHOUT GRAVEL
			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		PEAT AND OTHER HIGHLY ORGANIC SOILS	

SYMBOLS KEY

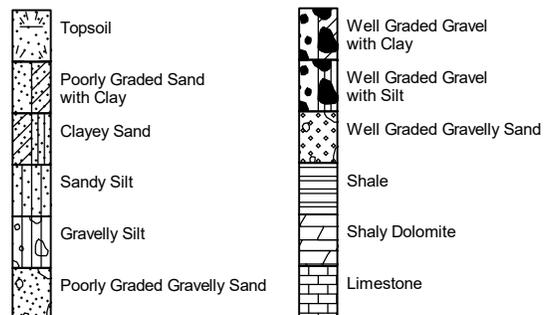
SAMPLE TYPES

- Grab Sample
- Rock Core
- Split Spoon sample, 1 inch or 2 inch outer-diameter.
- Shelby Tube sample - 3 inch diameter unless otherwise noted.

WELL SYMBOLS



OTHER MATERIAL SYMBOLS



BORING / WELL LOG KEY



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BOREHOLE NUMBER SB-01

Sheet 1 of 1

CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.009
DATE STARTED 03-04-2025 **COMPLETED** 03-04-2025
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
DRILLING METHOD ASTM D6282
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME Maple Rd / Durango Dr & Pear St at Apple St Retaining Wall
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 278814± ft E: 13282026± ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 1001± ft **FINAL DEPTH** 7.0 ft
LOGGED BY TCJ **CHECKED BY** JGA
REMARKS Elevation obtained from Google Earth™.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	<ul style="list-style-type: none"> ▲ N Value ● Moisture Content (%) Plastic/Liquid Limit (%) □ Fines Content (%)
								20 40 60 80
		0.2	ASPHALT - 2 INCHES					
		0.6	SILTY SAND WITH GRAVEL FILL - 7 INCHES					
			Lean CLAY (CL): very stiff to hard; brown; moist.					
				1000.8				
				1000.4				
5	996	7.0		SPT SS-1	78	4-8-10 (18)	4.00	●
				SPT SS-2	89	12-20-20 (40)	4.50	▲
				SPT SS-3	100	8-12-18 (30)	4.50	▲
				SPT SS-4	83	18-16-16 (32)	4.50	●
			Terminated at 7.00 ft. Reached Target Depth.					
10	991							
15	986							
20	981							
25	976							

LEGEND:

- ▽ AT TIME OF DRILLING _____
- ▼ AT END OF DRILLING _____
- ▽ AFTER DRILLING _____



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BOREHOLE NUMBER SB-02

Sheet 1 of 1

CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.009
DATE STARTED 03-04-2025 **COMPLETED** 03-04-2025
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
DRILLING METHOD ASTM D6282
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME Maple Rd / Durango Dr & Pear St at Apple St Retaining Wall
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 278585± ft E: 13282030± ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 997± ft **FINAL DEPTH** 7.0 ft
LOGGED BY TCJ **CHECKED BY** JGA
REMARKS Elevation obtained from Google Earth™.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	<ul style="list-style-type: none"> ▲ N Value ● Moisture Content (%) Plastic/Liquid Limit (%) □ Fines Content (%)
								20 40 60 80
		0.2	ASPHALT - 2 INCHES	996.8				
		0.4	SILTY SAND WITH GRAVEL FILL - 5 INCHES	996.6				
			Lean CLAY (CL): very stiff to hard; brown; moist. - Qu = 12623 psf					
		4.0	Sandy Lean CLAY (CL): medium stiff; brown; damp.	993.0	SPT SS-1	12-8-10 (18)	4.50	●
		5.5	Silty SAND (SM): loose; brown; damp.	991.5	SPT SS-2	10-8-10 (18)	4.50	▲
5	992	7.0	Terminated at 7.00 ft. Reached Target Depth.	990.0	SPT SS-3	4-3-4 (7)	0.75	▲
					SPT SS-4	4-5-5 (10)		▲
10	987							
15	982							
20	977							
25	972							

LEGEND:

- ▽ AT TIME OF DRILLING _____
- ▼ AT END OF DRILLING _____
- ▽ AFTER DRILLING _____

APPENDIX 1-17



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BOREHOLE NUMBER SB-03

Sheet 1 of 1

CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.009
DATE STARTED 03-04-2025 **COMPLETED** 03-04-2025
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
DRILLING METHOD ASTM D6282
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME Maple Rd / Durango Dr & Pear St at Apple St Retaining Wall
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 277977± ft E: 13282254± ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 983± ft **FINAL DEPTH** 7.0 ft
LOGGED BY TCJ **CHECKED BY** JGA
REMARKS Elevation obtained from Google Earth™.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	<ul style="list-style-type: none"> ▲ N Value ● Moisture Content (%) Plastic/Liquid Limit (%) □ Fines Content (%)
								20 40 60 80
	982.3	0.7	CONCRETE - 8 INCHES					
	982.0	1.0	SILTY SAND WITH GRAVEL FILL - 4 INCHES Lean CLAY (CL): medium stiff to stiff; brown; damp.	SPT SS-1	28	5-3-4 (7)	2.00	□
	980.5	2.5	Lean CLAY (CL): very stiff to hard; brown; moist.	SPT SS-2	83	8-10-12 (22)	2.00	●
5	978			SPT SS-3	100	7-15-16 (31)	4.50	▲
	976.0	7.0	Terminated at 7.00 ft. Reached Target Depth.	SPT SS-4	72	8-18-20 (38)	4.50	●
10	973							
15	968							
20	963							
25	958							

LEGEND:

- ▽ AT TIME OF DRILLING _____
- ▼ AT END OF DRILLING _____
- ▽ AFTER DRILLING _____

APPENDIX 1-18



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BOREHOLE NUMBER SB-04

Sheet 1 of 1

CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.009
DATE STARTED 03-04-2025 **COMPLETED** 03-04-2025
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
DRILLING METHOD ASTM D6282
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME Maple Rd / Durango Dr & Pear St at Apple St Retaining Wall
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 277843± ft E: 13282257± ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 978± ft **FINAL DEPTH** 7.0 ft
LOGGED BY TCJ **CHECKED BY** JGA
REMARKS Elevation obtained from Google Earth™.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	<ul style="list-style-type: none"> ▲ N Value ● Moisture Content (%) Plastic/Liquid Limit (%) □ Fines Content (%)
								20 40 60 80
	977.3	0.7	CONCRETE - 8 INCHES					
	977.0	1.0	SILTY SAND WITH GRAVEL FILL - 4 INCHES Lean CLAY (CL): stiff; brown; damp. - Qu = 3184 psf	SPT SS-1	50	5-5-8 (13)	1.50	
	974.0	4.0	Lean CLAY (CL): very stiff to hard; brown; moist.	SPT SS-2	61	4-7-8 (15)	2.00	
5	973			SPT SS-3	100	3-7-12 (19)	3.50	
	971.0	7.0	Terminated at 7.00 ft. Reached Target Depth.	SPT SS-4	100	18-18-20 (38)	4.50	
10	968							
15	963							
20	958							
25	953							

LEGEND:

- ▽ AT TIME OF DRILLING _____
- ▼ AT END OF DRILLING _____
- ▽ AFTER DRILLING _____

APPENDIX 1-19



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SUMMARY OF LABORATORY RESULTS



CLIENT City of Ann Arbor

PROJECT NAME Maple Rd / Durango Dr & Pear St at Apple St Retaining Wall

PROJECT NUMBER 401.2300021.009

PROJECT LOCATION Ann Arbor, Michigan

Boring No. / Sample No.	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Classification	Water Content (%)	Bulk Density (pcf)	Saturation (%)	Specific Gravity
SB-01 / SS-1	1.0							16.2			
SB-01 / SS-4	5.5							16.2			
SB-02 / SS-1	1.0							12.3	137.9		
SB-03 / BASE	0.0	NP	NP	NP	25	12	SM	8.9			
SB-03 / SS-2	2.5							14.1			
SB-03 / SS-4	5.5							13.1			
SB-04 / SS-2	2.5							17.6	130.4		
SB-05 / SS-1	1.0	NP	NP	NP	9.525	15	SM	8.2			
SB-05 / SS-3	4.0	NP	NP	NP	19	12	SM	6.4			

LAB SUMMARY - GINT STD US LAB.GDT - 3/13/25 14:28 - \\MSGFILES\RM\MSGDATA\PROJECTS\2023\401.2300001-001991401.2300021.000\ADMIN\09 MAPLE AND PEAR\GEO\TECH\LAB\TESTING.GPJ



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GRAIN SIZE DISTRIBUTION

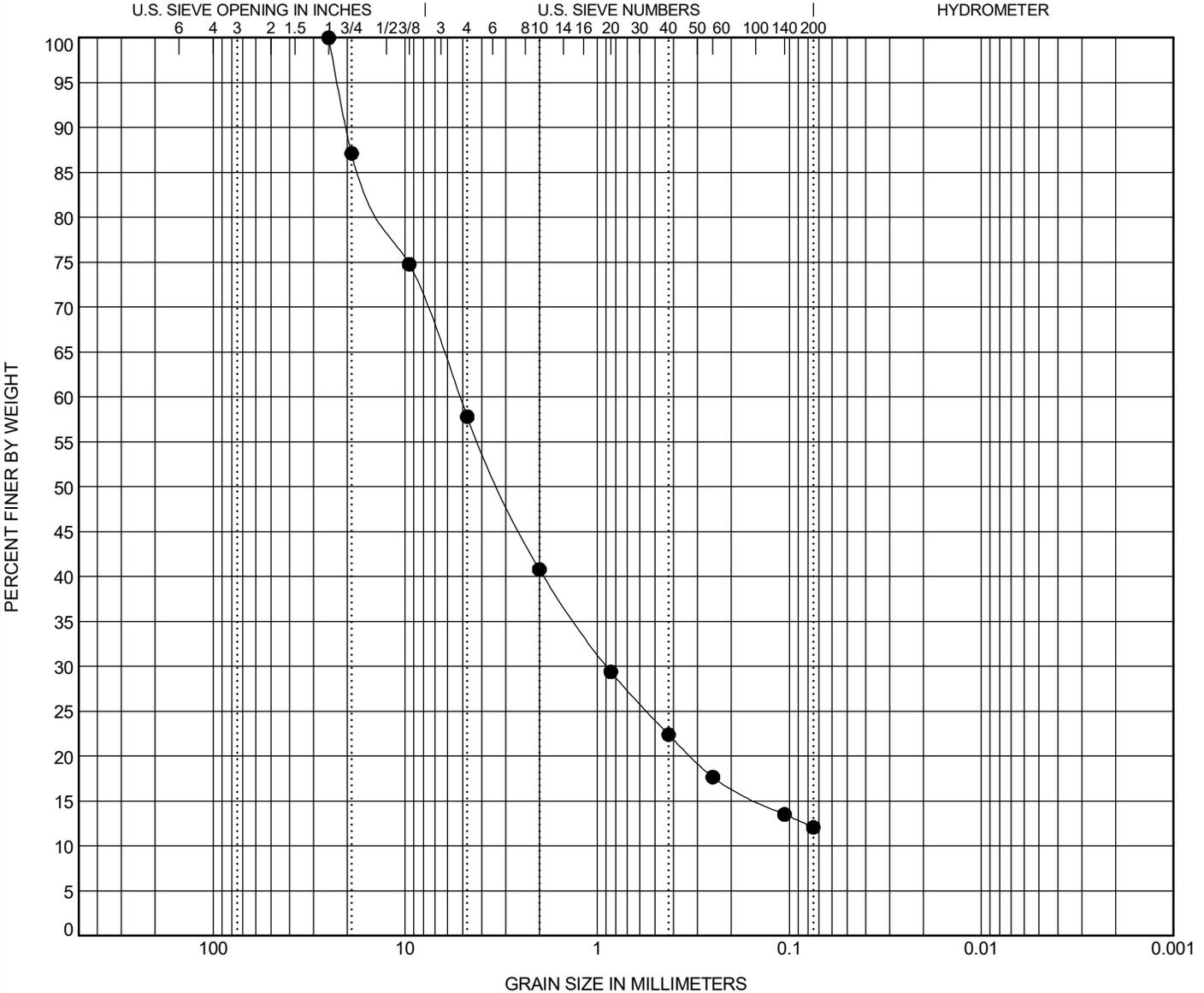


CLIENT City of Ann Arbor

PROJECT NAME Maple Rd / Durango Dr & Pear St at Apple St Retaining Wal

PROJECT NUMBER 401.2300021.009

PROJECT LOCATION Ann Arbor, Michigan



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● SB-03 / BASE	SILTY SAND with GRAVEL (SM)	NP	NP	NP	3.33	113.77

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SB-03 / BASE	0.0	25	5.196	0.889	42.2	45.7	12.1	

GRAIN SIZE - GINT STD US LAB.GDT - 3/12/25 11:21 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\09 MAPLE AND PEAR\GEO\TECH\LAB\LAB TESTING.GPJ



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GRAIN SIZE DISTRIBUTION

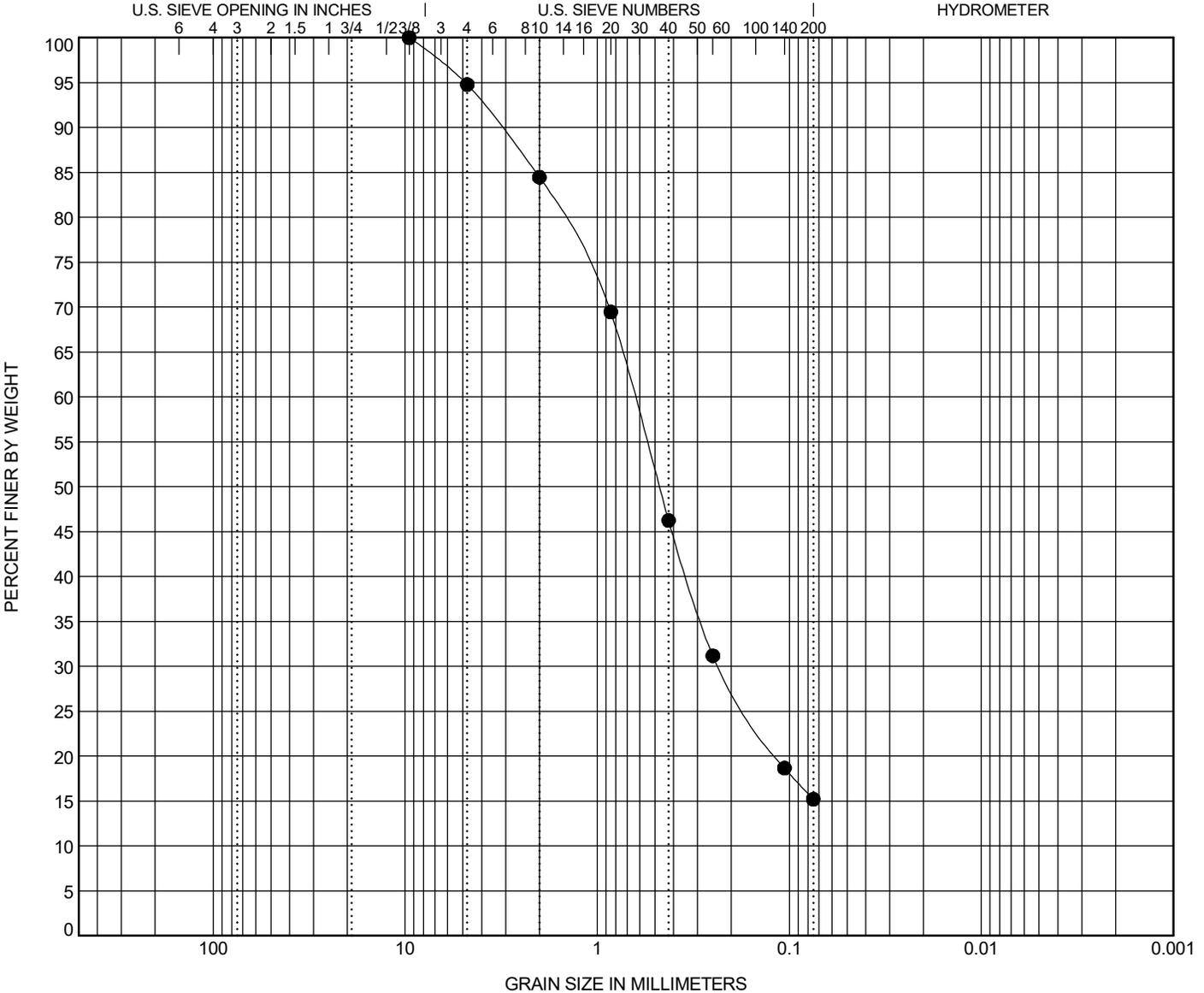


CLIENT City of Ann Arbor

PROJECT NAME Maple Rd / Durango Dr & Pear St at Apple St Retaining Wal

PROJECT NUMBER 401.2300021.009

PROJECT LOCATION Ann Arbor, Michigan



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● SB-05 / SS-1	1.0 SILTY SAND (SM)	NP	NP	NP		

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SB-05 / SS-1	1.0	9.525	0.641	0.23	5.2	79.6	15.2	

GRAIN SIZE - GINT STD. US LAB.GDT. - 3/12/25 11:22 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\09 MAPLE AND PEAR\GEO\TECH\LAB\LAB TESTING.GPJ



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UNCONFINED COMPRESSION TEST

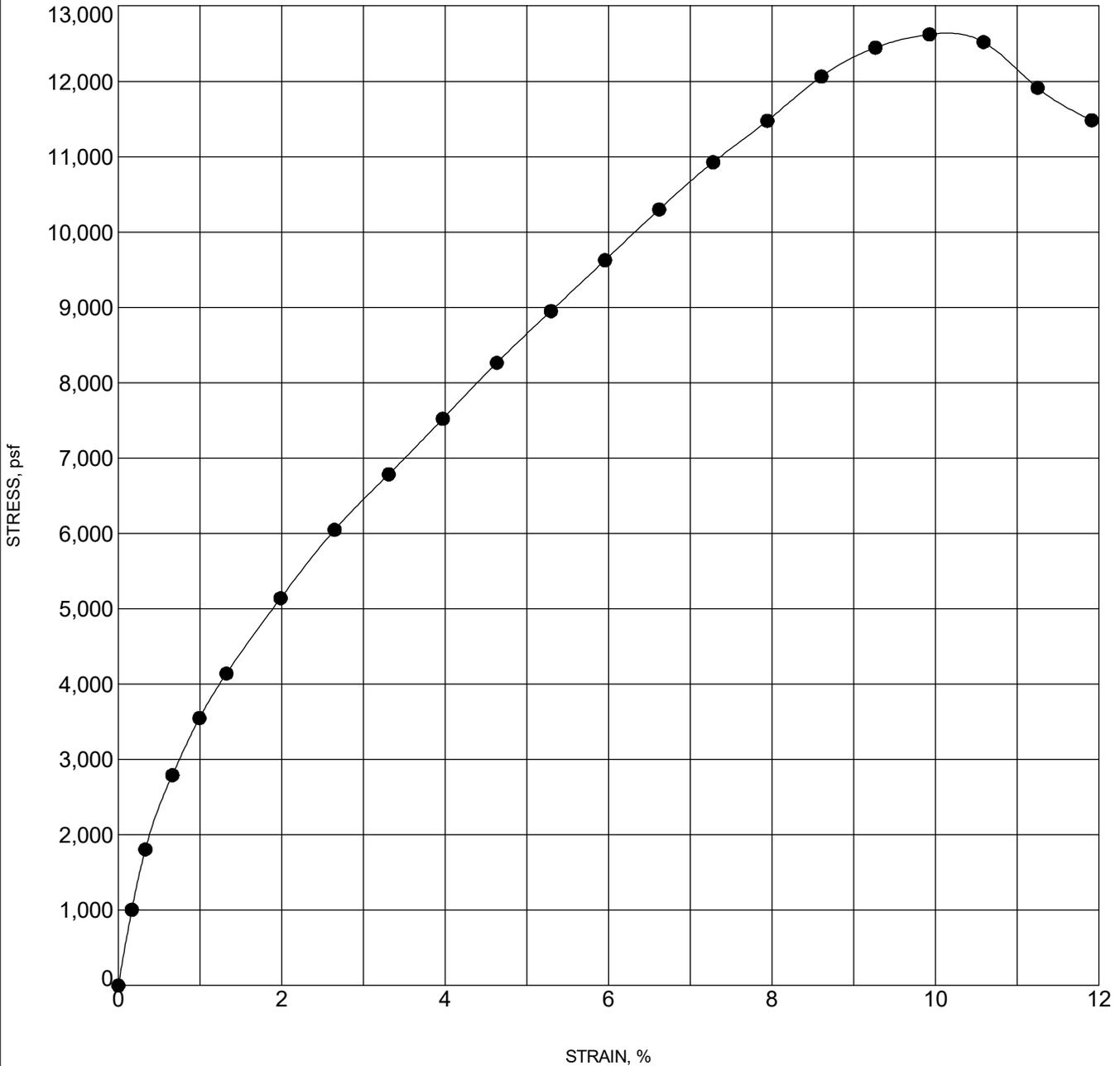


CLIENT City of Ann Arbor

PROJECT NAME Maple Rd / Durango Dr & Pear St at Apple St Retaining Wal

PROJECT NUMBER 401.2300021.009

PROJECT LOCATION Ann Arbor, Michigan



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Specimen Identification	Classification	UCS (psf)	γ_d	MC%
● SB-02 / SS-1 1.0		12623	122.7	12.3



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UNCONFINED COMPRESSION TEST

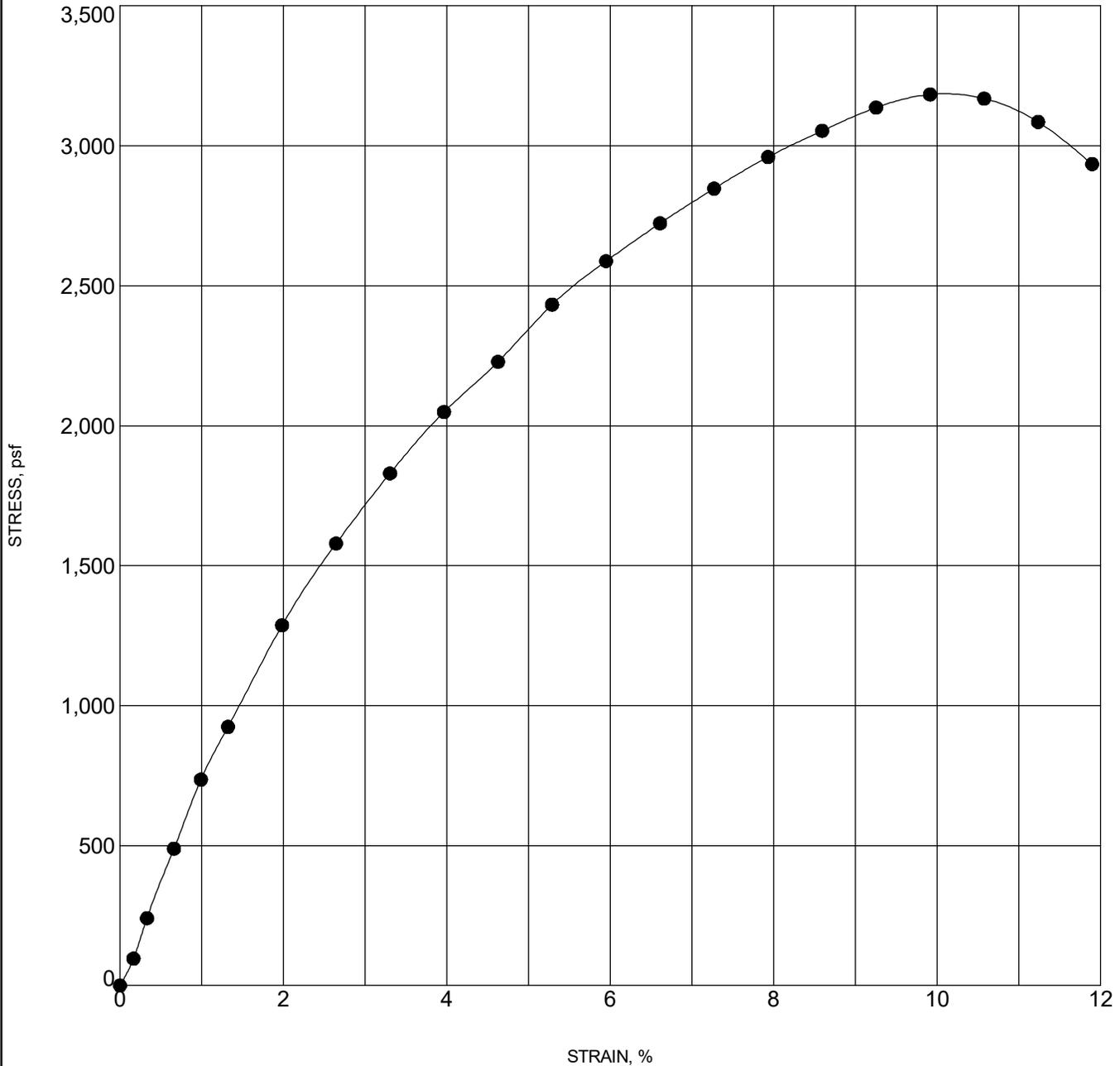


CLIENT City of Ann Arbor

PROJECT NAME Maple Rd / Durango Dr & Pear St at Apple St Retaining Wal

PROJECT NUMBER 401.2300021.009

PROJECT LOCATION Ann Arbor, Michigan



UNCONFINED - GINT STD US LAB.GDT - 3/12/25 11:26 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\09 MAPLE AND PEAR\GEO\TECH\LAB\LAB TESTING.GPJ

Specimen Identification	Classification	UCS (psf)	γ_d	MC%
● SB-04 / SS-2 2.5		3184	110.9	17.6



Photo 1: SB-01: 3-inch Asphalt

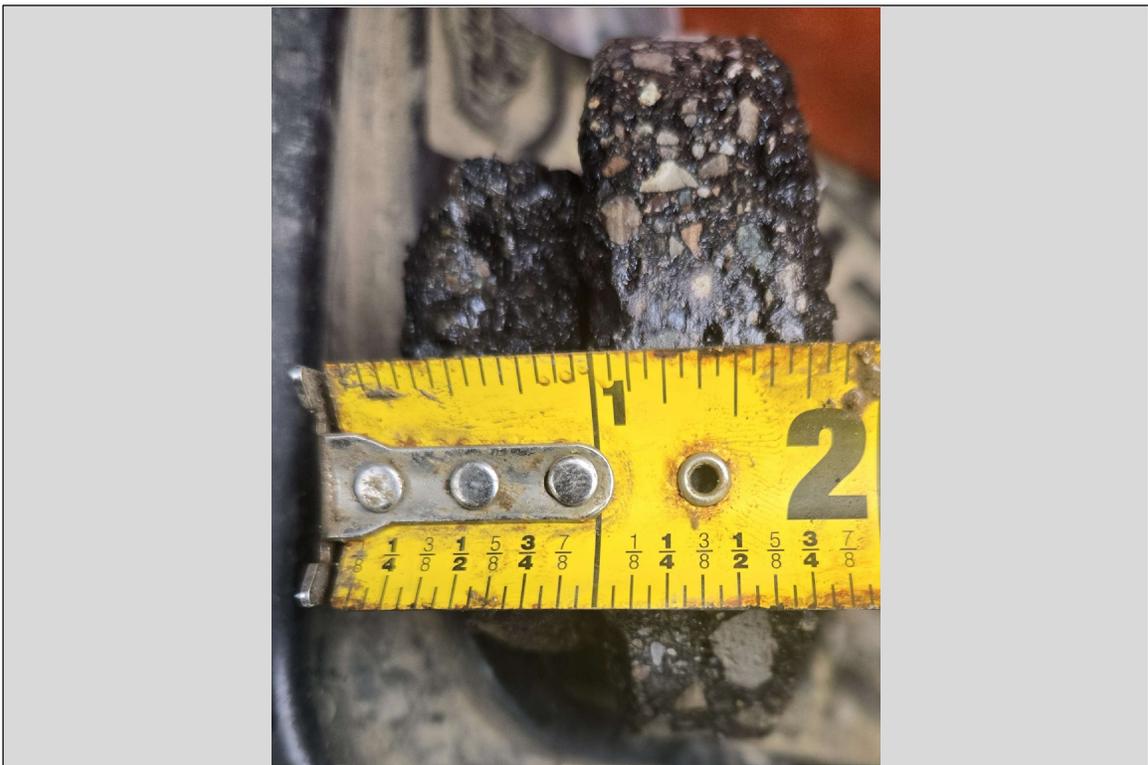


Photo 2: SB-02: 2-inch Asphalt

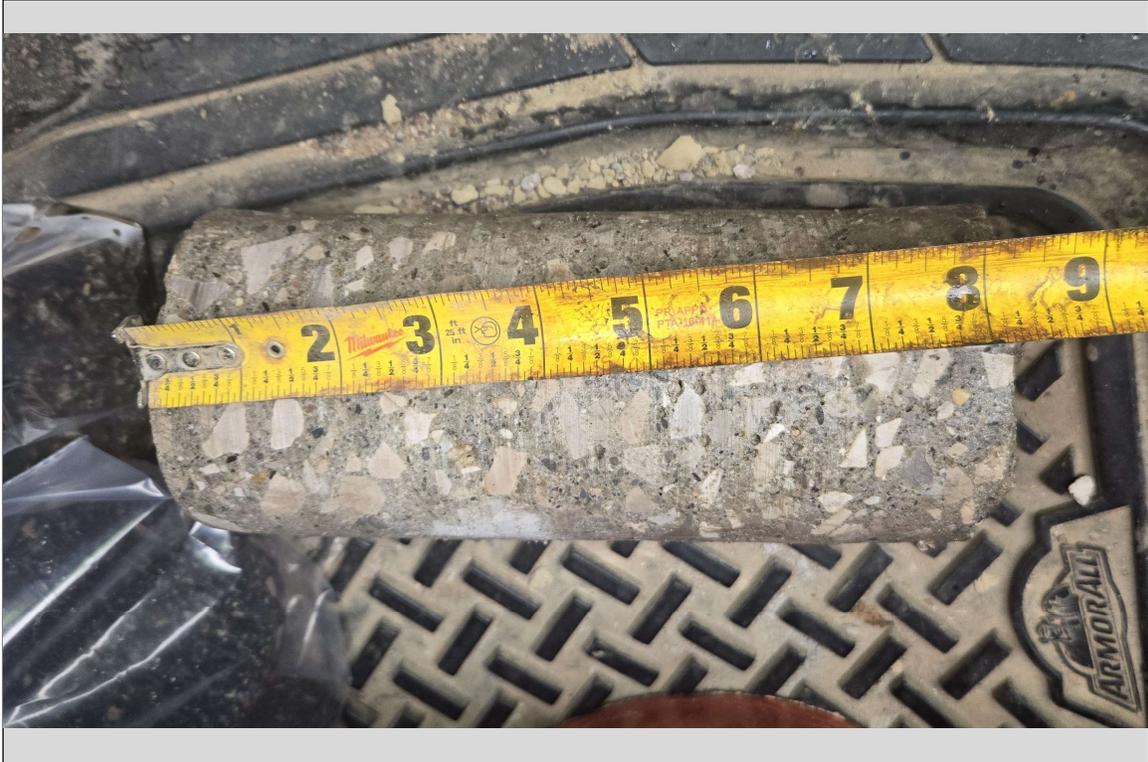


Photo 3: SB-03: 8-inch Concrete



Photo 4: SB-04: 8-inch Concrete

GEOTECHNICAL INVESTIGATION REPORT

2025 WATER MAIN AND RESURFACING PROJECTS S. HURON PARKWAY, ARBORDALE/SHERWOOD STREETS, INGALLS/KINGSLEY STREETS, & PACKARD STREET

CITY OF ANN ARBOR PROJECT NOS.
2025-009, 2025-011, 2025-012, & 2025-013
MSG PROJECT No.: 401.2300021.013

OCTOBER 2025

PREPARED FOR:
CITY OF ANN ARBOR
301 E. HURON, 4TH FLOOR
ANN ARBOR, MICHIGAN 48104

PREPARED BY:
THE MANNIK & SMITH GROUP, INC.
2365 HAGGERTY ROAD SOUTH
CANTON, MICHIGAN 48188





October 27, 2025

Mr. Jacob Dykman
City of Ann Arbor
301 E. Huron, 4th Floor
Ann Arbor, Michigan 48107

RE: Geotechnical Investigation Report
2025 Water Main and Resurfacing Projects
S. Huron Parkway, Arbordale/Sherwood Streets, Ingalls/Kingsley Streets, & Packard Street
Ann Arbor, Michigan
City Of Ann Arbor Project Nos. 2025-009, 2025-011, 2025-012, & 2025-013
MSG Project No.: 401.2300021.013

Dear Mr. Dykman:

This report presents the results of our geotechnical investigation for the proposed water main replacement and pavement resurfacing projects along S. Huron Parkway, Arbordale and Sherwood Streets, Ingalls and Kingsley Streets, and Packard Street. This geotechnical investigation was performed in general accordance with our contract with the City of Ann Arbor fully executed on May 2, 2023 as well as the proposals associated with these projects numbered 401.2300021.013 and dated July 9, 2025. This report presents our geotechnical recommendations and construction considerations for the project.

We trust that this report addresses your current 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.

Kevin D. Brown, PE
Geotechnical Engineer

Ibraheem Shunnar, PE
Principal



TECHNICAL SKILL.
CREATIVE SPIRIT.



EXECUTIVE SUMMARY

The Mannik & Smith Group, Inc., (MSG) was retained by the City of Ann Arbor to conduct a geotechnical investigation to support the proposed water main replacement and pavement resurfacing projects along S. Huron Parkway, Arbordale and Sherwood Streets, Ingalls and Kingsley Streets, and Packard Street in Ann Arbor, Michigan.

The current subsurface investigation consisted of performing a total of thirty-nine (39) soil borings. The locations were designated as SB-2026-108 to SB-2026-132 and SB-2026-139 to SB-2026-154. Details of the soil boring investigation are highlighted in Table 2.1-1.

The soil profile at each of the sites are summarized below:

- **S. Huron Parkway (Ann Arbor Project No. 2025-009):** Surficial materials consisted of 6 inches of topsoil or 5 to 10 inches of pavement over 5 to 9 inches of base material. Stratum 1, consisting of medium stiff to hard clay, was encountered below the surface material in all borings and extended to depths ranging between 8.5 and 20 feet below grade. Stratum 2, consisting of medium dense sand, was encountered below Stratum 1 in boring SB-2026-128 and extended to a depth of 10 feet below grade.
- **Arbordale/Sherwood Streets (Ann Arbor Project No. 2025-011):** Surficial materials included 3 to 5.5 inches of asphalt over 5 to 8 inches of aggregate. Stratum 1, consisting of soft to hard clay, was encountered below the surface material and extended to the explored depths of 10 feet below grade.
- **Ingalls/Kingsley Streets (Ann Arbor Project No. 2025-012):** Surficial materials included 3 to 8.5 inches of pavement over 8 to 12 inches of base material at all borings except at SB-2026-144, where 4 inches of brick was encountered over 12 inches of sand. Stratum 1, consisting of soft to very stiff clay, was encountered below the surface material in soil borings SB-2026-139, SB-2026-140, SB-2026-141, SB-2026-143, SB-2026-153, and SB-2026-154 and extended to depths of 3.5 feet below grade. Stratum 2, consisting of loose to very dense sand and gravel, was encountered below the surface material or Stratum 1 in all borings and extended to a depth of 10 feet below grade.
- **Packard Street (Ann Arbor Project No. 2025-013):** Surficial materials included 4 to 7 inches of asphalt over 8 to 10 inches of aggregate. Stratum 1, consisting of loose to medium dense sand or very dense gravel, was encountered below the surface material and extended to depths ranging between 3.5 and 6.5 feet below grade. Stratum 2, consisting of soft to hard clay, was encountered below the surface material or Stratum 1 in all borings except SB-2026-121 and extended to depths of 10 feet below grade.

Based on the observed subsurface conditions, the anticipated invert of the proposed water main may be between 5 and 10 feet below existing grades. At this depth, the bearing soils at each project site consist of medium stiff to stiff lean clay or loose to medium dense sand. This material is suitable for support of the water main, provided the bearing subgrade is properly prepared.

Based on our review of the subsurface soil conditions, we have developed design soil profiles for this project, see Section 4.1 for additional details. Based upon our review of the existing soil conditions in the project areas, the pavement design may use an estimated modulus for subgrade reaction of 120 pci for clay soils and 175 pci for compacted native medium dense sands. For a subgrade composed of well-compacted engineered fill, a modulus of subgrade reaction of 200 pci may be used.

Groundwater was encountered in boring SB-2026-128 at a depth of 10 feet below grade; groundwater was not encountered during or after drilling operations in any remaining borings. Excavations will likely be situated above the long-term groundwater level. In cohesive soils, significant problems associated with groundwater seepage into the excavation are not anticipated. The Contractor should be prepared to address general water infiltration (i.e., pumping water from prepared sumps).

This summary briefly discusses major findings covered within the body of the report. The intent of this executive summary is to provide a general summary. The report must be read carefully in its entirety before using any recommendations described herein.



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1.0 INTRODUCTION

1.1 General

The Mannik & Smith Group, Inc., (MSG) was retained by the City of Ann Arbor to conduct a geotechnical investigation to support the proposed water main replacement and pavement resurfacing projects along S. Huron Parkway, Arbordale and Sherwood Streets, Ingalls and Kingsley Streets, and Packard Street in Ann Arbor, Michigan. The approximate site locations are depicted as Figure 1 in Appendix A. This geotechnical investigation was completed in general accordance with our contract with the City of Ann Arbor fully executed on May 2, 2023, as well as our proposal and agreement for professional services dated July 9, 2025.

1.2 Project Information and Site Conditions

For the S. Huron Parkway segment, the project limits are between Washtenaw Avenue and Platt Road, or about 2,000 feet. Huron Parkway is currently an asphalt surfaced (with the exception of approximately 300 feet south of Washtenaw Avenue, where the roadway is concrete surfaced), five-lane, two-way road with a center turn lane. The roadway has concrete curbs and sidewalks on either side of the road. The ground surface elevation along varies from 793± to 805± feet. This project also includes parking lot and driveway areas associated with Arlington Place Condominiums.

For the Arbordale and Sherwood Streets segment, the project limits along Arbordale Street are between W. Stadium Boulevard and Pauline Boulevard, or about 2,750 feet; the project limits along Sherwood Street are bounded by Arbordale Street on both ends, or about 800 feet. Arbordale Street and Sherwood Street are currently asphalt surfaced, two-lane roads with concrete curbs and sidewalks on either side of the roads. The ground surface elevation along the streets varies from 914± to 940± feet.

For the Ingalls and Kingsley Streets segment, the project limits along Ingalls Street are between W. Huron Street and Kingsley Street, or about 1,300 feet; the project limits along Kingsley Street are between Detroit Street and Ingalls Street, or about 1,800 feet. Ingalls Street is currently an asphalt surfaced, two-lane, one-way road with concrete curbs and sidewalks on either side of the road; the ground surface elevation varies from 870± to 878± feet. Kingsley Street is currently an asphalt surfaced road with concrete curbs and sidewalks on either side of the road. Kingsley Street is a two-lane, one-way road with a section of two-way road between State Street and Detroit Street. The ground surface elevation varies from 827± to 869± feet. At the intersection of Kingsley and State Street, the pavement is surfaced with brick.

For the Packard Road segment, the project limits are between Chesterfield Drive and Cascade Drive, or about 650 feet. Packard Road is currently an asphalt surfaced, five-lane, two-way road with a center turn lane. The roadway has concrete curbs and sidewalks on either side of the road. The ground surface elevation varies from 802± to 812± feet.

2.0 SUBSURFACE INVESTIGATION

2.1 Field Exploration

The current subsurface investigation consisted of performing a total of forty-one (41) soil borings. The locations were designated as SB-2026-108 to SB-2026-132 and SB-2026-139 to SB-2026-154. Details of the soil boring investigation are highlighted in Table 2.1-1.



Table 2.1-1 Summary of Field Investigation

Project (Project Number)	Location ID	Boring Depth (ft)	Pavement Core
S. Huron Parkway (2025-009)	SB-2026-124, SB-2026-125	20	Yes
	SB-2026-126 to SB-2026-129	10	Yes
	SB-2026-130	10	No
	SB-2026-131, SB-2026-132	10	Yes
Arbordale/Sherwood Streets (2025-011)	SB-2026-108 to SB-2026-18	10	Yes
Ingalls/Kingsley Streets (2025-012)	SB-2026-139 to SB-2026-154*	10	Yes
Packard Street (2025-013)	SB-2026-119 to SB-2026-123*	10	Yes

*Borings SB-2026-121 and SB-2026-144 terminated at 6.5 feet upon possible obstruction

The number of borings, the approximate locations, and the boring depths were determined by City engineers. The boring locations were field located by MSG. Boring locations were adjusted in the field to avoid conflicts with existing utilities. Surveying of the boring locations was not performed; however, the approximate boring locations were field marked by MSG personnel by measuring from existing site features. Elevations were estimated from these locations using Google Earth™. Soil Boring Location Maps are presented in Figure 2A to 2E in Appendix A.

The drilling operations were performed on various days between August 26 and October 21, 2025. All borings were advanced using a track-mounted Geoprobe 7822DT drill rig and were advanced by hydraulically pushing 3.25-inch diameter steel casing into the soil using techniques outlined in ASTM D6282. Upon completion, the boreholes were backfilled using soil cuttings and bentonite chips. Pavement cores were capped with cold asphalt patch.

During drilling operations, Standard Penetration Test (SPT) and soil sampling were conducted in accordance with ASTM D1586 procedures (“Standard Method for Penetration Tests and Split Barrel Sampling of Soils”). The SPT and soil sampling were completed at 2.5-foot intervals for the first 10 feet and at 5-foot intervals to boring termination.

Soil samples were recovered using a split-spoon sampling procedure in general accordance with ASTM D1586 Standard (“Standard Method for Penetration Tests and Split Barrel Sampling of Soils”). All collected 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 and testing. 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 made during the drilling operations and are shown in the Soil Boring Logs. 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 particular, in pervious soils (granular soils), water levels are considered relatively reliable when solid or hollow-stem augers are used for drilling. However, 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.

Soil boring logs are included in Appendix B. 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.

2.2 Laboratory Testing

Each sample recovered from the borings was examined and visually classified. This examination was performed to verify conditions identified within field boring logs, to select samples for further laboratory evaluation, and to perform visual-manual classification of samples not subject to further laboratory testing. During the examination process, the geotechnical engineer finalized the soil boring logs.

Representative soil samples were subjected to laboratory tests consisting of a pocket penetrometer test, sieve analysis (ASTM D422) and unconfined compressive strength (ASTM D2166). 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 will be included on the Soil Boring Logs and Soil Laboratory Test Data, which are presented in Appendices B and C, respectively.

3.0 SUBSURFACE CONDITIONS

3.1 Subsurface Classification

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 various times of the year. A generalized soil profile of the subsurface conditions encountered across the site, beginning at the ground surface and extended downward, is as follows:

3.1.1 S. HURON PARKWAY (2025-009)

Surficial Material

In general, asphalt was encountered at boring locations SB-2026-126 to SB-2026-129, SB-2026-131, and SB-2026-132 with a thickness ranging between 5 and 8.5 inches. Concrete with a thickness of 10 inches was encountered at soil boring locations SB-2026-124 and SB-2026-125. Base material with a thickness ranging between 5 and 9 inches was encountered below the pavement section. At SB-2026-130, topsoil with a thickness of 6 inches was encountered at the surface. The thickness of the pavement and base material at each location is depicted in Table 3.1.1-1 below. Photos of cores are included in Appendix D.

Table 3.1.1-1 Pavement Section Material Thickness

Location ID	Asphalt (in)	Concrete (in)	Aggregate (in)
SB-2026-124	-	10.0	8.0
SB-2026-125	-	10.0	8.0
SB-2026-126	8.5	-	8.0
SB-2026-127	5.0	-	6.0
SB-2026-128	5.0	-	5.0
SB-2026-129	8.0	-	6.0
SB-2026-130	-	-	-
SB-2026-131	6.5	-	6.0
SB-2026-132	6.0	-	9.0

Stratum 1 – Clay (CL)

Clay material with variable amounts of sand and gravel was encountered below the surface material at all soil boring locations and extended to depths ranging between 8.5 and 20 feet below grade. The clay in this stratum was typically encountered as follows:

- Medium stiff to stiff up to depths ranging from 3.5 to 8.5 feet below grade; the standard penetration number ranged from 5 to 13 and averaged 9.
- Stiff to hard up to depths ranging from 18.5 to 20 feet below grade; the standard penetration number ranged from 15 to 30 and averaged 20.

Stratum 2 – Sand (SP)

Medium dense sand with gravel was encountered at SB-2026-128 below Stratum 1. This material extended to the termination depth of the boring at 10 feet below ground surface. The standard penetration number was 20.

3.1.2 ARBDORALE AND SHERWOOD STREETS (2025-011)

Surficial Material

In general, asphalt was encountered at all soil boring locations with a thickness ranging between 3 and 5.5 inches. Aggregate base material with a thickness ranging between 5 and 8 inches was encountered below the pavement section at all soil boring locations. The thickness of the pavement and base material at each location is depicted in Table 3.1.2-1 below. Photos of cores are included in Appendix D.

Table 3.1.2-1 Surficial Material Thickness

Location ID	Asphalt (in)	Aggregate (in)
SB-2026-108	3.0	6.0
SB-2026-109	3.0	6.0
SB-2026-110	3.0	6.0
SB-2026-111	5.5	6.0
SB-2026-112	4.5	8.0
SB-2026-113	3.0	8.0
SB-2026-114	3.0	5.0
SB-2026-115	4.0	5.0
SB-2026-116	5.0	5.0
SB-2026-117	4.5	8.0
SB-2026-118	3.5	6.0

Stratum 1 – Clay (CL)

Clay material with variable amounts of sand and gravel was encountered below the surface material at all soil boring locations and extended to depths of 10 feet below grade. The clay in this stratum was typically encountered as follows:

- Soft to stiff up to depths ranging from 3.5 to 8.5 feet below grade; the standard penetration number ranged from 4 to 11 and averaged 7.
- Stiff to hard up to depths of 10 feet below grade; the standard penetration number ranged from 10 to 37 and averaged 20.

3.1.3 INGALLS AND KINGSLEY STREETS (2025-012)

In general, asphalt was encountered at all the soil borings with a thickness ranging between 3 and 4 inches, with the exception of soil boring SB-2026-144, where 4 inches of brick was encountered. Concrete with a thickness ranging between 2 and 5 inches was encountered below the asphalt at SB-2026-142, SB-2026-143, SB-2026-146, SB-2026-151, SB-2026-152, SB-2026-153, and SB-2026-154. Aggregate was encountered at all soil boring locations with a thickness ranging between 8 and 12 inches, with exception of soil boring SB-2026-144, where 12 inches of sand was encountered below the brick. The thickness of the pavement and base material at each location is depicted in Table 3.1.3-1 below. Photos of cores are included in Appendix D.

Table 3.1.3-1 Surficial Material Thickness

Location ID	Asphalt (in)	Concrete (in)	Aggregate (in)
SB-2026-139	3.0	-	8.0
SB-2026-140	3.5	-	12.0
SB-2026-141	3.5	-	8.0
SB-2026-142	3.5	5.0	8.0
SB-2026-143	3.0	5.0	8.0
SB-2026-144*	-	-	-
SB-2026-145	3.5	-	8.0
SB-2026-146	3.5	2.0	8.0
SB-2026-147	4.0	-	8.0
SB-2026-148	3.5	-	8.0
SB-2026-149	4.0	-	8.0
SB-2026-150	3.5	-	8.0
SB-2026-151	4.0	3.0	8.0
SB-2026-152	3.5	3.0	8.0
SB-2026-153	3.5	3.0	8.0
SB-2026-154	4.0	3.0	8.0

* At SB-2026-144: 4 inches of brick over 12 inches of sand

Stratum 1 – Clay (CL)

Clay material with variable amounts of sand and gravel was encountered below the surface material at soil boring locations SB-2026-139, SB-2026-140, SB-2026-141, SB-2026-143, SB-2026-153, and SB-2026-154 and extended to depths of 3.5 feet below grade. The clay in this stratum was typically encountered as follows:

- Soft to medium stiff in borings SB-2026-141 and SB-2026-143 up to depths of 3.5 feet below grade; the standard penetration number ranged from 3 to 5 and averaged 4.
- Stiff to very stiff in borings SB-2026-139, SB-2026-140, SB-2026-153, and SB-2026-154 up to depths of 3.5 feet below grade; the standard penetration number ranged from 15 to 20 and averaged 17.

Stratum 2 – Sand/Gravel (SP, SW, SC, GP)

Sand and gravel was encountered below the surface material or Stratum 1 in all borings and extended to depths ranging from 6.5 to 10 feet below the surface. This stratum was typically encountered as follows:

- Loose sand and gravel up to depths generally ranging from 3.5 to 6 feet; the loose sand extended to 10 feet in borings SB-2026-142 and SB-2026-143. The standard penetration number ranged from 2 to 10 and averaged 7.
- Medium dense to very dense sand in all borings except SB-2026-142 and SB-2026-143 to a depth of 10 feet; the standard penetration number ranged from 11 to 65 and averaged 25.

3.1.4 PACKARD STREET (2025-013)

In general, asphalt was encountered at all the soil boring locations with a thickness ranging between 4 and 7 inches. Aggregate base material with a thickness ranging between 8 and 10 inches was encountered below the pavement section at all soil boring locations. The thickness of the pavement and base material at each location is depicted in Table 3.1.4-1 below. Photos of cores are included in Appendix D.

Table 3.1.4-1 Surficial Material Thickness

Location ID	Asphalt (in)	Concrete (in)	Aggregate (in)
SB-2026-119	6.5	-	10.0
SB-2026-120	5.0	-	10.0
SB-2026-121	4.0	-	10.0
SB-2026-122	6.0	-	10.0
SB-2026-123	7.0	-	8.0

Stratum 1 – Sand/Gravel (SW, GP)

Sand and gravel was encountered below the surface material in borings SB-2026-121 and SB-2026-123 and extended to depths ranging from 3.5 feet to 6.5 feet below the surface. This stratum was typically encountered as follows:

- Loose to medium dense sand up to depths ranging from 3.5 to 6 feet; the standard penetration number ranged from 7 to 1 and averaged 12.
- Very dense gravel in boring SB-2026-121 to a depth of 6.5 feet; the standard penetration number was 50+ over 6 inches.

Stratum 2 – Clay (CL)

Clay material with variable amounts of sand and gravel was encountered below the surface material and Stratum 1 at all soil boring locations except SB-2026-121 and extended to depths of 10 feet below grade. The clay in this stratum was typically encountered as follows:

- Soft to stiff up to depths ranging from 6 to 10 feet below grade; the standard penetration number ranged from 6 to 14 and averaged 9.
- Stiff to hard up to depths of 10 feet below grade; the standard penetration number ranged from 17 to 36 and averaged 22.

3.2 Groundwater Observations

Groundwater was encountered in boring SB-2026-128 at a depth of 10 feet below grade; groundwater was not encountered during or after drilling operations in any remaining borings. However, the lack of groundwater encountered in the borings is not necessarily an indicator of the actual water levels due to the presence of cohesive soils and their inherent property of low permeability. Typically, the level where the soil color changes from brown to gray is generally



indicative of the long-term groundwater level. This color change from brown to gray was observed in two soil borings, SB-2026-124 and SB-2026-125, at a depth of about 13.5 feet, which may indicate the depth of the long-term groundwater. As this color change was not observed in any of the remaining borings, we conclude the long-term water table is generally below the depth of the remaining explored borings.

Water levels (or lack thereof) 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, and the elevation and quantity of the perched groundwater, is likely to vary throughout the year depending on the amount of precipitation, runoff, evaporation and percolation in the area, as well as on the water level in the surface water bodies in the vicinity affecting the groundwater flow pattern. Long-term monitoring with monitoring wells or piezometers such is necessary to accurately assess the groundwater levels and fluctuation patterns at the site.

4.0 ANALYSES AND RECOMMENDATIONS

The following sections discuss in detail the results of our analyses and geotechnical recommendations for the design and construction of the water main replacement and resurfacing projects along S. Huron Parkway, Arbordale and Sherwood Streets, Ingalls and Kingsley Streets, and Packard Street.

4.1 Design Soil Profile and Soil Modulus

Based on our review of the subsurface soil conditions, we have developed the following design soil profiles for each area of this project. These soil profiles will be used in the completion of the analysis.

Table 4.1-1 Soil Profile (S. Huron Parkway - 2025-009)

Layer No	Soil Description	Depth (ft)	Total Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)
1a	Medium stiff to stiff clay	1.0-8.5	130	1000	0
1b	Stiff to hard clay	8.5-18.5	135	2500	0
2	Medium dense sand	18.5-20.0	125	0	30

Table 4.1-2 Soil Profile (Arbordale/Sherwood - 2025-011)

Layer No	Soil Description	Depth (ft)	Total Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)
1a	Medium stiff to stiff clay	1.0-6.0	130	750	0
1b	Stiff to hard clay	6.0-10.0	135	2500	0

Table 4.1-3 Soil Profile (Ingalls/Kingsley - 2025-012)

Layer No	Soil Description	Depth (ft)	Total Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)
1	Soft to medium stiff clay	1.0-3.5	125	500	0
2a	Loose sand and gravel	3.5-6.0	120	0	28
2b	Med. dense sand	6.0-10.0	125	0	30

Table 4.1-4 Soil Profile (Packard Street - 2025-013)

Layer No	Soil Description	Depth (ft)	Total Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)
1	Loose to med. dense sand	1.0-3.5	120	0	28
2a	Medium stiff to stiff clay	3.5-6.0	130	1000	0
2b	Stiff to hard clay	6.0-10.0	135	2500	0

Based on the observed subsurface conditions, the anticipated invert of the proposed water main may be between 5 and 10 feet below existing grades. At this depth, the bearing soils at each project site consist of medium stiff to stiff lean clay or loose to medium dense sand. This material is suitable for support of the water main, provided the bearing subgrade is properly prepared. All loose soils should be compacted in place, and any soft clays should be removed and replaced with compacted engineered fill.

Based upon our review of the existing soil conditions in the project areas, the pavement design may use an estimated modulus for subgrade reaction of 120 pounds per cubic inch (pci) for clay soils. Where native sand soils were encountered near the surface, an estimated modulus for subgrade reaction of 175 pci may be used on sand soils compacted in place. For a subgrade composed of well-compacted engineered fill, a modulus of subgrade reaction of 200 pci may be used. The recommended modulus for subgrade reaction assumes the soil conditions encountered in the borings are representative of the soil conditions within the proposed pavement areas. This also assumes site preparation recommendations presented in Section 4.2 is followed to provide subgrade conditions suitable for pavement support.

4.2 Site Preparation

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 construction areas. The bearing soils should be observed by a geotechnical engineer and visually checked for suitability as a bearing soil. Depending on the time of year of construction and the Contractor’s Means and Methods at controlling surface water, it may be possible that additional site subgrade material within development/construction areas will be considered unsuitable and/or unstable and will be required to be stripped during site preparation activities.

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 Maximum Dry Density (MDD) within 2 percent of the Optimum Moisture Content (OMC). Soft, loose, or saturated soils that are difficult to compact may require an undercut and replacement with engineered fill for stabilization. The on-site Geotechnical Engineer or their designated representative should determine required undercut depths if necessary.

Existing utilities or underground structures in conflict with the proposed construction location 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 4.3.

4.3 Fill Placement and Engineered Fill Requirements

All new 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. All fine-grained fill soils should be checked for plasticity index and liquid limit before placement. Cohesive fill materials should have a liquid limit less than 40 percent and plasticity index less than 20 percent (i.e., non-expansive). On site clay soils observed appear to be suitable for re-use as fill.

Coarse crushed granular material is recommended as fill for utility trench backfill, undercut areas, and as aggregate base material. The granular material shall consist of natural aggregate materials that meet the gradation requirements of MDOT 21AA or engineer approved equivalent. Typical lift thickness utilized for this material is 8 inches. In utility trenches, granular backfill material should extend at least two pipe diameters above the pipe's crown. As an alternative to imported granular fill, excavated soil material may be recompacted back in place so long as the excavated soil material is determined to be suitable. If a working platform for construction is needed, and prior to footing excavation, it is recommended that at least 6 inches of granular base material meeting the gradation requirements MDOT 21AA aggregate.

Fill should be compacted to 98 percent of the Standard Proctor or 95 percent of Modified Proctor MDD and should be compacted within 2 percent of OMC. Fill materials should be placed in horizontal lifts and adequately keyed into stripped and scarified subgrade soils and adjacent fill. A qualified geotechnical consultant should be retained to monitor fill placement in order to assure compaction requirements are achieved. Soil 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 recompacted to meet project requirements.

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 a 9-inch loose lift thickness (8-inch compacted); assuming appropriately weighted and ballasted compaction equipment is utilized. In confined areas where hand operated compaction equipment is required, 4-inch and 6-inch loose lift thickness 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.

To minimize corrosion of existing metallic utilities, topsoil, organic soils, existing fill soils, and mixtures of sand and clay should not be placed adjacent to metallic utilities. In addition, buried utilities of different metallic materials should be electrically isolated from each other to minimize galvanic corrosion.

4.4 Lateral Earth Pressures

Lateral earth pressures (horizontal stresses) are developed during soil displacements (strains). Lateral earth pressure for design is determined utilizing an earth pressure coefficient to relate horizontal stress to vertical stress. Three separate earth pressure coefficients are used to determine lateral earth pressure: at-rest; active; and passive.

Applied horizontal stress can be determined by multiplying the appropriate earth pressure coefficient by the applied vertical stress. Earth pressure coefficients are a direct function of the internal friction of a soil. Laboratory testing to determine internal friction angles for soil was not performed. However, index laboratory and field data obtained can be

utilized to approximate earth pressure coefficients based upon empirical relationships. Lateral earth pressure coefficients for soils encountered during this investigation are provided in Table 4.4-1.

Table 4.4-1 Recommended Lateral Earth Parameters

Soil Parameters	Engineered Granular Soil	Existing Soils			
		Loose Sand	M. Dense Sand	Soft Clay	Stiff Clay
Total Unit Weight (pcf)	125	120	125	125	130
Internal Friction Angle (°)	30.0	28	30.0	20.0	25.0
At-rest Pressure Coefficient, K_0	0.50	0.55	0.50	0.65	0.6
Active Pressure Coefficient, K_a	0.30	0.35	0.30	0.50	0.4
Passive Pressure Coefficient, K_p	3.0	2.8	3.0	2.0	2.5
Concrete/Soil Friction Coefficient	0.5	0.5	0.5	0.0	0.0
Concrete/Soil Adhesion Factor	0.0	0.0	0.0	0.2	0.2

For retaining walls, to minimize lateral earth pressures, MSG recommends the zone adjacent to any walls be backfilled with granular fill. To provide effective drainage, a zone of free-draining gravel (similar to MDOT 6AA gravel) should be used directly adjacent to the walls with a minimum thickness of 18 inches. This granular zone should drain to weepholes or a pipe drainage system to prevent hydrostatic pressures from developing against the walls.

The type of backfill beyond the free-draining granular zone will govern the magnitude of the pressure to be used for structural design. Clean granular soil is recommended as the backfill material against retaining structures to minimize lateral earth pressure. Lateral earth pressure coefficients for engineered fill are provided in Table 4.4-1.

The coefficients of friction between concrete and soil subgrade were also provided in the table above. These coefficients can be used for evaluating the factor of safety against sliding of foundations. The recommended minimum safety factor against sliding is 1.5. Passive pressure resistance of the top 3 feet below final grade should generally be neglected in designing the retaining walls to resist sliding failure due to the freeze-thaw cycle that can significantly weaken soils and the potential for the material to be removed at a future date for installation of utilities or other construction-related activities.

Any additional lateral earth pressure due to surcharge loading conditions including, but not limited to, floor loads, column loads, sloping backfill, traffic loading, and construction loads, should be incorporated into the wall design. MSG should be retained to perform other detailed geotechnical evaluations for retaining walls, as necessary, including but not limited to, settlement and global stability. A detailed geotechnical evaluation and structural design of retaining walls is beyond the scope of this report.

5.0 CONSTRUCTION CONSIDERATIONS

5.1 Groundwater Control

Groundwater was encountered in boring SB-2026-128 at a depth of 10 feet below grade; groundwater was not encountered during or after drilling operations in any remaining borings. We anticipate the long-term groundwater table is situated at a depth below the explored soil borings. Perched water may be possible in utility trenches or above clay layers. Typically, the groundwater elevation fluctuates and is higher during the winter and spring and lower in summer and early fall. It should be noted that groundwater seepage will have a significant impact on construction activities.

Excavations will likely be situated above the long-term groundwater level. In cohesive soils, significant problems associated with groundwater seepage into the excavation are not anticipated. The Contractor should be prepared to address general water infiltration (i.e., pumping water from prepared sumps). However, if there are water-bearing granular layers encountered during construction, there may be more groundwater infiltrating the excavation than the boring logs indicate. Special dewatering procedures in this case could include, but are not limited to, downhole pumps in slotted casings or well points. The loss of fines through dewatering should be carefully monitored to protect against the settlement of surrounding structures and utilities to remain in place. A temporary earth retention system may be used to limit groundwater pathways through the granular fill soils that allow infiltration into the excavations. The use of steel sheeting embedded in the clay layer can cut off groundwater flow to reduce infiltration. It would then be feasible to control groundwater by standard sump pit and pumping techniques.

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 final design of any temporary earth support structures for excavations, as well as the associated dewatering and groundwater control plan, will be completed by the Contractor.

5.2 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 medium stiff cohesive soil and loose to medium dense sand. Based upon the data obtained, we anticipate OSHA will classify site clay soils as Type B soil, which will require maximum temporary excavation slopes of 1(H):1(V). Loose sand where encountered will classify as Type C soil, which will require maximum temporary excavation slopes of 1.5(H):1(V). Flatter slopes will be required if seepage conditions occur during construction are encountered. However, due to the location of the excavations, the bore pit excavations are anticipated to be vertical, requiring temporary shoring.

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, requiring temporary shoring, or extending into bedrock be done under the supervision of a qualified engineer.

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:

- Forty-one (41) soil 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 and pavement construction should be prepared and/or reviewed by MSG's Geotechnical Engineer of Record. In addition, we recommend site subgrade preparation, fill compaction activities, and installation activities should be monitored by MSG's geotechnical engineer or his/her representative.

This report and evaluation reflect 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.

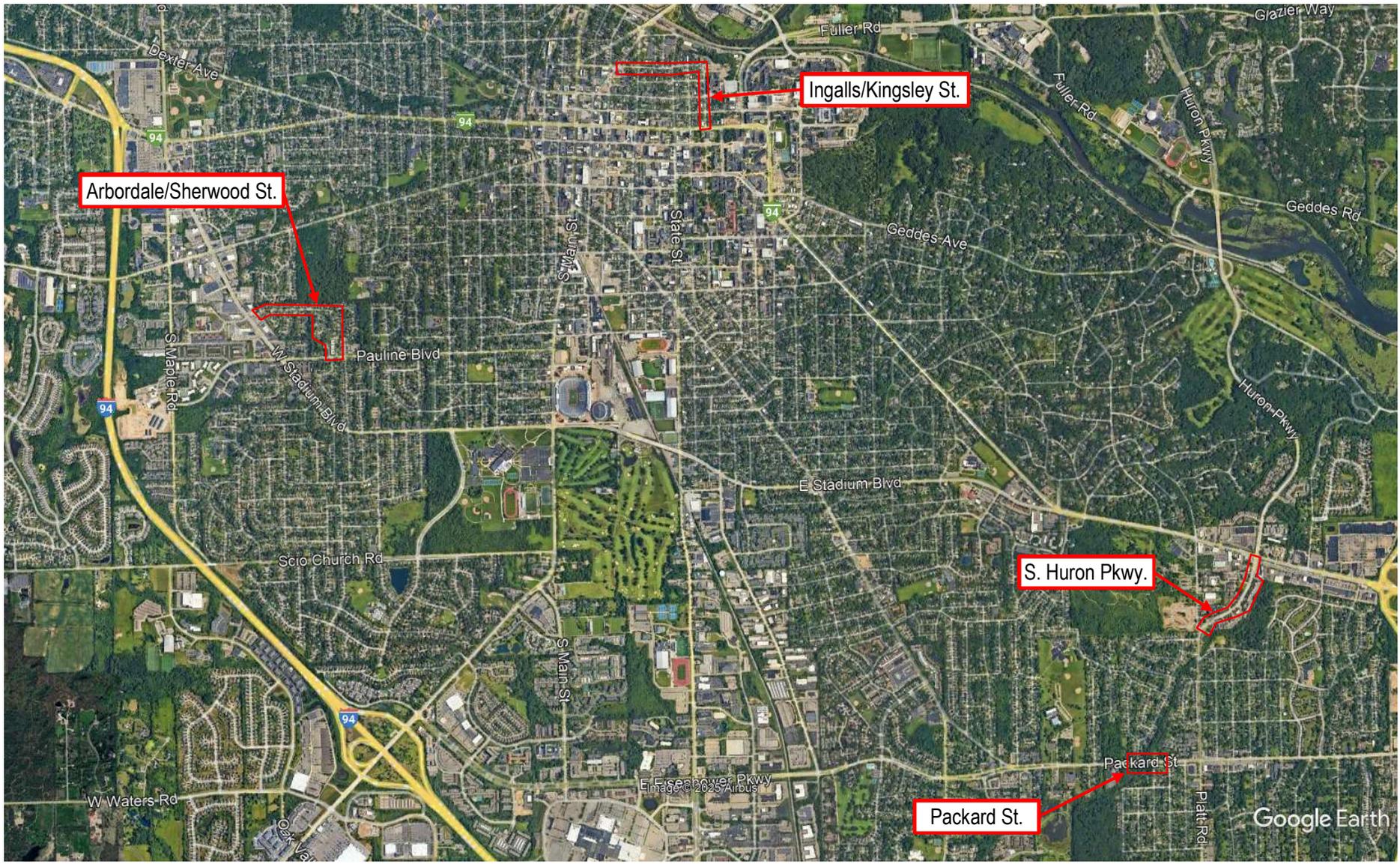


Figure 1: Site Location Map

2025 Water Main and Resurfacing Projects
 S. Huron Pkwy., Arbordale/Sherwood St., Ingalls/Kingsley St., & Packard St.
 Ann Arbor, Michigan
 MSG Project Number: 401.2300021.013



2365 Haggerty Road South
 Canton, Michigan 48188
 Tel: 734-397-3100
 Fax: 734-397-3131
 www.MannikSmithGroup.com

No Scale
 Map Adapted from
 Google Earth 2025 ©



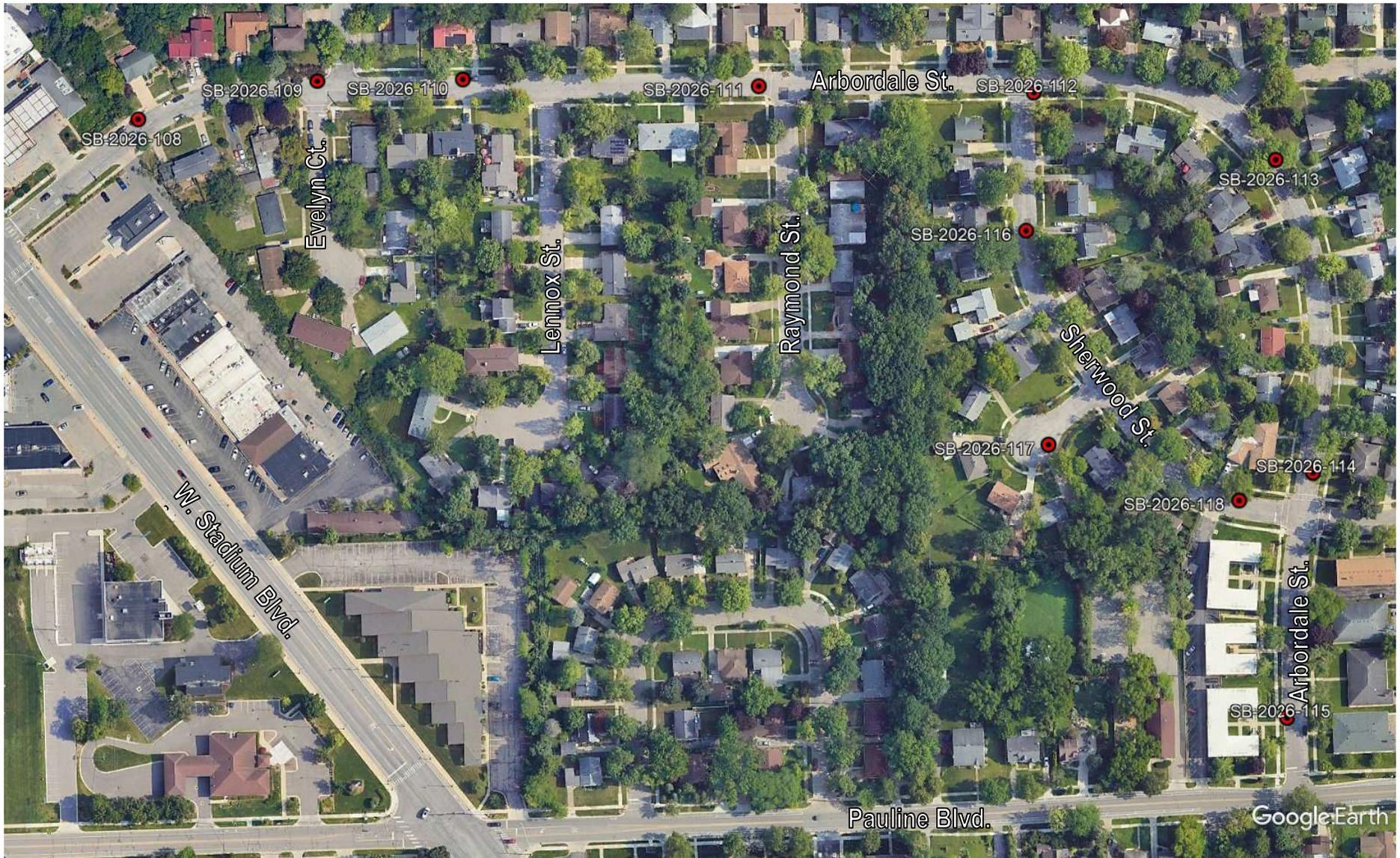


Figure 2B: Soil Boring Location Map (Arbordale/Sherwood St.)

2025 Water Main and Resurfacing Projects
 S. Huron Pkwy., Arbordale/Sherwood St., Ingalls/Kingsley St., & Packard St.
 Ann Arbor, Michigan
 MSG Project Number: 401.2300021.013



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 Map Adapted from
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GENERAL SOIL SAMPLE NOTES

Unless noted, all terms utilized herein refer to the Standard Definitions presented in ASTM D653.

Standard Penetration Test (ASTM D1586): A 2.0-inch outside-diameter (O.D.), 1-3/8-inch inside-diameter (I.D.) split barrel sampler is driven into undisturbed soil by means of a 140-pound weight falling freely through a vertical distance of 30 inches. The sampler is normally driven three successive 6-inch increments. The total number of blows required for the final 12 inches of penetration is the Standard Penetration Resistance (N).

COHESIVE SOILS			COHESIONLESS SOILS	
Consistency	Approximate Range of N	Unconfined Compressive Strength (psf)	Density Classification	Approximate Range of N
Very Soft	0 – 1	Below 500	Very Loose	0 – 4
Soft	2 – 4	500 – 1,000	Loose	5 – 10
Medium Stiff	5 – 8	1,000 – 2,000	Medium Dense	11 – 30
Stiff	9 – 15	2,000 – 4,000	Dense	31 – 50
Very Stiff	16 – 30	4,000 – 8,000	Very Dense	Over 50
Hard	31 – 50	8,000 – 16,000		
Very Hard	Over 50	Over 16,000		

CLASSIFICATION

The major soil constituent is the principal noun, i.e. sand, silt, gravel. The second major soil constituent and other minor constituents are reported as follows:

Second Major Constituent (percent by weight)	Minor Constituents (percent by weight)
Trace – 1% to 11%	Trace – 1% to 11%
Adjective – 12% to 35% (clayey, silty, etc.)	Little – 12% to 22%
And – Over 35%	Some – 23% to 33%

PARTICLE SIZES

Boulders	- Greater than 12 inches (305 mm)
Cobbles	- 3 inches (76.2 mm) to 12 inches (305 mm)
Gravel:	Coarse - 3/4 inches (19.05 mm) to 3 inches (76.2 mm)
	Fine - No. 4 (4.75 mm) to 3/4 inches (19.05 mm)
Sand:	Coarse - No. 10 (2.00 mm) to No. 4 (4.75 mm)
	Medium - No. 40 (0.425 mm) to No. 10 (2.00 mm)
	Fine - No. 200 (0.074 mm) to No. 40 (0.425 mm)
Silt	- 0.005 mm to 0.074 mm
Clay	- Less than 0.005 mm

If clay content is sufficient so that clay dominates soil properties, clay becomes the principal noun with the other major soil constituent as modifier: i.e., silty clay. Other minor soil constituents may be included in accordance with the classification breakdown for cohesionless soils: i.e., silty clay, trace sand, little gravel.

If sand particle size is greater than 11% by weight of the total sample weight, the adjective (i.e., fine, medium or coarse) is added to the soil description for the sand portion of the sample, provided sand is the major or second major constituent.

SAMPLE DESIGNATIONS

AS	Auger Sample - directly from auger flight	ST	Shelby Tube Sample - 3-inch diameter unless otherwise noted
BS	Miscellaneous Samples - Bottle or Bag	PS	Piston Sample - 3-inch diameter unless otherwise noted
MC	Macro-Core Sample - 2.25-inch O.D., 1.75-inch I.D., 5 feet long polyethylene liner	RC	Rock Core - NX core unless otherwise noted
LB	Large-Bore (Micro-Core) Sample - 1-inch diameter, 2 feet long polyethylene liner	CS	CME Continuous Sample - 5 feet long, 3-inch diameter unless otherwise noted
SS	Split Spoon Sample - 1-inch or 2-inch O.D.	HA	Hand Auger
LS	Split Spoon (SS) Sampler with 3 feet long liner insert	DP	Drive Point
NR	No Recovery	CM	Coring Machine

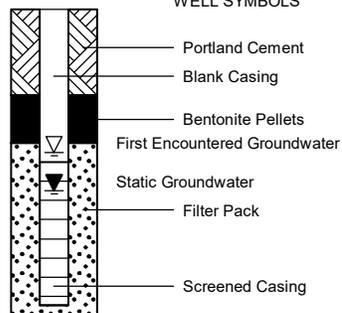
MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LESS THAN 15% FINES	GW		WELL-GRADED GRAVELS WITH OR WITHOUT SAND
		GRAVELS WITH 15% OR MORE FINES	GP		POORLY-GRADED GRAVELS WITH OR WITHOUT SAND
			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
		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		PEAT AND OTHER HIGHLY ORGANIC SOILS	

SYMBOLS KEY

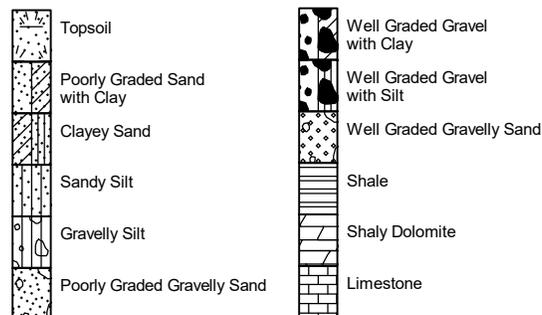
SAMPLE TYPES

- Grab Sample
- Rock Core
- Split Spoon sample, 1 inch or 2 inch outer-diameter.
- Shelby Tube sample - 3 inch diameter unless otherwise noted.

WELL SYMBOLS



OTHER MATERIAL SYMBOLS



BORING / WELL LOG KEY



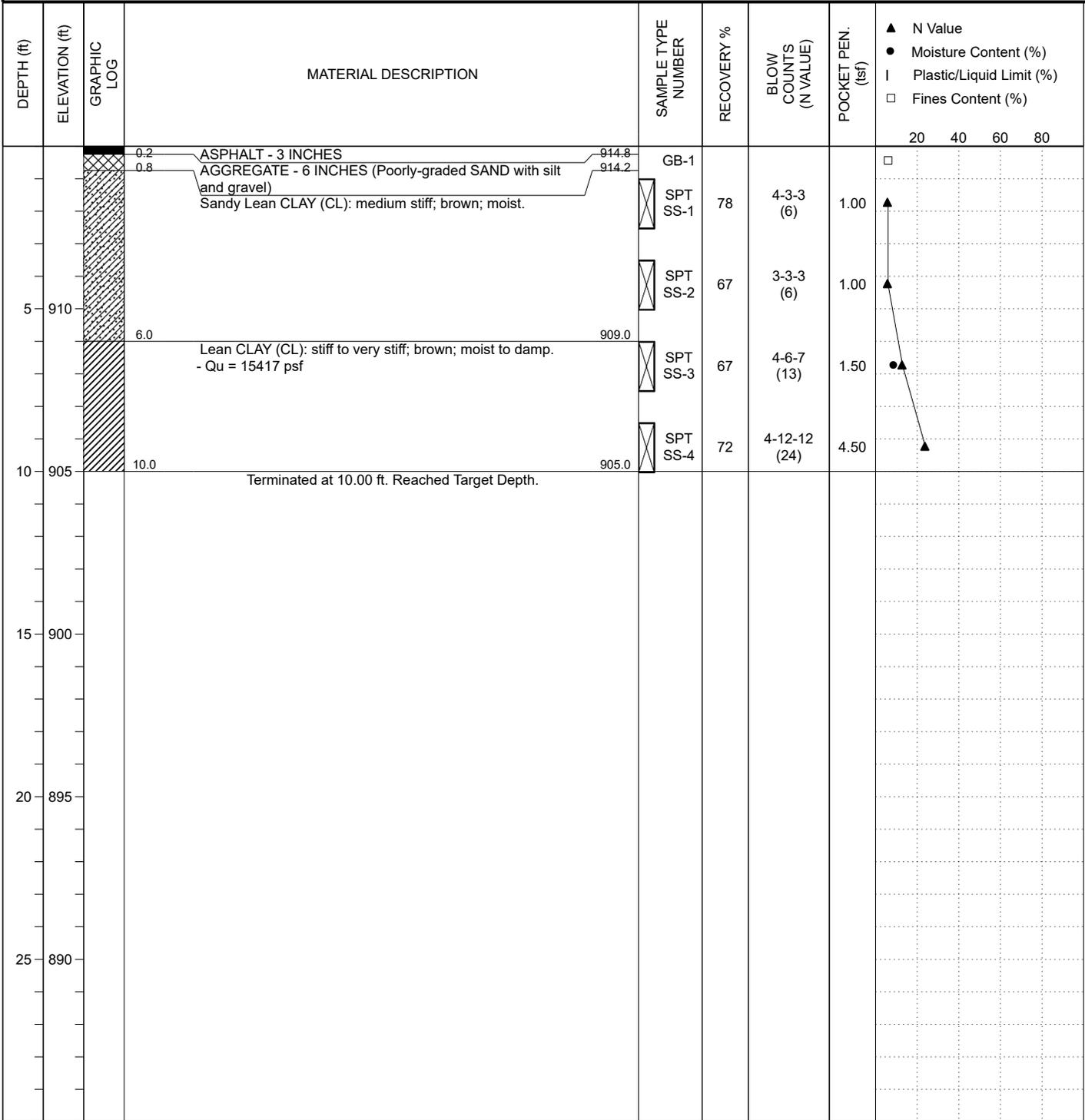
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BOREHOLE NUMBER SB-2026-108

Sheet 1 of 1

CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.013
DATE STARTED 09-10-2025 **COMPLETED** 09-10-2025
DRILLING CONTRACTOR The Mannik & Smith Group Inc.
DRILLING METHOD Direct Push
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME 2025 Water Main and Resurfacing Projects
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 281448.7 ft E: 13284039.7 ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 915.0 ft **FINAL DEPTH** 10.0 ft
LOGGED BY JR **CHECKED BY** AMN
REMARKS Coord. & Elev. Estimated from Google Earth.



LEGEND:

- ▽ AT TIME OF DRILLING _____
- ▼ AT END OF DRILLING _____
- ▽ AFTER DRILLING _____



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BOREHOLE NUMBER SB-2026-109

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CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.013
DATE STARTED 09-10-2025 **COMPLETED** 09-10-2025
DRILLING CONTRACTOR The Mannik & Smith Group Inc.
DRILLING METHOD Direct Push
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME 2025 Water Main and Resurfacing Projects
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 281503.3 ft E: 13284289.3 ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 918.0 ft **FINAL DEPTH** 10.0 ft
LOGGED BY JR **CHECKED BY** AMN
REMARKS Coord. & Elev. Estimated from Google Earth.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	<ul style="list-style-type: none"> ▲ N Value ● Moisture Content (%) Plastic/Liquid Limit (%) □ Fines Content (%)
								20 40 60 80
		0.2	ASPHALT - 3 INCHES					
		0.8	AGGREGATE - 6 INCHES					
			Sandy Lean CLAY (CL): stiff to very stiff; brown; damp.	GB-1				
				SPT SS-1	33	12-9-5 (14)	2.00	
5	913		- At 3.5 ft to 5 ft: medium stiff	SPT SS-2	33	4-4-4 (8)	1.00	
			- Qu = 13297 psf	SPT SS-3	72	5-8-4 (12)	4.00	□
10	908		Terminated at 10.00 ft. Reached Target Depth.	SPT SS-4	67	6-9-11 (20)	4.00	
15	903							
20	898							
25	893							

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- ▽ AFTER DRILLING _____



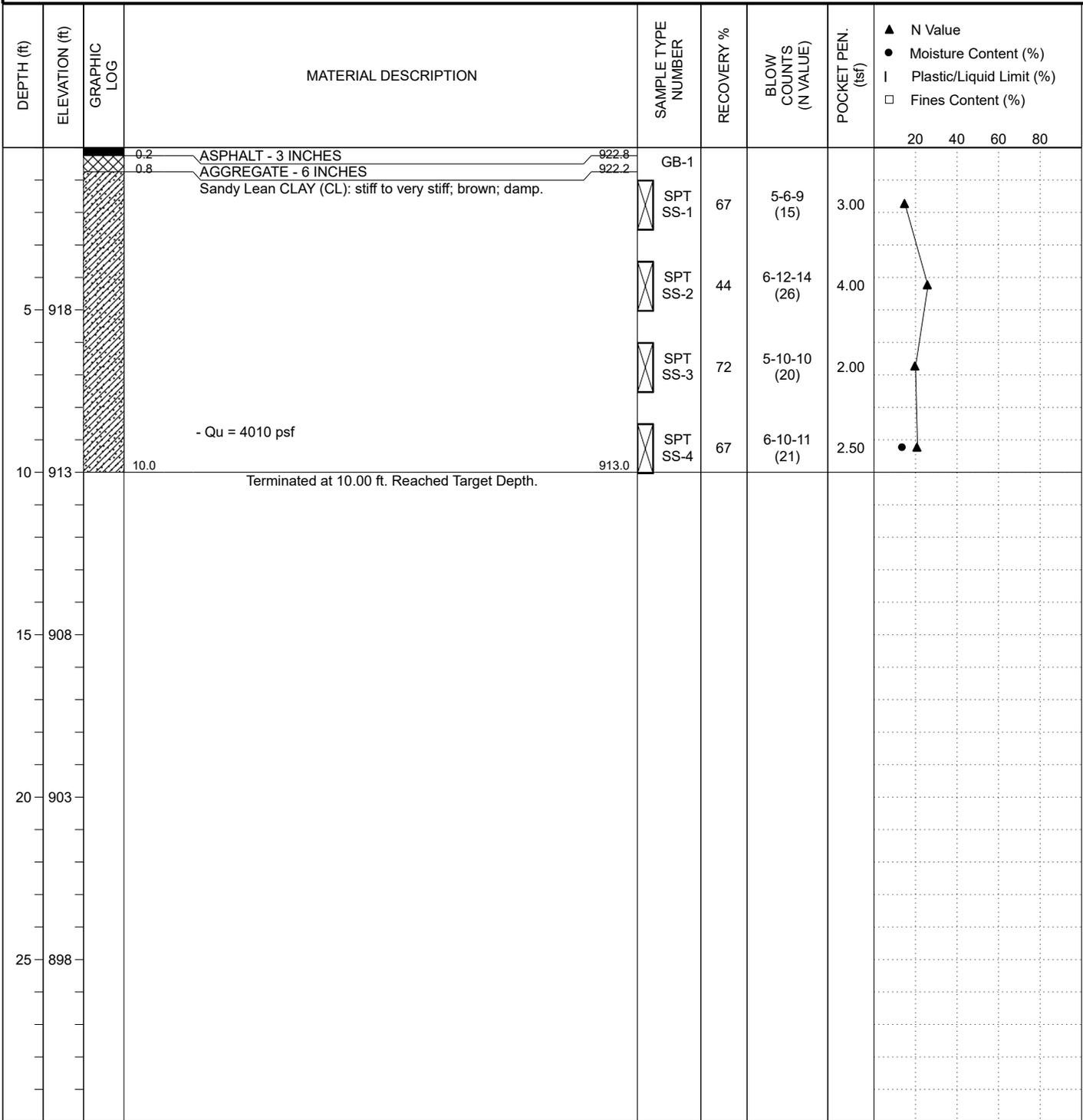
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BOREHOLE NUMBER SB-2026-110

Sheet 1 of 1

CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.013
DATE STARTED 09-10-2025 **COMPLETED** 09-10-2025
DRILLING CONTRACTOR The Mannik & Smith Group Inc.
DRILLING METHOD Direct Push
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME 2025 Water Main and Resurfacing Projects
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 281507.5 ft E: 13284492.4 ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 923.0 ft **FINAL DEPTH** 10.0 ft
LOGGED BY JR **CHECKED BY** AMN
REMARKS Coord. & Elev. Estimated from Google Earth.



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BOREHOLE NUMBER SB-2026-111

Sheet 1 of 1

CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.013
DATE STARTED 09-10-2025 **COMPLETED** 09-10-2025
DRILLING CONTRACTOR The Mannik & Smith Group Inc.
DRILLING METHOD Direct Push
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME 2025 Water Main and Resurfacing Projects
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 281501.1 ft E: 13284905.5 ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 929.0 ft **FINAL DEPTH** 10.0 ft
LOGGED BY JR **CHECKED BY** AMN
REMARKS Coord. & Elev. Estimated from Google Earth.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	<ul style="list-style-type: none"> ▲ N Value ● Moisture Content (%) Plastic/Liquid Limit (%) □ Fines Content (%)
								20 40 60 80
	928.5	0.5	ASPHALT - 5.5 INCHES	GB-1				
	928.0	1.0	AGGREGATE - 6 INCHES					
			Sandy Lean CLAY (CL): very stiff to hard; brown; damp.	SPT SS-1	72	12-12-12 (24)	4.00	▲
5	924			SPT SS-2	67	12-12-15 (27)	4.50	▲
				SPT SS-3	78	10-15-18 (33)	4.50	▲
10	919	10.0	Terminated at 10.00 ft. Reached Target Depth.	SPT SS-4	67	13-15-20 (35)	4.50	▲
15	914							
20	909							
25	904							

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APPENDIX 1-50



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Sheet 1 of 1

CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.013
DATE STARTED 08-26-2025 **COMPLETED** 08-26-2025
DRILLING CONTRACTOR The Mannik & Smith Group Inc.
DRILLING METHOD Direct Push
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME 2025 Water Main and Resurfacing Projects
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 281495.1 ft E: 13285289.3 ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 930.0 ft **FINAL DEPTH** 10.0 ft
LOGGED BY RD **CHECKED BY** AMN
REMARKS Coord. & Elev. Estimated from Google Earth.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	<ul style="list-style-type: none"> ▲ N Value ● Moisture Content (%) Plastic/Liquid Limit (%) □ Fines Content (%)
								20 40 60 80
	929.6	0.4	ASPHALT - 4.5 INCHES	GB-1				
	929.0	1.0	AGGREGATE - 8 INCHES					
			Sandy Lean CLAY (CL): stiff; brown; damp.	SPT SS-1	78	6-3-6 (9)	1.00	▲
5	925			SPT SS-2	89	6-6-5 (11)	2.00	▲
			- Qu = 4866 psf	SPT SS-3	78	3-3-6 (9)	2.00	● □
10	920	10.0	Terminated at 10.00 ft. Reached Target Depth.	SPT SS-4	72	5-7-8 (15)	2.00	▲

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BOREHOLE NUMBER SB-2026-113

Sheet 1 of 1

CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.013
DATE STARTED 08-26-2025 **COMPLETED** 08-26-2025
DRILLING CONTRACTOR The Mannik & Smith Group Inc.
DRILLING METHOD Direct Push
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME 2025 Water Main and Resurfacing Projects
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 281404.2 ft E: 13285627.6 ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 932.0 ft **FINAL DEPTH** 10.0 ft
LOGGED BY RD **CHECKED BY** AMN
REMARKS Coord. & Elev. Estimated from Google Earth.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	<ul style="list-style-type: none"> ▲ N Value ● Moisture Content (%) Plastic/Liquid Limit (%) □ Fines Content (%)
								20 40 60 80
		0.2	ASPHALT - 3 INCHES	GB-1				
		0.9	AGGREGATE - 8 INCHES (Well-graded GRAVEL with sand)					
			Sandy Lean CLAY (CL): medium stiff; brown; damp.	SPT SS-1	83	2-3-3 (6)	1.00	
		3.5	Sandy Lean CLAY (CL): very stiff to hard; brown; moist.	SPT SS-2	78	7-8-12 (20)	4.50	
5	927			SPT SS-3	67	8-9-12 (21)	4.50	
			- Qu = 7935 psf	SPT SS-4	67	8-10-12 (22)	4.50	
10	922	10.0	Terminated at 10.00 ft. Reached Target Depth.					
15	917							
20	912							
25	907							

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BOREHOLE NUMBER SB-2026-114

Sheet 1 of 1

CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.013
DATE STARTED 08-26-2025 **COMPLETED** 08-26-2025
DRILLING CONTRACTOR The Mannik & Smith Group Inc.
DRILLING METHOD Direct Push
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME 2025 Water Main and Resurfacing Projects
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 280969.6 ft E: 13285682.9 ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 931.0 ft **FINAL DEPTH** 10.0 ft
LOGGED BY RD **CHECKED BY** AMN
REMARKS Coord. & Elev. Estimated from Google Earth.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	▲ N Value ● Moisture Content (%) Plastic/Liquid Limit (%) □ Fines Content (%)
			0.2 ASPHALT - 3 INCHES 930.8 0.7 AGGREGATE - 5 INCHES 930.3 Sandy Lean CLAY (CL): stiff to very stiff; brown; damp.	GB-1				
	926		- Qu = 12801 psf	SPT SS-1	89	5-5-5 (10)	2.00	▲
				SPT SS-2	89	6-7-10 (17)	2.50	▲
				SPT SS-3	72	6-8-10 (18)	4.00	● □
				SPT SS-4	83	4-6-8 (14)	3.75	▲
10	921	10.0	Terminated at 10.00 ft. Reached Target Depth.					
15	916							
20	911							
25	906							

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BOREHOLE NUMBER SB-2026-115

Sheet 1 of 1

CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.013
DATE STARTED 08-26-2025 **COMPLETED** 08-06-2025
DRILLING CONTRACTOR The Mannik & Smith Group Inc.
DRILLING METHOD Direct Push
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME 2025 Water Main and Resurfacing Projects
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 280628.7 ft E: 13285649.2 ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 937.0 ft **FINAL DEPTH** 10.0 ft
LOGGED BY RD **CHECKED BY** AMN
REMARKS Coord. & Elev. Estimated from Google Earth.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	<ul style="list-style-type: none"> ▲ N Value ● Moisture Content (%) Plastic/Liquid Limit (%) □ Fines Content (%)
								20 40 60 80
		0.3	ASPHALT - 4 INCHES	936.7				
		0.8	AGGREGATE - 5 INCHES (Well-graded GRAVEL with sand)	936.2	GB-1			
			Sandy Lean CLAY (CL): soft to medium stiff; brown; moist.					
5	932			SPT SS-1	78	2-2-2 (4)		
				SPT SS-2	67	4-3-4 (7)	1.00	
		6.0	Lean CLAY (CL): very stiff to hard; brown; damp. - Qu = 10955 psf	931.0				
				SPT SS-3	89	6-8-12 (20)	4.25	
10	927	10.0	Terminated at 10.00 ft. Reached Target Depth.	927.0			4.50	
				SPT SS-4	83	6-10-12 (22)		
15	922							
20	917							
25	912							

LEGEND:

- ▽ AT TIME OF DRILLING _____
- ▼ AT END OF DRILLING _____
- ▽ AFTER DRILLING _____



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BOREHOLE NUMBER SB-2026-116

Sheet 1 of 1

CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.013
DATE STARTED 09-10-2025 **COMPLETED** 09-10-2025
DRILLING CONTRACTOR The Mannik & Smith Group Inc.
DRILLING METHOD Direct Push
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME 2025 Water Main and Resurfacing Projects
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 281303.0 ft E: 13285280.0 ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 933.0 ft **FINAL DEPTH** 10.0 ft
LOGGED BY JR **CHECKED BY** AMN
REMARKS Coord. & Elev. Estimated from Google Earth.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	<ul style="list-style-type: none"> ▲ N Value ● Moisture Content (%) Plastic/Liquid Limit (%) □ Fines Content (%)
			ASPHALT - 5 INCHES					
	932.6		AGGREGATE - 5 INCHES					
	932.2		Sandy Lean CLAY (CL): stiff to very stiff; brown; moist.	GB-1				
				SPT SS-1	67	4-5-7 (12)	2.00	
				SPT SS-2	78	6-7-9 (16)	2.50	
5	928		Lean CLAY (CL): hard; brown; moist.	SPT SS-3	72	10-15-18 (33)	4.50	
				SPT SS-4	78	12-16-21 (37)	4.50	
			- Qu = 13848 psf					
10	923		Terminated at 10.00 ft. Reached Target Depth.					
15	918							
20	913							
25	908							

LEGEND:

- ▽ AT TIME OF DRILLING _____
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BOREHOLE NUMBER SB-2026-117

Sheet 1 of 1

CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.013
DATE STARTED 08-26-2025 **COMPLETED** 08-26-2025
DRILLING CONTRACTOR The Mannik & Smith Group Inc.
DRILLING METHOD Direct Push
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME 2025 Water Main and Resurfacing Projects
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 281005.6 ft E: 13285315.0 ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 936.0 ft **FINAL DEPTH** 10.0 ft
LOGGED BY RD **CHECKED BY** AMN
REMARKS Coord. & Elev. Estimated from Google Earth.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	<ul style="list-style-type: none"> ▲ N Value ● Moisture Content (%) Plastic/Liquid Limit (%) □ Fines Content (%)
								20 40 60 80
	935.6	0.4	ASPHALT - 4.5 INCHES	GB-1				
	935.0	1.0	AGGREGATE - 8 INCHES (Poorly-graded SAND with gravel) Sandy Lean CLAY (CL): medium stiff to stiff; brown; moist.	SPT SS-1	89	2-2-3 (5)	1.00	
5	931			SPT SS-2	78	6-6-8 (14)	2.00	
	930.0	6.0	Lean CLAY (CL): very stiff to hard; brown; moist. - Qu = 12943 psf	SPT SS-3	67	7-10-12 (22)	4.50	
10	926	10.0	Terminated at 10.00 ft. Reached Target Depth.	SPT SS-4	78	6-10-10 (20)	4.50	
15	921							
20	916							
25	911							

LEGEND:

- ▽ AT TIME OF DRILLING _____
- ▼ AT END OF DRILLING _____
- ▽ AFTER DRILLING _____



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BOREHOLE NUMBER SB-2026-118

Sheet 1 of 1

CLIENT City of Ann Arbor
PROJECT NUMBER 401.2300021.013
DATE STARTED 08-26-2025 **COMPLETED** 08-26-2025
DRILLING CONTRACTOR The Mannik & Smith Group Inc.
DRILLING METHOD Direct Push
EQUIPMENT Geoprobe 7822DT **Operator** JDF

PROJECT NAME 2025 Water Main and Resurfacing Projects
PROJECT LOCATION Ann Arbor, Michigan
POSITION N: 280930.3 ft E: 13285580.1 ft (NAD 1983 Michigan South (Intl Feet))
SURFACE ELEVATION 930.0 ft **FINAL DEPTH** 10.0 ft
LOGGED BY RD **CHECKED BY** AMN
REMARKS Coord. & Elev. Estimated from Google Earth.

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	<ul style="list-style-type: none"> ▲ N Value ● Moisture Content (%) Plastic/Liquid Limit (%) □ Fines Content (%)
								20 40 60 80
		0.3	ASHPALT - 3.5 INCHES	929.7				
		0.8	AGGREGATE - 6 INCHES	929.2	GB-1			
			Sandy Lean CLAY (CL): medium stiff to stiff; brown; moist.	SPT SS-1	78	2-4-3 (7)		
		3.5	Lean CLAY (CL): stiff to very stiff; brown; moist.	926.5	SPT SS-2	89	5-6-6 (12)	4.00
5	925			SPT SS-3	89	7-5-7 (12)	4.00	
			- Qu = 9787 psf	SPT SS-4	78	5-5-5 (10)	4.00	
10	920	10.0	Terminated at 10.00 ft. Reached Target Depth.	920.0				
15	915							
20	910							
25	905							

LEGEND:

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- ▽ AFTER DRILLING _____



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SUMMARY OF LABORATORY RESULTS



CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan

LAB SUMMARY - GINT STD US LAB.GDT - 10/27/25 10:07 - \\MSGFILES\SRVMSGDATA\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\13 BUNDLE\GEGOTECH\LAB\1013 LAB TESTING WATER MAIN.GPJ

Boring No. / Sample No.	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Classification	Water Content (%)	Bulk Density (pcf)	Saturation (%)	Specific Gravity
SB-2026-108 / GB-1	0.5	NP	NP	NP	19	6	SP-SM				
SB-2026-108 / SS-3	6.0							8.8	145.1		
SB-2026-109 / SS-3	6.0				9.525	65		12.3	137.7		
SB-2026-110 / SS-4	8.5							13.8	126.0		
SB-2026-112 / SS-3	6.0				19	65		12.5	145.3		
SB-2026-113 / GB-1	0.5	NP	NP	NP	25	0	GW				
SB-2026-113 / SS-4	8.5							12.3	129.9		
SB-2026-114 / SS-3	6.0				19	64		11.7	134.5		
SB-2026-115 / GB-1	0.5	NP	NP	NP	25	1	GW				
SB-2026-115 / SS-3	6.0							12.8	137.3		
SB-2026-116 / SS-4	8.5							11.5	135.2		
SB-2026-117 / GB-1	0.5	NP	NP	NP	19	2	SP				
SB-2026-117 / SS-3	6.0							14.0	136.1		
SB-2026-118 / SS-4	8.5							11.5	137.3		
SB-2026-119 / GB-1	0.5	NP	NP	NP	25	1	GW				
SB-2026-119 / SS-3	6.0							13.2	140.3		
SB-2026-120 / GB-1	0.5	NP	NP	NP	19	3	SP				
SB-2026-120 / SS-4	8.5							13.7	139.5		
SB-2026-121 / SS-1	1.0	NP	NP	NP	19	11	SW-SM				
SB-2026-122 / GB-1	0.5	NP	NP	NP	25	3	GP				
SB-2026-123 / SS-1	1.0	NP	NP	NP	19	7	SP-SM				
SB-2026-123 / SS-3	6.0							15.1	132.1		
SB-2026-124 / GB-1	0.5	NP	NP	NP	19	4	GW				
SB-2026-124 / SS-5	13.5							17.9	132.3		
SB-2026-125 / SS-5	13.5				9.525	81					
SB-2026-125 / SS-6	18.5							18.1	135.0		
SB-2026-126 / GB-1	0.5	NP	NP	NP	25	3	SP				
SB-2026-126 / SS-3	6.0							16.6	131.6		
SB-2026-128 / SS-3	6.0							17.4	132.7		
SB-2026-128 / SS-4	8.5	NP	NP	NP	25	11	SP-SM				
SB-2026-130 / SS-3	6.0				9.525	87		15.6	129.1		
SB-2026-139 / GB-1	0.5	NP	NP	NP	19	2	GW				
SB-2026-140 / SS-3	6.0	NP	NP	NP	19	8	SW-SM				
SB-2026-141 / SS-3	6.0	NP	NP	NP	19	11	SW-SM				
SB-2026-142 / SS-3	6.0	NP	NP	NP	25	7	GP-GM				
SB-2026-143 / SS-3	6.0	NP	NP	NP	25	9	GW-GM				
SB-2026-144 / SS-1	1.0	NP	NP	NP	19	12	SW-SM				
SB-2026-145 / SS-3	6.0	NP	NP	NP	19	9	SW-SM				
SB-2026-146 / SS-3	6.0	NP	NP	NP	25	6	SP-SM				
SB-2026-147 / SS-3	6.0	NP	NP	NP	25	8	SW-SM				
SB-2026-148 / SS-1	1.0	NP	NP	NP	19	17	SM				
SB-2026-148 / SS-3	6.0	NP	NP	NP	25	12	SP-SM				
SB-2026-149 / GB-1	0.5	NP	NP	NP	25	0	GW				



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GRAIN SIZE DISTRIBUTION

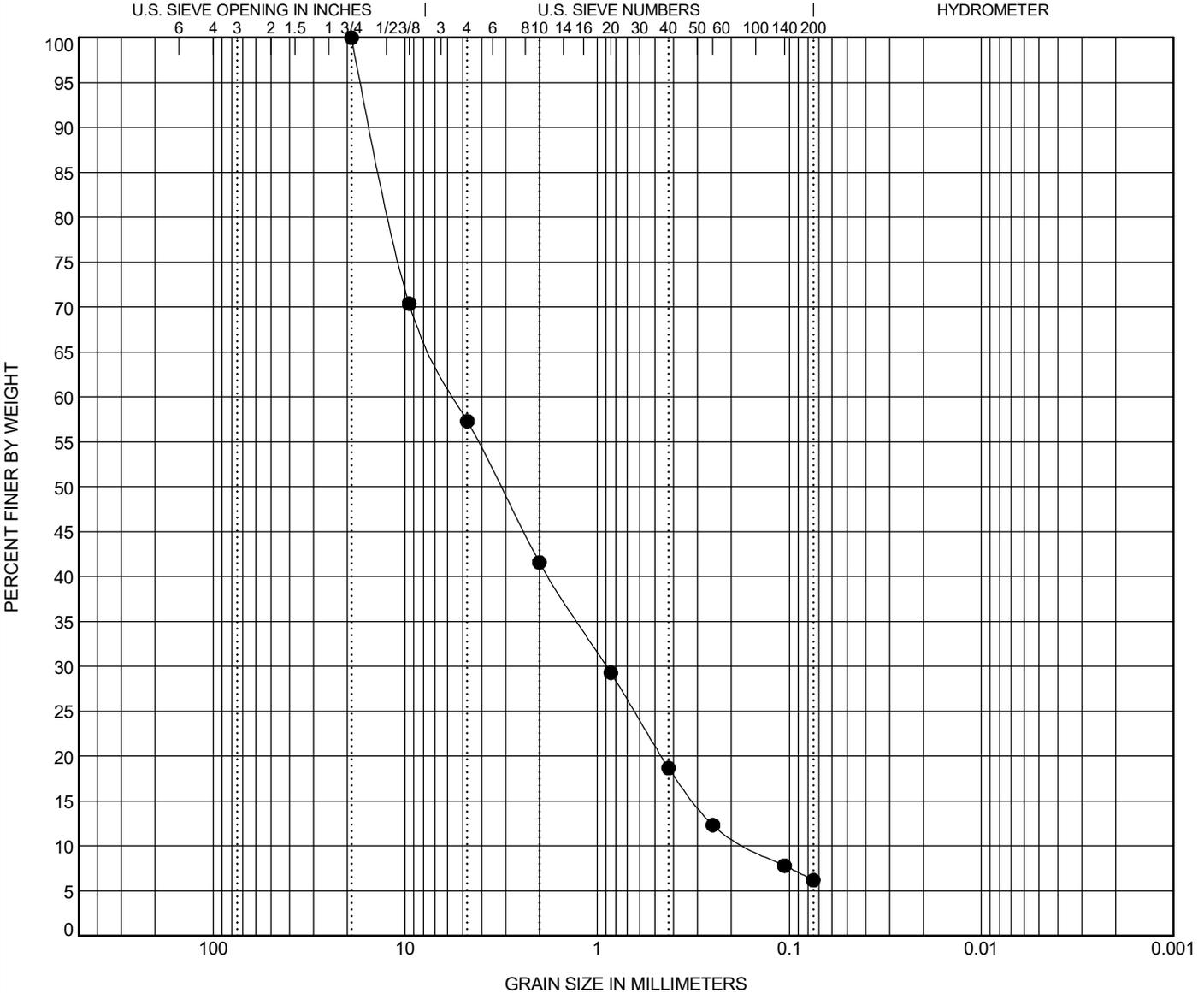


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification					LL	PL	PI	Cc	Cu
● SB-2026-108 / GB-1 0.5	POORLY GRADED SAND with SILT and GRAVEL (SP-SM)					NP	NP	NP	0.91	34.15

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SB-2026-108 / GB-1 0.5	19	5.48	0.892	0.16	42.7	51.1	6.2	

GRAIN SIZE - GINT STD. US LAB.GDT - 10/6/25 14:01 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\13 BUNDLE\GEO\TECH\LAB\013 LAB TESTING WATER MAIN.GPJ



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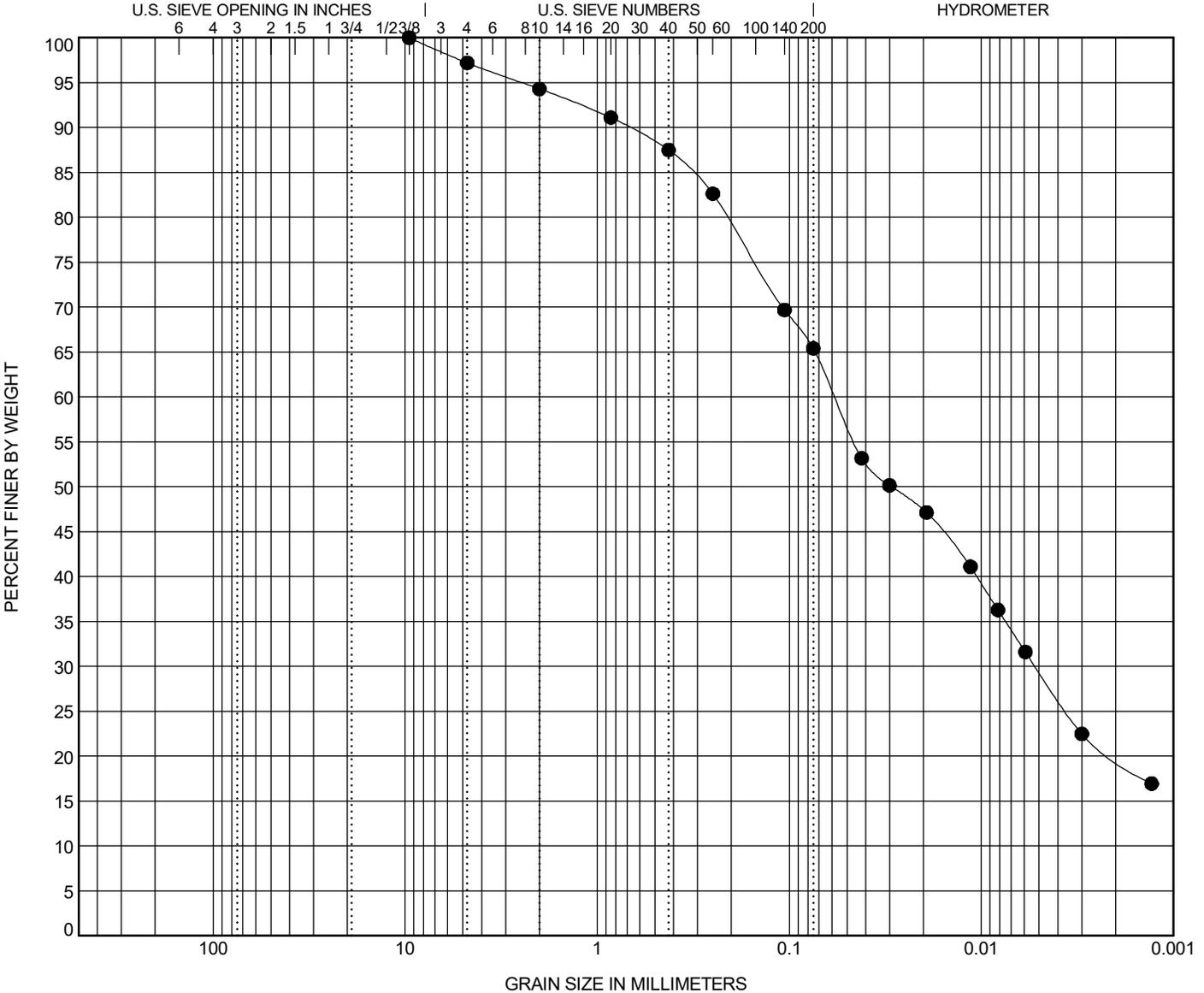


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu		
● SB-2026-109 / SS-3	6.0							
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SB-2026-109 / SS-3	6.0	9.525	0.058	0.005	2.8	31.8	45.6	19.8

GRAIN SIZE - GINT STD. US LAB.GDT - 10/6/25 14:02 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\13 BUNDLE\GEO\TECH\LAB\013 LAB TESTING WATER MAIN.GPJ



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GRAIN SIZE DISTRIBUTION

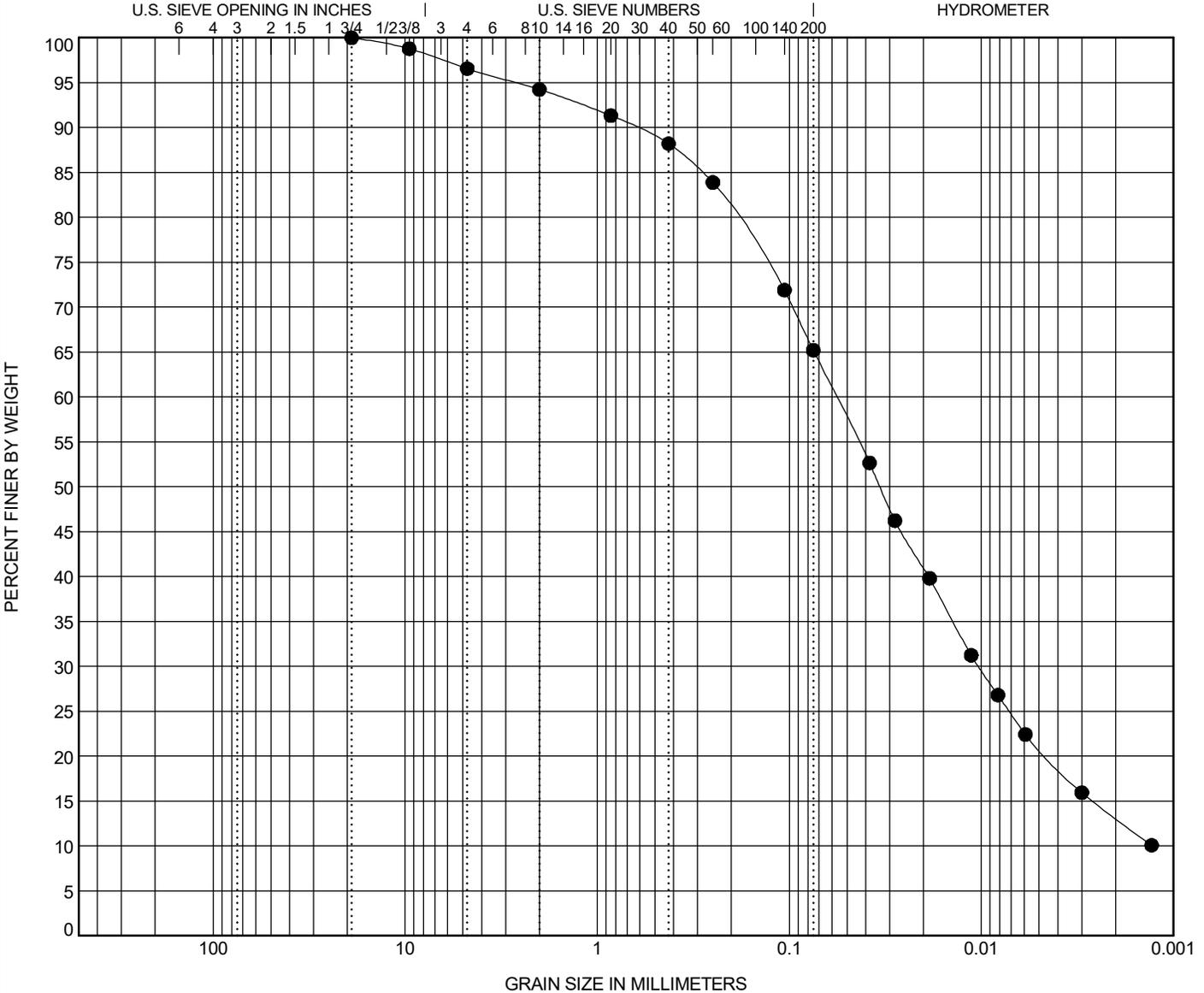


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification					LL	PL	PI	Cc	Cu
● SB-2026-112 / SS-3 6.0										
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
● SB-2026-112 / SS-3 6.0	19	0.057	0.01		3.4	31.4	52.1	13.1		

GRAIN SIZE - GINT STD. US LAB.GDT - 10/6/25 14:02 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\13 BUNDLE\GEO\TECH\LAB\013 LAB TESTING WATER MAIN.GPJ



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GRAIN SIZE DISTRIBUTION

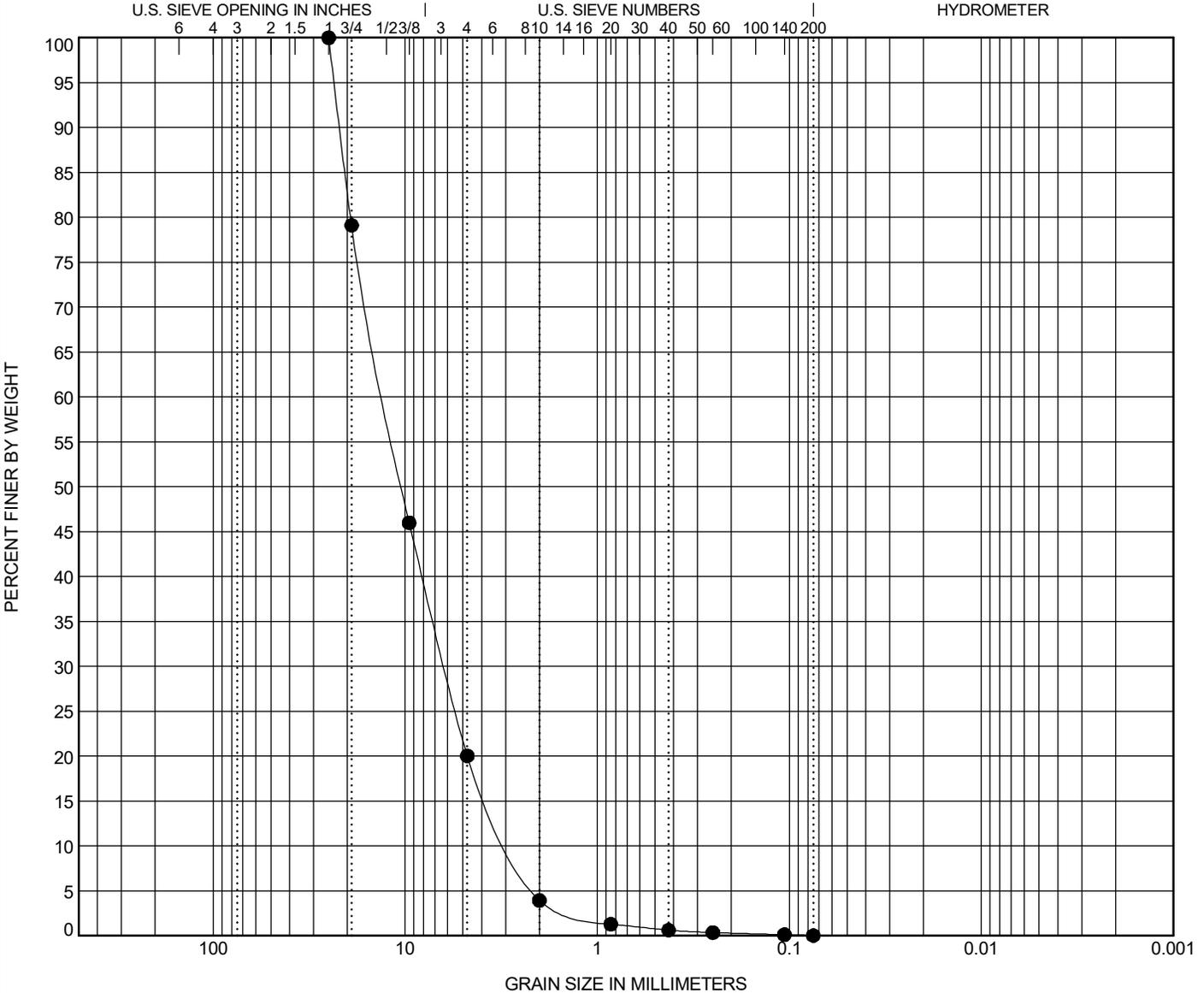


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● SB-2026-113 / GB-1 0.5	WELL-GRADED GRAVEL with SAND (GW)	NP	NP	NP	1.09	4.61

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SB-2026-113 / GB-1 0.5	25	12.754	6.204	2.769	80.0	20.0	0.0	0.0

GRAIN SIZE - GINT STD. US LAB.GDT - 10/6/25 14:03 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\13 BUNDLE\GEOTECH\LAB\013 LAB TESTING WATER MAIN.GPJ



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GRAIN SIZE DISTRIBUTION

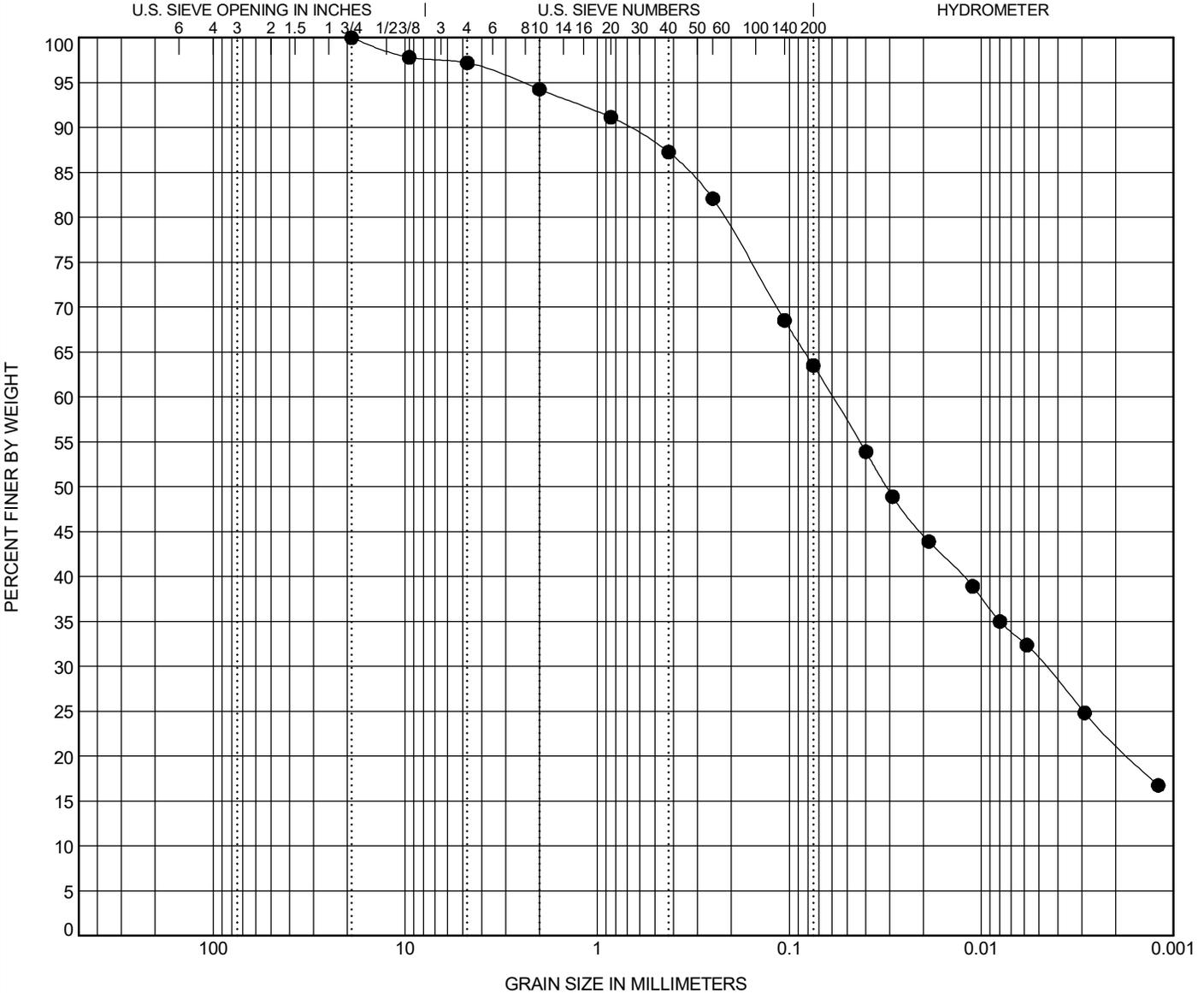


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification					LL	PL	PI	Cc	Cu
●	SB-2026-114 / SS-3	6.0									
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	SB-2026-114 / SS-3	6.0	19	0.06	0.005	2.8	33.7	42.1	21.4		

GRAIN SIZE - GINT STD. US LAB.GDT - 10/6/25 14:03 - W:\PROJECTS\2023\401.2300021-00199\401.2300021.000\ADMIN\13 BUNDLE\GEO\TECH\LAB\013 LAB TESTING WATER MAIN.GPJ



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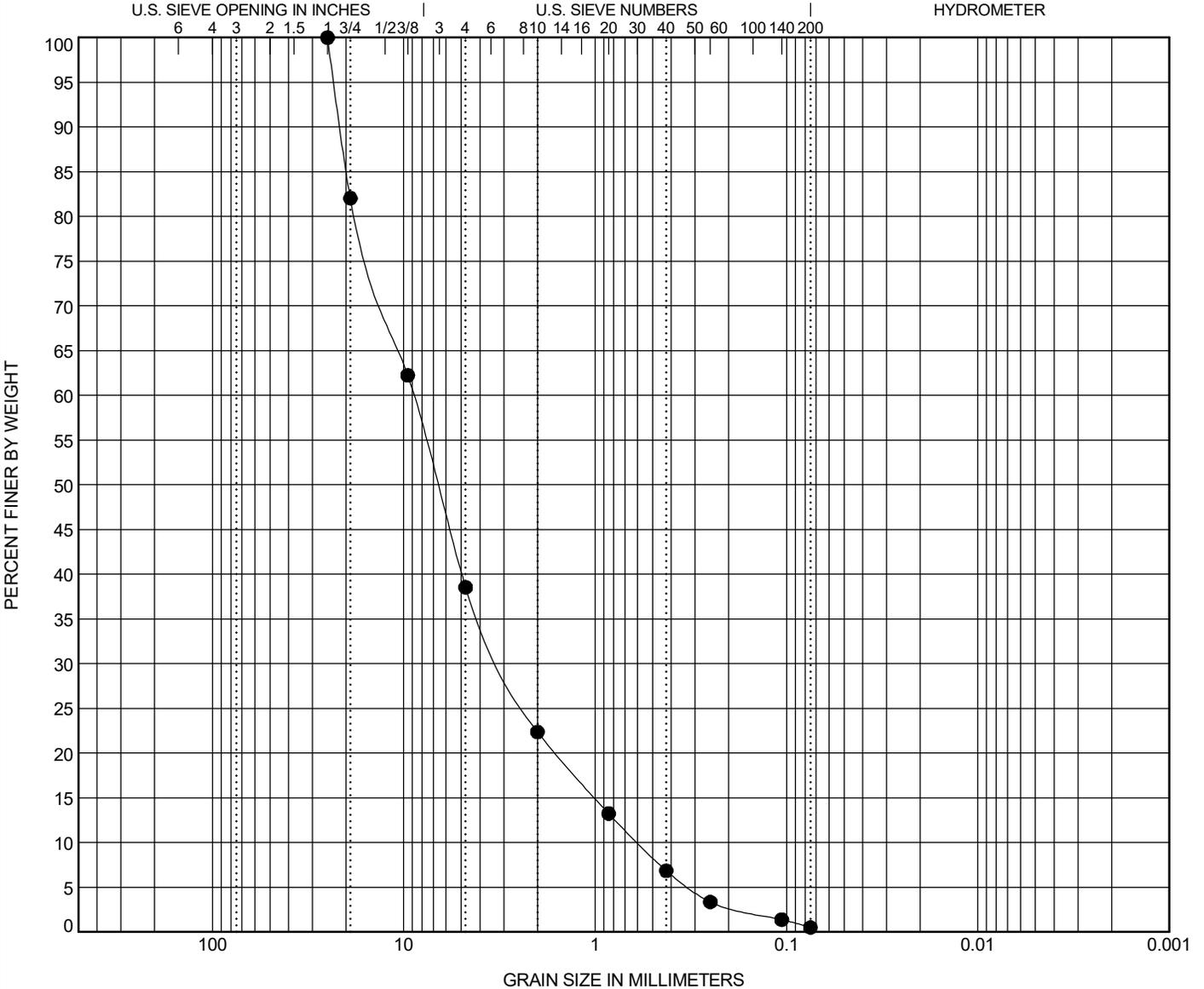


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● SB-2026-115 / GB-1 0.5	WELL-GRADED GRAVEL with SAND (GW)	NP	NP	NP	1.70	14.93

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SB-2026-115 / GB-1 0.5	25	8.918	3.008	0.597	61.5	38.0	0.5	

GRAIN SIZE - GINT STD. US LAB.GDT - 10/6/25 14:04 - W:\PROJECTS\2023\401.2300021-00199\401.2300021.000\ADMIN\13 BUNDLE\GEO\TECH\LAB\013 LAB TESTING WATER MAIN.GPJ



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GRAIN SIZE DISTRIBUTION

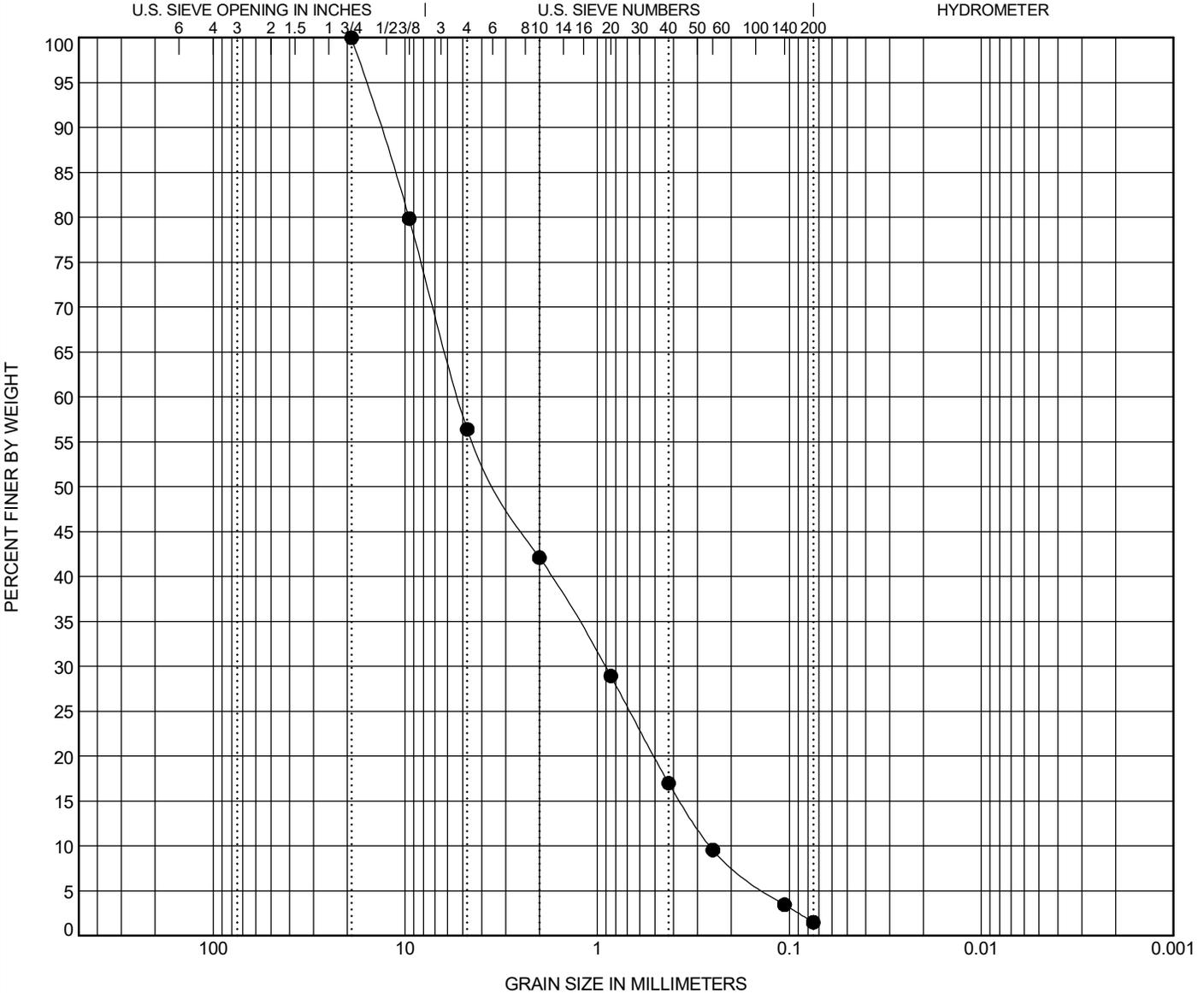


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● SB-2026-117 / GB-1 0.5	POORLY GRADED SAND with GRAVEL (SP)	NP	NP	NP	0.61	20.49

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SB-2026-117 / GB-1 0.5	19	5.285	0.91	0.258	43.6	54.9	1.5	

GRAIN SIZE - GINT STD. US LAB. GDT - 10/6/25 14:04 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\13 BUNDLE\GEO\TECH\LAB\013 LAB TESTING WATER MAIN.GPJ



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UNCONFINED COMPRESSION TEST



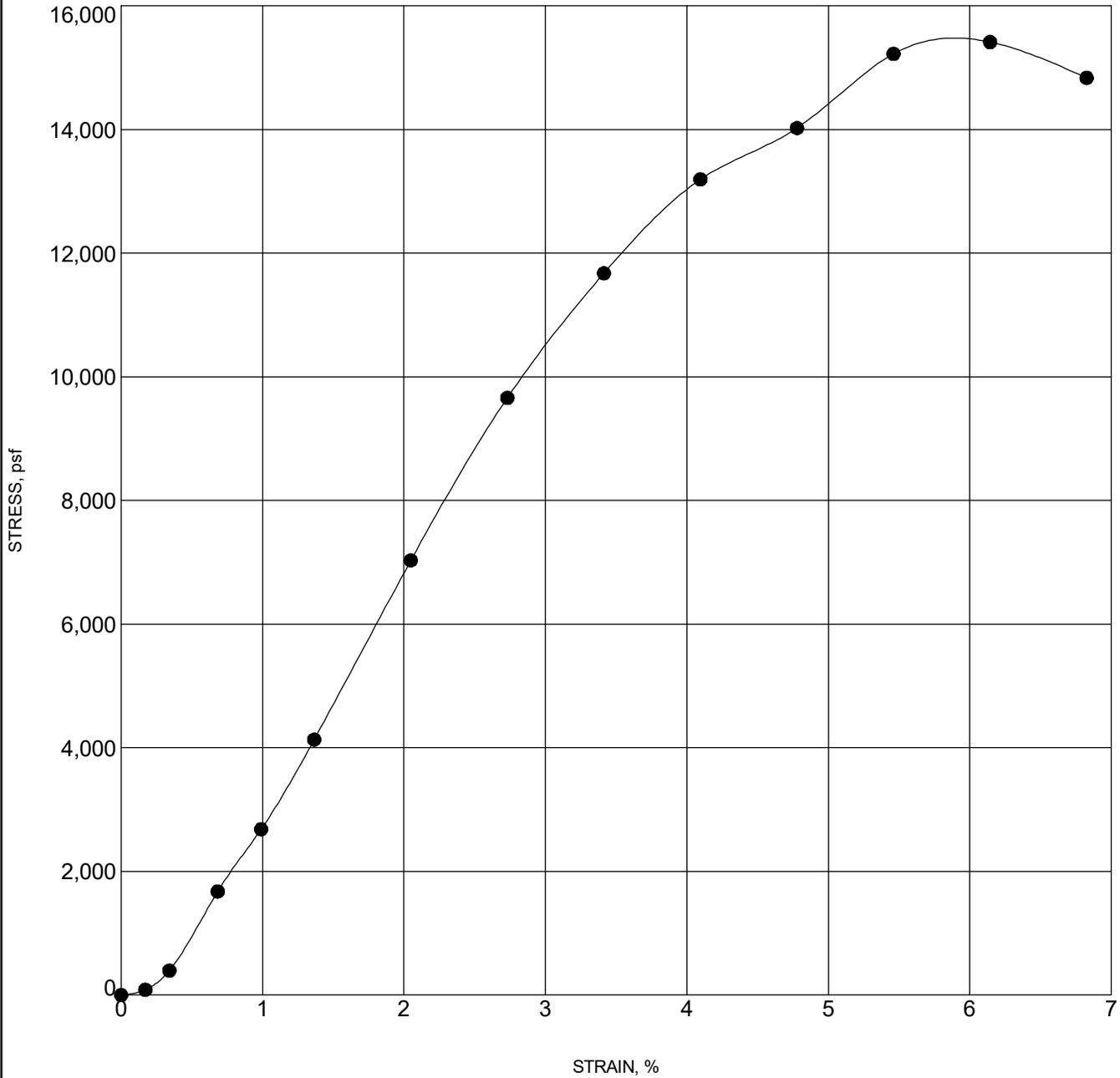
CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan

UNCONFINED - GINT STD US LAB.GDT - 10/6/25 13:15 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\13 BUNDLE\GEO\TECH\LAB\013 LAB TESTING WATER MAIN.GPJ



Specimen Identification	Classification	UCS (psf)	γ_d	MC%
● SB-2026-108 / SS-3 6.0		15417	133.4	8.8



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UNCONFINED COMPRESSION TEST

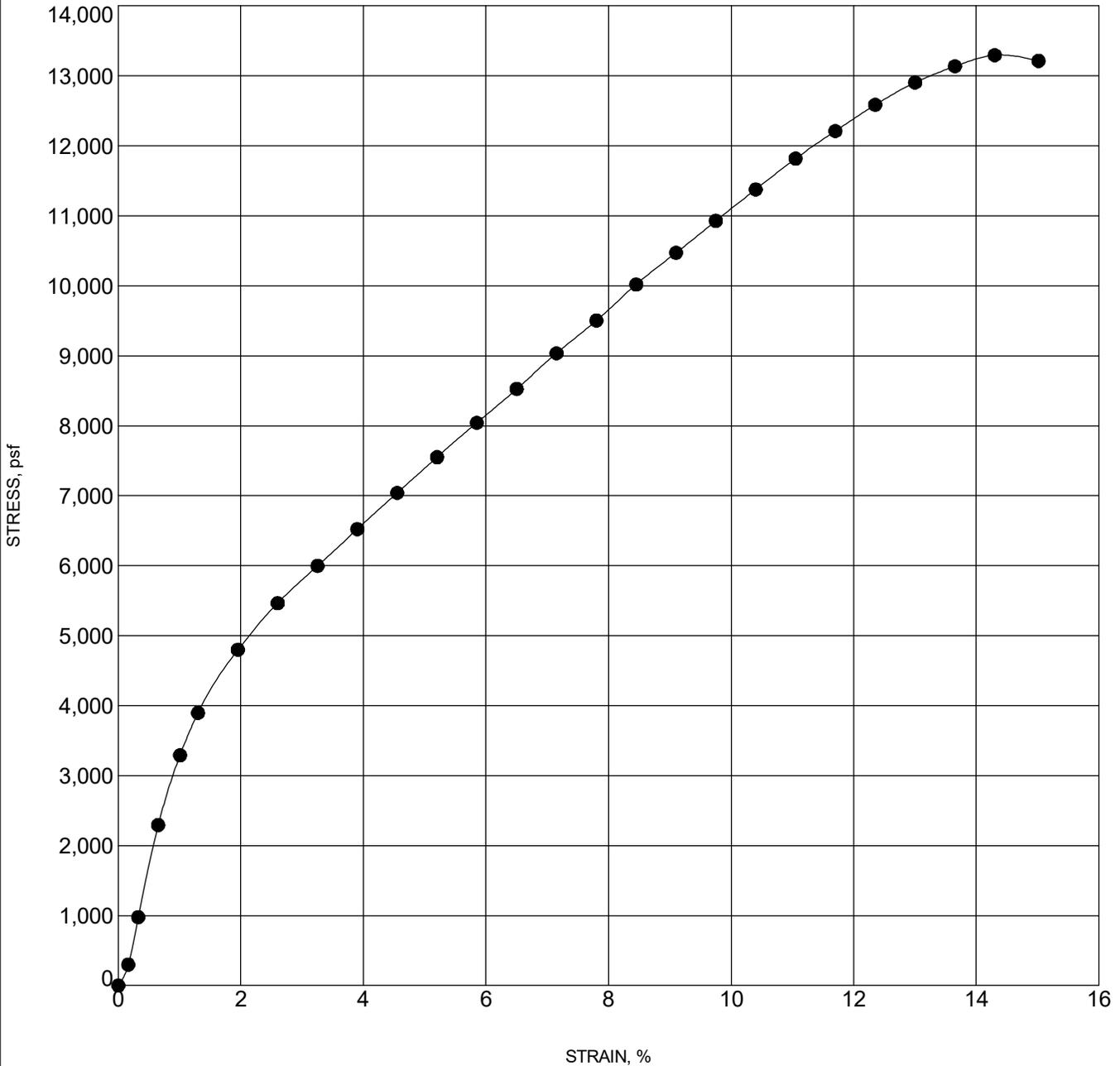


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



UNCONFINED - GINT STD US LAB.GDT - 10/6/25 13:16 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\13 BUNDE\GEO\TECH\LAB\013 LAB TESTING WATER MAIN.GPJ

Specimen Identification	Classification	UCS (psf)	γ_d	MC%
● SB-2026-109 / SS-3 6.0		13297	122.6	12.3



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UNCONFINED COMPRESSION TEST

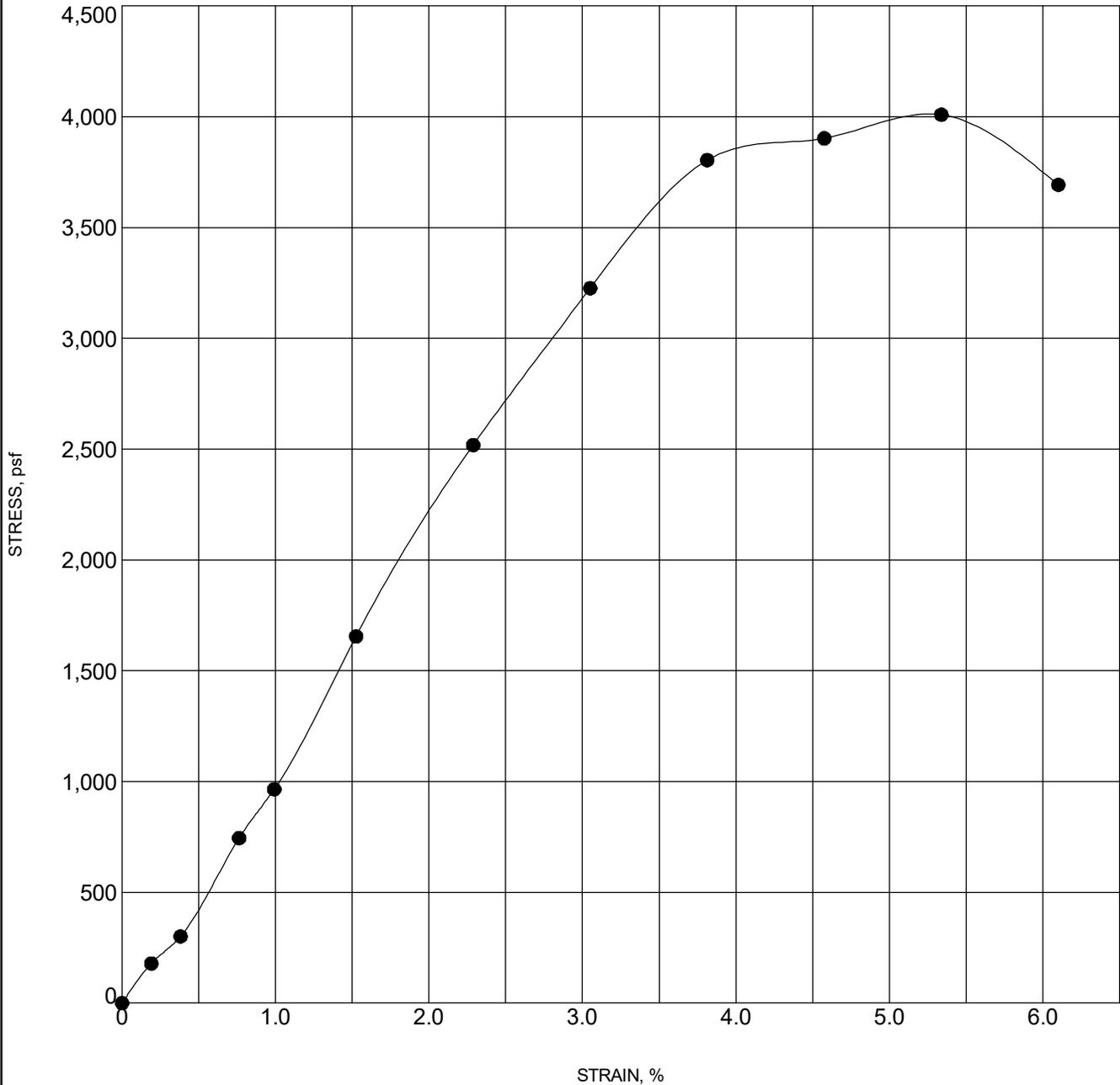


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



UNCONFINED - GINT STD US LAB.GDT - 10/6/25 13:17 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\13 BUNDLE\GEO\TECH\LAB\013 LAB TESTING WATER MAIN.GPJ

Specimen Identification	Classification	UCS (psf)	γ_d	MC%
● SB-2026-110 / SS-4 8.5		4010	110.7	13.8



The Mannik & Smith Group, Inc.
 2365 Haggerty Road South, Canton, MI 48188
 ph: (734) 397-3100 fax: (734) 397-3131
 www.manniksmithgroup.com

UNCONFINED COMPRESSION TEST

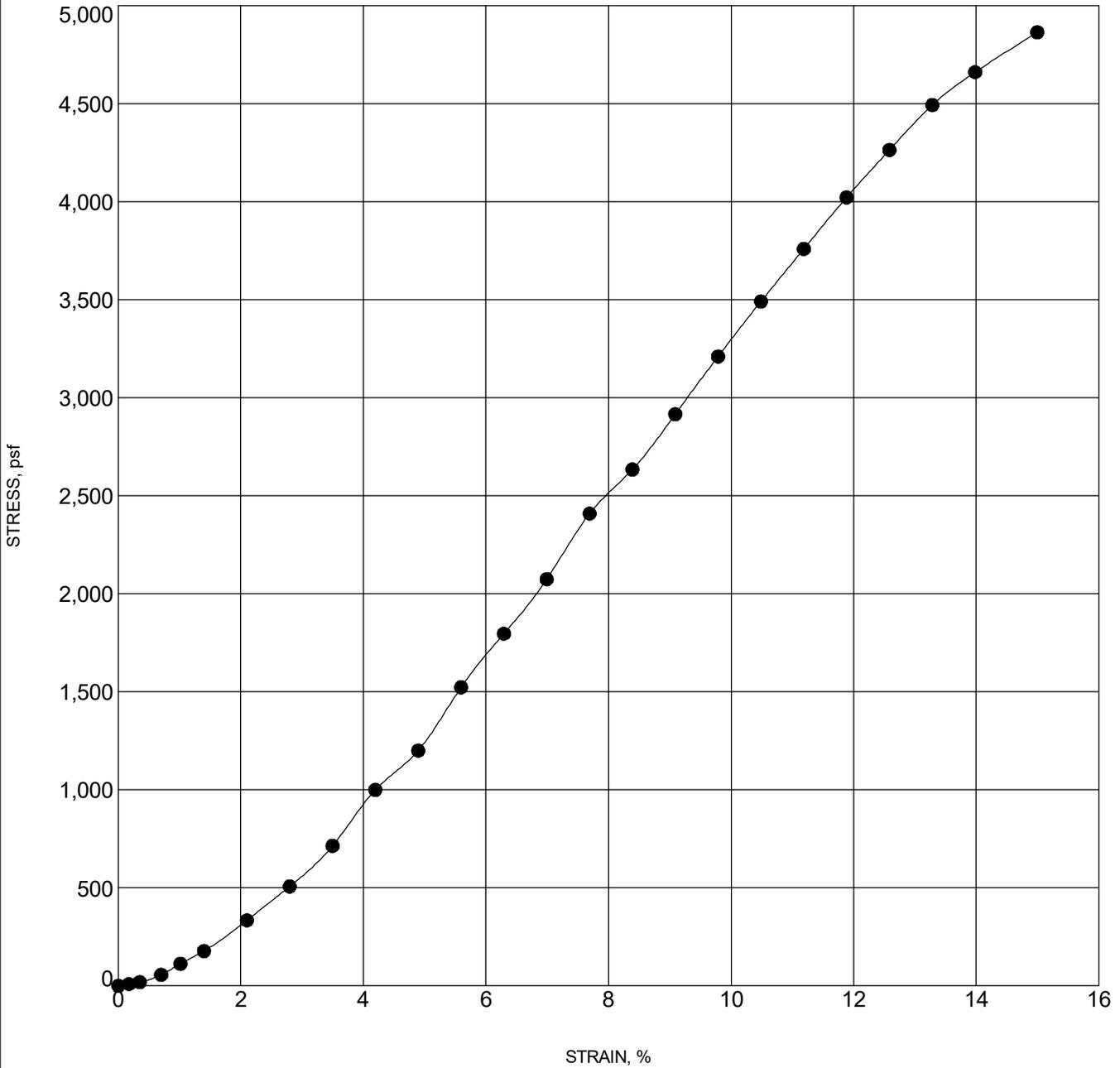


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



Specimen Identification	Classification	UCS (psf)	γ_d	MC%
● SB-2026-112 / SS-3 6.0		4866	129.2	12.5

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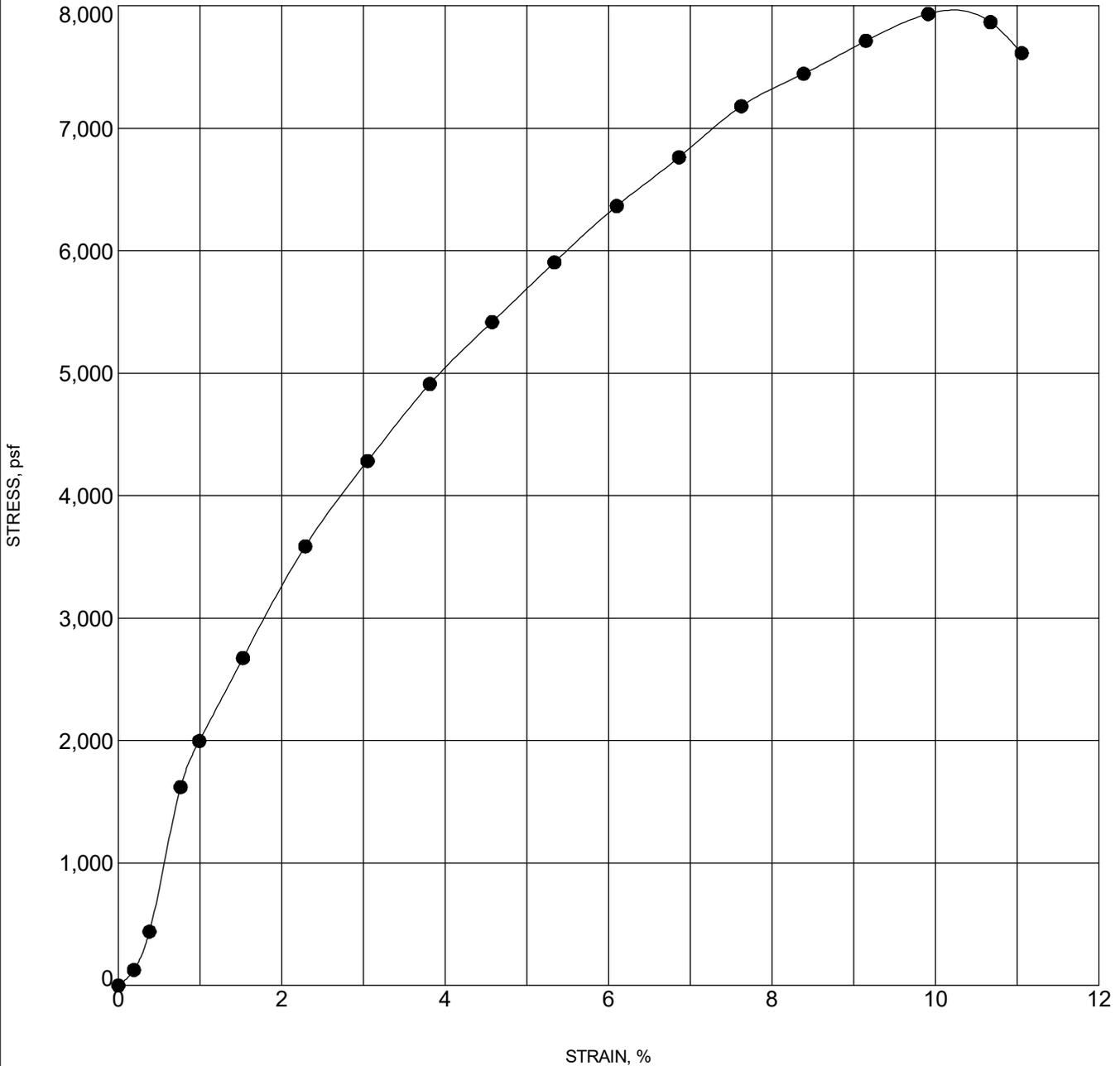


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



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Specimen Identification	Classification	UCS (psf)	γ_d	MC%
● SB-2026-113 / SS-4 8.5		7935	115.7	12.3



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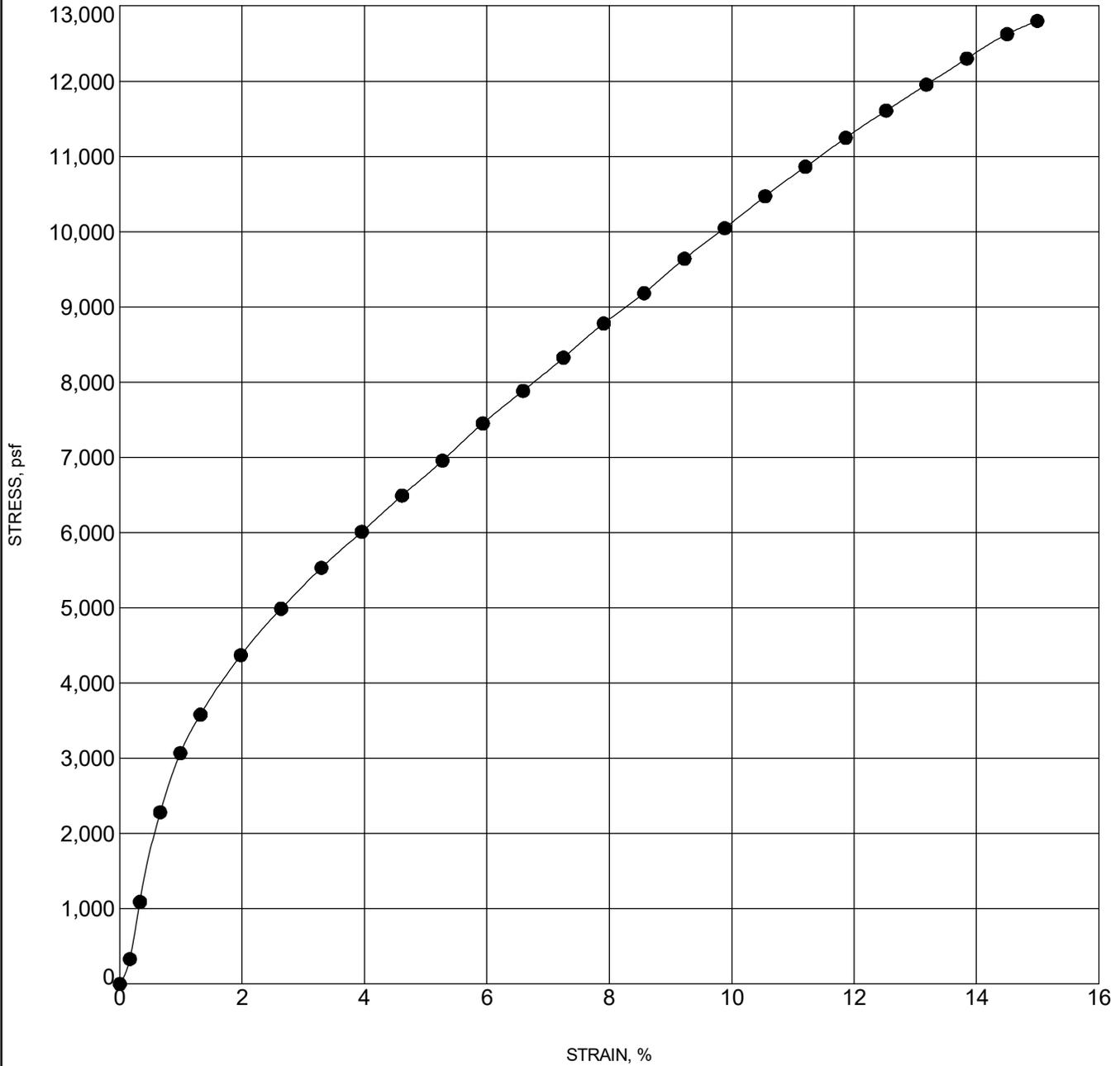
CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan

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Specimen Identification	Classification	UCS (psf)	γ_d	MC%
● SB-2026-114 / SS-3 6.0		12801	120.4	11.7



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UNCONFINED COMPRESSION TEST

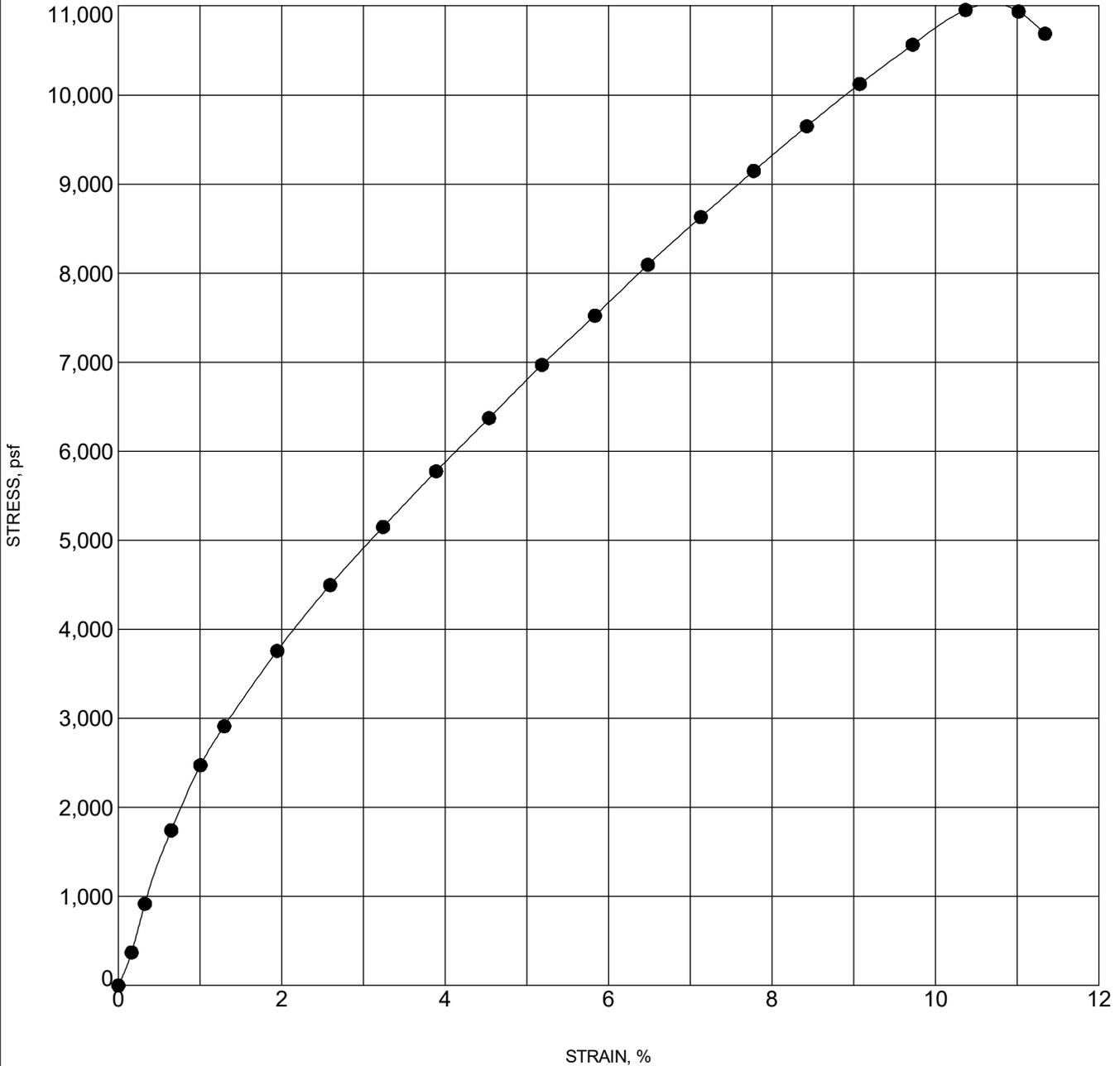


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



UNCONFINED - GINT STD US LAB.GDT - 10/6/25 13:42 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\13 BUNDLE\GEO\TECH\LAB\013 LAB TESTING WATER MAIN.GPJ

Specimen Identification	Classification	UCS (psf)	γ_d	MC%
● SB-2026-115 / SS-3 6.0		10955	121.7	12.8



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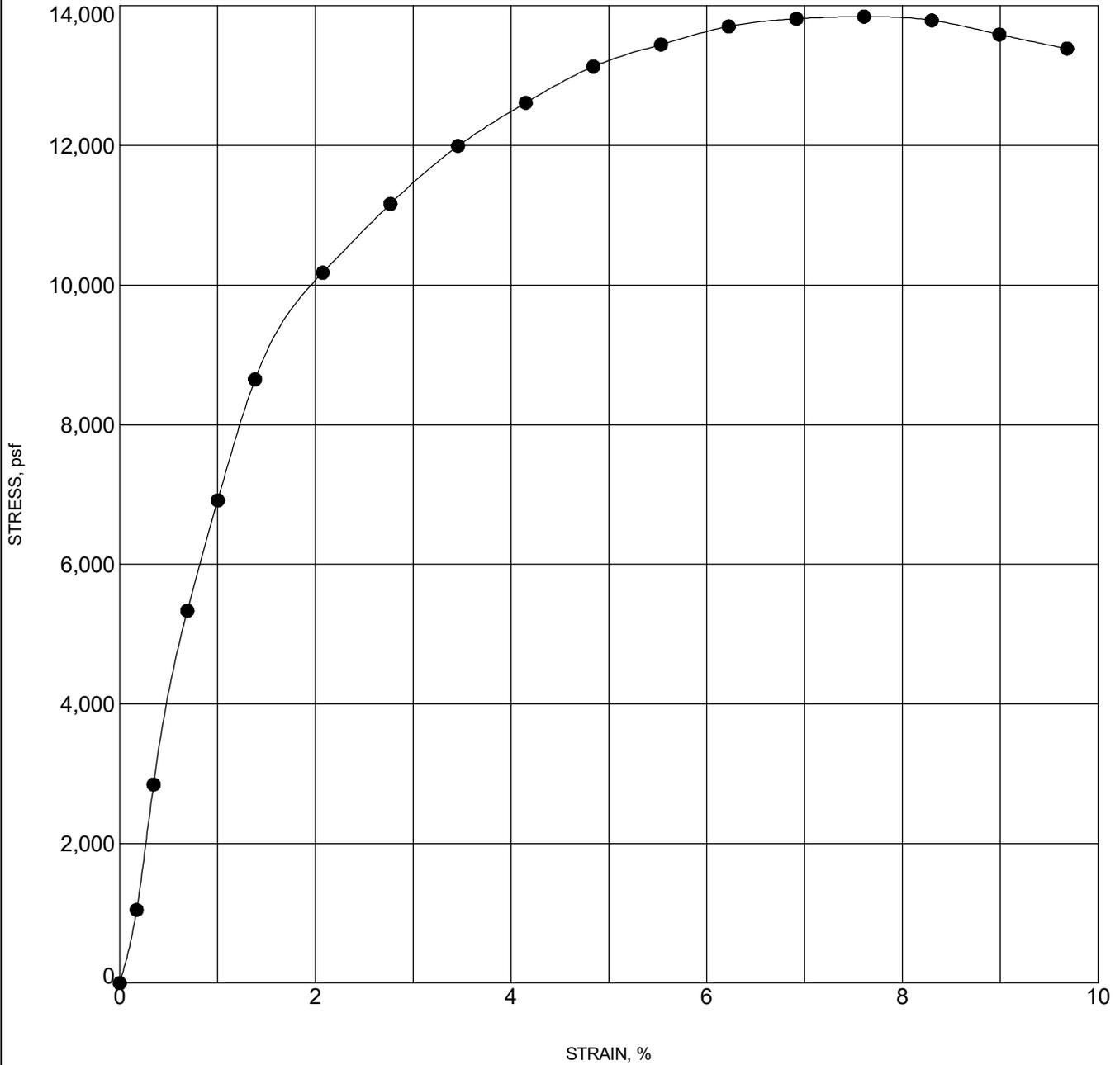


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



UNCONFINED - GINT STD US LAB.GDT - 10/6/25 13:43 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\13 BUNDE\GEO\TECH\LAB\013 LAB TESTING WATER MAIN.GPJ

Specimen Identification	Classification	UCS (psf)	γ_d	MC%
● SB-2026-116 / SS-4 8.5		13848	121.3	11.5



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UNCONFINED COMPRESSION TEST

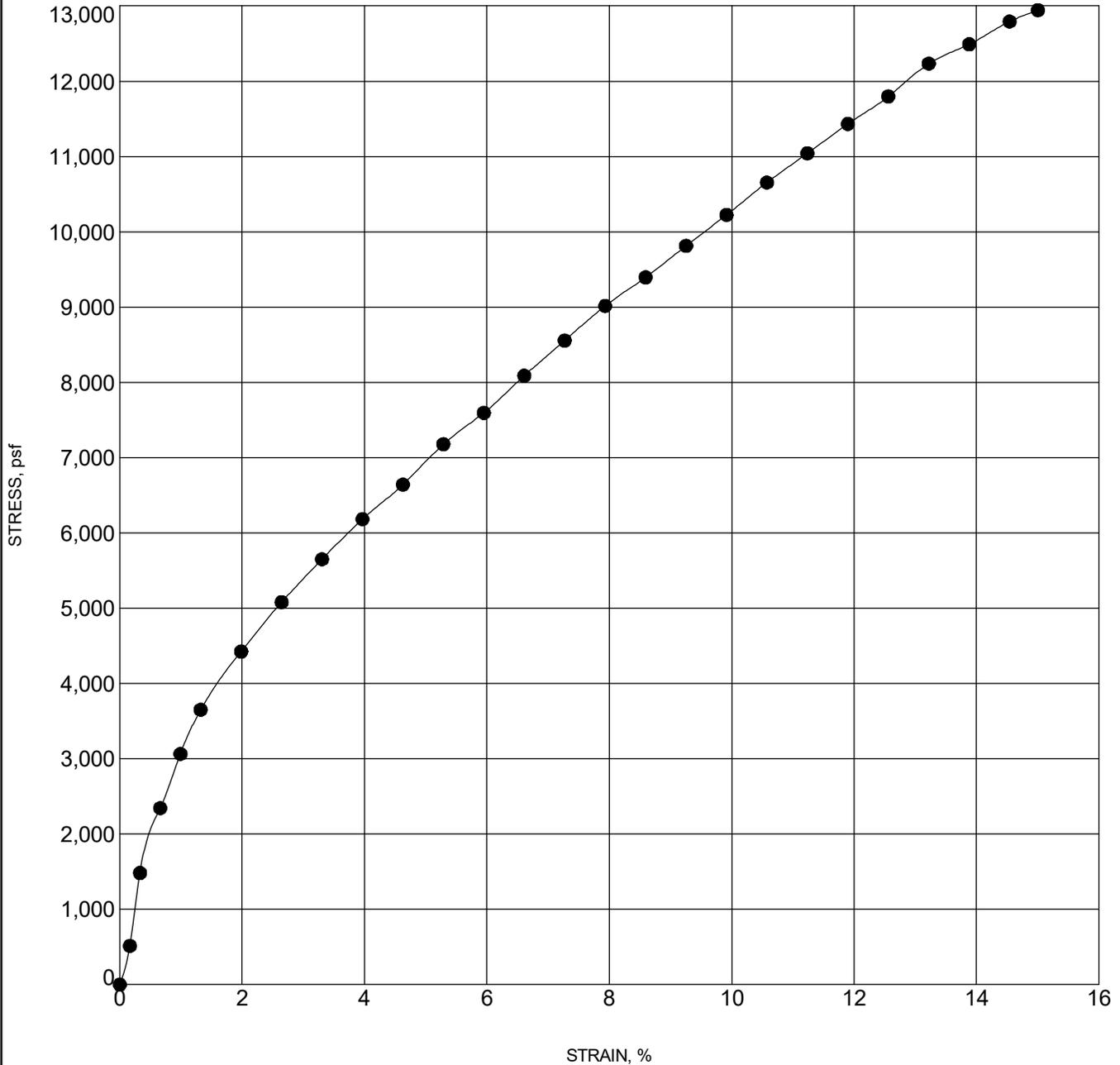


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



Specimen Identification	Classification	UCS (psf)	γ_d	MC%
● SB-2026-117 / SS-3 6.0		12943	119.3	14.0

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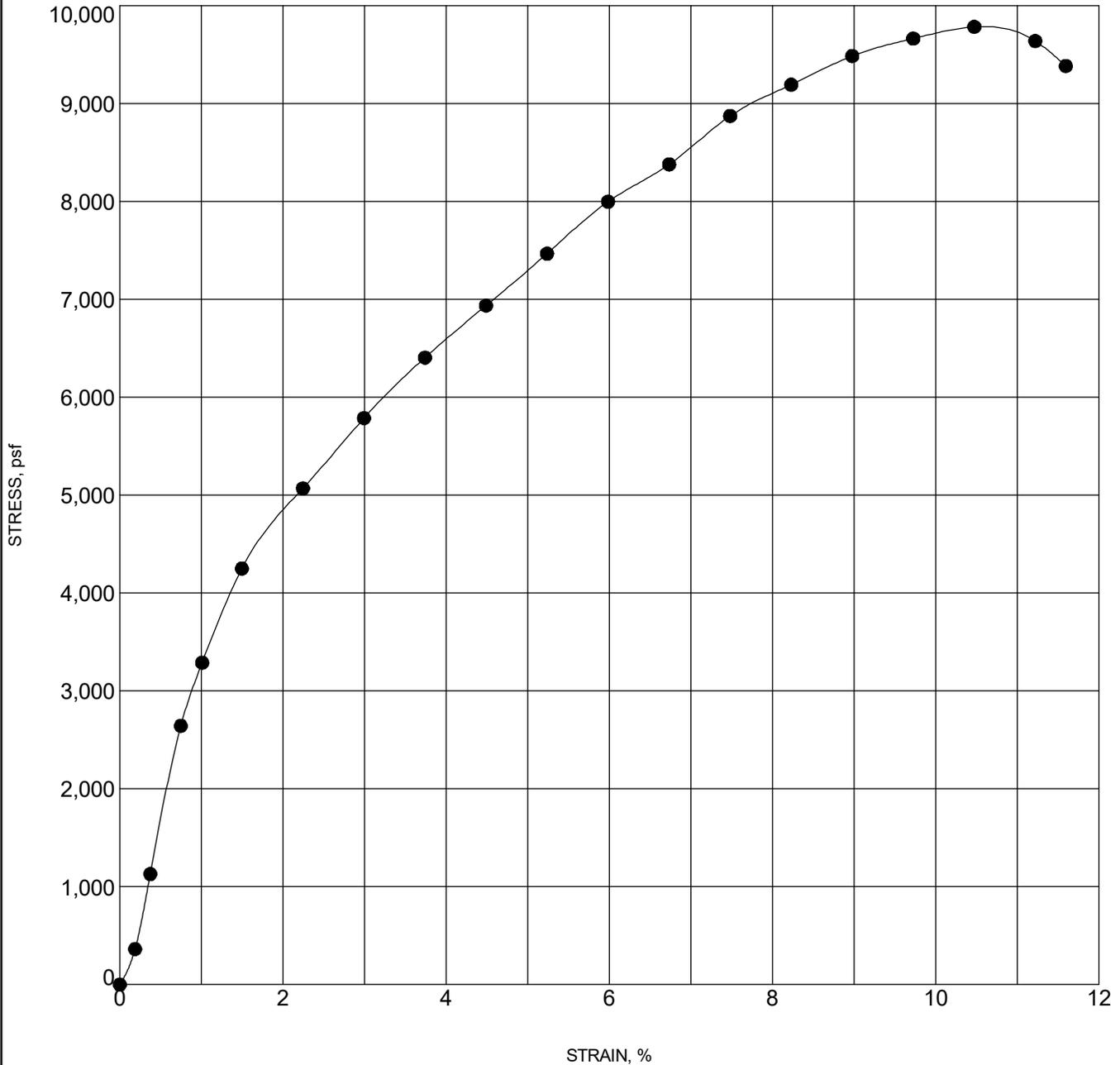


CLIENT City of Ann Arbor

PROJECT NAME 2025 Water Main and Resurfacing Projects

PROJECT NUMBER 401.2300021.013

PROJECT LOCATION Ann Arbor, Michigan



UNCONFINED - GINT STD US LAB.GDT - 10/6/25 13:44 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\13 BUNDLE\GEO\TECH\LAB\013 LAB TESTING WATER MAIN.GPJ

Specimen Identification	Classification	UCS (psf)	γ_d	MC%
● SB-2026-118 / SS-4 8.5		9787	123.2	11.5



Photo 1: SB-2026-108 (Arbordale St.): 3-inch Asphalt

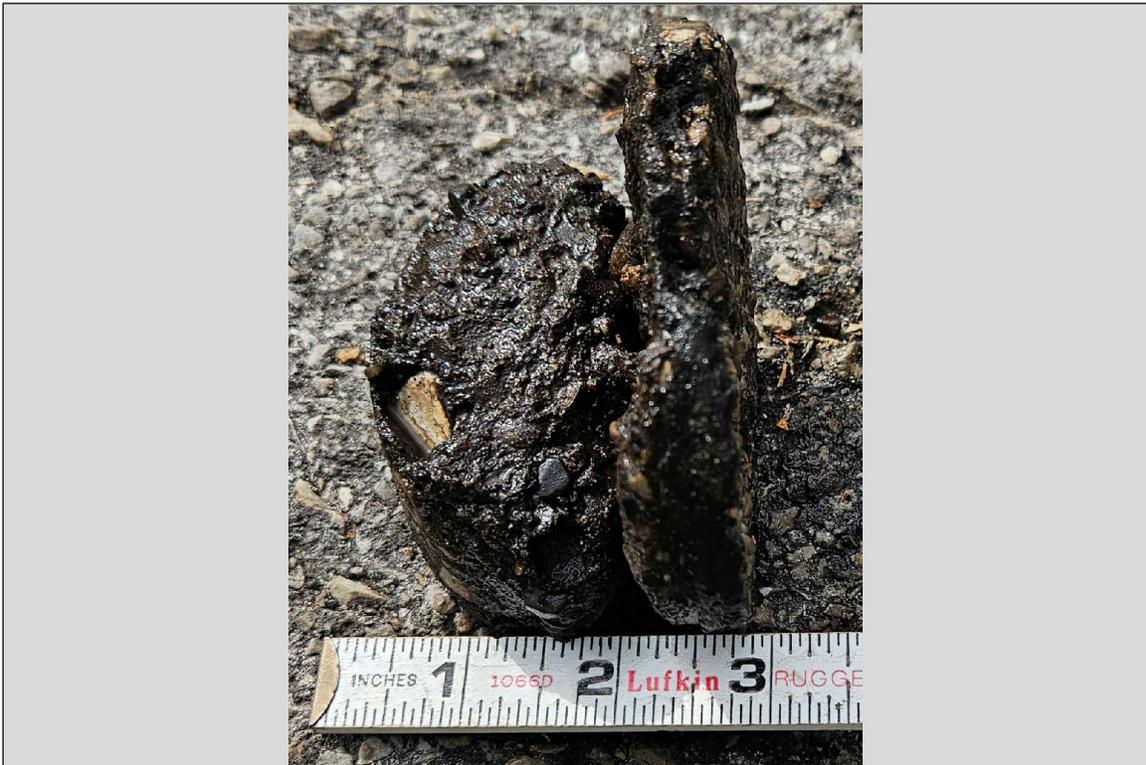


Photo 2: SB-2026-109 (Arbordale St.): 3-inch Asphalt (1-inch unrecoverable)



Photo 3: SB-2026-110 (Arbordale St.): 3-inch Asphalt

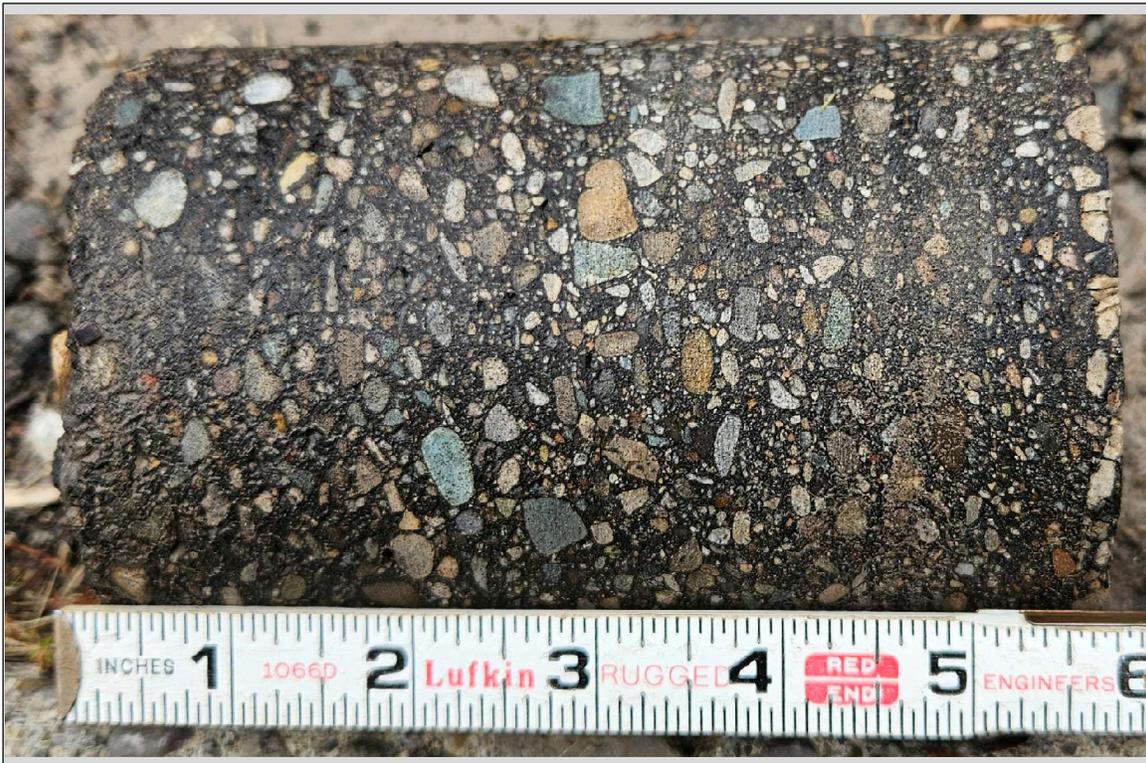


Photo 4: SB-2026-111 (Arbordale St.): 5.5-inch Asphalt



Photo 5: SB-2026-112 (Arbordale St.): 4.5-inch Asphalt



Photo 6: SB-2026-113 (Arbordale St.): 3-inch Asphalt



Photo 7: SB-2026-114 (Arbordale St.): 3-inch Asphalt



Photo 8: SB-2026-115 (Arbordale St.): 4-inch Asphalt



Photo 9: SB-2026-116 (Sherwood St.): 5-inch Asphalt



Photo 10: SB-2026-117 (Sherwood St.): 4.5-inch Asphalt



Photo 11: SB-2026-118 (Sherwood St.): 3.5-inch Asphalt