CONSTRUCTION CONTRACT

RFP# 25-10

WESTGATE WATER MAIN PROJECT

City of Ann Arbor
PUBLIC SERVICES/ ENGINEERING

Issued By:

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

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ADDENDUM No. 1

RFP No. 25-10

WESTGATE WATER MAIN PROJECT

Due: March 3, 2025 at 2:00 P.M. (local time)

The information contained herein shall take precedence over the original documents and all previous addenda (if any), and is appended thereto. **This Addendum includes fifty-five (55) pages.**

The Proposer is to acknowledge receipt of this Addendum No. 1 by signing and submitting Attachment B, including all attachments in its Proposal by so indicating in the proposal that the addendum has been received. Proposals submitted without acknowledgement of receipt of this addendum may be considered non-conforming.

The following forms provided within the RFP Document should be included in submitted proposal:

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

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

I. CORRECTIONS/ADDITIONS/DELETIONS

Changes to the RFP documents which are outlined below are referenced to a page or Section in which they appear conspicuously. Offerors are to take note in its review of the documents and include these changes as they may affect work or details in other areas not specifically referenced here.

Section/Page(s)	Change
Addendum 1 pages 11-13	Pre-proposal meeting Minutes and attendance
Addendum 1 BF1 toBF3	As provided in RFP No. 25-10 Document: Form, Section E – Schedule of Prices as Page 15-17 As updated herein: Form, Section E – Schedule of Prices as Pages BF-1 to BF-3. Modifications to pay items and quantities shown in bold

Comment: The intent with this change is to simply replace the inaccurate Page 15-17 provided in the RFP Document with the accurate Page 14-16 provided herein.

All mentions	As provided in RFP No. 24-10 Document: Proposal Due Date: February 25, 2025 at 2:00 p.m.

As updated herein:
Proposal Due Date: March 3, 2025 at 2:00 p.m.

Comment: The Due Date and Time for responses to this RFP has been extended to March 3, 2025 at 2:00 p.m. (local time). Note that all other dates are unchanged.

Replace DS	Replace DS_2 In., Copper Service Lead, Directional Drill with DS_2 In., HDPE Water Service, Directional Drill
Replace Plan Set in its entirety	Replace Plan Set Minor labeling revisions as mentioned in the answers below Widened trench sections as mentioned in the answers below New alignment for Jack and Bore across Jackson Road New Tie In alignment for Maple Tie In

II. QUESTIONS AND ANSWERS

The following Questions have been received by the City. Responses are being provided in accordance with the terms of the RFP. Respondents are directed to take note in its review of the documents of the following questions and City responses as they affect work or details in other areas not specifically referenced here.

Question 1: Can you please provide the Engineers Estimate for bonding purposes?

Answer 1: Engineers' Estimate is $2M.

Question 2: Do you know which material testing company will be utilized for this project?

Answer 2: Intertek PSI will be the material testing company.

Question 3: Can MDOT CLII limestone sand be used on the project?

Answer 3: Yes, MDOT Class II Limestone sand is acceptable.

Question 4: Does 6A stone used for the project (utility construction) need to meet the specifications of MDOT Table 902-1 AND 902-2?

Answer 4: The 6A coarse aggregate for utility trench bedding needs to meet MDOT Table 902-1. Table 902-2 would be required if the coarse aggregate is used for concrete purposes.

Question 5: Please confirm "Water Structure Covers" and "Water Structure Cover, Adjust" will be for both proposed and existing structures. If the two items are not to be paid for the proposed structures, please clarify what work is incidental and to what item it is incidental.

Answer 5: Correct, "Water Structure Covers" and "Water Structure Cover, Adjust" will be for both proposed and existing structures.

Question 6: Water main restraints lengths are not shown in the plan profiles for the "West Side North- South Water Main" profiles (Pg. 24 - Pg.26.) Please confirm restraint joints are not required in this section or please provide the required restraint joint lengths if required.

Answer 6: There are no vertical bends on the water main shown on sheets 24-26, only vertical deflections. Restrained joints are only required where vertical bends are present.

Question 7: Please define the payment limits of "Machine Grading". Plans do not indicate how this item will be measured for payment.

Answer 7: Machine Grading will be measured by the limits of the pavement removal for trenching.

Question 8: How is the excavation for the sidewalk to be paid?

Answer 8: Excavation for sidewalks will be incidental to pay item "Sidewalk, Sidewalk Ramp, and Driveway Approach, Any Thickness, Rem".

Question 9: How is the excavation of the curb items to be paid?

Answer 9: Excavation of the curb item will be incidental to "Curb, Gutter, and Curb and Gutter, Any Type, Rem".

Question 10: Is the sand subbase for the proposed sidewalk incidental to the sidewalk item or paid for under an item?

Answer 10: For the ramps and level landing subbase will be paid under "Aggregate Base Course, 21AA, CIP", and for the sidewalk subbase will be paid for under "Subbase, Class II Sand, CIP".

Question 11: Is limestone aggregate base required under any of the sidewalk or sidewalk ramp items. If required, how is it paid?

Answer 11: Please refer to City of Ann Arbor Detail for Sidewalk, SD-DS-5. For the ramps and level landing, subbase will be required and paid under "Aggregate Base Course, 21AA, CIP", and for the sidewalk subbase will be required and will be paid for under "Subbase, Class II Sand, CIP".

Question 12: Where is Item 8000.00, Subbase CIP to be utilized on this project?

Answer 12: It is meant to be used for subbase under sidewalk, pay item name has been updated to "Subbase, Class II Sand, CIP" for increase clarity.

Question 13: Please provide necessary curb details for the proposed curbs for this project, including the required stone cross section.

Answer 13: For curbs on City of Ann Arbor ROW or private property, please refer to City of Ann Arbor 2025 Standard Specifications, Article 12. For curb on MDOT Row, MDOT Curb Detail is located on Plan Sheet 27. Stone under curb will the 8 inches thick and it will be paid as "Aggregate Base Course, 21AA, CIP."

Question 14: If stone is required under the curb how is to be paid?

Answer 14: See Answer 13.

Question 15: The existing pavement sections for Maple Rd. are not provided in the plan set or provided Geo reports. Please provide the existing pavement cross section within S. Maple Rd or confirm what the bidding contractors are to assume for existing pavement.

Answer 15: According to as-builts, Maple Road pavement cross section is 6 inches of asphalt over 8 inches of aggregate base.

Question 16: What is the pavement/aggregate cross section for Maple Road?

Answer 16: See Answer 15.

Question 17: Will all detour signs be required to be installed per note 9 on the detour plans even if the detour is in place for less than 30 days?

Answer 17: Yes all detour signs need to meet Note 9 unless the ground conditions or a utility conflict does not allow them to be driven.

Question 18: Per a site visit the existing Westgate parking lot has varied pavement conditions. Some appear to have "recent overlay/paving work" and in fair condition while other areas show signs of block and alligator cracking. The "preferred "north side parking lot staging area as discussed in the pre-bid meeting will result in excess construction traffic which could result in damage to the existing lot. If damage to the existing lot happens utilizing normal construction practices and legal loaded trucks will payment and replacement of the damaged lot be paid for?

Answer 18: This hypothetical question cannot be answered at this time as it depends on the actual factors and the extent for 'damage' to existing parking lot. Specific factors will need to be discussed when a situation arises but we will use contract documents and video survey as our framework for such a discussion.

Question 19: There is conflicting information between the plans/bid items and the detailed specification for Minor traffic Control, Modified. The plans call out quantities of traffic control items and there are pay items for these items in the schedule of items. The special provision notes "The furnishing and operating of signs, pedestrian channelizers, temporary pedestrian ramp and temporary mats (and/or plywood or cold patch material) as required to maintain or detour pedestrian traffic around the construction areas and provide access to business for the duration of the project." Please clarify what traffic control related items are incidental and what traffic control items will be paid.

Answer 19: Please review Detailed Specification Minor Traffic Control Modified for more information. Pay items that are incidental to this pay item include Pedestrian Channelizer Device, Furn & Oper, Temporary Pedestrian Ramp, Furn & Oper, Temporary Pedestrian Mat, Furn & Oper. Per Section 1 of proposed construction contract: 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.

Question 20: Will stone brought up to grade be considered a drivable surface?

Answer 20: Yes, stone brought up to grade will be considered a drivable surface.

Question 21: Please specify what areas will require cold patch for the maintenance of vehicular and/or pedestrian traffic.

Answer 21: Contractor should provide maintenance of traffic configuration for review and approval. Means and methods are up to the contractor. Areas may need either a cold patch, and/or other drivable surface such as stone or steel plates to maintain vehicle and pedestrian access during construction.

Question 22: The staging and phasing of work within the three noted CIA is critical to the successful completion of this project for the owner, businesses, public, contractor and city. The current plans and specifications leave this open ended for the contractor to make assumptions with only general requirements. A reasonable assumption made by a bidding contractor might not be acceptable to the owner and business and greatly increase the cost. Please provide the staging and phasing within the CIA's as it will directly relate to price and receiving comparable bids.

Answer 22: The exact phasing of the work is left open for the contractor but guidance is provided in contract documents and will be provided throughout the project. Especially setting the initial phasing and section plans, and if analysis is required, assistance from Public Works Department and Systems Planning and Engineering Department will be provided.

Question 23: Is the existing water main material for all proposed tie-in locations available? Please provide if this information is available.

Answer 23: All water mains at tie-in locations are cast iron pipes.

Question 24: Sheet 26 calls out three incidental exploratory excavations to be performed two weeks prior to the start of construction to verify the location and depth of the existing utilities. The noted storm that will require an exploratory excavation is in the middle of Jackson Road. Please provide the existing pavement cross section and the required pavement repair that will need to be performed the noted exploratory excavation.

Answer 24: Pavement repair is incidental to exploratory excavation pay item. Existing cross section for Jackson Road is approximately 5 inches of asphalt over 10 inches nonreinforced concrete base over 6 inches of aggregate base.

Question 25: The bid form has three paid exploratory excavations. What exploratory excavations will be paid? What exploratory excavations are incidental?

Answer 25: Only the jack and bore has the 3 exploratory who are incidental. All other exploratory excavations will be paid for using pay item "Exploratory Excavation, SD-TD-1, (0-10' Deep)".

Question 26: What is the detail for the approach/curb restoration in the MDOT right of way on sheet 34 of the plan set?

Answer 26: Please refer to MDOT Special Detail on Sheet, 27.

Question 27: Will the city provide all necessary material testing to be compliant with a typical MDOT permit?

Answer 27: Yes.

Question 28: Please provide the anticipated MDOT permit fee.

Answer 28: Unknown at this time.

Question 29: If the MDOT permit fee cannot be provided can an allowance be provided?

Answer 29: No, but if the fee is more than $1,000 it will be reimbursed by the City of Ann Arbor.

Question 30: Are there any specific excavation concerns/limitation for the work within the road ROW. Below is a picture of an MDOT monument located about 8' from the existing TSVIW on the North side of Jackson Road @ the proposed Bore.

Answer 30: MDOT has briefly reviewed the plans and has not mentioned any other special restrictions to the proposed project other than Jackson Road I-94 entrance must not have any lane closures. MDOT may state additional restrictions or requirements when they issue the permit.

Question 31: Please provide profiles for the DI water service leads shown In the West North-South Water Main section of work.

Answer 31: Most profiles can be provided to the contractor once the project has been awarded and before construction. We do not anticipate any bends in the service leads but have added some as pay items in case the situation arises.

Question 32: Please provide the existing storm invert information for existing storm line for the West North-South project area. Will the proposed 2" water services be above or below the existing storm?

Answer 32: Invert information has been added to sheets 24-25. The exact depth of the proposed water services to be reconnected will be unknown until they are excavated.

Question 33: Based on the proposed design vertical 6" bends will be required to achieve the correct alignment for some of the DI service leads. Can 6" bend please be added to the proposal.

Answer 33: We do not anticipate 6-inch bends but we will add a pay item in case they are needed.

Question 34: There are concerns with the current alignment of the proposed water main at the proposed water main bore at Jackson Road.

a. The proposed water bore pit is shown to be only 20' long. The standard bore pit length to auger and jack the pipe requires a 40' long pit. Water main pipe is 20' in length.
b. There is an existing 3" steel gas service in the current proposed alignment for the bore pit. This gas service will have to be relocated and/or the alignment revised to perform the bore as you cannot push against the gas main or have suspended in the pit. Please advise how the 3" steel gas service will be addressed.
c. The CL/CL of the existing 8" water main bend to the proposed 12" water main in casing is 2' apart. There is only inches of separation when the OD's of the existing pipe are figured in and that is not considering that there is also a thrust block at the bend. It is too close to the existing water main bend/thrust block to safely perform this work. Please advise how this should be handled.

Answer 34: The Plan set has been revised with requested bore pit dimensions and also a new alignment that takes into considerations concerns noted in the question. If utility conflicts are still a concern, additional exploratory excavation can be done to verify location of existing utilities before jack and bore.

Question 35: The proposed elevation of the water main at the bore is 7' deep. Assuming the existing water main is at 5.5' of vertical bends will need to be installed. Per the MOT plans a 12' lane needs to be maintained at all times (Sheet 14). This only leaves a maximum of 6' of working horizontal working space to install bends as required. Will portable concrete barrier wall be required for the proposed east side of Jackson Road tie in to create a safe excavation? Will PCB wall be paid for if needed?

Answer 35: Means and methods are up to the contractor. If a portable concrete barrier or trench box or other means is necessary for a safe excavation it will be incidental to the pay item "DS_12 In., PC 350 DIP w/polywrap, Bore and Jack". Please note that alignment has been shifted to allow for a larger bore pit.

Question 36: Please confirm the abandoned water main will not need to be grouted in the MDOT ROW.

Answer 36: Per City of Ann Arbor 2025 Standard Specifications, Article 10, Section 10-74, abandoned water main in MDOT ROW shall be filled with flowable fill, the Contractor is responsible to provide all needed materials and appurtenances to properly introduce the flowable fill into the full length and cross section of the pipe being abandoned.

Question 37: Is any of the existing water main required to be grouted?

Answer 37: Only abandoned water main in MDOT ROW is required to be grouted, no other existing water main shall be grouted.

Question 38: Will the bore and jack require grout between the carrier and casing pipe.

Answer 38: Please refer to Sheet 27, Typical Type Casing Standard Detail or City of Ann Arbor Standard Specifications, Article 12, SD-W-6 which includes information on the required spacers inside of the casing pipe. No grouting is required.

Question 39: Is both the 12" carrier pipe and steel casing pipe paid for under DS_12 In., PC350 DIP w/polywrap, Bore and Jack?

Answer 39: Yes both the 12" pipe and 20" steel casing pipe will be paid under "DS_12 In., PC350 DIP w/polywrap, Bore and Jack".

Question 40: Will the carrier pipe need to be fully restrained inside of the casing pipe?

Answer 40: Please refer to Sheet 27, Typical Type Casing Standard Detail or City of Ann Arbor Standard Specifications, Article 12, SD-W-6 which includes information on the required spacers inside of the casing pipe. Due to the design configuration especially at the tie in location, restrained joints are necessary from the bore pit to the receiving pit. This change has been reflected on Sheet 26.

Question 41: The Detailed Special provision for the direction drilled copper service specifies the material to be copper. For this application and length, it is not advised or recommended by suppliers to use this material. Two-inch copper comes in 60' rolls and will require multiple silver solder joints. Can alternative material be specified for this work? A typical industry standard water service material used for directional drill applications is HDPE SDR-9 CTS. It also comes in lengths that are longer than the bore length resulting in a jointless run of pipe.

Answer 41: The Detailed Special Provision for directional drilled service has been revised and included in this Addendum as DS_2 In., HDPE Water Service, Directional Drill. Instead of copper, we recommend HDPE. Service lead material is noted on Sheet 32.

Question 42: If an alternate 2" material for the HDD drilled is not acceptable, please state what unions/joints are to be used to splice pipe together.

Answer 42: Please see Answer 41.

Question 43: Please state the scope of work and material field services will perform for all the proposed 2" water services.

Answer 43: For a complete description please refer to City of Ann Arbor 2025 Standard Specification Article 3.

Domestic water connections 2-inch diameter or smaller will be installed by the City's field services from the main to the curb stop or service valve upon completion of new water main construction, testing, and acceptance. Except for the Zingerman 2" service lead on Sheet 29 will be done by the contractor, however the corp connection to the water main will be by the City.

Domestic water service connections larger than 2-inch diameter shall be constructed to within 5 feet of the serviced building (or please refer to plan set for the limits of each service) by the Contractor and shall be tested in conjunction with the water main that is under construction. All water service connections will be made by the City's field services.

The City's field services will provide the boxes, corp, and curb stops for all services 2" and below. In addition, they will provide the HDPE adapter, curb and corp stops, and make the connection for the HDD service for the library. All other boxes, curb stops/valves for services greater than 2" will be provided by the Contractor.

Question 44: Please state the scope of the work and material the contractors will be required to perform for all the proposed 2" water services.

Answer 44: Please see answer 43.

Question 45: Item 7050.01 is for a 2", Gave Valve in Box. Where is this required?

Answer 45: 2" Gate in Valve in Box pay item has been removed. Instead Curb Stop label has been added but no pay item is needed given this is provided by city field services. Notes have been added to Sheets 25 and 29 regarding the curb stop boxes.

Question 46: Will field services provide the curb stop and box if needed for any of the services for the project?

Answer 46: Please see Answer 43.

Question 47: Please provide a detail for the 2", Gate Valve and Box.

Answer 47: Not needed, please see Answer 45.

Question 48: Will any building or plumbing permits be required for the copper water services or DI water services? If additional permits are required, please specify the fees and requirements the contractor will be responsible be responsible for.

Answer 48: No building or plumbing permits shall be required as these are not new services but existing and the scope of work terminates at the curb stop. If additional permits or plumbing subcontractor are needed this will be considered additional work subject to contract terms for additional work.

Question 49: It was noted in the meeting that the intent was to pay plan quantities for the removal and restoration items. This goes against the intent of a unit price contract and makes the entire removal and restoration lump sum with all the risk being put on the contractor for changes. Please confirm how the removal and restoration limits will be paid and quantified.

Answer 49: The intent is to pay for plan quantities however as per contract terms, unit prices are paid for actual work performed. If contractor finds an incorrect quantity or substantially deviates from plan set or scope of work per the contract, justification should be brought to the attention of the project manager and inspector before continuing the work.

Question 50: The current removal limits are not wide enough to perform the work as shown. Below are a few examples of areas where it is not feasible to install the proposed work with the depicted removal limits. A minimum average width of 12'-15' would be more appropriate for the proposed work and existing constraints of this project. Please revise the removal limits to reflect the required removals to allow for the construction of the proposed work.

Answer 50: Revisions to the plan set have been made. Trench widths have been increased.

Question 51: What is the testing procedure for the South Maple Road / Lewis Jewelers Hydrant reconnection. This work is referenced as a "tie-in" in the plans. Does this mean pipe is to be swabbed and directly tied in or will the entire portion of this work need to follow the standard pressure testing and chlorination procedure. Please confirm a 4-week detour of this area will be acceptable if standard testing procedures are required.

Answer 51: This tie-in section is to be tested at the same time for the segment that is ready to be tested on plans. Anything more than 20 ft length of water main pipe needs to be tested. Deviations to this plan that still met the standard testing procedures can be approved by Project Manager.

Question 52: There is proposed water line work shown at the S Maple Road / Lewis Jewelers Tie-in. The plan view does not have any callouts for work and a profile is not provided. Please clarify what this is.

Answer 52: Revisions to plan set have been added. This is a service lead reconnection. Detailed information on this lead is not available but a service box was located by City of Ann Arbor Survey. The size of the lead has been added to the plans.

Question 53: Please confirm the location of the existing valves that will be turned of and the distance from the proposed 20" water main work. Also please confirm if the existing 20" water main is restrained at the S. Maple Road Tie in. The required work on the existing 20" water main

will require a long shut down to safely cut into existing water main.
Answer 53: At this location we proposed 20-inch line stops. We cannot guarantee the valves will operate properly. Approximate distances have been added to the Plan Set. We don't know if the existing 20" water main is restrained.

Question 54: The plans do not note the location of the 20" valve. Please confirm the location of the 20" valve.

Answer 54: The approximate location has been added to Plan Set. A label with station and offset has been added.

Question 55: Please state how far the contractor will be required to stub the water main into S. Maple Rd at the Abbott Tie in. (What is the water main station required to install the testing blow of.)

Answer 55: Please review revised tie in on plan set. New valves have been added to allow for smoother testing. For all the testing on this loop, we can use the H1 hydrant lead as a blow off. Contractor should follow the water testing requirements found in the City of Ann Arbor 2025 Standard Specifications.

Question 56: Please create additional pay items for Temporary Water Main Line Stop Additional Rental Day for 12" and 20" Line Stops. The additional daily rental cost varies by line stop size.

Answer 56: These have been added to the bid sheet.

Offerors are responsible for any conclusions that they may draw from the information contained in the Addendum.

ADDENDUM No. 2

RFP No. 25-10

WESTGATE WATER MAIN PROJECT

Due: March 3, 2025 at 2:00 P.M. (local time)

The information contained herein shall take precedence over the original documents and all previous addenda (if any), and is appended thereto. **This Addendum includes six (6) pages.**

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The following forms provided within the RFP Document should be included in submitted proposal:

- **Attachment D - Prevailing Wage Declaration of Compliance**
- **Attachment E - Living Wage Declaration of Compliance**
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Section/Page(s)	**Change**
Corrections	
Addendum 1	As provided in Addendum No.1:
BF-1 to BF-3	Form, Section E – Schedule of Prices as Page BF-1 to BF-3.
	As updated herein: Addendum 2, Form, Section E – Schedule of Prices as Pages BF-1 to BF-3. Modifications to pay items and quantities shown in bold

Comment: The intent with this change is to simply replace the inaccurate Page 14-17 provided in the RFP Document with the accurate Page 3 to 5 provided herein.

Addendum 1	Question 43: Please state the scope of work and material field services will perform for all the proposed 2" water services.
	Corrected Answer 43: For a complete description please refer to City of Ann Arbor 2025 Standard Specification Article 3.

Domestic water connections 2-inch diameter or smaller will be installed by the City's field services from the main to the curb stop or service valve upon completion of new water main construction, testing, and acceptance.

Domestic water service connections larger than 2-inch diameter shall be constructed to within 5 feet of the serviced building (or please refer to plan set for the limits of each service) by the Contractor and shall be tested in conjunction with the water main that is under construction. All water service connections will be made by the City's field services.

The City's field services will provide the boxes, corp, and curb stops for all services 2" and below. In addition, they will provide the HDPE adapter, curb and corp stops, and make the connection for the HDD service for the library. All other boxes, curb stops/valves for services greater than 2" will be provided by the Contractor.

Comment: The intent with this change is to simply remove the portion that has the contractor install the service for Zingerman, field services will install this 2" service as well after contractor has excavated the limits.

Water Service	2" water service for 2503 Jackson will be all HDPE even the trenched portion that is shown as cooper. Field services can roll out the HDPE when making the water connection. Detailed Specification and Bid item has been added for 178 feet of HDPE.
HMA thickness	Clarifying discrepancy on sheet 4 on plan set, HMA thickness for westgate parking section is 3" of HMA Approach Top (4EL) at 330 lb/syd over 3" HMA Approach Level (4EL) over at 330 lb/syd.

II. QUESTIONS AND ANSWERS

The following Questions have been received by the City. Responses are being provided in accordance with the terms of the RFP. Respondents are directed to take note in its review of the documents of the following questions and City responses as they affect work or details in other areas not specifically referenced here.

Question 1: The current removal limits on water main are not wide enough to perform the work as shown given a 10.5 feet paver needed for restoration.

Answer 1: Trench limits quantities have been updated on bid sheet to 11 feet wide trench width for the water main.

Offerors are responsible for any conclusions that they may draw from the information contained in the Addendum.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
DS_2 In., HDPE

Description

This work shall consist of furnishing 2 inch HDPE pipe in accordance with the Ann Arbor 2025 Public Services Standard Specifications; current, applicable City of Ann Arbor Standard Details; as shown on the plans; and as specified herein.

Where unspecified by City of Ann Arbor Standard Specifications and/or standard details, work and materials shall be in accordance with the MDOT 2020 Standard Specifications for Construction.

Materials

Material requirements of Section II.E of Article 3, and Appendix A of the Ann Arbor 2025 Public Services Standard Specifications, or approved equal as determined by the City of Ann Arbor.

Construction

Water service material shall be 2-inch HDPE SDR 9, preferably Municipex Pipe.

The Contractor shall be required to notify and coordinate work with City personnel at an interval specified by City personnel to complete connections, tapping of water mains, the installation of all corporation stops, and the operation of valves and hydrants.

Excavation of the trench shall be paid for as "Excavate & Backfill For Water Service Tap and Lead".

Measurement and Payment

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

Pay Item	Pay Unit
DS_2 In., HDPE	Ft

The unit price bid shall be payment in full for will be measured by length in feet and shall include all labor, material and equipment costs required to furnish the pipe; excavation of the trench shall be paid for as " Excavate & Backfill For Water Service Tap and Lead".

Company: Fonson Company, Inc.

Project: Westgate Water Main Project

File #: 2023-013

(Changes have been bolded; updated 2/24/25)

ITEM NUMBER	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL
	General				
01000.00	General Conditions, Max. $100,000	LS	1	$ 99,000.00	$ 99,000.00
01001.00	Project Supervision, Max. $50,000	LS	1	$ 50,000.00	$ 50,000.00
01002.00	Project Clean-Up and Restoration	LS	1	$ 65,000.00	$ 65,000.00
01003.00	Digital Audio Visual Coverage	LS	1	$ 1,450.00	$ 1,450.00
01004.00	Allowance for Unforeseen Conditions	Dlr	30,000	$ 1.00	$ 30,000.00
01021.00	Erosion Control, Inlet Protection, Fabric Drop	Ea	9	$ 140.00	$ 1,260.00
01030.00	Tree Protection Fence	Ft	45	$ 5.00	$ 225.00
01040.00	DS_Minor Traffic Control, Modified, Max. $80,000	LS	1	$ 80,000.00	$ 80,000.00
01041.00	Traffic Regulator Control	LS	1	$ 72,627.00	$ 72,627.00
01050.00	Sign, Type B, Temp, Prismatic, Furn & Oper	Sft	841	$ 4.56	$ 3,834.96
01051.00	Sign, Type B, Temp, Prismatic, Special, Furn & Oper	Sft	144	$ 4.68	$ 673.92
01070.00	Sign, Portable, Changeable Message, Furn & Oper	Ea	8	$ 1,920.00	$ 15,360.00
01080.00	Plastic Drum, High Intensity, Lighted, Furn & Oper	Ea	7	$ 27.60	$ 193.20
01081.00	Channelizer Cone, High Intensity, 42 In., Furn & Oper	Ea	65	$ 18.00	$ 1,170.00
01092.00	Barricade, Type III, High Intensity, Double Sided, Lighted, Furn & Oper	Ea	87	$ 90.00	$ 7,830.00
01100.00	Pedestrian Type II Barricade, Temp, Furn & Oper	Ea	10	$ 78.00	$ 780.00
01101.00	Pedestrian Channelizer Device, Furn & Oper (Contingency)	Ea	20	$ 13.00	$ 260.00
01102.00	Temporary Pedestrian Ramp, Furn & Oper (Contingency)	Ea	2	$ 550.00	$ 1,100.00
01103.00	Temporary Pedestrian Mat, Furn & Oper (Contingency)	Ft	20	$ 50.00	$ 1,000.00
01127.00	Pavt Mrkg, Wet Reflective, Type R, Tape, 6 In., White, Temp	Ft	177	$ 4.00	$ 708.00
01128.00	DS_Additional Signs	Ea	20	$ 38.95	$ 779.00
	Removals				
02020.00	HMA, Any Thickness, Rem	Syd	2303	$ 15.00	$ 34,545.00
02023.00	Cold-Milling HMA Surface	Syd	657	$ 16.00	$ 10,512.00
02025.00	Concrete Pavt, Any Thickness, Rem	Syd	7	$ 24.00	$ 168.00
02030.00	Curb, Gutter, and Curb and Gutter, Any Type, Rem	Ft	365	$ 12.00	$ 4,380.00
02040.00	Sidewalk, Sidewalk Ramp, and Driveway Approach, Any Thickness, Rem	Sft	902	$ 3.17	$ 2,859.34
02050.00	Sign, Rem, Salv	Ea	5	$ 150.00	$ 750.00
02060.00	DS_Concrete Bollard, Rem	Ea	10	$ 210.00	$ 2,100.00
	Earthwork				
03001.00	Machine Grading	Syd	4000	$ 21.00	$ 84,000.00
03030.01	Exploratory Excavation, SD-TD-1, (0-10' Deep)	Ea	3	$ 849.00	$ 2,547.00
03030.02	Exploratory Excavation, SD-TD-1, Additional Depth	Ft	5	$ 118.00	$ 590.00
	Storm and Drainage				
06160.01	Storm Structure Cover	Ea	2	$ 424.00	$ 848.00
06160.02	Storm Structure Cover, Adjust	Ea	2	$ 1,139.00	$ 2,278.00
	Water Mains				
07000.02	6 In., PC 350 DIP w/polywrap, SD-TD-1	Ft	64	$ 180.00	$ 11,520.00
07000.03	8 In., PC 350 DIP w/polywrap, SD-TD-1	Ft	18	$ 225.00	$ 4,050.00
07000.05	12 In., PC 350 DIP w/polywrap, SD-TD-1	Ft	2175	$ 275.00	$ 598,125.00
07001.02	20 In., PC 250 DIP w/polywrap, SD-TD-1	Ft	12	$ 443.00	$ 5,316.00
	DS_2 In., HDPE Water Service, Directional Drill	Ft	143	$ 137.00	$ 19,591.00
	DS_2 In., HDPE	**Ft**	**178**	$ 3.29	$ 585.62
	DS_12 In., PC 350 DIP w/polywrap, Bore and Jack	Ft	98	$ 1,200.00	$ 117,600.00
7010.01	**6 In. 11.25° DIP Bend**	**Ea**	**3**	$ 970.00	$ 2,910.00
7010.01	**6 In. 22.5° DIP Bend**	**Ea**	**3**	$ 962.00	$ 2,886.00
07011.02	8 In. 45° DIP Bend	Ea	1	$ 1,078.00	$ 1,078.00

ITEM NUMBER	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL
07013.01	12 In. 90° DIP Bend	Ea	3	$ 1,652.00	$ 4,956.00
07013.02	12 In. 45° DIP Bend	Ea	9	$ 1,498.00	$ 13,482.00
07013.03	12 In. 22.5° DIP Bend	Ea	10	$ 1,417.00	$ 14,170.00
07013.04	12 In. 11.25° DIP Bend	Ea	7	$ 1,410.00	$ 9,870.00
07020.08	12 In. X 6 In. DIP Reducer	Ea	6	$ 832.00	$ 4,992.00
07020.09	12 In. X 8 In. DIP Reducer	Ea	1	$ 872.00	$ 872.00
07020.10	20 In. X 12 In. DIP Reducer	Ea	1	$ 2,037.00	$ 2,037.00
07030.03	6 In. X 6 In. X 6 In. DIP Tee	Ea	1	$ 1,295.00	$ 1,295.00
07030.12	12 In. X 12 In. X 6 In. DIP Tee	Ea	3	$ 1,771.00	$ 5,313.00
07030.13	12 In. X 12 In. X 8 In. DIP Tee	Ea	1	$ 1,916.00	$ 1,916.00
07030.15	12 In. X 12 In. X 12 In. DIP Tee	Ea	7	$ 2,071.00	$ 14,497.00
07030.33	20 In. X 20 In. X 20 In. DIP Tee	Ea	1	$ 9,706.00	$ 9,706.00
07050.02	Gate Valve in Box, 6 In.	Ea	3	$ 2,508.00	$ 7,524.00
07050.03	Gate Valve in Box, 8 In.	Ea	1	$ 2,997.00	$ 2,997.00
07050.04	Gate Valve in Box, 12 In.	Ea	3	$ 4,540.00	$ 13,620.00
07050.05	Gate Valve in Box, 20 In.	Ea	1	$ 24,181.00	$ 24,181.00
07060.04	Gate Valve in Well, 12 In.	Ea	4	$ 9,731.00	$ 38,924.00
07080.00	Excavate & Backfill For Water Service Tap and Lead	Ft	700	$ 104.00	$ 72,800.00
07090.00	Water Structure Cover	Ea	4	$ 473.00	$ 1,892.00
07100.00	Fire Hydrant Assembly, Complete	Ea	4	$ 8,500.00	$ 34,000.00
07102.00	Fire Hydrant Assembly, Rem	Ea	6	$ 1,028.00	$ 6,168.00
07110.02	Sacrificial Anode, 32-pound	Ea	10	$ 943.00	$ 9,430.00
07121.00	Curb Box, Adjust	Ea	1	$ 193.00	$ 193.00
07141.00	DS_Water Main Pipe, Abandon, Modified	LS	1	$ 115,000.00	$ 115,000.00
07141.00	DS_6 in TSV in Well, Rem	Ea	1	$ 1,887.00	$ 1,887.00
07141.00	DS_20 in Tee, Rem	Ea	1	$ 1,269.00	$ 1,269.00
07170.01	DS_Gate Valve in Box, 2 In. Dia., Rem	Ea	2	$ 636.00	$ 1,272.00
07170.02	Gate Valve in Box, 6 In. Dia., Rem	Ea	4	$ 918.00	$ 3,672.00
07170.03	Gate Valve in Box, 8 In. Dia., Rem	Ea	3	$ 917.00	$ 2,751.00
07190.02	Gate Valve in Well, 6 In. Dia., Rem	Ea	2	$ 1,555.00	$ 3,110.00
07190.03	Gate Valve in Well, 8 In. Dia., Rem	Ea	5	$ 1,559.00	$ 7,795.00
07190.05	Gate Valve in Well, 12 In. Dia., Rem	Ea	2	$ 1,565.00	$ 3,130.00
07130.01	Temporary Water Main Line Stop, 8 In. or less	Ea	3	$ 8,888.00	$ 26,664.00
07130.03	Temporary Water Main Line Stop, 12 In.	Ea	3	$ 10,099.00	$ 30,297.00
7130.04	Temporary Water Main Line Stop, 20 In.	Ea	1	$ 19,335.00	$ 19,335.00
07131.00	**Temporary Water Main Line Stop, 12 In., Additional Rental Day**	**Ea**	**2**	$ 600.00	$ 1,200.00
07131.00	**Temporary Water Main Line Stop, 20 In., Additional Rental Day**	**Ea**	**2**	$ 950.00	$ 1,900.00
	Streets, Driveways, & Sidewalks				
	Subbase, Class II Sand, CIP	**Cyd**	**5**	$ 150.00	$ 750.00
08010.00	Aggregate Base Course, 21AA, CIP	Cyd	713	$ 75.00	$ 53,475.00
08020.00	DS_Steel Bollard	Ea	2	$ 844.00	$ 1,688.00
08060.00	Hand Patching (Contingency)	Ton	10	$ 395.00	$ 3,950.00
08070.14	HMA, 4EL	Ton	193	$ 140.00	$ 27,020.00
08071.00	HMA Approach	Ton	**850**	$ 164.00	$ 139,400.00
08110.00	Conc, Curb or Curb & Gutter, All Types	Ft	285	$ 52.03	$ 14,828.55
08120.01	Conc, Driveway Opening, Type M	Ft	95	$ 45.00	$ 4,275.00
08130.01	Conc, Sidewalk, 4 In.	Sft	641	$ 8.14	$ 5,217.74
08131.01	Conc, Sidewalk, Drive Approach, or Ramp, 6 In.	Sft	380	$ 14.17	$ 5,384.60
08150.00	Detectable Warning Surface	Ft	27	$ 80.00	$ 2,160.00
08200.09	Pavt Mrkg, Polyurea, 24 In., Stop Bar	Ft	48	$ 15.00	$ 720.00
08200.10	Pavt Mrkg, Polyurea, 12 In., Crosswalk	Ft	199	$ 7.50	$ 1,492.50
08200.13	Pavt Mrkg, Polyurea, 6 In., White	Ft	120	$ 5.00	$ 600.00
08200.14	Pavt Mrkg, Polyurea, 6 In., Yellow	Ft	513	$ 5.00	$ 2,565.00
08200.15	Pavt Mrkg, Polyurea, Lt Turn Arrow Sym	Ea	1	$ 250.00	$ 250.00

ITEM NUMBER	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL
08200.17	Pavt Mrkg, Polyurea, Rt Turn Arrow Sym	Ea	1	$ 250.00	$ 250.00
08240.02	Pavt Mrkg, Waterborne, 4 In., Yellow	Ft	354	$ 4.00	$ 1,416.00
08251.00	Recessing Pavt Mrkg, Longit	Ft	633	$ 5.00	$ 3,165.00
08252.00	Recessing Pavt Mrkg, Transv	Sft	335	$ 9.00	$ 3,015.00
	Lighting and Electrical				
09102.00	DS_Light Pole and Foundation, Rem and Salvage	Ea	2	$ 3,725.00	$ 7,450.00
09103.00	DS_Light Pole and Foundation, Reinstall	Ea	2	$ 4,575.00	$ 9,150.00
	Landscaping				
10000.01	Tree, Medium, B&B	Ea	2	$ 850.00	$ 1,700.00
10030.00	Fence, Salvage and Re-Erect	Ft	20	$ 250.00	$ 5,000.00
10060.00	Turf Restoration	Syd	1059	$ 15.72	$ 16,647.48
	Estimated Total			$	$ 2,168,176.91

THIS POWER OF ATTORNEY SUPERCEDES ANY PREVIOUS POWER BEARING THIS SAME POWER # AND ISSUED PRIOR TO 06/30/22, FOR ANY PERSON OR PERSONS NAMED BELOW.

POWER NO. **2140082 03**

General Power of Attorney

CERTIFIED COPY

Westfield Insurance Co.
Westfield National Insurance Co.
Ohio Farmers Insurance Co.

Westfield Center, Ohio

Know All Men by These Presents, That WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, corporations, hereinafter referred to individually as a "Company" and collectively as "Companies," duly organized and existing under the laws of the State of Ohio, and having its principal office in Westfield Center, Medina County, Ohio, do by these presents make, constitute and appoint
JUDY K. WILSON, VICKI S. DUNCAN, KRISTIE A. PUDVAN, SUSAN E. HURD, NICHOLAS R. HYLANT, MICHAEL SCHATZ, KATHY S. ZACK, JENNIFER A. JAROSZ, JAMIE M. LAURENCELLE, SARAYU S. NAIR, THERESA J. FOLEY, JOINTLY OR SEVERALLY

of **ANN ARBOR** and State of **MI** its true and lawful Attorney(s)-in-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver **any and all bonds, recognizances, undertakings, or other instruments or contracts of suretyship in any penal limit.** -.

<u>LIMITATION:</u> THIS POWER OF ATTORNEY CANNOT BE USED TO EXECUTE NOTE GUARANTEE, MORTGAGE DEFICIENCY, MORTGAGE GUARANTEE, OR BANK DEPOSITORY BONDS.
and to bind any of the Companies thereby as fully and to the same extent as if such bonds were signed by the President, sealed with the corporate seal of the applicable Company and duly attested by its Secretary, hereby ratifying and confirming all that the said Attorney(s)-in-Fact may do in the premises. Said appointment is made under and by authority of the following resolution adopted by the Board of Directors of each of the WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY:

"*Be It Resolved,* that the President, any Senior Executive, any Secretary or any Fidelity & Surety Operations Executive or other Executive shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

The Attorney-in-Fact, may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements of indemnity and other conditional or obligatory undertakings and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed by the President and sealed and attested by the Corporate Secretary."

"*Be it Further Resolved,* that the signature of any such designated person and the seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signatures or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached." (Each adopted at a meeting held on February 8, 2000).

In Witness Whereof, WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY have caused these presents to be signed by their **National Surety Leader** and **Senior Executive** and their corporate seals to be hereto affixed this **30th** day of **JUNE** A.D., **2022** .

Corporate Seals Affixed

WESTFIELD INSURANCE COMPANY
WESTFIELD NATIONAL INSURANCE COMPANY
OHIO FARMERS INSURANCE COMPANY

State of Ohio
County of Medina ss.:

By: **Gary W. Stumper,** *National Surety Leader* and *Senior Executive*

On this **30th** day of **JUNE** A.D., **2022** , before me personally came **Gary W. Stumper** to me known, who, being by me duly sworn, did depose and say, that he resides in **Medina, OH;** that he is **National Surety Leader** and **Senior Executive** of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, the companies described in and which executed the above instrument; that he knows the seals of said Companies; that the seals affixed to said instrument are such corporate seals; that they were so affixed by order of the Boards of Directors of said Companies; and that he signed his name thereto by like order.

Notarial Seal Affixed

State of Ohio
County of Medina ss.:

David A. Kotnik, Attorney at Law, *Notary Public*
My Commission Does Not Expire (Sec. 147.03 Ohio Revised Code)

I, **Frank A. Carrino,** Secretary of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; and furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seals of said Companies at Westfield Center, Ohio, this 25th day of February A.D., 2025 .

Secretary

Frank A. Carrino, *Secretary*

BPOAC2 (combined) (03-22)

FONSON COMPANY, INC.

CONSENT RESOLUTIONS OF A SPECIAL MEETING OF THE BOARD OF DIRECTORS

I, the undersigned, being the sole Director of **FONSON COMPANY, INC.,** a Michigan corporation (the "Corporation"), hereby waive the necessity of notice and holding of the annual meeting of the Board of Directors of the Corporation and in its stead adopt as of January 01, 2025, the following:

RESOLVED, that the following persons are elected to the offices set forth beside his name, to serve until the next annual meeting of the Board of Directors and until the election and qualification of their respective successors (or until the effective date of their resignation, or removal with or without cause by the Board of Directors):

President:	Peter D. Scodeller
Vice President:	Kirk Cooley
Secretary:	Brendan J. Fons
Treasurer:	Peter D. Scodeller

RESOLVED, that Peter D. Scodeller shall have authority to enter into and sign bids, proposals and contracts on behalf of the Corporation.

RESOLVED, that Kirk T. Cooley, is appointed Vice President and shall have authority to enter into and sign bids, proposals and contracts on behalf of the Corporation.

RESOLVED, that Brendan J. Fons, shall have authority to enter into and sign bids, proposals and contracts on behalf of the Corporation.

Dated as of:
January 01, 2025

Peter D. Scodeller, President

UNITED STATES OF AMERICA

The State of Michigan

Department of Licensing and Regulatory Affairs

Lansing, Michigan

This is to Certify That

FONSON COMPANY, INC.

was validly incorporated on August 27 , 2014 as a Michigan DOMESTIC PROFIT CORPORATION, and said corporation is validly in existence under the laws of this state.

This certificate is issued pursuant to the provisions of 1972 PA 284 to attest to the fact that the corporation is in good standing in Michigan as of this date and is duly authorized to transact business and for no other purpose.

This certificate is in due form, made by me as the proper officer, and is entitled to have full faith and credit given it in every court and office within the United States.

LICENSING AND REGULATORY AFFAIRS
Corporations, Securities & Commercial Licensing Bureau

In testimony whereof, I have hereunto set my hand, in the City of Lansing, this 12th day of April , 2024.

Linda Clegg

Linda Clegg, Director

Corporations, Securities & Commercial Licensing Bureau

Sent by electronic transmission

Certificate Number: 24040264109

Verify this certificate at: URL to eCertificate Verification Search http://www.michigan.gov/corpverifycertificate.

FONSON COMPANY, INC.
Site Development / Road Builders / Sewer and Water
7644 Whitmore Lake Road • Brighton, MI 48116 • Phone: 810-231-5188 • Fax: 810-231-5404

AUTHORIZED NEGOTIATOR

The following are authorized to negotiate contracts and agreements with the City of Ann Arbor:

Peter Scodeller	(248) 374-1102	pete@scodeller.com
Kirk Cooley	(810) 231-5188	kirk@fonsoninc.com
Brendan Fons	(810) 397-3065	bfons@fonsoninc.com

CONTRACT

THIS CONTRACT is between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 East Huron Street, Ann Arbor, Michigan 48104 ("City") and Fonson Company, Inc. ("Contractor") a corporation in the state of Michigan located at 7644 Whitmore Lake Road, Brighton Michigan, 48116.

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

ARTICLE I - Scope of Work

The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the project titled **RFP #25-10 Westgate Water Main Replacement Project** in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, all of which are incorporated as part of this Contract:

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

ARTICLE II - Definitions

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

Project means **RFP #25-10 Westgate Water Main Replacement Project**

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

Contractor's Representative means _____ [**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 one hundred (120) consecutive calendar days.

(C) Failure to complete all the work within the time specified above, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the City, as liquidated damages and not as a penalty, an amount equal to **$1,000** for each calendar day of delay in the completion of all the work. If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

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

ARTICLE IV - The Contract Sum

Choose one only.

(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:

Two Million, one hundred and sixty eight, one hundred seventy six and 91/100 Dollars ($2,168,176.91)

(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]

By: _____

Name: _____

Title: _____

Date: _____

CITY OF ANN ARBOR

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 Westgate Water Main Replacement Project, for RFP No. 25-10 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 _____, 2025.

_____	_____
(Name of Surety Company)	(Name of Principal)
By _____	By _____
(Signature)	(Signature)
Its _____	Its _____
(Title of Office)	(Title of Office)
Approved as to form:	Name and address of agent:
_____	_____
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 Westgate Water Main Replacement Project, for RFP No. 25-10; 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 _____, 2025

_____
(Name of Surety Company)
By _____
(Signature)
Its _____
(Title of Office)

Approved as to form:

_____
Atleen Kaur, City Attorney

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

Name and address of agent:

_____
.....
_____

_____

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 1,2, the undersigned, as Bidder, proposes to perform at the sites in and/or around Ann Arbor, Michigan, all the work included herein for the amounts set forth in the Bid Forms.

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

The Bidder declares that it has become fully familiar with the provisions of Chapter 14, Section 1:320 (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.

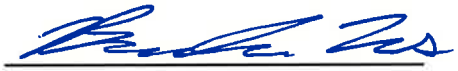
The Bidder encloses a certified check or Bid Bond in the amount of 5% of the total of the Bid Price. The Bidder agrees both to contract for the work and to furnish the necessary Bonds and insurance documentation within 10 days after being notified of the acceptance of the Bid.

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 3rd. DAY OF March, 2025.

Fonson Company, Inc.	
Bidder's Name	Authorized Signature of Bidder
7644 Whitmore Lake Rd Brighton, MI 48116	Brendan Fons, Secretary
Official Address	(Print Name of Signer Above)
810-231-5188	estimating@fonsoninc.com
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 Michigan, for whom Brendan Fons, bearing the office title of Secretary, 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: N/A
(initial here)

Authorized Official

_____ **Date** March 3rd, 2025

(Print) Name Brendan Fons Title Secretary

Company: Fonson Company, Inc.

Address: 7644 Whitmore Lake Rd. Brighton, MI 48116

Contact Phone (810) 231-5188 Fax (810) 231-5404

Email estimating@fonsoninc.com

ATTACHMENT D
PREVAILING WAGE DECLARATION OF COMPLIANCE

The "wage and employment requirements" of Section 1:320 of Chapter 14 of Title I of the Ann Arbor City Code mandates that the city not enter any contract, understanding or other arrangement for a public improvement for or on behalf of the city unless the contract provides that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen, mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. Where the contract and the Ann Arbor City Code are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used. Further, to the extent that any employees of the contractor providing services under this contract are not part of the class of craftsmen, mechanics and laborers who receive a prevailing wage in conformance with section 1:320 of Chapter 14 of Title I of the Code of the City of Ann Arbor, employees shall be paid a prescribed minimum level of compensation (i.e. Living Wage) for the time those employees perform work on the contract in conformance with section 1:815 of Chapter 23 of Title I of the Code of the City of Ann Arbor.

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

The Contractor agrees:

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

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

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

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

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

Fonson Company, Inc.
Company Name

03/03/2025
Signature of Authorized Representative Date

Brendan Fons, Secretary
Print Name and Title
7644 Whitmore Lake Rd. Brighton, MI 48116
Address, City, State, Zip
810-231-5188 estimating@fonsoninc.com
Phone/Email address

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

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 $16.43/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 $18.32/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

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

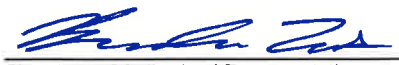
(b) To post a notice approved by the City regarding the applicability of the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.

(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.

Fonson Company, Inc.	7644 Whitmore Lake Rd.
Company Name	Street Address
 03/03/2025	Brighton, MI 48116
Signature of Authorized Representative Date	City, State, Zip
Brendan Fons, Secretary	810-231-5188 estimating@fonsoninc.com
Print Name and Title	Phone/Email address

Attachment F

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2024 - ENDING APRIL 29, 2025

$16.43 per hour
If the employer provides health care benefits*

$18.32 per hour
If the employer does **NOT** provide health care benefits*

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

ENFORCEMENT

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

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

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

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

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

Revised 2/1/2024

ATTACHEMENT G

Vendor Conflict of Interest Disclosure Form

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

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

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

Conflict of Interest Disclosure*	
Name of City of Ann Arbor employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	( ) Relationship to employee ( ) Interest in vendor's company ( ) Other (please describe in box below)
None	

*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:		
Fonson Company, Inc.		810-231-5188
Vendor Name		**Vendor Phone Number**
	03/03/2025	Brendan Fons, Secretary
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 H

DECLARATION OF COMPLIANCE

Non-Discrimination Ordinance

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

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

The Contractor agrees:

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

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

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

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

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

Fonson Company, Inc.
Company Name

03/03/2025
Signature of Authorized Representative — Date

Brendan Fons, Secretary
Print Name and Title

7644 Whitmore Lake Rd. Brighton, MI 48116
Address, City, State, Zip

810-231-5188 estimating@fonsoninc.com
Phone/Email Address

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

ATTACHMENT I

CITY OF ANN ARBOR NON-DISCRIMINATION ORDINANCE

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

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

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

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

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

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

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

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

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

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

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

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

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

Section 2 - Order of Completion

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

Section 3 - Familiarity with Work

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

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

Section 4 - Wage Requirements

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

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

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

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

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

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

Section 5 - Non-Discrimination

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

Section 6 - Materials, Appliances, Employees

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

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

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

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

Section 8 - Royalties and Patents

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

Section 9 - Permits and Regulations

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

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

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

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

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

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

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

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

Section 11 - Inspection of Work

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

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

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

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

Section 12 - Superintendence

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

Section 13 - Changes in the Work

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

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

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

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

Section 14 - Extension of Time

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

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

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

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

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

(5) Delay due to an act of Government;

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

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

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

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

Section 15 - Claims for Extra Cost

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

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

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

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

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

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

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

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

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

Section 16 - Progress Payments

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

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

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

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

Section 17 - Deductions for Uncorrected Work

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

Section 18 - Correction of Work Before Final Payment

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

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

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

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

Section 19 - Acceptance and Final Payment

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

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

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

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

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

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

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

Section 20 - Suspension of Work

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

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

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

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

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

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

Section 22 - Contractor's Right to Terminate Contract

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

Section 23 - City's Right To Do Work

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

Section 24 - Removal of Equipment and Supplies

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

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

Section 25 - Responsibility for Work and Warranties

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

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

Section 26 - Partial Completion and Acceptance

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

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

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

Section 27 - Payments Withheld Prior to Final Acceptance of Work

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

(1) Defective work not remedied;

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

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

(4) Damage to another Contractor.

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

Section 28 - Contractor's Insurance

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

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

Required insurance policies include:

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

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

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

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

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

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

(2) Insurance required under subsection (1)(b) and (1)(c) above shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute

with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City for any insurance listed herein.

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

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

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

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

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

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

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

Section 30 - Damage Claims

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

Section 31 - Refusal to Obey Instructions

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

Section 32 - Assignment

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

Section 33 - Rights of Various Interests

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

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

Section 34 - Subcontracts

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

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

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

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

Section 35 - Supervising Professional's Status

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

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

Section 36 - Supervising Professional's Decisions

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

Section 37 - Storing Materials and Supplies

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

Section 38 - Lands for Work

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

Section 39 - Cleaning Up

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

Section 40 - Salvage

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

Section 41 - Night, Saturday or Sunday Work

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

Section 42 - Sales Taxes

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

Section 43

CONTRACTOR'S DECLARATION

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

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

_____ _____
Contractor Date

By _____
(Signature)

Its _____
(Title of Office)

Past due invoices, if any, are listed below.

Section 44

CONTRACTOR'S AFFIDAVIT

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

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

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

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

_____ _____
Contractor Date

By _____
(Signature)

Its _____
(Title of Office)

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

STANDARD SPECIFICATIONS

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

Standard Specifications are available online:

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

DETAILED SPECIFICATIONS

DETAILED SPECIFICATIONS

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
PROJECT SCHEDULE AND PAYMENT

Description

Examination of Plans, Specifications, and Work Site

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

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

1. The Contractor shall begin the work of this project on or before **May 6, 2025**, 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 replacement and relocation of watermain, appurtenances, possible storm sewer and structures (if in conflict), road restoration, and turf establishment, and shall be completed within **one hundred and twenty (120) consecutive calendar days**. Contractor shall determine the sequence of work at the project location areas and shall not be actively working on more than one major area, unless otherwise approved by the Engineer. The two major project areas include:

   a. West Side - North to South Water Main Replacement
   b. South East Side - Water Main Replacement

3. Contractor shall maintain access for local traffic and shall maintain a drivable surface in all proposed roadways where not actively working.

4. Contractor shall sequence the water main work in a way that does not interrupt service of other utilities.

5. 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 Saturday: 7:00 am – 8:00 p.m.
   - Sunday: Only with written approval from the City of Ann Arbor

   No work shall be performed during Holiday weekends as follows, unless approved by the

City of Ann Arbor:

- Memorial Day, from 3:00 p.m. Friday May 23, 2025, through 7:00 a.m. Tuesday May 27, 2025
- Fourth of July, from 3:00 p.m. Thursday July 3, 2025, through 7:00 a.m. Monday July 7, 2025
- Labor Day, from 3:00 p.m. Friday August 29, 2025, through 7:00 a.m. Tuesday September 2, 2025

a. No lane closures will be allowed during University of Michigan home football games, unless approved by the Engineer.

b. No lane closures will be allowed during Ann Arbor Art Fair, July 17-19, 2025.

City Council approval is expected on **April 7, 2025**. The Contractor shall not begin the work without approval from the Project Engineer, and in no case before the receipt of the Notice to Proceed.

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

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

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

Liquidated Damages

Failure to complete all work as specified herein within the times specified herein, including time extensions granted thereto as determined by the Engineer, shall entitle the City to deduct from the payments due the Contractor, **$1,000.00** 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.

Liquidated Damages will be assessed until the required work is completed in the current

construction season. If, with the Engineer's approval, work is extended beyond seasonal limitations, the assessment of Liquidated Damages will be discontinued until the work is resumed in the following construction season.

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
MAINTAINING TRAFFIC
AND
CONSTRUCTION SEQUENCING

General.- Traffic shall be maintained in accordance with Sections 104.11, 810, 811, 812, 919, and 920 of the Michigan Department of Transportation (MDOT), City of Ann Arbor 2025 Public Services Standard Specifications and in accordance with the 2011 edition of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD) as amended, except as herein provided.

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

Materials.- The materials and equipment shall meet the requirements specified in the sections designated of the MDOT 2020 Standard Specifications for Construction and all Detailed Specifications contained in these Contract Documents.

Cold Patching Material shall meet the requirements of the City of Ann Arbor 2025 Standard Specifications and be accepted for use by the Engineer.

Permits.- Prior to the start of construction, the Contractor shall obtain a "Right-of-Way" Permit from City of Ann Arbor Planning and Development Services and a "Lane Closure" Permit from City of Ann Arbor Project Management Services Unit. The fees for these permits will be waived. The lane closure permit must be obtained at least 48 hours in advance of any proposed street or lane closing.

Construction Influence Area (CIA).- The CIA shall include the following areas:

I. Westgate Shopping Center Parcel
II. The road right-of-way of Jackson Avenue between I-94 exit/ on ramps and Maple Road
III. The right-of-way of the S Maple Road between Jackson and Stadium. The right-of-way of S Maple Road from Stadium to 500 feet south of said intersection.

The CIA shall also include the affected portions of the driveways along, and contiguous with these roadways that contain advance warning and/or regulatory signs, pavement

markings, plastic drums, traffic delineators, and all other project related traffic maintenance items.

In addition, the CIA shall include the rights-of-way of all roadway segments used for detours and all locations where the Contractor's traffic control devices, pavement markings and signs are used. The CIA shall also include those portions of private property outside of the roadway Rights-of-way as shown in the plans within the "Water Main Easement" areas.

Work Performed by City of Ann Arbor Signs and Signals Unit.-

Signal Modifications

To coordinate the needed signal or pedestrian signal work, the Contractor shall notify the Signs and Signals Unit at least 7 days in advance. No additional or extra compensation will be paid for any delays caused by City of Ann Arbor Signs and Signals.

Maintenance of Traffic, General.-

The Contractor shall continuously maintain through traffic as indicated on the Maintenance of Traffic sheets during the course of the Project's construction.

The Contractor shall not obstruct the traffic lanes in any manner from 7:00 to 9:00 a.m. and from 3:30 to 6:00 p.m. along Jackson or Stadium or Maple. The exception to this requirement is that certain construction operations require the use of lane closures to complete certain construction operations such as the water main connection work. When this work is to be performed, approved Lane Closure Permits shall have been previously obtained and the required traffic control devices must be in place to safely maintain traffic. These required lane closures must be scheduled by the Contractor and approved by the Engineer a minimum of seven (7) calendar days in advance in order to allow the Engineer to properly notify affected parties.

At other times the temporary obstruction of traffic for loading and unloading of trucks will be permitted if the Contractor provides traffic regulators (flag persons) in conformance with Part VI of the MMUTCD.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
MAINTAINING TRAFFIC
AND
CONSTRUCTION SEQUENCING

The Contractor shall coordinate his operations with all Utilities, Contractors and/or sub-Contractors performing work on this and other projects within, or adjacent to, the Construction Influence Area (CIA).

Maintenance.- Walks, driveways, and entrances to business shall not be blocked. Deliveries and trash pickups to each business should not be blocked. Special coordination with business might be needed in order to be prepared for maintenance of traffic for deliveries/trash pickups. Coordination and communication would fall under pay item "Project Supervision, Max". Vehicular and pedestrian access shall be maintained to all businesses.

Exploratory Excavations, utility crossings, and all other openings created by the Work over which vehicular traffic will be maintained shall receive a minimum cover of 3 inches of Cold-Patching material that is thoroughly compacted in place. The cost of the cold patch material will not be paid for separately, but shall be included in the item(s) of work being performed.

Signs and Pavement Markings.- When lane closures are in place, the Contractor shall completely cover all conflicting warning, regulatory and guide signs in accordance with Section 812.03.D.2 of the Standard Specifications for Construction, 2020 edition, and all applicable details therein.

Sequence of Construction.- This special provision does not detail all the project work. It is intended to indicate major project requirements and assist the Contractor in developing, for the review and approval of the Engineer, the Progress Schedule for the project.

The Contractor shall notify the Engineer a minimum of five (5) calendar days prior to the implementation of any detours, road closures, ramp or lane closures, and major traffic shifts.

West Side - North to South Water Main Replacement Construction. The following major work tasks are included in this work:

1. Implement the traffic control as shown on the project plans for this stage of the construction. Install all needed soil erosion and sedimentation control measures.

2. Perform the needed tree removal, clearing and brush removal, and other similar preparatory work.

3. Perform replacement and reroute of water main, appurtenances, abandonment, service transfers and connections, etc. as shown in the plans.

4. Perform jack and bore across Jackson Ave (MDOT I-94BL) for new water main.

5. Replace portions of HMA drive aisle/driveways if needed to provide access. Install aggregate base course and maintain access to a minimum of one driveway open on Jackson and Maple. At least one route of continuous access from one side of parking lot to the other (i.e. vehicle entering driveway from Jackson can exit on Maple) should be maintained.

6. Install bollards as shown on the plan sheets and as directed by the Engineer.

7. Adjust any impacted structures to final grade. Place final layer of HMA and install needed pavement parking markings.

8. Perform the needed final grading and site restoration activities. Clean the project site of all construction debris.

9. Remove traffic control devices and re-open construction areas.

South East Water Main Replacement Construction. The following major work tasks are included in this work:

Note: All work must be performed in accordance with the construction coordination requirements as shown on the plans.

1. Implement the traffic control as shown on the project plans for this stage of the construction. Install all needed soil erosion and sedimentation control measures.

2. Perform replacement and reroute of water main, appurtenances, abandonment, service transfers and connections, etc. as shown in the plans.

3. Perform directional bore for service connection for Westgate Library.

4. Coordinate and perform construction associated with the water main connections at Maple and Abbot and Lewis Jewelers. These two connections need to be done separately as both detours CANNOT be in affect at the same time.

5. Zingerman Water Service trench should be done at the same time as Maple and Abbot Water Main connection lane closure/detour is in place.

6. Replace portions of HMA driveways if needed to provide access. Install aggregate base course and maintain access to a minimum of one driveway open on Jackson and Maple. At least one route of continuous access from one side of parking lot to the other should be maintained.

7. Coordinate with the City of Ann Arbor Signs and Signals Unit with regard to the modifications needed during lane closures at Maple.

8. Adjust any impacted structures to final grade.

9. Place final layer of HMA and perform pavement markings.

10. Perform the needed final grading and site restoration activities. Clean the project site of all construction debris.

11. Remove traffic control devices and re-open construction areas.

Measurement and Payment.- The estimated quantities for maintaining traffic is based on the maintenance of traffic plans and pay items such as “DS_Minor Traffic Control, Modified, Max” and “Traffic Regular Control”. Any additional signing, traffic control devices, pavement markings, or the like required to expedite the construction, beyond that which is specified, shall be at the Contractor's sole expense.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
MINOR TRAFFIC CONTROL, MODIFIED, MAX. $_____

a. Description.- This work shall consist of protecting and maintaining vehicular and pedestrian traffic in accordance with the 2025 City of Ann Arbor Public Services Standard Specifications, Article 1, 10.I.C, 10.III.B; Section 812 of the 2020 MDOT Standard Specifications for Construction; Part 6 of the Michigan Manual of Uniform Traffic Control Devices, Latest Revised Edition (MMUTCD); this Detailed Specification; and, as shown on the plans and as directed by the Engineer.

This item of work shall include, but not be limited to:

- The furnishing and operating of miscellaneous signs, warning devices, flag-persons, and cones as required for the entire duration of the project;
- The furnishing and operating of signs, pedestrian channelizers, temporary pedestrian ramp and temporary mats (and/or plywood or cold patch material) as required to maintain or detour pedestrian traffic around the construction areas and provide access to business for the duration of the project;
- The operation of additional signs furnished by the City;
- Furnishing and installing meter bags (where required);
- Coordinating with the City to have meter heads removed and reinstalled (where required);
- Maintaining pedestrian traffic;
- Temporarily covering conflicting existing signs as directed by the Engineer with approved sign covers; and,
- Any and all other miscellaneous and/or incidental items that are necessary to properly and safely perform the work.

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

Typical applications for maintaining pedestrian traffic in accordance with the MMUTCD are included in plan set for this project.

b. Materials.- Traffic maintenance material and equipment shall meet the requirements as specified in Section 812.02 of the 2020 MDOT Standard Specifications for Construction.

c. Construction Methods.- All temporary traffic/pedestrian control devices furnished by the Contractor shall remain the property of the Contractor. The City shall not be responsible for stolen or damaged signs, barricades, barricade lights or other traffic maintenance items. The Contractor shall replace missing traffic control devices

immediately and at no additional cost to the City.

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

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

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

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

The Contractor shall furnish and install the traffic control items as shown on the contract plan sheets and details included therein and in accordance with detailed specification “Maintaining Traffic and Construction Sequencing”.

Removable black pavement marking cover tape shall be used to cover conflicting pavement markings as directed by the Engineer. Temporary pavement markings may be used within transition areas, if requested by the Contractor, and approved by the Engineer. All temporary pavement markings shall be removable.

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

The completed work as measured for this item of work shall be paid for at the contract unit price for the following contract item (Pay Item):

Pay Item	**Pay Unit**
DS_Minor Traffic Control, Modified, Max. $____	**Lump Sum**

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR

LIGHT POLE AND FOUNDATION, REM, SALV, AND REINSTALL

a. Description.- This work shall consist of removing, salvaging, protecting during storage, relocating, and energizing the parking lot light pole and all related appurtenances. This work shall also include removing and disposing of the existing foundation, and constructing new foundations at the locations shown on the plans or as directed by the Engineer.

b. Materials.- Backfill shall be Granular Material, Class II, unless otherwise approved by the Engineer. All electrical components needed to re-connect the wiring shall match existing materials unless otherwise directed by the Engineer. Any costs associated with furnishing new materials as a result of Contractor caused damage, shall be included in the payment for this item of work, and will not be paid for separately.

c. Construction Methods.- Disconnect all electrical connections, remove the pole from the existing foundation, and salvage all material as directed. Carefully store the poles and appurtenances, protecting them from all manner of damage. Construct new foundation at the location as shown on the plans, or as directed by the Engineer. The new foundation shall match in-kind the existing foundation, or as approved by the Engineer. The new foundation shall be constructed with forms, as needed, to shape the upper part of the foundation which is exposed to view. The top elevation of the new foundation shall be level and at an elevation as directed by the Engineer. The anchor bolts shall be accurately spaced on the bolt circle and in lines parallel to the curb.

The Contractor shall provide ground rods and wires meeting the requirements of the NEC (latest edition). The ground wire shall be placed inside the foundation. If conduit is extended into the foundation, the ground wire shall be imbedded in the concrete. If a formed channel is used in the foundation in lieu of conduit, the ground wire shall be located in the formed channel. The ground wire shall be wrapped around and properly attached to the ground rods. The ground rod/wire connection shall not be encased in concrete.

After the concrete foundation has cured a minimum of 7 days, and reached a minimum of 80% of its maximum compressive strength, install the salvaged light pole using approved materials.

d. Measurement and Payment.- The completed work as measured for "Light Pole and Foundation – Remove, Savage" will be paid for at the contract unit price for the following contract item (pay item):

Contract Item (Pay Item)	**Pay Unit**
DS_Light Pole and Foundation, Remove and Salvage	Each
DS_Light Pole and Foundation, Reinstall	Each

The unit prices shall include all material labor, and equipment to complete the work as described herein. New anchor bolts will be required and are included in the bid price for this item. Additional conduit and wiring necessary to relocate the light poles will not be paid for separately, but shall be included in this item of work.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
CONCRETE BOLLARD, REM

Description

This work shall consist of removing concrete bollards and its footing and its disposal as indicated on the Plans or where directed by the Engineer. This work shall be performed in accordance with 2025 Public Services Standard Specifications and section 204 of Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, except as specified herein.

Construction Method

Remove concrete bollards, associated footings, backfill and restore surface in accordance with Section 204.

Measurement and Payment

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

Contract Item (Pay Item)	Pay Unit
DS_Concrete Bollard, Rem	Ea

DS_Concrete Bollard, Rem shall include the cost of removing and proper disposal of concrete bollards and its footing, in accordance with these contract documents, and the applicable MDOT specifications. The cost of breaking down and removing, sawing, disposing of materials, and providing, placing, and compacting backfill shall be included in the unit price. If additional surface restoration is needed, including asphalt, it shall be considered incidental to the pay item.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
BORE AND JACK WATER MAIN

Description

This work shall consist of furnishing all labor, tools, equipment, and materials to construct water main in place via bore and jack method in accordance with the Ann Arbor 2025 Public Services Standard Specifications; current, applicable City of Ann Arbor Standard Details; as shown on the plans; and as specified herein.

Where unspecified by City of Ann Arbor Standard Specifications and/or standard details, work and materials shall be in accordance with the MDOT 2020 Standard Specifications for Construction.

Materials

Casing pipe and spacers shall meet the material requirements of Section XXVI of Article 1, Section II.E of Article 3, and Appendix A of the Ann Arbor 2025 Public Services Standard Specifications.

Blocks, bricks, and mortar for bulkheads shall meet the material requirements of Appendix A of the Ann Arbor 2025 Public Services Standard Specifications, or approved equal as determined by the City of Ann Arbor.

Carrier pipe, fittings, restraints, and wrappings shall meet the material requirements of Section II.A of Article 3 and Appendix A of the Ann Arbor 2025 Public Services Standard Specifications.

Tracer wire shall meet the material requirements of Section II.F of Article 3 and Appendix A of the Ann Arbor 2025 Public Services Standard Specifications.

Construction

The proposed water main (of the size indicated) and casing pipe shall be constructed at the locations and to the vertical and horizontal limits and elevations indicated in the plans. Unless otherwise noted, construction shall be in accordance with Ann Arbor Standard Detail SD-W-6 (current edition) and also applicable MDOT Standard Specification for Construction for Jack and Bore.

Measurement and Payment

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

Pay Item	Pay Unit
DS_12 In., PC 350 DIP w/polywrap, Bore and Jack	Ft

Payment shall be made based on the lineal foot constructed in place, as measured along the centerline of the carrier pipe, from end of casing pipe to end of casing pipe. The unit price bid shall be payment in full for all labor, materials, and equipment required to bore and jack casing pipe at the locations and to the horizontal and vertical limits and grades indicated in the project

plans and profiles, and install the proposed water main pipe and required appurtenances (joint restraints, mechanical joint fittings, polyethylene encasement, tracer wire, etc.) inside of the casing pipe, as indicated in Ann Arbor Standard Detail SD-W-6. All labor, material, and equipment requirements of Ann Arbor Standard Detail SD-W-6 shall be considered incidental to the unit price bid for the item **DS_12 In., PC 350 DIP w/polywrap, Bore and Jack – Ft** and will not be paid for separately, including the removal and offsite disposal of earth spoils and slurry from the bore operation. All disturbed areas within the right of way shall be top-soiled, seeded and mulched to match existing areas per current MDOT standards and specifications.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
COPPER SERVICE LEAD
DIRECTIONAL DRILL

Description

This work shall consist of furnishing all labor, tools, equipment, and materials to construct copper service lead via horizontal directional drill in accordance with the Ann Arbor 2025 Public Services Standard Specifications; current, applicable City of Ann Arbor Standard Details; as shown on the plans; and as specified herein.

Where unspecified by City of Ann Arbor Standard Specifications and/or standard details, work and materials shall be in accordance with the MDOT 2020 Standard Specifications for Construction.

Materials

Material requirements of Section II.E of Article 3, and Appendix A of the Ann Arbor 2025 Public Services Standard Specifications, or approved equal as determined by the City of Ann Arbor.

Tracer wire shall meet the material requirements of Section II.F of Article 3 and Appendix A of the Ann Arbor 2024 Public Services Standard Specifications.

Construction

Construction shall comply with Section 1.B. item 14 of Article 3 and Section II. N. (Water Main Directional Drilling), items 1-4, 7 of Article 10 of the Ann Arbor 2025 Public Services Standard Specifications.

Copper service lead shall be constructed at the locations and to the vertical and horizontal limits and elevations indicated in the plans. The minimum depth of cover at any location shall be 3 feet. Depth of cover is measured from the finished grade to the top of the pipe.

Inject drilling fluid through reamer to stabilize bore and lubricate pipe. Ratio of reaming diameter to pipe outer diameter is a maximum of 1.5.

Measurement and Payment

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

Pay Item	Pay Unit
DS_2 In., Copper Service Lead, Directional Drill	Ft

The unit price bid shall be payment in full for will be measured by length in feet and shall include all labor, material and equipment costs required to furnish and install conduit; and shall include, but not be limited to, excavation, bore pits, trench sheeting and shoring, directional drilling, assembly, dewatering, spoils removal, backfill, compaction, fittings, elbows, sweeps, pull strings, end caps, sleeves, tracer wire, expansion couplings, conduit spacers, concrete and other work

necessary for installation of as shown on the plans or specified.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
WATER MAIN ABANDON AND REM

Description

This work shall consist of furnishing all labor, tools, equipment, and material to properly abandon water mains as indicated on the Plans or as directed by the Engineer. This work shall be performed in accordance with 2025 Public Services Standard Specifications Article 3 and Article 10, Section II.BB., except as specified herein.

Construction

The Contractor shall abandon water mains where shown on the Plans and as directed by the Engineer. This includes, but is not limited to, properly draining the main, cutting the main at every connection point (each end and all side street connections), and plugging the abandoned cut ends with brick and mortar, concrete, or mechanical joint plug.

Any previously abandoned water main that is removed for installation of another utility shall be properly abandoned and plugged on each remaining end. This is included in the payment of the installed utility and shall be paid for separately.

Valve wells and valve boxes shall be abandoned per the 2025 City of Ann Arbor standard where shown on the Plans and as directed by the Engineer. This includes, but is not limited to, breaking down any manholes (remove manhole ring and cover and the top 4 feet of manhole structure, breaking out the manhole base, and backfilling as specified herein), removing the top 4 feet of any valve boxes and backfilling with approved granular material.

Measurement And Payment

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

Pay Item	Pay Unit
DS_Water Main Pipe, Abandon, Modified, _____	LS
DS_6 in TSV in Well, Rem	EA
DS_20 in Tee, Rem	EA
DS_Gate Valve in Box, 2 In. Dia., Rem	EA

DS_Gate Valve in Box, DS _in TSV in Well, Rem and DS_ in Tee, Rem shall be measured by each and shall include all labor, materials, and equipment costs necessary to completely abandon the gate box, well or tee including, but not limited to; the removal and proper disposal off-site of all excess materials and the furnishing, placement, and compaction of approved granular backfill and surface restoration, including asphalt or concrete.

Payment for **DS_Water Main Pipe, Abandon, Modified,** _____ shall be made in two payments, when approximately 50% of the water main has been abandoned, 50% of LS will be paid.

No payment shall be made for removing or abandoning previously abandoned water main that is removed for installation of another utility; this shall be included in the payment of the installed utility.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
STEEL PIPE BOLLARD

Description

This work shall consist of installing concrete filled steel pipe bollards and yellow high density polyethylene (HDPE) bollard covers as indicated on the Plans or where directed by the Engineer. This work shall be performed in accordance with 2025 Public Services Standard Specifications Detail SD-M-3, except as specified herein.

Construction Method

Install bollards to the dimensions shown as indicated in Ann Arbor Standard Detail SD-M-3. Install bollards plumb. Install bollard covers according to manufacturer's specifications.

Measurement and Payment

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

Contract Item (Pay Item)	Pay Unit
DS_Steel Bollard	Ea

DS_Steel Bollard shall include includes fabricating, galvanizing, delivering, and installing the bollard and bollard cover at the location shown on the plans.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
ADDITIONAL SIGNS

Description

This work shall consist of furnishing and placing additional construction signs in accordance with the Ann Arbor 2025 Public Services Standard Specifications; current, applicable City of Ann Arbor Standard Details; as shown on the plans; and as specified herein.

Materials

- yard signs, 18x24, color, printed on one side, coro board with stakes ("OPEN DURING CONSTRUCTION")

Measurement and Payment

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

Pay Item	Pay Unit
DS_Additional Signs	Ea

The unit price bid shall be payment in full for each sign furnished and placed.

APPENDIX

GEOTECHNICAL INVESTIGATION REPORT

2023 BUNDLE 2 - STREET RESURFACING
BURSON PLACE AND WESTGATE SHOPPING CENTER

ANN ARBOR, MICHIGAN

MSG PROJECT NO.: 401.2300021.000

FEBRUARY 2024

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

February 2, 2024

Ms. Andrea Wright
Project Manager
City of Ann Arbor
301 E. Huron, 4th Floor
PO Box 8647
Ann Arbor, Michigan 48107

RE: Geotechnical Investigation Report
2023 Bundle 2 - Street Resurfacing (Burson Place & Westgate Shopping Center)
Ann Arbor, Michigan
MSG Project Number: 401.2300021.000

Dear Ms. Wright:

This report presents the results of our geotechnical investigation for the proposed pavement resurfacing project along Burson Place and within the Westgate Shopping Center in Ann Arbor, Michigan. 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 November 10, 2023.

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

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EXECUTIVE SUMMARY

The Mannik & Smith Group, Inc., (MSG) was retained by the City of Ann Arbor to conduct a geotechnical investigation to support the design of a proposed pavement resurfacing project along Burson Place and within the Westgate Shopping Center in Ann Arbor, Michigan.

The subsurface investigation consisted of performing a total of thirteen (13) soil borings. The locations along Burson Place were designated as SB2023-106 through SB2023-108. The locations at the Westgate Shopping Center were designated as SB2023-109 to SB2023-118. We note that SB2023-119 was not attempted during this investigation due to access issues.

At Burson Place, 6 to 9 inches of asphalt was encountered at the surface over 7 inches of sand or aggregate base. At Westgate Shopping Center, either 4 to 11 inches of asphalt was encountered at the surface generally over 2 to 8 inches of aggregate base, or 6 to 8 inches of topsoil was encountered at the surface. At Burson Place, native medium stiff to very stiff clay was encountered below the pavement section. At Westgate Shopping Center, loose to very dense sand fill was encountered in 2 borings below the surface material to depths of 1.8 to 4 feet below ground surface and loose to medium dense clayey sand was encountered in 2 borings below the surface material to depths of 2 to 2.2 feet below ground surface; medium stiff to hard clay soils were found in each of the borings below the surface layer or sand layers.

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 areas, the pavement design may use an estimated modulus for subgrade reaction of 120 pounds per cubic inch (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.

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

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 design of a proposed pavement resurfacing project along Burson Place and within the Westgate Shopping Center in Ann Arbor, Michigan. The approximate site locations for Burson Place and the Westgate Shopping Center are depicted as Figure 1 and Figure 2 in Appendix A. 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 our proposal and agreement for professional services dated November 10, 2023.

1.2 Project Information and Site Conditions

The project on Burson Place consists of the design and construction of a proposed pavement resurfacing at the end of the cul-de-sac, north of Hill Street. Westgate Shopping Center is located at 2463 W stadium Boulevard in Ann Arbor, Michigan. The Westgate project consists of the design and construction pavement improvements of the parking lots associated driveways.

2.0 SUBSURFACE INVESTIGATION

2.1 Field Exploration

The subsurface investigation consisted of performing a total of thirteen (13) soil borings. The locations along Burson Place were designated as SB2023-106 through SB2023-108. The locations at the Westgate Shopping Center were designated as SB2023-109 to SB2023-118. We note that SB2023-119 was not attempted during this investigation due to access issues. Details of the field investigation are highlighted in Table 2.1-1.

Table 2.1-1 Summary of Field Investigation

Burson Place			Westgate Shopping Center		
Location ID	Boring Depth (ft)	Pavement Core	Location ID	Boring Depth (ft)	Pavement Core
SB2023-106	5.0	Yes	SB2023-109	10.0	Yes
SB2023-107	5.25	Yes	SB2023-110	10.0	Yes
SB2023-108	5.0	Yes	SB2023-111	10.0	Yes
-	-	-	SB2023-112	10.0	Yes
-	-	-	SB2023-113*	4.0	Yes
-	-	-	SB2023-114	10.0	Yes
-	-	-	SB2023-115	10.0	No
-	-	-	SB2023-116	10.0	Yes
-	-	-	SB2023-117	10.0	Yes
-	-	-	SB2023-118*	1.0	No
-	-	-	SB2023-119**	n/a	n/a

*Boring terminated on an obstruction
**Boring not attempted due to access issues

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 Plans for Burson Place and Westgate Shopping Center are depicted as Figure 3 and Figure 4 in Appendix A. The boring locations at Westgate Shopping Center were scanned for the presence of private underground utilities using Ground Penetrating Radar device (GPR) prior to the drilling operations.

The drilling operations for Burson Place were performed on December 1, 2023. The drilling operations for Westgate Shopping Center were performed between November 28 to November 30, 2023. 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. At soil boring locations performed within existing pavement, the pavement was first cored to the full depth of the pavement. 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 continuous intervals for the first 5 feet and at 2.5-foot intervals up to 10 feet.

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.

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 the pocket penetrometer test, sieve analysis (ASTM D422), unconfined compressive strength (ASTM D2166), and natural moisture content (ASTM D2216). A brief description of each test performed by MSG is provided in Laboratory Test Procedures in Appendix C.

All soil samples were classified in general accordance with the Unified Soil Classification System (USCS). The USCS group symbol determined from the visual-manual classification is shown in parentheses at the end of the sample description for each layer shown on the Soil Boring Logs.

The results of the soil classification and the laboratory test results are included on the Soil Boring Logs and Soil Laboratory Test Data, which are presented in Appendices B and C, respectively. Also included in Appendix B are General Soil Sample Notes, and a Boring/Well Log Key that illustrates the soil classification criteria and terminology used on the Soil Boring Logs.

3.0 SUBSURFACE CONDITIONS

3.1 Subsurface Classification

The following sections describe the subsurface conditions in terms of major soil strata for the purposes of geotechnical exploration. The soil boundaries indicated are inferred from non-continuous sampling and observations of the drilling operations and/or sampling resistance. The subsurface conditions discussed in the following sections and those shown on the boring logs represent an evaluation of the subsurface conditions based on interpretation of the field and laboratory data using normally accepted geotechnical engineering judgement and common engineering practice standards. The subsurface conditions described herein may vary beyond the boring locations and at different times of the year. A generalized soil profile of the subsurface conditions encountered across the sites, beginning at the ground surface and extended downward is as follows:

3.1.1 BURSON PLACE

Surficial Material

Asphalt was encountered at all the soil boring locations. Fill sand or aggregate base was encountered below the asphalt in all borings. The thickness of the pavement at each location is depicted in Table 3.1.1-1 below.

Table 3.1.1-1 Burson Place

Location ID	Pavement	Base Material
SB2023-106	6-inch Asphalt	7-inch Sand
SB2023-107	9-inch Asphalt	7-inch Sand
SB2023-108	6-inch Asphalt	7-inch Aggregate

Stratum 1 – Clay (CL)

Medium stiff to very stiff clay with variable amounts of sand and gravel was encountered at all soil boring locations below the pavement and base material. This material generally extended to the termination depths of the borings at 5 to 5.25 feet below ground surface. The standard penetration number ranged from 7 to 17 and averaged 13; the estimated unconfined compressive strength ranged from 2,000 to 4,000 psf and averaged 2,800 psf.

3.1.2 WESTGATE SHOPPING CENTER

Surficial Material

Asphalt was encountered at the majority of the soil boring locations. The thickness of the pavement at each location is depicted in Table 3.1.2-1 below. Note at boring locations SB2023-115 and SB2023-118, topsoil was encountered at the surface with a thickness of 6 to 8 inches.

Table 3.1.2-1 Westgate Shopping Center

Location ID	Pavement	Base Material
SB2023-109	11-inch Asphalt	2-inch Aggregate
SB2023-110	10-inch Asphalt	4-inch Aggregate
SB2023-111	7-inch Asphalt	8-inch Aggregate
SB2023-112	7-inch Asphalt	8-inch Aggregate
SB2023-113	6-inch Asphalt	-
SB2023-114	4-inch Asphalt	-
SB2023-115	n/a	n/a
SB2023-116	6-inch Asphalt	6-inch Aggregate
SB2023-117	6-inch Asphalt	6-inch Aggregate
SB2023-118	n/a	n/a

Stratum 1 – Sand Fill (SC, SM)
Fill sand with variable amounts of clay, silt, and gravel was encountered at soil boring locations SB2023-113 and SB2023-114, and extended to depths of 1.8 to 4 feet below ground surface. The fill ranged from loose to very dense.

Stratum 2 – Sand (SW-SM, SC)
Sand with variable amounts of silt, clay, and gravel was encountered at soil boring locations SB2023-111 and SB2023-115, and extended to depths of 2 to 2.2 feet below ground surface. The sand ranged from loose to medium dense, and the standard penetration number ranged from 7 to 16 and averaged 11.

Stratum 3 – Clay (CL)
Medium stiff to hard clay with variable amounts of sand and gravel was encountered at all soil boring locations below the pavement and base material, Stratum 1 and Stratum 2. This material generally extended to the termination depths of the borings at 10 feet below ground surface. The standard penetration number ranged from 3 to 48 and averaged 16; the estimated unconfined compressive strength ranged from 2,000 to 9,000 psf and averaged 6,000 psf.

3.2 Groundwater Observations

Groundwater was not encountered in any of the borings during drilling operations, except for boring SB2023-113, where water was encountered at a depth of 2.5 feet during drilling. Typically, the level where the soil color changes from brown to gray is generally indicative of the long-term groundwater level. As this color change was not observed in any of the borings, we conclude the long-term water table is below the depth of the explored borings. Water levels reported are accurate only for the time and date the borings were drilled. The borings were backfilled and sealed the same day that they were completed. Long-term monitoring of the boreholes was not included as part of the scope of our subsurface investigation.

It should be noted that the elevation of the natural groundwater table, 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 resurfacing project on Burson Place and within the Westgate Shopping Center.

4.1 Design Soil Profile and Soil Modulus

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

Table 4.1-1 Burson Place Design Soil Profile

Layer No	Soil Description	Depth (ft)	Total Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)
1	Medium stiff to very stiff clay (CL)	1.0-5.0	130.0	2,500	0

Table 4.1-2 Westgate Shopping Center Soil Profile

Layer No	Soil Description	Depth (ft)	Total Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)
1	Fill - Loose Sand (SM, SC)	1.0-2.0	115	0	28
2	Loose to medium dense sand (SW-SM, SC)	1.0-2.0	120	0	29
3	Medium stiff to stiff clay (CL)	2.0-10.0	130	3,500	0

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 at Westgate Shopping Center, 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.

It is recommended that the prepared subgrade for pavement and slab-on-grade 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. Alternately, chemical stabilization of the upper 14 inches with cement may be performed. It should be noted that MSG does not recommend chemical stabilization if the number of sulfates present in the subgrade soils exceeds 5,000 ppm. The actual undercut depths and/or subgrade remediation measures required should be determined by the on-site Geotechnical Engineer or a designated representative.

Existing abandoned utilities or underground structures within the proposed location were not identified but may be present. If such utilities are present, they should be removed and relocated or abandoned in place. If abandoned in place, it is recommended that the utility pipe be filled with cement grout to mitigate the potential for collapse in the future. Should the utility lines be removed from the site, the resultant trench excavations should be backfilled with well-compacted granular material, placed and compacted in accordance with the recommendations of Section 4.3.

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 are 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 and slab-on-grade 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. 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. 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.

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.

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 pressures. Lateral earth pressure coefficients for engineered fill are provided in Table 4.4-1.

Table 4.4-1 Recommended Lateral Earth Parameters

Soil Parameters	Engineered Fill	
	Clean Granular Soil	Clay Soil
Total Unit Weight (pcf)	125.0	130.0
Internal Friction Angle (°)	30.0	25.0
At-rest Pressure Coefficient, K_o	0.5	0.6
Active Pressure Coefficient, K_a	0.3	0.4
Passive Coefficient, K_p	3.0	2.5
Concrete/Soil Friction Coefficient	0.5	0.0
Concrete/Soil Adhesion Factor	0.0	0.2

The coefficients of friction between concrete and soil subgrade were also provided in the table above. These friction coefficients can be used for evaluating the factor of safety against sliding of foundations. The recommended minimum safety factor against sliding is 1.5. Generally, passive pressure resistance of the top 3.5 feet below final grade should

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 geotechnical evaluations for retaining walls, as necessary, including but not limited to bearing capacity, settlement, and global stability. A geotechnical evaluation of retaining walls is beyond the scope of this report.

5.0 CONSTRUCTION CONSIDERATIONS

5.1 Groundwater Control

Other than at boring SB2023-113, where groundwater was recorded at 2.5 feet below grade, 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 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.

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.

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:

- Thirteen (13) 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.

APPENDIX A

FIGURE 1 – SITE LOCATION MAP (BURSON PLACE)

FIGURE 2 – SITE LOCATION MAP (WESTGATE SHOPPING CENTER)

FIGURE 3 – SOIL BORING LOCATION PLAN (BURSON PLACE)

FIGURE 4 – SOIL BORING LOCATION PLAN (WESTGATE SHOPPING CENTER)

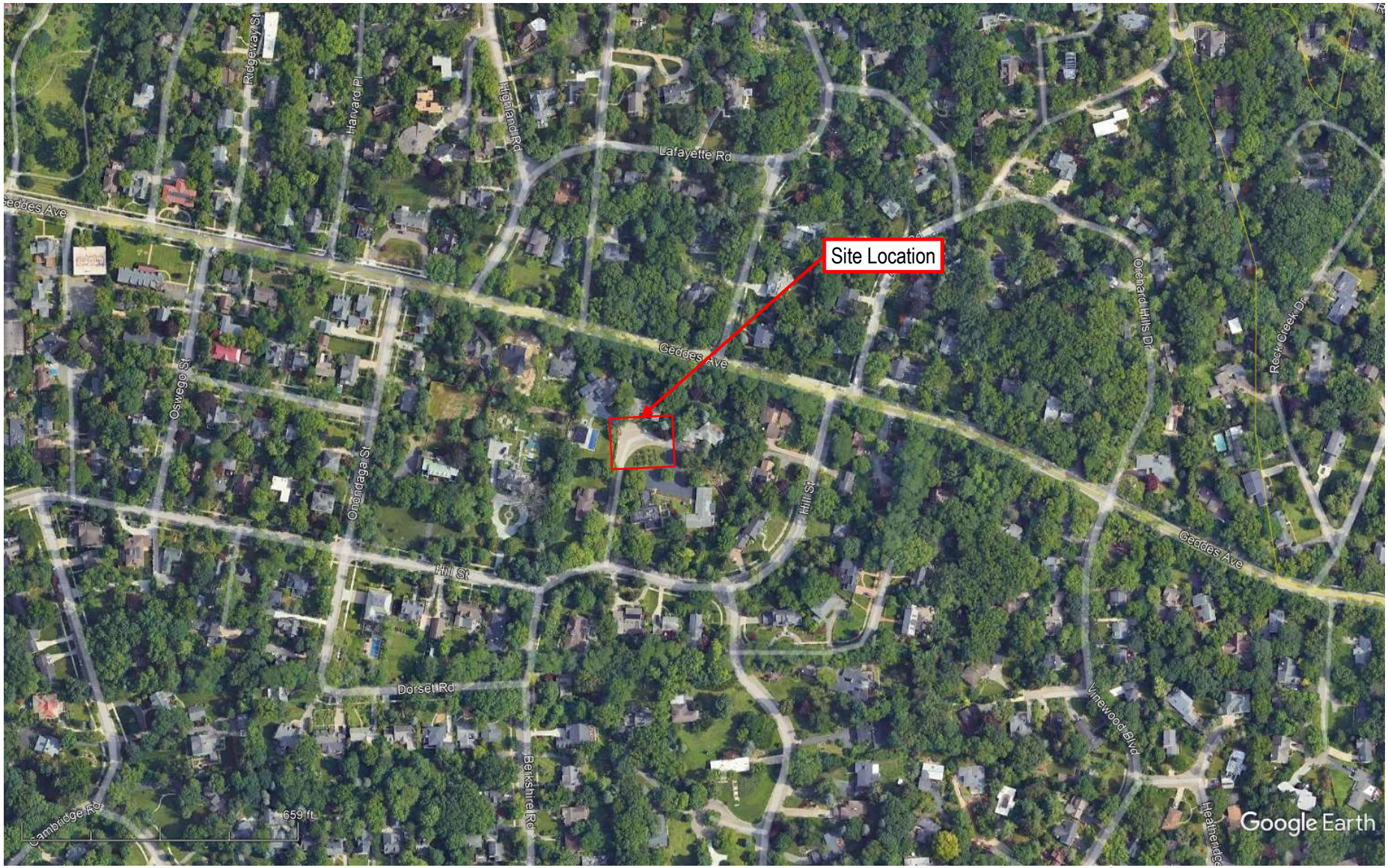

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Figure 1: Site Location Map (Burson Place)
2023 Bundle 2 - Street Resurfacing
Burson Place, Ann Arbor, Michigan
MSG Project Number: 401.2300021.000

Map Adapted from
Google Earth 2023 ®

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Figure 2: Site Location Map (Westgate Shopping Center)
2023 Bundle 2 - Street Resurfacing
Westgate Shopping Center, 2463 W. Stadium Boulevard, Ann Arbor, Michigan
MSG Project Number: 401.2300021.000

Map Adapted from Google Earth 2023 ®

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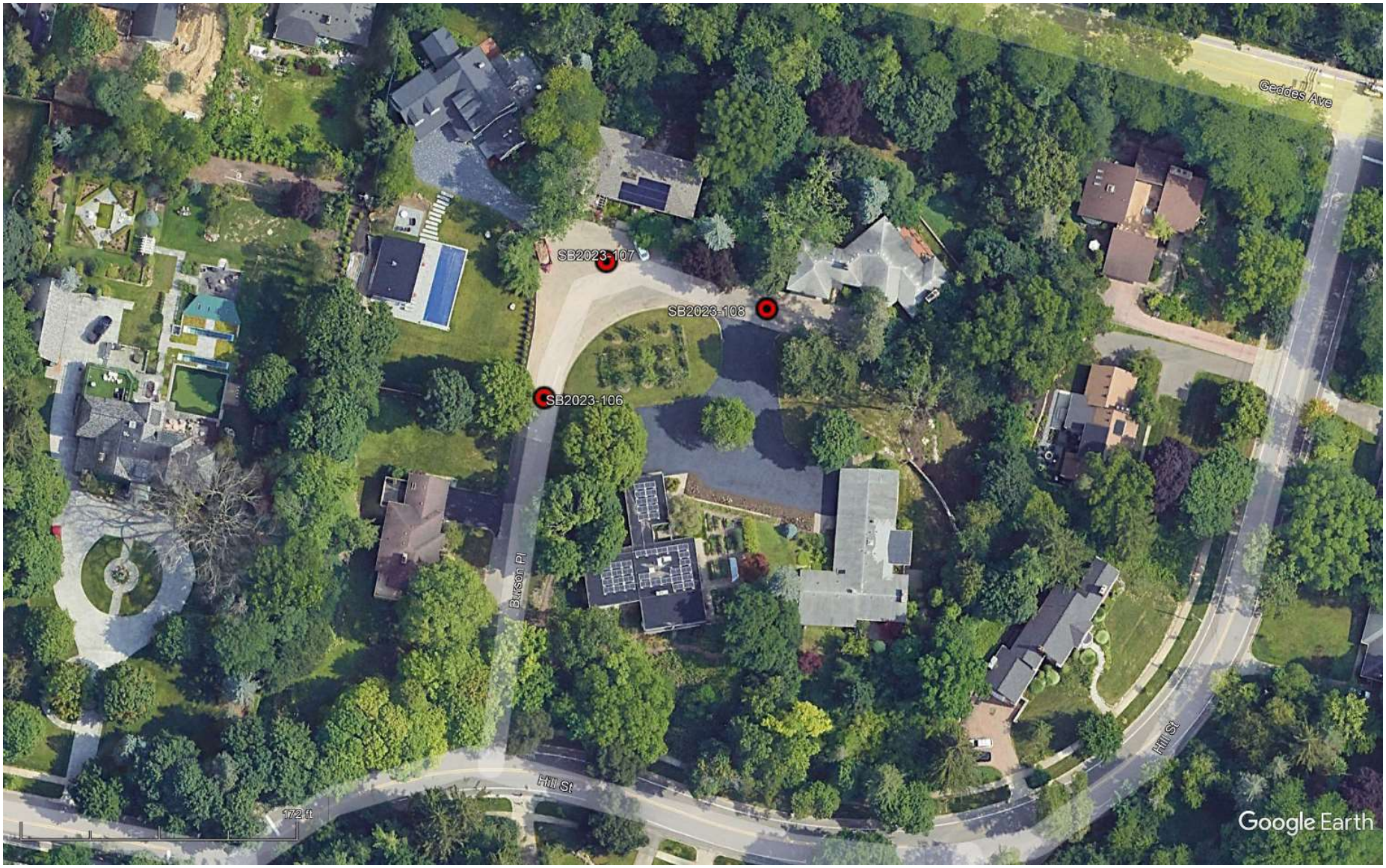

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Figure 3: Soil Boring Location Map (Burson Place)
2023 Bundle 2 - Street Resurfacing
Burson Place, Ann Arbor, Michigan
MSG Project Number: 401.2300021.000

No Scale
Map Adapted from
Google Earth 2023 ®

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Figure 4: Soil Boring Location Map (Westgate Shopping Center)
2023 Bundle 2 - Street Resurfacing
Westgate Shopping Center, 2463 W. Stadium Boulevard, Ann Arbor, Michigan
MSG Project Number: 401.2300021.000

No Scale
Map Adapted from
Google Earth 2023 ®

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APPENDIX B
SOIL BORING LOGS

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%
	Some – 23% to 33%
And – Over 35%	

PARTICLE SIZES

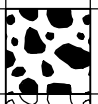
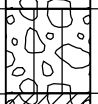
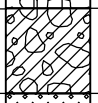
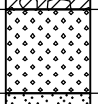
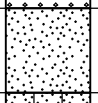
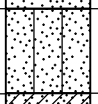
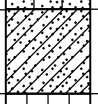
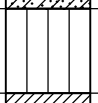
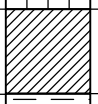
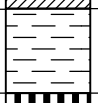
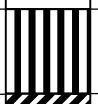
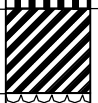
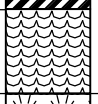
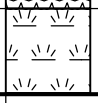
Boulders		- Greater than 12 inches (305 mm)
Cobbles		- 3 inches (76.2 mm) to 12 inches (305 mm)
Gravel:	Coarse	- ¾ inches (19.05 mm) to 3 inches (76.2 mm)
	Fine	- No.4 (4.75 mm) to ¾ inches (19.05 mm)
Sand:	Coarse	- No. 10 (2.00 mm) to No. 4 (4.75 mm)
	Medium	- No. 40 (0.425 mm) to No. 10 (2.00 mm)
	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
			GP		POORLY-GRADED GRAVELS WITH OR WITHOUT SAND
		GRAVELS WITH 15% OR MORE FINES	GM		SILTY GRAVELS WITH OR WITHOUT SAND
			GC		CLAYEY GRAVELS WITH OR WITHOUT SAND
	SANDS MORE THAN HALF COARSE FRACTION IS FINER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 15% FINES	SW		WELL-GRADED SANDS WITH OR WITHOUT GRAVEL
			SP		POORLY-GRADED SANDS WITH OR WITHOUT GRAVEL
		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

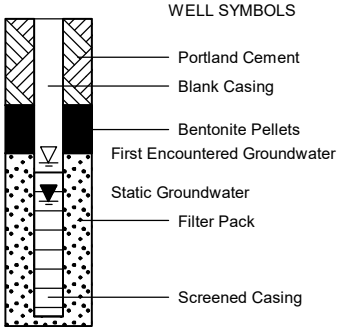

Grab Sample


Rock Core

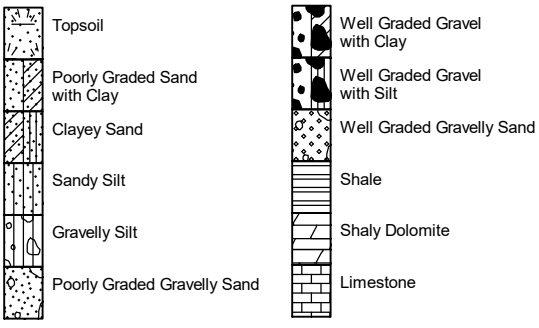

Split Spoon sample, 1 inch or 2 inch outer-diameter.


Shelby Tube sample - 3 inch diameter unless otherwise noted.

WELL SYMBOLS



OTHER MATERIAL SYMBOLS



Mannik Smith GROUP

BORING / WELL LOG KEY

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

BOREHOLE NUMBER SB2023-106

CLIENT City of Ann Arbor
PROJECT NAME 2023 Bundle 2 - Street Resurfacing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Burson Place, Ann Arbor, Michigan
DATE STARTED 12-01-2023 **COMPLETED** 12-01-2023
POSITION Lat.: 42.273923° Long.: -83.719441°
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
GROUND ELEVATION 922.00 ft **FINAL DEPTH** 5.00 ft
DRILLING METHOD Direct Push
LOGGED BY JH **CHECKED BY** AN
EQUIPMENT Geoprobe 7822DT **Operator** JDF
REMARKS

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)
		ASPHALT - 6 INCHES				
		0.50 — 921.50				
		FILL SAND - 7 INCHES				
		1.08 — 920.92				
		Sandy Lean CLAY with gravel (CL): medium stiff to stiff; brown; damp.	SPT S-1	72	3-3-4 (7)	1.00
			SPT S-2	56	5-5-7 (12)	1.50
		3.50 — 918.50				
		Lean CLAY with sand (CL): stiff to very stiff; brown; damp.	SPT S-3	50	7-8-8 (16)	1.00
5	917	5.00 — 917.00				
		Terminated at 5.00 ft. Reached Target Depth.				
10	912					

▲ N Value
● Moisture Content (%)
I Plastic/Liquid Limit (%)
□ Fines Content (%)
20 40 60 80

LEGEND:

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

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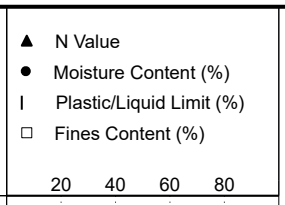
BOREHOLE NUMBER SB2023-107

CLIENT City of Ann Arbor
PROJECT NAME 2023 Bundle 2 - Street Resurfacing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Burson Place, Ann Arbor, Michigan
DATE STARTED 12-01-2023 **COMPLETED** 12-01-2023
POSITION Lat.: 42.274155° Long.: -83.719298°
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
GROUND ELEVATION 921.00 ft **FINAL DEPTH** 5.25 ft
DRILLING METHOD Direct Push
LOGGED BY JH **CHECKED BY** AN
EQUIPMENT Geoprobe 7822DT **Operator** JDF
REMARKS

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)
		ASPHALT - 9 INCHES				
		0.75 920.25 FILL SAND - 7 INCHES				
		1.33 919.67 Lean CLAY with sand (CL): stiff to very stiff; brown; damp.	SPT S-1	83	3-5-6 (11)	2.00
			SPT S-2	78	6-8-8 (16)	2.00
			SPT S-3	67	8-8-8 (16)	2.00
5	916	5.25 915.75 Terminated at 5.25 ft. Reached Target Depth.				
10	911					

GRAPHIC LOG



LEGEND:

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

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BOREHOLE NUMBER SB2023-108

CLIENT City of Ann Arbor
PROJECT NAME 2023 Bundle 2 - Street Resurfacing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Burson Place, Ann Arbor, Michigan
DATE STARTED 12-01-2023 **COMPLETED** 12-01-2023
POSITION Lat.: 42.274074° Long.: -83.718929°
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
GROUND ELEVATION 920.00 ft **FINAL DEPTH** 5.00 ft
DRILLING METHOD Direct Push
LOGGED BY JH **CHECKED BY** AN
EQUIPMENT Geoprobe 7822DT **Operator** JDF
REMARKS

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)
			ASPHALT - 6 INCHES				
			0.50 / 919.50				
			AGGREGATE BASE - 7 INCHES				
			1.08 / 918.92				
			Sandy Lean CLAY (CL): stiff to very stiff; brown; damp.	SPT S-1	44	4-5-6 (11)	1.50
				SPT S-2	61	6-8-7 (15)	1.00
				SPT S-3	89	7-8-9 (17)	1.00
			5.00 / 915.00				
5	915		Terminated at 5.00 ft. Reached Target Depth.				
10	910						

▲ N Value
● Moisture Content (%)
I Plastic/Liquid Limit (%)
□ Fines Content (%)
20 40 60 80

LEGEND:

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

The Mannik Smith Group, Inc.
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BOREHOLE NUMBER SB2023-109

CLIENT City of Ann Arbor
PROJECT NAME 2023 Bundle 2 - Street Resurfacing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Westgate Shopping Center, Ann Arbor, Michigan
DATE STARTED 11-29-2023 **COMPLETED** 11-29-2023
POSITION Lat.: 42.281479° Long.: -83.782954°
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
GROUND ELEVATION 941.00 ft **FINAL DEPTH** 10.00 ft
DRILLING METHOD Direct Push
LOGGED BY JF **CHECKED BY** AN
EQUIPMENT Geoprobe 7822DT **Operator** BM
REMARKS

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)
		ASPHALT - 11 INCHES				
		0.92 / 940.08				
		1.08 / 939.92 AGGREGATE BASE - 2 INCHES				
		Lean CLAY with sand (CL): stiff to very stiff; brown; damp.	SPT S-1	33	6-5-4 (9)	1.00
			SPT S-2	67	2-4-7 (11)	3.50
		4.00 / 937.00				
		Sandy Lean CLAY (CL): very stiff to hard; brown; damp.	SPT S-3	56	7-9-11 (20)	4.50
5	936					
			SPT S-4	67	5-7-11 (18)	4.50
			SPT S-5	67	6-8-8 (16)	4.50
10	931	10.00 / 931.00				
		Terminated at 10.00 ft. Reached Target Depth.				

N Value
Moisture Content (%)
Plastic/Liquid Limit (%)
Fines Content (%)
20 40 60 80

LEGEND:

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

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BOREHOLE NUMBER SB2023-110

CLIENT City of Ann Arbor
PROJECT NAME 2023 Bundle 2 - Street Resurfacing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Westgate Shopping Center, Ann Arbor, Michigan
DATE STARTED 11-29-2023 **COMPLETED** 11-29-2023
POSITION Lat.: 42.281047° Long.: -83.783213°
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
GROUND ELEVATION 943.00 ft **FINAL DEPTH** 10.00 ft
DRILLING METHOD Direct Push
LOGGED BY JF **CHECKED BY** AN
EQUIPMENT Geoprobe 7822DT **Operator** BM
REMARKS

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)
		ASPHALT - 10 INCHES				
		0.83 / 942.17 AGGREGATE BASE - 4 INCHES				
		1.16 / 941.84 Sandy Lean CLAY (CL): hard; brown; damp.	SPT S-1	33	3-5-7 (12)	4.50
			SPT S-2	56	4-5-7 (12)	4.50
			SPT S-3	56	5-6-8 (14)	4.50
5	938	5.33 / 937.67 Lean CLAY with sand (CL): stiff to very stiff; brown.				
			SPT S-4	56	4-3-5 (8)	3.50
			SPT S-5	56	5-5-5 (10)	3.50
10	933	10.00 / 933.00 Terminated at 10.00 ft. Reached Target Depth.				

N Value
Moisture Content (%)
Plastic/Liquid Limit (%)
Fines Content (%)
20 40 60 80

LEGEND:

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

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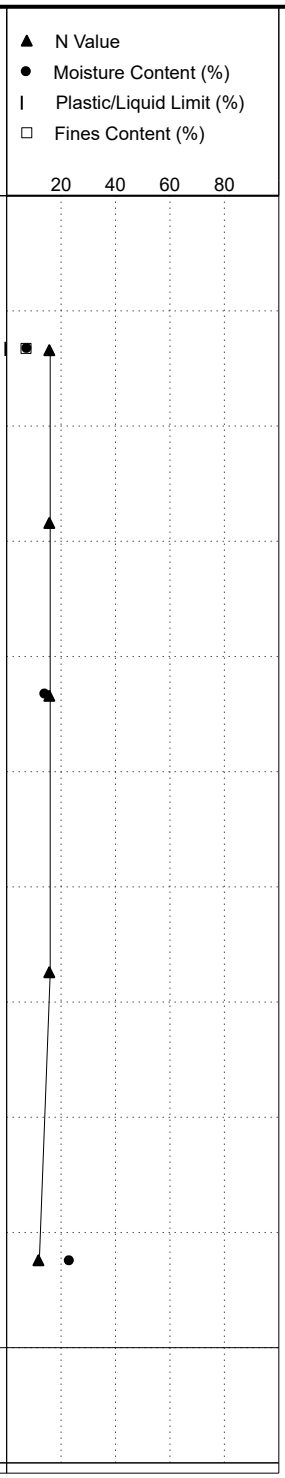
BOREHOLE NUMBER SB2023-111

CLIENT City of Ann Arbor
PROJECT NAME 2023 Bundle 2 - Street Resurfacing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Westgate Shopping Center, Ann Arbor, Michigan
DATE STARTED 11-30-2023 **COMPLETED** 11-30-2023
POSITION Lat.: 42.279865° Long.: -83.783375°
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
GROUND ELEVATION 946.00 ft **FINAL DEPTH** 10.00 ft
DRILLING METHOD Direct Push
LOGGED BY BM **CHECKED BY** AN
EQUIPMENT Geoprobe 7822DT **Operator** JDF
REMARKS

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)
		ASPAHLT - 7 INCHES				
		0.58 945.42 AGGREGATE BASE - 8 INCHES				
		1.24 944.76 Well-graded SAND with silt and gravel (SW-SM): medium dense; brown; damp.	SPT S-1	56	8-8-8 (16)	
		2.00 944.00 Lean CLAY (CL): very stiff; brown; damp.	SPT S-2	67	6-7-9 (16)	2.50
5	941		SPT S-3	67	7-8-8 (16)	2.50
		6.00 940.00 Lean CLAY (CL): stiff to very stiff; brownish gray; damp.	SPT S-4	89	6-8-8 (16)	1.50
			SPT S-5	89	5-5-7 (12)	1.50
10	936	10.00 936.00 Terminated at 10.00 ft. Reached Target Depth.				



LEGEND:

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

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2365 Haggerty Road South, Canton, MI 48188
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BOREHOLE NUMBER SB2023-112

CLIENT City of Ann Arbor
PROJECT NAME 2023 Bundle 2 - Street Resurfacing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Westgate Shopping Center, Ann Arbor, Michigan
DATE STARTED 11-30-2023 **COMPLETED** 11-30-2023
POSITION Lat.: 42.278342° Long.: -83.783420°
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
GROUND ELEVATION 957.00 ft **FINAL DEPTH** 10.00 ft
DRILLING METHOD Direct Push
LOGGED BY BM **CHECKED BY** AN
EQUIPMENT Geoprobe 7822DT **Operator** JDF
REMARKS

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)
		ASPHALT - 7 INCHES				
		0.58 956.42				
		AGGREGATE BASE - 8 INCHES	SPT S-1	67	5-6-8 (14)	4.50
		1.25 955.75				
		Lean CLAY with sand (CL): very stiff to hard; brown; damp.	SPT S-2	83	6-8-9 (17)	4.50
			SPT S-3	83	6-7-7 (14)	4.50
5	952		SPT S-4	83	5-7-8 (15)	4.50
			SPT S-5	83	8-8-9 (17)	4.50
		10.00 947.00				
10	947	Terminated at 10.00 ft. Reached Target Depth.				

N Value
Moisture Content (%)
Plastic/Liquid Limit (%)
Fines Content (%)
20 40 60 80

LEGEND:

- AT TIME OF DRILLING
- AT END OF DRILLING
- AFTER DRILLING

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

BOREHOLE NUMBER SB2023-113

CLIENT City of Ann Arbor
PROJECT NAME 2023 Bundle 2 - Street Resurfacing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Westgate Shopping Center, Ann Arbor, Michigan
DATE STARTED 11-29-2023 **COMPLETED** 11-29-2023
POSITION Lat.: 42.278062° Long.: -83.781772°
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
GROUND ELEVATION 954.00 ft **FINAL DEPTH** 4.00 ft
DRILLING METHOD Direct Push
LOGGED BY CGG **CHECKED BY** AN
EQUIPMENT Geoprobe 7822DT **Operator** BM
REMARKS

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)
			ASPHALT - 6 INCHES			
			0.50 953.50			
			Silty SAND with gravel (SM): loose; brown; FILL.	SPT S-1	72	8-4-3 (7)
			2.00 952.00			
			Clayey SAND with gravel (SC): very dense; brown; wet; FILL.	SPT S-2	11	9-50-50 (100)
			3.50 950.50			
			No Recovery	SPT S-3	0	50/6" (R)
			4.00 950.00			
			Terminated at 4.00 ft. Refusal.			
5	949					
10	944					

▲ N Value
● Moisture Content (%)
I Plastic/Liquid Limit (%)
□ Fines Content (%)

20 40 60 80

N=R

LEGEND:

▽ **AT TIME OF DRILLING** 2.5 ft
▼ **AT END OF DRILLING**
▼ **AFTER DRILLING**

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

BOREHOLE NUMBER SB2023-114

CLIENT City of Ann Arbor
PROJECT NAME 2023 Bundle 2 - Street Resurfacing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Westgate Shopping Center, Ann Arbor, Michigan
DATE STARTED 11-29-2023 **COMPLETED** 11-29-2023
POSITION Lat.: 42.278895° Long.: -83.782172°
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
GROUND ELEVATION 952.00 ft **FINAL DEPTH** 10.00 ft
DRILLING METHOD Direct Push
LOGGED BY CGG **CHECKED BY** AN
EQUIPMENT Geoprobe 7822DT **Operator** BM
REMARKS

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)
		ASPHALT - 4 INCHES				
		0.33 951.67 Clayey SAND (SC): loose; brown; moist; FILL.	SPT S-1	33	2-2-5 (7)	
		1.83 950.17 Lean CLAY with sand (CL): very stiff to hard; brown; moist.	SPT S-2	97	6-8-11 (19)	4.5
			SPT S-3	100	7-10-13 (23)	4.5
5	947		SPT S-4	100	9-18-24 (42)	4.5
			SPT S-5	100	11-20-28 (48)	4.5
10	942	10.00 942.00 Terminated at 10.00 ft. Reached Target Depth.				

▲ N Value
● Moisture Content (%)
I Plastic/Liquid Limit (%)
□ Fines Content (%)
20 40 60 80

LEGEND:

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

The Mannik Smith Group, Inc.
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BOREHOLE NUMBER SB2023-115

CLIENT City of Ann Arbor
PROJECT NAME 2023 Bundle 2 - Street Resurfacing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Westgate Shopping Center, Ann Arbor, Michigan
DATE STARTED 11-29-2023 **COMPLETED** 11-29-2023
POSITION Lat.: 42.278815° Long.: -83.780479°
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
GROUND ELEVATION 944.00 ft **FINAL DEPTH** 10.00 ft
DRILLING METHOD Direct Push
LOGGED BY CGG **CHECKED BY** AN
EQUIPMENT Geoprobe 7822DT **Operator** BM
REMARKS

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)
		TOPSOIL - 8 INCHES				
		0.67 / 943.33 Clayey SAND with gravel (SC): loose; brown; damp.	SPT S-1	72	9-3-4 (7)	
		2.17 / 941.83 Lean CLAY (CL): stiff to very stiff; brown; damp.	SPT S-2	81	3-4-4 (8)	1.75
			SPT S-3	100	3-4-6 (10)	2.25
5	939	5.16 / 938.84 Lean CLAY (CL): very stiff to hard; brown; damp.				
			SPT S-4	100	6-7-10 (17)	4.5
			SPT S-5	100	9-14-18 (32)	4.5
10	934	10.00 / 934.00 Terminated at 10.00 ft. Reached Target Depth .				

▲ N Value
● Moisture Content (%)
I Plastic/Liquid Limit (%)
□ Fines Content (%)
20 40 60 80

LEGEND:

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

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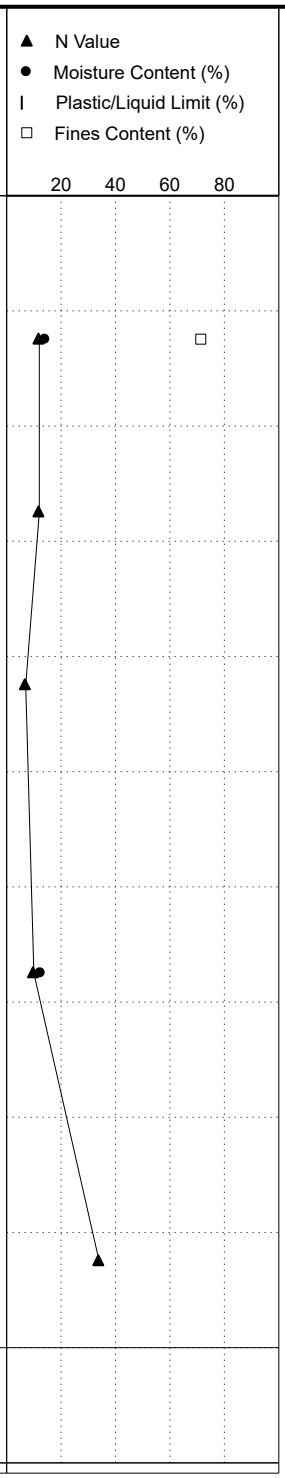
BOREHOLE NUMBER SB2023-116

CLIENT City of Ann Arbor
PROJECT NAME 2023 Bundle 2 - Street Resurfacing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Westgate Shopping Center, Ann Arbor, Michigan
DATE STARTED 11-29-2023 **COMPLETED** 11-29-2023
POSITION Lat.: 42.279535° Long.: -83.780666°
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
GROUND ELEVATION 944.00 ft **FINAL DEPTH** 10.00 ft
DRILLING METHOD Direct Push
LOGGED BY CGG **CHECKED BY** AN
EQUIPMENT Geoprobe 7822DT **Operator** BM
REMARKS 22 feet south offset

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)
		ASPHALT - 6 INCHES				
		0.50 / 943.50				
		AGGREGATE BASE - 6 INCHES				
		1.00 / 943.00				
		Lean CLAY with sand (CL): hard; brown; damp.	SPT S-1	89	10-6-6 (12)	4.5
		2.00 / 942.00				
		Sandy Lean CLAY (CL): stiff; brown; damp.	SPT S-2	100	6-6-6 (12)	2
		3.50 / 940.50				
		Lean CLAY (CL): medium stiff to stiff; brown; damp.	SPT S-3	86	1-3-4 (7)	1.5
5	939					
			SPT S-4	100	2-4-6 (10)	1.75
		8.50 / 935.50				
		Lean CLAY (CL): hard; brown; damp.	SPT S-5	100	11-14-20 (34)	4.5
10	934	10.00 / 934.00				
		Terminated at 10.00 ft. Reached Target Depth.				



LEGEND:

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

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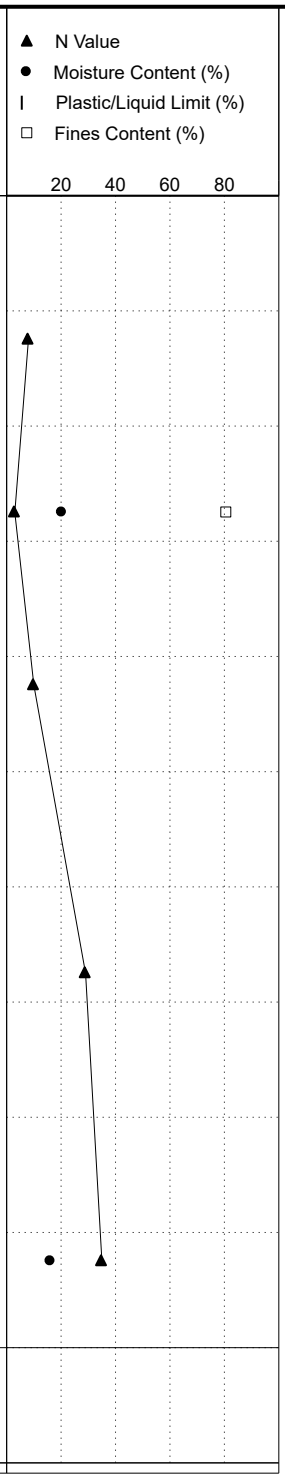
BOREHOLE NUMBER SB2023-117

CLIENT City of Ann Arbor
PROJECT NAME 2023 Bundle 2 - Street Resurfacing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Westgate Shopping Center, Ann Arbor, Michigan
DATE STARTED 11-29-2023 **COMPLETED** 11-29-2023
POSITION Lat.: 42.280218° Long.: -83.780807°
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
GROUND ELEVATION 944.00 ft **FINAL DEPTH** 10.00 ft
DRILLING METHOD Direct Push
LOGGED BY CGG **CHECKED BY** AN
EQUIPMENT Geoprobe 7822DT **Operator** BM
REMARKS

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)
		ASPHALT - 6 INCHES				
		0.50 / 943.50				
		AGGREGATE BASE - 6 INCHES				
		1.00 / 943.00				
		Sandy Lean CLAY (CL): very stiff; brown; moist.	SPT S-1	83	6-4-4 (8)	3.75
		2.00 / 942.00				
		Lean CLAY with sand (CL): medium stiff to stiff; brown; damp.	SPT S-2	94	2-1-2 (3)	2
			SPT S-3	100	1-2-8 (10)	1.5
5	939	5.00 / 939.00				
		Lean CLAY (CL): very stiff to hard; brown; moist.	SPT S-4	100	9-12-17 (29)	4.5
			SPT S-5	100	9-14-21 (35)	4.5
10	934	10.00 / 934.00				
		Terminated at 10.00 ft. Reached Target Depth.				



LEGEND:

▽ **AT TIME OF DRILLING**
▼ **AT END OF DRILLING**
▽ **AFTER DRILLING**

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BOREHOLE NUMBER SB2023-118

CLIENT City of Ann Arbor
PROJECT NAME 2023 Bundle 2 - Street Resurfacing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Westgate Shopping Center, Ann Arbor, Michigan
DATE STARTED 11-30-2023 **COMPLETED** 11-30-2023
POSITION Lat.: 42.280658° Long.: -83.781803°
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
GROUND ELEVATION 946.00 ft **FINAL DEPTH** 1.00 ft
DRILLING METHOD Direct Push
LOGGED BY BM **CHECKED BY** AN
EQUIPMENT Geoprobe 7822DT **Operator** JDF
REMARKS 4 attempts 5 feet apart

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION
			TOPSOIL - 6 INCHES
			0.50 945.50
			GRAVEL FILL - 6 INCHES
			1.00 945.00
			Terminated at 1.00 ft. Refusal.
5	941		
10	936		

LEGEND:

▽ **AT TIME OF DRILLING**
▼ **AT END OF DRILLING**
▼ **AFTER DRILLING**

APPENDIX C
LABORATORY TEST RESULTS

LABORATORY TEST PROCEDURES

A brief description of the most common laboratory tests performed at the Geotechnical Engineering Laboratory at the Mannik Smith Group is provided in the following sections.

DESCRIPTION OF SOILS (VISUAL-MANUAL PROCEDURE) (ASTM D2488)
The visual classification of soil samples are performed in accordance with ASTM D2488 standard. Our engineers use this test method to describe each soil sample using visual examination and simple manual tests. Visual classification helps grouping similar soil samples so that only a minimum number of laboratory tests are required for positive soil classification.

POCKET PENETROMETER
In the pocket penetrometer test, the unconfined compressive strength of a cohesive soil sample is estimated by measuring the resistance of the sample to the penetration of a small, calibrated spring-loaded cylinder. The maximum capacity of the penetrometer is 4.5 tons per square foot.

NATURAL MOISTURE CONTENT (ASTM D2216)
Natural moisture content represents the ratio of the weight of water in a given amount of soil to the weight of solid particles. Natural moisture content is expressed as a percentage (%). In this test method the water content is measured in the laboratory by noting the weight loss after drying the soil at specific temperature for 24 hours.

ATTERBERG LIMITS (ASTM D4318)
The Atterberg Limits test is performed in accordance with ASTM D4318. Liquid Limit (LL), Plastic Limit (PL) and Plasticity Index (PI) of the soil sample are determined using this test method. The Liquid Limit is the moisture content at which the soil begins to behave as a liquid material and starts to flow. The Plastic Limit is the moisture content at which the soil changes from plastic to semi-solid stage. The Plasticity Index (PI = LL - PL) is the range of moisture content at which the soil is in a plastic stage. Typically, a soil's potential for volume change increases with increase of plasticity indices.

PARTICLE SIZE ANALYSIS (ASTM D421, D422 and D1140)
These tests are performed to determine the partial soil particle size distribution. The soil sample is prepared according to ASTM D421 test method. The amount of material finer than the openings on the No. 200 sieve (0.075 mm) is determined by wash sieve method according to ASTM D1140. The hydrometer test is used to determine particle size distribution of material finer than 0.075 mm according to ASTM D422 test method.

STANDARD PROCTOR COMPACTION TEST (ASTM D698)
The Standard Proctor compaction test is used to determine maximum dry density and optimum moisture content of the soil sample. In this test, the soil is compacted in the Proctor mold in three lifts of equal volume using a standard effort by the free falling of a 5.5 lb rammer from 12 inches above soil surface. The test procedure is repeated on samples at several different moisture contents and a parabolic graph showing the relationship between moisture content and dry density of the soil is established. The maximum dry unit weight of the compacted sample and the respective moisture content is reported as maximum dry density and optimum moisture content of the soil sample.

MODIFIED PROCTOR COMPACTION TEST (ASTM D1557)
Modified Proctor compaction is similar to the Standard Proctor test. In this test, the soil is compacted in the Proctor mold in five lifts of equal volume using a standard effort by the free falling of a 10 lb rammer from 18 inches above the soil surface. The maximum dry unit weight of the compacted sample and the respective moisture content is reported as maximum dry density and optimum moisture content of the soil sample.

LABORATORY CALIFORNIA BEARING RATIO (ASTM D1883)
The CBR value is the ratio of forces required for 0.1-inch penetration of a 2-inch diameter circular plunger at the rate of 0.05 inch/min into a compacted soil sample compared to the same penetration in a certain standard crushed stone.

LOSS ON IGNITION TEST (LOI) (ASTM D2974)
LOI tests are performed on peat or suspected organic soils. An oven-dried sample is ignited in a furnace at 440°C (Method C) or 750°C (Method D). The ash content of the soil sample is determined as a percentage of the weight of the oven-dried sample. The organic content is the loss of weight due to ignition and reported as a percentage of the weight of the oven-dried sample.

ONE-DIMENSIONAL CONSOLIDATION TEST (ASTM D2435)
The consolidation test data is used to estimate the magnitude and rate of both differential and total settlement of a structure. A one-dimensional consolidation test is performed in a consolidation ring that does not allow lateral displacement of the sample. The sample is subjected to various vertical loading and unloading cycles. The deformation of the sample due to loading and unloading is recorded and used for the plotting a void ratio-applied pressure graph. The pre-consolidation pressure for the soil can also be determined from this test.

UNCONFINED COMPRESSION TEST ON ROCK SAMPLES (ASTM D7012)

In the unconfined compression test, the unconfined compressive strength (q_u) of a rock sample is estimated by measuring the resistance of the sample in compression when an axial loading is applied to the cylindrical specimen (with a height to diameter ratio of approximately 2) to reach the failure condition.

UNCONFINED COMPRESSION TEST ON SOIL SAMPLES (ASTM D2166)

In the unconfined compression test, the unconfined compressive strength (q_u) of a cohesive soil sample is estimated by measuring the resistance of the sample in compression when an axial loading is applied to the cylindrical specimen (with a height to diameter ratio of 2 to 2.5) to reach the failure condition or 15 percent (%) of axial deformation, whichever is secured first.

UNCONSOLIDATED-UNDRAINED (UU) TRIAXIAL COMPRESSION TEST (ASTM D2850)

Triaxial Shear tests are used to determine the shear strength of soil samples under various loading conditions. The test is performed on a relatively undisturbed sample extruded from a Shelby tube. In this test method, fluid flow is not permitted into or out of the soil specimen as the load is applied (undrained condition), therefore pore pressure builds up in the sample. The compressive strength of a soil is determined in terms of the total stress. The various confining pressures help determining the shear strength of the soil at different depths.

CONSOLIDATED-UNDRAINED (CU) TRIAXIAL COMPRESSION TEST (ASTM D4767)

The shear characteristics of cohesive samples (collected from relatively undisturbed sample extruded from a Shelby tube) are measured in this test under undrained conditions. This test represents field conditions where fully consolidated soils under one set of stresses are subjected to a sudden change in stress without sufficient time for further consolidation (undrained condition). The data from this test is used to analyze the shear strength parameters of the soil at different depths. The compressive strength of a soil is reported in terms of the effective stress.

WATER SOLUBLE SULFATE, RESISTIVITY AND PH

To evaluate the corrosion potential of the site, MSG performs sulfates (Ohio DOT Supplement 1122), resistivity (ASTM G187), and pH tests (ASTM D4972) on select soil samples.

SPECIFIC GRAVITY (ASTM D854)

Specific gravity is defined as the ratio of the unit weight of soil solids only to unit weight of water at a specific temperature. MSG performs specific gravity tests for soils according to ASTM D854 test procedure.

PERMEABILITY (ASTM D2434 and ASTM D5084)

This test method covers laboratory measurements of the hydraulic conductivity (the coefficient of permeability) of water-saturated granular and cohesive materials. MSG performs multiple methods for permeability tests according to ASTM D2434 and ASTM D5084.

DIRECT SHEAR TEST (ASTM D3080)

The direct shear tests are performed to determine the maximum and residual shear strength. A horizontal load is applied at a constant rate of strain. The soil sample is placed in a box where the lower half of the box is mounted on rollers and is pushed forward at a uniform rate by a motorized apparatus. The upper half of the box bears against a steel proving ring, the deformation of which is shown on a dial gauge indicating the shear force. The various information that can be obtained from the results includes the maximum (peak) shear strength and the ultimate (residual) shear strength.

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SUMMARY OF LABORATORY RESULTS

AASHTO R18

CLIENT City of Ann Arbor **PROJECT NAME** 2023 Bundle 2 - Street Resurfacing

PROJECT NUMBER 401.2300021.000 **PROJECT LOCATION** Burson Place, Ann Arbor, Michigan

Boring No. / Sample No.	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Class-ification	Water Content (%)	Bulk Density (pcf)	Satur-ation (%)	Specific Gravity
SB2023-106 / SS-1	0.5				25	56		16.3			
SB2023-107 / SS-2	2.3				19	73		12.8			
SB2023-108 / SS-3	3.5				9.525	61		16.6	130.3		

LAB SUMMARY - GINT STD US LAB.GDT - 1/31/24 14:34 - C:\USERS\KEBROWN\DESKTOP\GINT SOIL BORING LOGS.GPJ

GRAIN SIZE DISTRIBUTION

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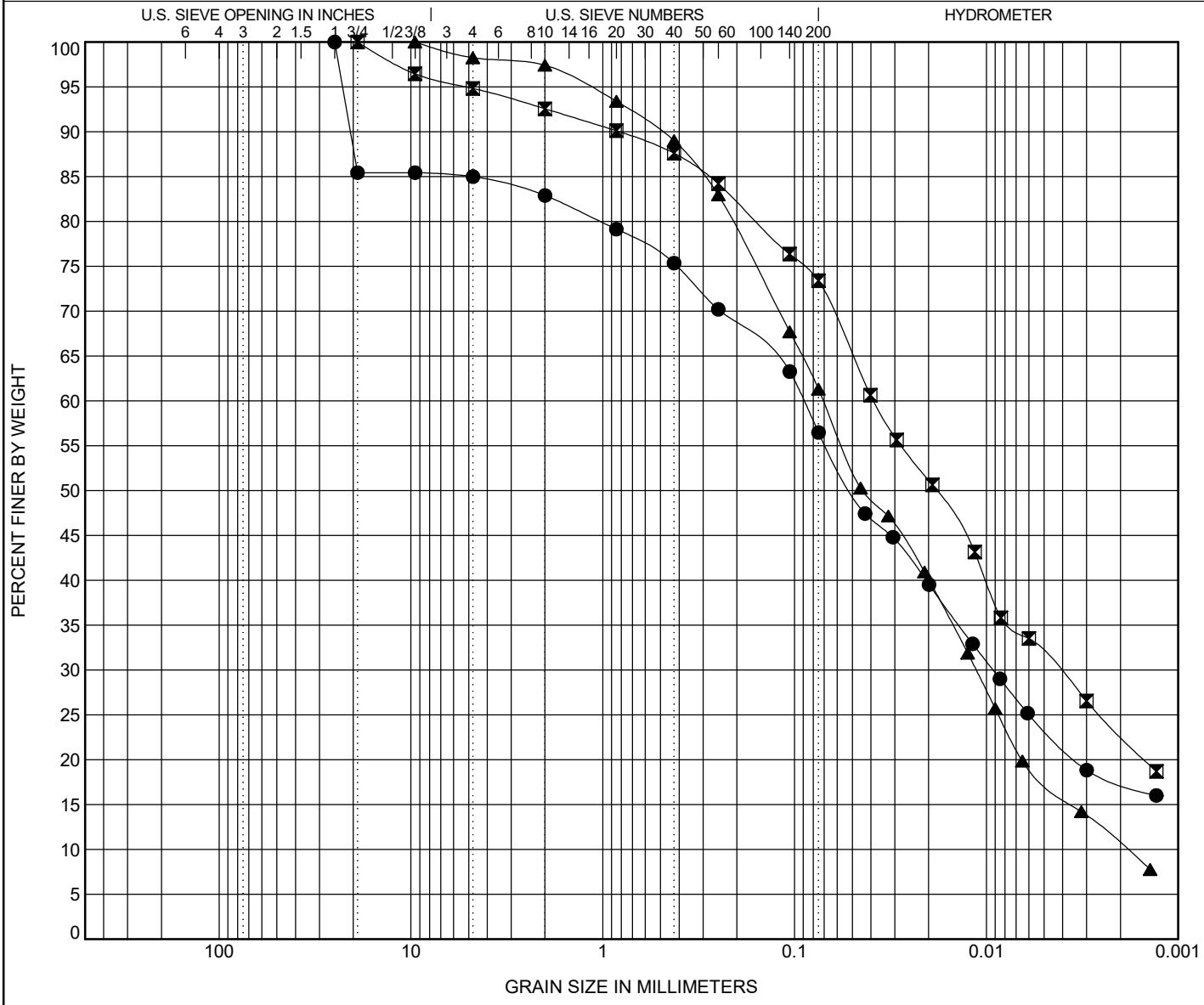
AASHTO R18

CLIENT City of Ann Arbor **PROJECT NAME** 2023 Bundle 2 - Street Resurfacing

PROJECT NUMBER 401.2300021.000 **PROJECT LOCATION** Burson Place, Ann Arbor, Michigan



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● SB2023-106 / SS-1	0.5						
⊠ SB2023-107 / SS-2	2.3						
▲ SB2023-108 / SS-3	3.5					0.97	37.87

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SB2023-106 / SS-1	0.5	25	0.09	0.009		15.0	28.5	39.0	17.5
⊠ SB2023-107 / SS-2	2.3	19	0.039	0.004		5.2	21.4	50.6	22.7
▲ SB2023-108 / SS-3	3.5	9.525	0.071	0.011	0.002	1.8	36.9	50.8	10.5

UNCONFINED COMPRESSION TEST

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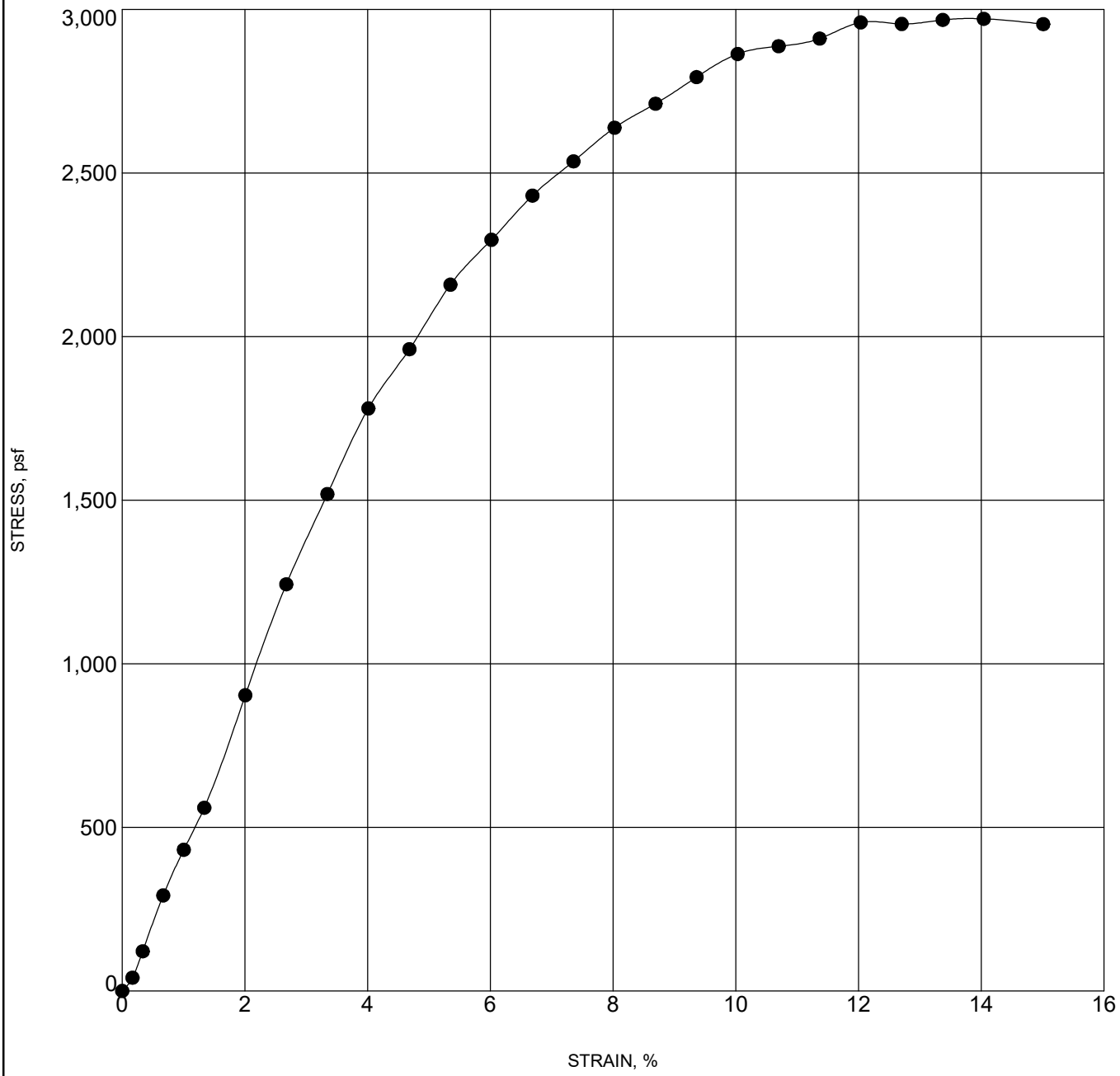
AASHTO R18

CLIENT City of Ann Arbor
PROJECT NAME 2023 Bundle 2 - Street Resurfacing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Burson Place, Ann Arbor, Michigan



Specimen Identification	Classification	UCS (psf)	γ_d	MC%
● **SB2023-108 / SS-3 3.5**		**2971**	**112**	**17**

UNCONFINED - GINT STD US LAB.GDT - 1/31/24 14:33 - C:\USERS\KEBROWN\DESKTOP\GINT SOIL BORING LOGS.GPJ

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SUMMARY OF LABORATORY RESULTS

AASHTO R18

CLIENT City of Ann Arbor **PROJECT NAME** 2023 Bundle 2 - Street Resurfacing

PROJECT NUMBER 401.2300021.000 **PROJECT LOCATION** Westgate Shopping Center, Ann Arbor, Michigan

Boring No. / Sample No.	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Class-ification	Water Content (%)	Bulk Density (pcf)	Satur-ation (%)	Specific Gravity
SB2023-109 / SS-2	2.4							12.9			
SB2023-109 / SS-4	6.0				9.525	66		13.1	130.0		
SB2023-110 / SS-2	2.3				9.525	59		14.8	129.5		
SB2023-110 / SS-5	8.5							14.8			
SB2023-111 / SS-1	0.6	NP	NP	NP	25	7	SW-SM	7.6			
SB2023-111 / SS-3	3.6							14.2			
SB2023-111 / SS-5	8.5							23.2	126.2		
SB2023-112 / SS-3	3.3				19	73		14.3	134.7		
SB2023-112 / SS-5	8.5							14.1			
SB2023-113 / SS-1	0.5	NP	NP	NP	25	20	SM	10.7			
SB2023-114 / SS-2	1.8							11.8			
SB2023-114 / SS-4	6.0				19	71		12.1	141.8		
SB2023-115 / SS-1	0.7				19	35		13.0			
SB2023-115 / SS-3	3.7							17.2	129.1		
SB2023-115 / SS-5	8.5							12.6			
SB2023-116 / SS-1	0.5				9.525	71		14.2	136.5		
SB2023-116 / SS-4	6.0							12.5			
SB2023-117 / SS-2	2.0				2	81		20.3	122.1		
SB2023-117 / SS-5	8.5							16.1			

LAB SUMMARY - GINT STD US LAB.GDT - 1/31/24 14:34 - C:\USERS\KEBROWN\DESKTOP\GINT SOIL BORING LOGS.GPJ

GRAIN SIZE DISTRIBUTION

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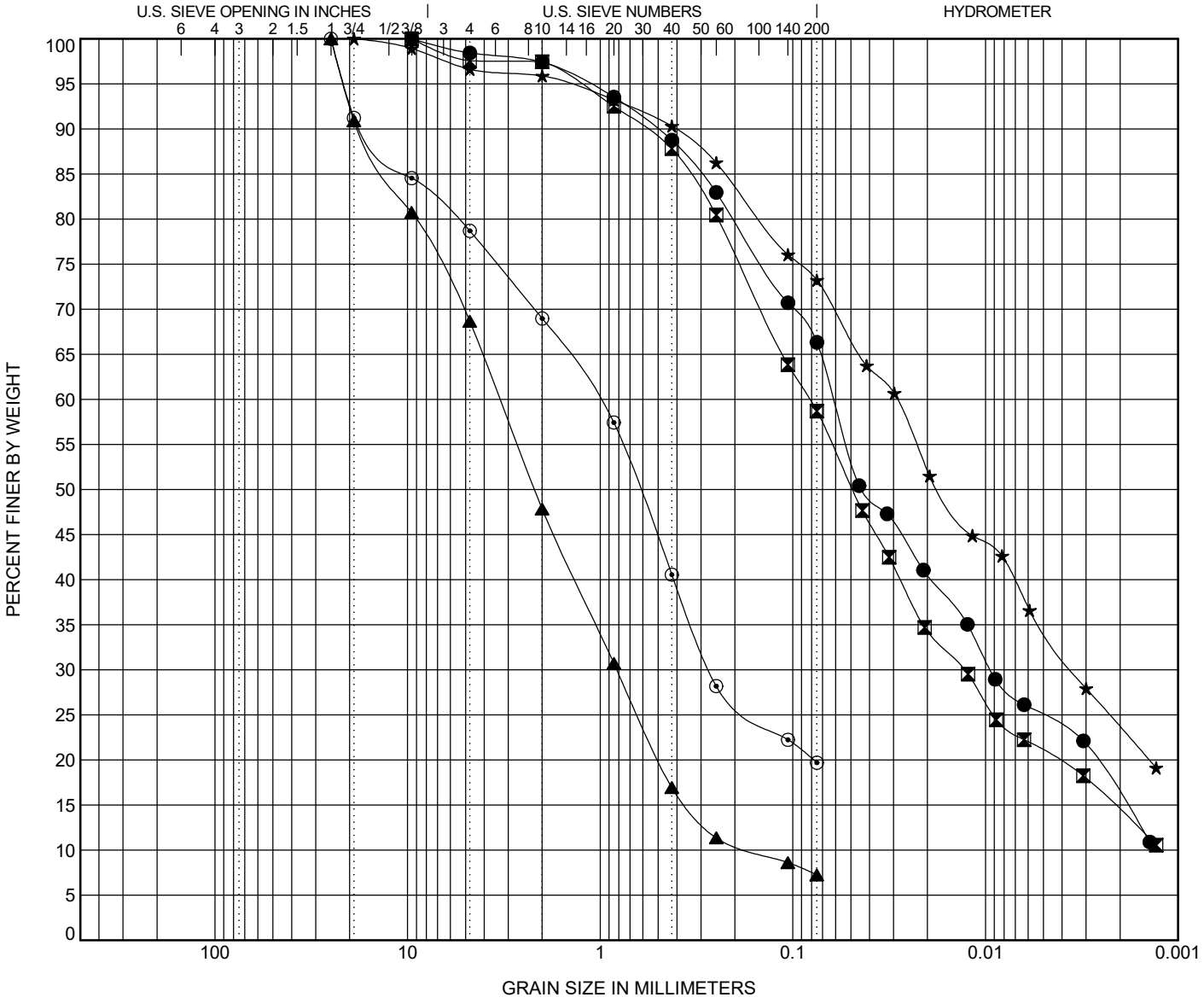
AASHTO R18

CLIENT City of Ann Arbor **PROJECT NAME** 2023 Bundle 2 - Street Resurfacing

PROJECT NUMBER 401.2300021.000 **PROJECT LOCATION** Westgate Shopping Center, Ann Arbor, Michigan



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	SB2023-109 / SS-4	6.0						
⊠	SB2023-110 / SS-2	2.3						
▲	SB2023-111 / SS-1	0.6	WELL-GRADED SAND with SILT and GRAVEL (SW-SM)	NP	NP	NP	1.24	20.26
★	SB2023-112 / SS-3	3.3						
⊙	SB2023-113 / SS-1	0.5	SILTY SAND with GRAVEL (SM)	NP	NP	NP		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	SB2023-109 / SS-4	6.0	9.525	0.061	0.009		1.6	32.1	50.4	15.9
⊠	SB2023-110 / SS-2	2.3	9.525	0.082	0.013		2.4	38.8	44.3	14.4
▲	SB2023-111 / SS-1	0.6	25	3.314	0.82	0.164	31.3	61.4	7.3	
★	SB2023-112 / SS-3	3.3	19	0.029	0.004		3.4	23.4	49.6	23.7
⊙	SB2023-113 / SS-1	0.5	25	1.028	0.27		21.3	59.0	19.7	

GRAIN SIZE - GINT STD US LAB.GDT - 1/31/24 14:32 - C:\USERS\KEBROWN\DESKTOP\GINT SOIL BORING LOGS.GPJ

GRAIN SIZE DISTRIBUTION

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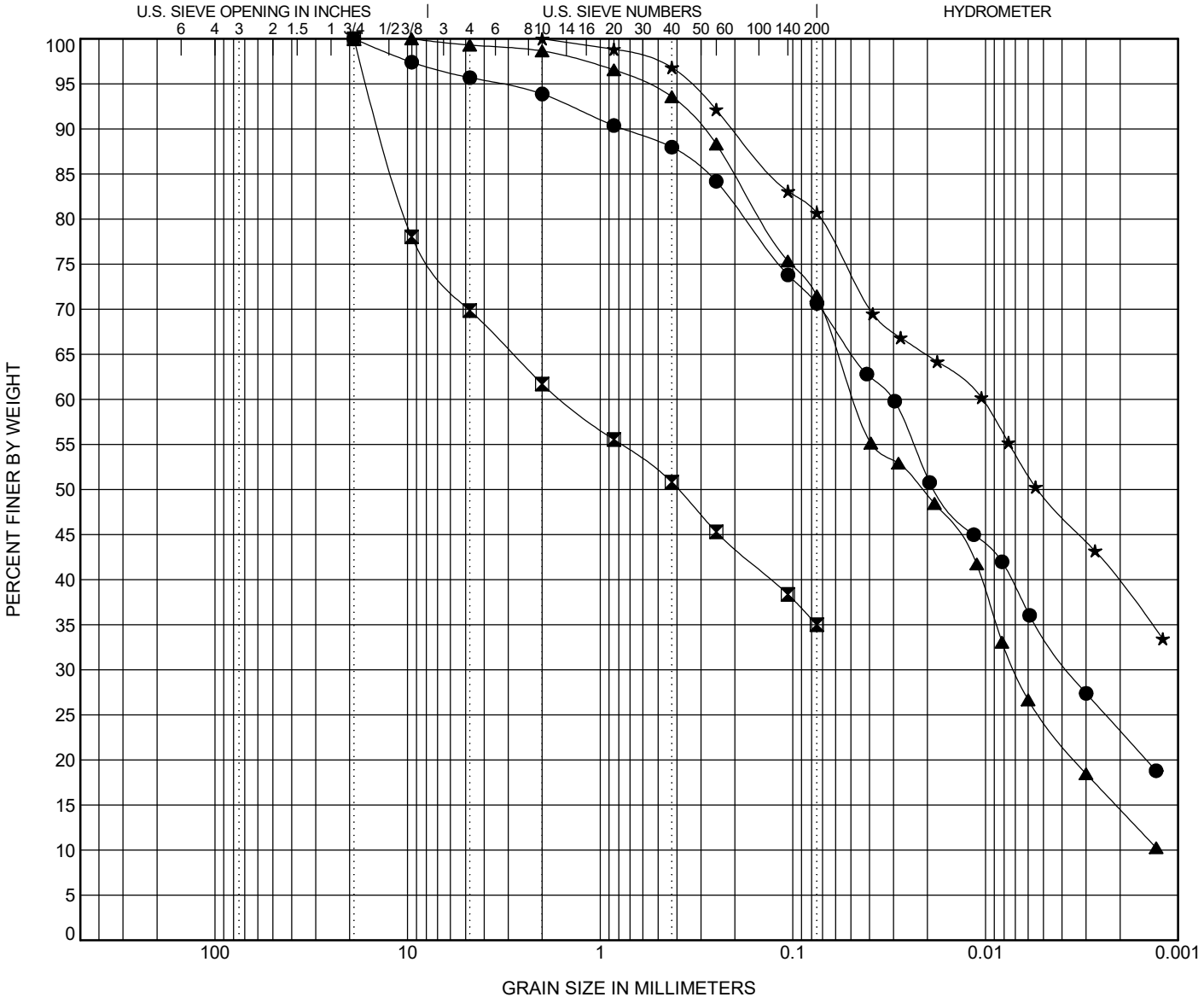
AASHTO R18

CLIENT City of Ann Arbor **PROJECT NAME** 2023 Bundle 2 - Street Resurfacing

PROJECT NUMBER 401.2300021.000 **PROJECT LOCATION** Westgate Shopping Center, Ann Arbor, Michigan



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	SB2023-114 / SS-4	6.0						
⊠	SB2023-115 / SS-1	0.7						
▲	SB2023-116 / SS-1	0.5						
★	SB2023-117 / SS-2	2.0						

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	SB2023-114 / SS-4	6.0	19	0.03	0.004		4.3	25.0	47.4	23.2
⊠	SB2023-115 / SS-1	0.7	19	1.58			30.1	34.9	35.0	
▲	SB2023-116 / SS-1	0.5	9.525	0.048	0.007		0.7	27.8	57.0	14.5
★	SB2023-117 / SS-2	2.0	2	0.01			0.0	19.3	41.1	39.6

GRAIN SIZE - GINT STD US LAB.GDT - 1/31/24 14:32 - C:\USERS\KEBROWN\DESKTOP\GINT SOIL BORING LOGS.GPJ

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

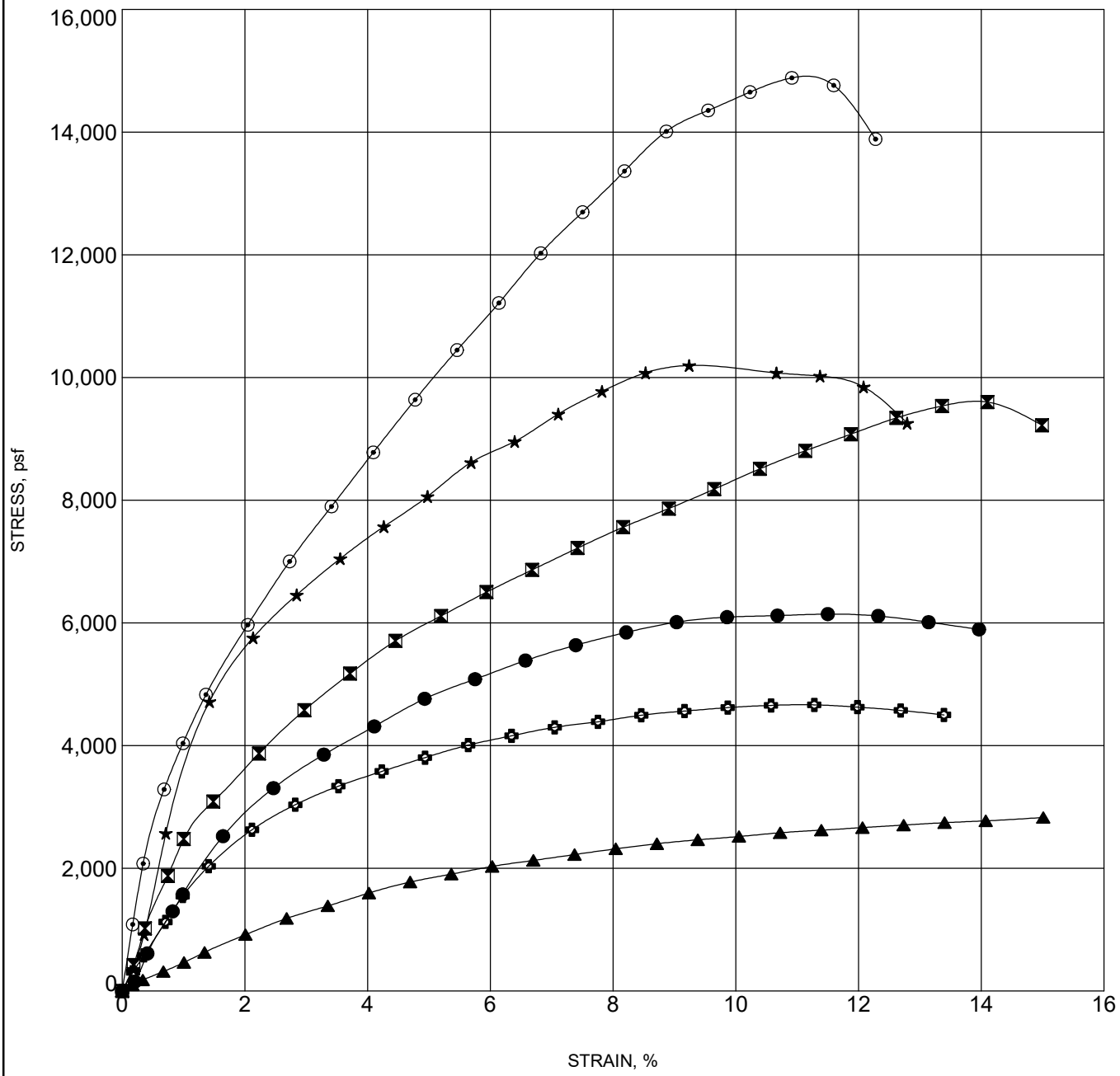
AASHTO R18

CLIENT City of Ann Arbor

PROJECT NAME 2023 Bundle 2 - Street Resurfacing

PROJECT NUMBER 401.2300021.000

PROJECT LOCATION Westgate Shopping Center, Ann Arbor, Michigan



Specimen Identification			Classification	UCS (psf)	γ_d	MC%
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⊠	SB2023-110 / SS-2	2.3		9600	113	15
▲	SB2023-111 / SS-5	8.5		2827	102	23
★	SB2023-112 / SS-3	3.3		10196	118	14
⊙	SB2023-114 / SS-4	6.0		14885	126	12
✿	SB2023-115 / SS-3	3.7		4664	110	17

UNCONFINED - GINT STD US LAB.GDT - 1/31/24 14:33 - C:\USERS\KEBROWN\DESKTOP\GINT SOIL BORING LOGS.GPJ

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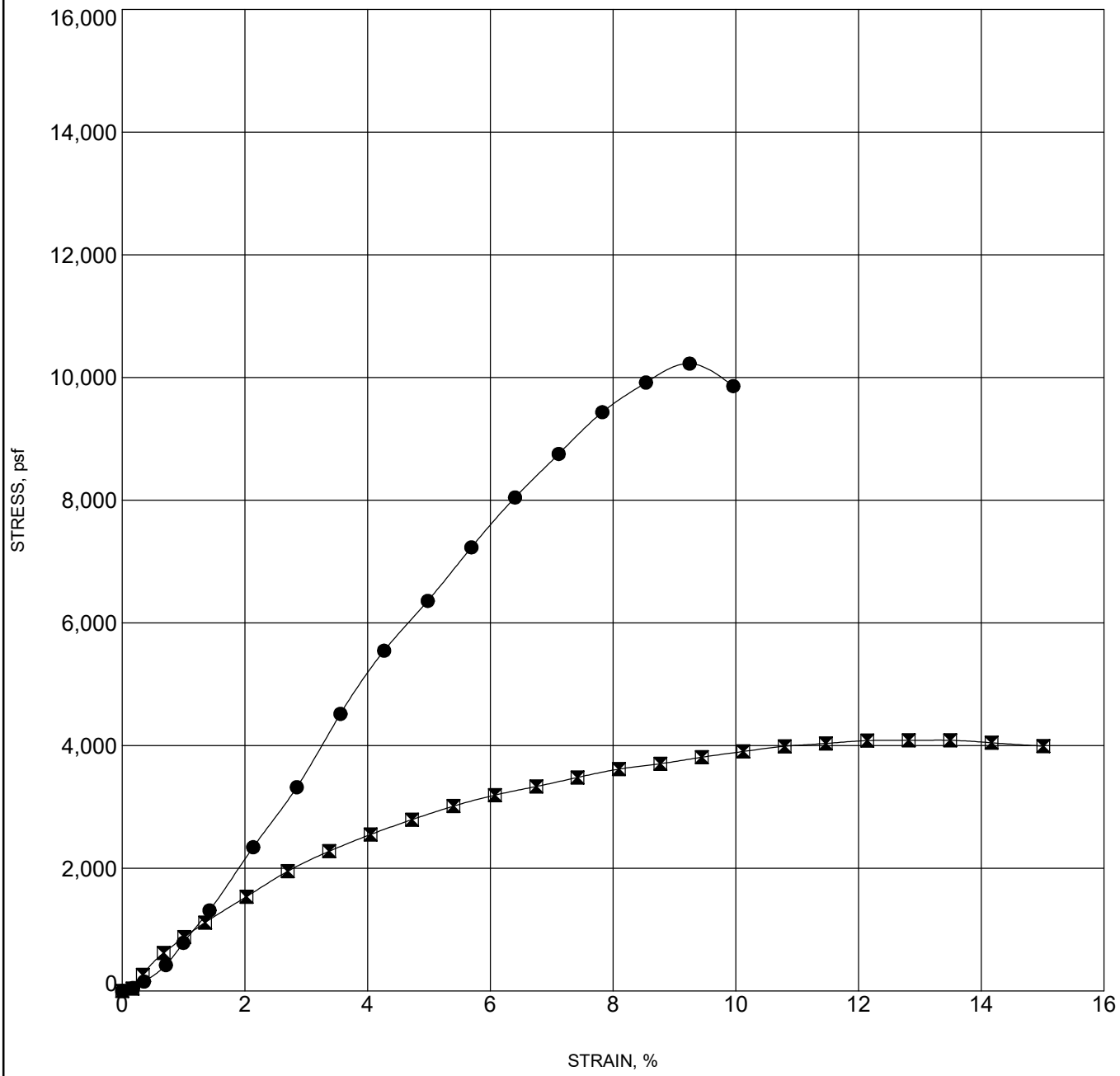
PROJECT LOCATION Westgate Shopping Center, Ann Arbor, Michigan



Specimen Identification		Classification	UCS (psf)	γ_d	MC%
●	**SB2023-116 / SS-1 0.5**		**10227**	**119**	**14**
⧓	**SB2023-117 / SS-2 2.0**		**4086**	**102**	**20**

UNCONFINED - GINT STD US LAB.GDT - 1/31/24 14:33 - C:\USERS\KEBROWN\DESKTOP\GINT SOIL BORING LOGS.GPJ

ATTERBERG LIMITS' RESULTS

The Mannik & Smith Group, Inc.
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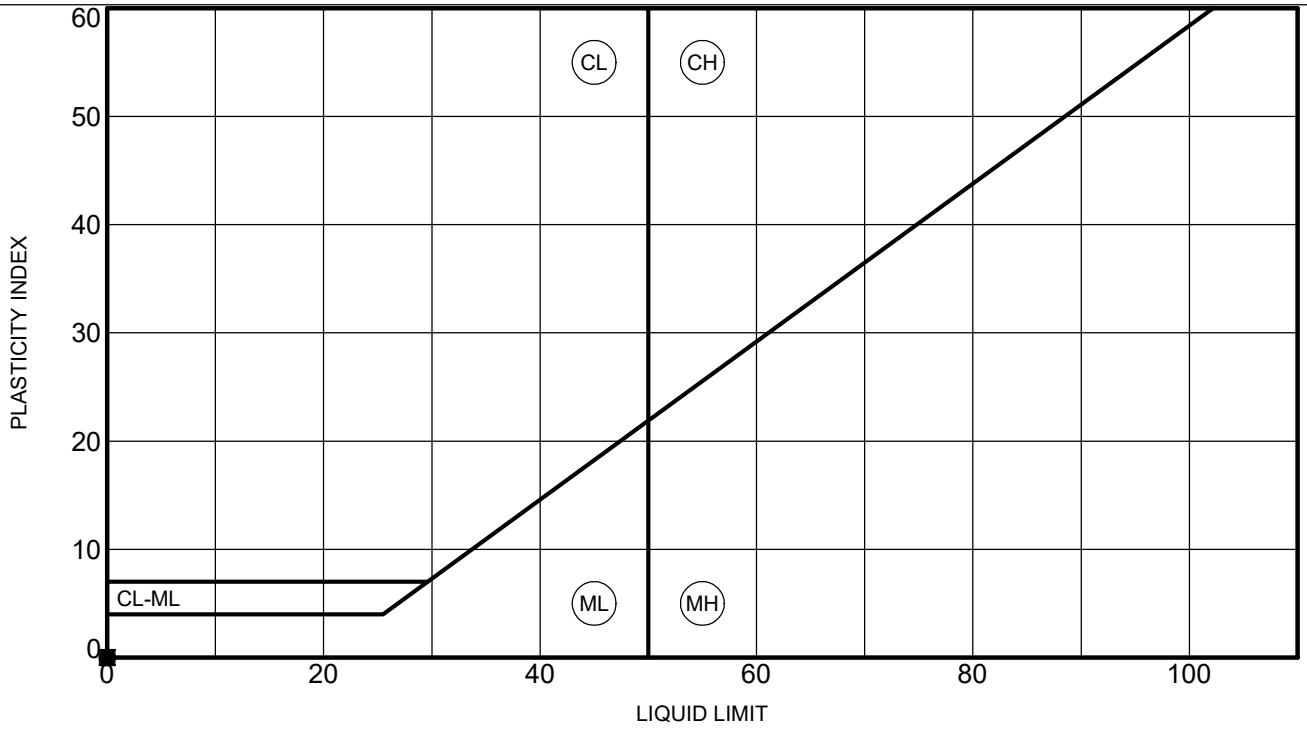
AASHTO R18

CLIENT City of Ann Arbor **PROJECT NAME** 2023 Bundle 2 - Street Resurfacing

PROJECT NUMBER 401.2300021.000 **PROJECT LOCATION** Westgate Shopping Center, Ann Arbor, Michigan



	Specimen Identification		LL	PL	PI	Fines	Classification
●	**SB2023-111 / SS-1**	**0.6**	**NP**	**NP**	**NP**	**7**	**WELL-GRADED SAND with SILT and GRAVEL (SW-SM)**
⧓	**SB2023-113 / SS-1**	**0.5**	**NP**	**NP**	**NP**	**20**	**SILTY SAND with GRAVEL (SM)**

ATTERBERG LIMITS - GINT STD US LAB.GDT - 1/31/24 14:30 - C:\USERS\KEBROWN\DESKTOP\GINT SOIL BORING LOGS.GPJ

GEOTECHNICAL INVESTIGATION REPORT

WESTGATE WATERMAIN – JACKSON AVENUE CROSSING

JACKSON AVENUE, ANN ARBOR, MICHIGAN

MSG PROJECT NO. 401.2401506.000

JANUARY 2025

PREPARED FOR:

CITY OF ANN ARBOR

301 E. HURON, 4TH FLOOR

ANN ARBOR MICHIGAN 48107

PREPARED BY:

THE MANNIK & SMITH GROUP, INC.

2365 HAGGERTY ROAD SOUTH

CANTON, MICHIGAN 48188

January 16, 2025

Ms. Francisca Chan, PE
City of Ann Arbor
301 E. Huron, 4th Floor
Ann Arbor, Michigan 48107

Re: Geotechnical Investigation Report
Westgate Watermain – Jackson Avenue Crossing
Jackson Avenue, Ann Arbor, Michigan
MSG Project No. 401.2400021.000

Dear Ms. Chan:

This report presents the results of our geotechnical investigation for the proposed Westgate watermain crossing under Jackson Avenue in Ann Arbor, Michigan. We completed this investigation in accordance with our proposal No. 401.2300021.000 dated November 18, 2024. 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

2365 Haggerty Road South, Canton, Michigan 48188 Tel: 734.397.3100 Fax: 734.397.3131 www.MannikSmithGroup.com

EXECUTIVE SUMMARY

The Mannik & Smith Group, Inc., (MSG) was retained by the City of Ann Arbor to conduct a geotechnical investigation for the proposed Westgate watermain crossing under Jackson Avenue in Ann Arbor, Michigan. This geotechnical investigation was completed in general accordance with MSG Proposal No. 401.2300021.000 dated November 18, 2024. This project includes the construction of a new watermain for the Westgate Mall in Ann Arbor. Approximately 88 feet of a 12-inch diameter pipe will be installed using trenchless directional drilling methods underneath Jackson Avenue. The proposed watermain invert depth is planned to be at a depth of approximately 8 feet below existing grades. Temporary excavations will be required at either end of the directional drilling segment for the boring launching and receiving pits; these pits are planned to be approximately 10 feet below existing grade.

The subsurface investigation consisted of completing two (2) soil borings, designated B-01 and B-02. The soil borings were located at the anticipated launching and receiving pit locations. Soil borings were advanced to a depth of 20 feet below ground surface.

Approximately 6 inches of topsoil was encountered at both boring locations. Stratum 1 consisted of stiff to very stiff lean clay and was encountered below the topsoil, extending to a depth of 20 feet below grade. Stratum 2 consisted of loose to medium dense silty sand and was encountered within Stratum 1 in boring B-01 between a depth of 8.5 and 13.5 feet below grade.

The material encountered in the soil borings at the anticipated invert depth of approximately 8 feet below existing grades consists of stiff to very stiff lean clay. This material is suitable directional drilling installation techniques. Trenchless methods of construction typically require temporary shoring, which may include a cantilevered system or a braced excavation. The design of the excavation should consider a predominantly lean clay profile. The excavations and temporary shoring should be designed by a Professional Engineer and constructed under the supervision of a qualified engineer.

Excavations will likely be situated at or 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. 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.

Based upon the data obtained, we anticipate OSHA will classify site clay soils as Type A soil, and sandy soils as encountered in boring B-01 may classify as Type C soil. However, the bore pit excavations are anticipated to be vertical, requiring temporary shoring. 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

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 for the proposed Westgate watermain crossing under Jackson Avenue in Ann Arbor, Michigan. The approximate site location of the geotechnical study is depicted as Figure 1 in Appendix A. This geotechnical investigation was completed in general accordance with MSG Proposal No. 401.2300021.000 dated November 18, 2024.

1.2 Project Information

This project includes the construction of a new watermain for the Westgate Mall in Ann Arbor. Approximately 88 feet of a 12-inch diameter pipe will be installed using trenchless directional drilling methods underneath Jackson Avenue. The proposed watermain invert depth is planned to be at a depth of approximately 8 feet below existing grades. Temporary excavations will be required at either end of the directional drilling segment for the boring launching and receiving pits; these pits are planned to be approximately 2 feet below the invert depth (10 feet below existing grade).

This site is located at Jackson Avenue between I-94 and North Maple Road; see Figure 1. Jackson Avenue is an asphalt surfaced, five-lane, two-way road with concrete curbs on either side of the road. Based on the proposed watermain crossing profile provided to MSG, the ground surface elevation at the crossing varies along the pipe alignment from 939± to 941± feet.

2.0 SUBSURFACE INVESTIGATION

2.1 Field Exploration

The subsurface investigation consisted of completing two (2) soil borings, designated B-01 and B-02. The soil borings were located at the anticipated launching and receiving pit locations. Soil borings were advanced to a depth of 20 feet below ground surface. The boring locations were field marked by MSG personnel, and the soil boring as-drilled coordinates were collected using a hand-held GPS unit. Elevations at the boring locations were estimated using Google Earth ™. A Soil Boring Location Plan is presented in Figure 2 in Appendix A.

The drilling operations for this investigation were completed on December 18, 2024. All borings were advanced using a track-mounted Geoprobe 3230 DT drill rig by hydraulically pushing steel casing into the soil using techniques outlined in ASTM D6282. Upon completion, the boreholes were backfilled to the surface with bentonite mixed with auger cuttings.

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 2.5 feet 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 were 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 pocket penetrometer tests, sieve and hydrometer analysis (ASTM D422), Atterberg Limits (ASTM D4318), 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 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:

Surficial Material – Topsoil

Approximately 6 inches of topsoil was encountered at both boring locations.

Stratum 1 – Clay (CL)

Stiff to very stiff lean clay with variable amounts of sand was encountered below the topsoil and extended to a depth of 20 feet below grade. The standard penetration number ranged from 10 to 24 and averaged 15.

Stratum 2 – Silty Sand (SM)

Loose to medium dense silty sand was encountered within Stratum 1 in boring B-01 between a depth of 8.5 and 13.5 feet below grade. The standard penetration number ranged from 10 to 14 and averaged 12.

3.2 Groundwater Observations

Groundwater was not encountered in any of the borings during drilling operations. 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. Notable transitions from brown to gray generally occurred at a depth of about 13.5 to 16 feet below ground surface.

Water levels reported are accurate only for the time and date the borings were drilled. The borings were backfilled and sealed the same day that they were completed. Long-term monitoring of the boreholes was not included as part of the scope of our subsurface investigation.

It should be noted that the elevation of the natural groundwater table, 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 ANALYSIS AND RECOMMENDATIONS

4.1 Pipe Installation Recommendations

Based on the observed subsurface conditions, the anticipated invert of the proposed watermain at approximately 8 feet below existing grades consists of stiff to very stiff lean clay. This material is suitable directional drilling installation techniques. This method of pipe installation requires less excavation, produces minimal construction waste, and is advantageous for use in avoiding utilities or obstructions within the planned alignment.

As we understand, temporary launching and receiving pits will be required to facilitate the directional drilling operations, a type of trenchless installation method. Trenchless methods of construction typically require temporary shoring due to the depth and location which does not often allow for sloping of excavation walls. The design of the excavation should consider a predominantly lean clay profile. See Section 4.3 for anticipated lateral earth pressure coefficients to be used in design. The excavations and temporary shoring should be designed by a Professional Engineer and constructed under the supervision of a qualified engineer.

Cantilever sheeting is typically designed with an embedment of 1 to 1.5 times the exposed wall height. With an excavation depth anticipated at about 10 feet below grade, a temporary shoring system consisting of cantilever sheeting is feasible. The ground surface movement behind a cantilevered system of this depth would have to be monitored during construction so the top of the sheeting remains less than one to two inches of lateral movement.

Depending on the lateral size of the excavation, a braced excavation may be considered. A braced excavation may be required for excavations where the soil and groundwater conditions and adjacent surcharge loading preclude a cantilevered temporary earth retention design. Interior bracing is used to support the wall from moving inward, and the amount of steel sheeting can be reduced. The bracing should be designed to provide optimal work room within the excavation.

4.2 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). Fill should be compacted to 98 percent of the Standard Proctor or 95 percent of Modified Proctor Maximum Dry Density (MDD) within 2 percent of the Optimum Moisture Content (OMC). If a working platform at the base of the excavation is needed, it is recommended that at least 6 inches of granular base material be placed and compacted.

In general, fill should be placed in 9-inch loose thickness lifts (8-inch compacted); assuming appropriately weighted and ballasted compaction equipment is used. In confined areas where hand operated compaction equipment is required, 4-inch and 6-inch loose thickness lifts should be used for hand operated vibratory plate compactors and hand operated vibratory drum rollers weighing at least 1,000 pounds, respectively. 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.

A qualified geotechnical consultant should be retained to monitor all fill placement in order to assure that materials are placed according to their suitability and compaction requirements are achieved. In-place soil moisture/density testing should be performed during fill placement activities to assure proper fill compaction with a minimum of three tests per lift. Areas that do not achieve compaction requirements after initial placement should be re-compacted to meet project requirements.

4.3 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 4.3-1.

Table 4.3-1 Recommended Lateral Earth Parameters

Soil Parameters	Engineered Granular Soil	Existing Soils	
		Stiff Clay (Stratum 1)	Loose Sand (Stratum 2)
Total Unit Weight (pcf)	125	130	120
Internal Friction Angle (°)	30.0	20.0	28
At-rest Pressure Coefficient, K_o	0.50	0.65	0.55
Active Pressure Coefficient, K_a	0.30	0.50	0.35
Passive Pressure Coefficient, K_p	3.0	2.0	2.8
Concrete/Soil Friction Coefficient	0.5	0.0	0.5
Concrete/Soil Adhesion Factor	0.0	0.2	0.0

Any additional lateral earth pressure due to surcharge loading conditions including, but not limited to, floor loads, sloping backfill, traffic loading, and construction loads, should be incorporated into the design.

5.0 CONSTRUCTION CONSIDERATIONS

5.1 Groundwater Control

Groundwater was not encountered during or after drilling operations. However, the long-term groundwater level may be estimated at a depth of 13.5 to 16 feet below existing grade based on notable color transitions of the cohesive soil from brown to gray, which may indicate the presence of a long-term groundwater table. 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 at or 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 stiff to very stiff cohesive soil and loose to medium dense sand. Based upon the data obtained, we anticipate OSHA will classify site clay soils as Type A soil, which will require maximum temporary excavation slopes of 0.75(H):1(V). However, sandy soils as encountered in boring B-01 may 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:

- Two (2) exploratory borings performed during this investigation;
- Observations of the project site by our staff;
- Results of laboratory soil testing; and,
- Results of the geotechnical analyses.

The subsurface conditions discussed in this report and those shown on the boring logs represent an estimate of the subsurface conditions based on interpretation of the boring data using normally accepted geotechnical engineering judgments. Although individual test borings are representative of the subsurface conditions at the boring locations on the dates shown, they are not necessarily indicative of subsurface conditions at other locations or at other times. MSG is not responsible for independent conclusions, opinions, or recommendations made by others based upon information presented in this report.

We strongly recommend the final project plans and specifications be reviewed by MSG's geotechnical engineer to confirm that the geotechnical aspects are generally consistent with the recommendations of this report. In particular, the specifications for excavation 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.

APPENDIX A

FIGURE 1 – SITE LOCATION MAP

FIGURE 2 – SOIL BORING LOCATION MAP

Mannik Smith GROUP

2365 Haggerty Road South
Canton, Michigan 48188
Tel: 734-397-3100
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Figure 1: Site Location Map
Westgate Watermain - Jackson Avenue Crossing
Jackson Avenue, Ann Arbor, Michigan
MSG Project Number: 401.2300021.000

No Scale
Map Adapted from
Google Earth 2025®

N

Mannik Smith GROUP
2365 Haggerty Road South
Canton, Michigan 48188
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Fax: 734-397-3131
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Figure 2: Soil Boring Location Map
Westgate Watermain - Jackson Avenue Crossing
Jackson Avenue, Ann Arbor, Michigan
MSG Project Number: 401.2300021.000

No Scale
Map Adapted from
Google Earth 2025®

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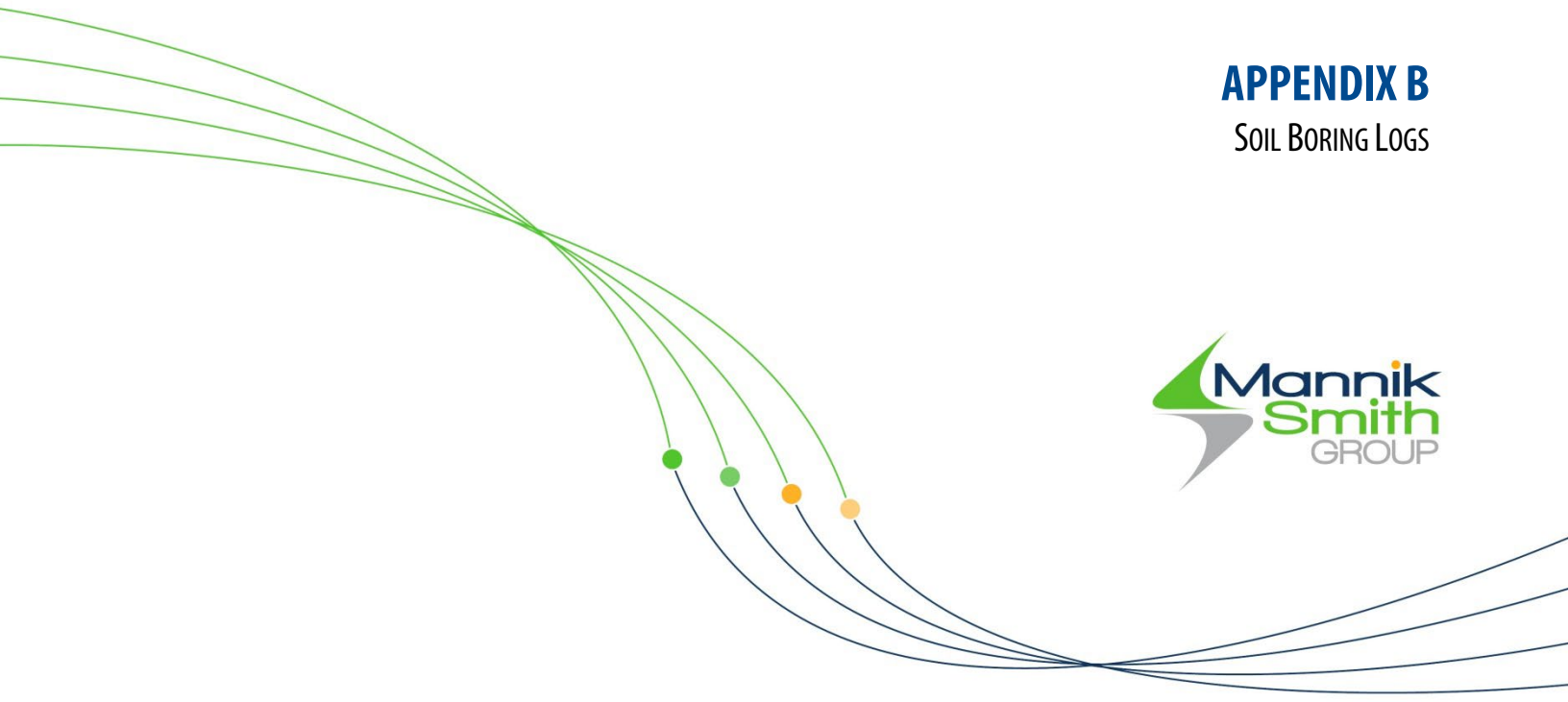
APPENDIX B

Soil Boring Logs



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%
	Some – 23% to 33%
And – Over 35%	

PARTICLE SIZES

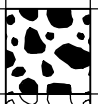
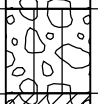
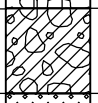
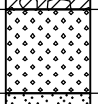
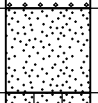
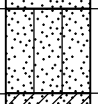
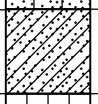
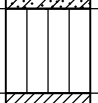
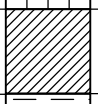
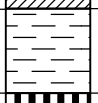
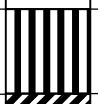
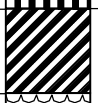
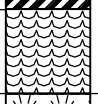
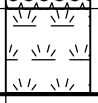
Boulders		- Greater than 12 inches (305 mm)
Cobbles		- 3 inches (76.2 mm) to 12 inches (305 mm)
Gravel:	Coarse	- ¾ inches (19.05 mm) to 3 inches (76.2 mm)
	Fine	- No.4 (4.75 mm) to ¾ inches (19.05 mm)
Sand:	Coarse	- No. 10 (2.00 mm) to No. 4 (4.75 mm)
	Medium	- No. 40 (0.425 mm) to No. 10 (2.00 mm)
	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
			GP		POORLY-GRADED GRAVELS WITH OR WITHOUT SAND
		GRAVELS WITH 15% OR MORE FINES	GM		SILTY GRAVELS WITH OR WITHOUT SAND
			GC		CLAYEY GRAVELS WITH OR WITHOUT SAND
	SANDS MORE THAN HALF COARSE FRACTION IS FINER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 15% FINES	SW		WELL-GRADED SANDS WITH OR WITHOUT GRAVEL
			SP		POORLY-GRADED SANDS WITH OR WITHOUT GRAVEL
		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

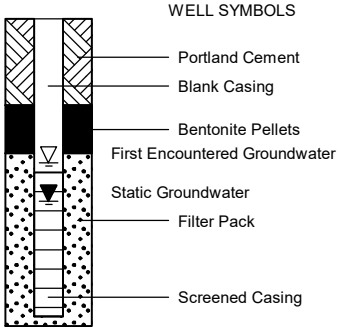

Grab Sample


Rock Core

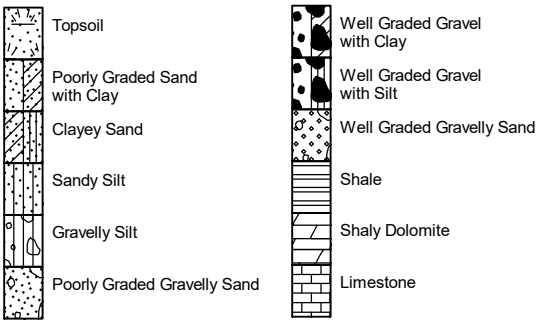

Split Spoon sample, 1 inch or 2 inch outer-diameter.


Shelby Tube sample - 3 inch diameter unless otherwise noted.

WELL SYMBOLS



OTHER MATERIAL SYMBOLS



Mannik Smith GROUP

BORING / WELL LOG KEY

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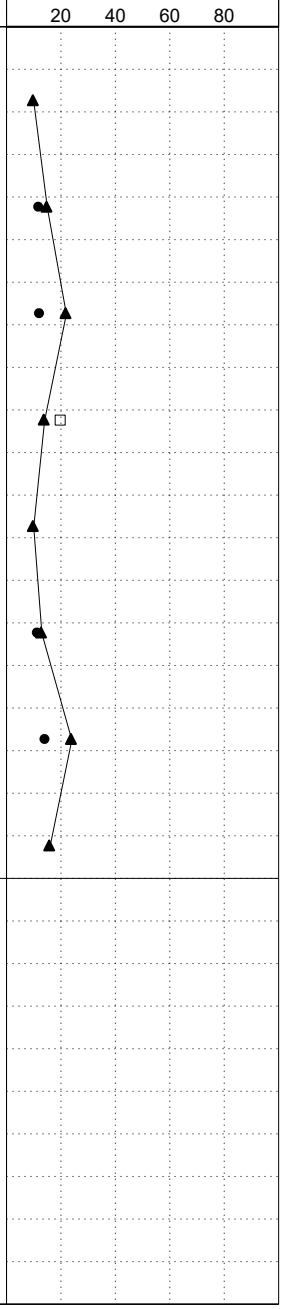
BOREHOLE NUMBER B-01

CLIENT City of Ann Arbor
PROJECT NAME Westgate Watermain – Jackson Avenue Crossing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 12-18-2024 **COMPLETED** 12-18-2024
POSITION N: 285198± ft E: 13281246± ft (NAD 1983 Michigan South (Intl Feet))
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
SURFACE ELEVATION 942± ft **FINAL DEPTH** 20.0 ft
DRILLING METHOD Direct Push
LOGGED BY MH **CHECKED BY** CGG
EQUIPMENT Geoprobe 3230DT **Operator** RJS
REMARKS Elevation obtained from Google Earth™.

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)
		0.5 TOPSOIL - 6 INCHES 941.5				
		Lean CLAY with sand (CL): stiff to very stiff; brown; moist.	SPT SS-1	67	3-4-6 (10)	3.50
5	938		SPT SS-2	56	5-7-8 (15)	3.00
			SPT SS-3	72	8-10-12 (22)	3.50
		8.5 933.5				
10	933	Silty SAND (SM): loose to medium dense; brown; moist.	SPT SS-4	78	3-7-7 (14)	
			SPT SS-5	100	4-5-5 (10)	
		13.5 928.5				
15	928	Lean CLAY (CL): stiff to very stiff; gray; damp. - Qu = 3018 psf	SPT SS-6	61	3-5-8 (13)	2.00
			SPT SS-7	72	5-6-18 (24)	2.25
20	923	20.0 922.0	SPT SS-8	72	8-8-8 (16)	1.50
		Terminated at 20.00 ft. Reached Target Depth.				
25	918					
	913					



LEGEND:

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

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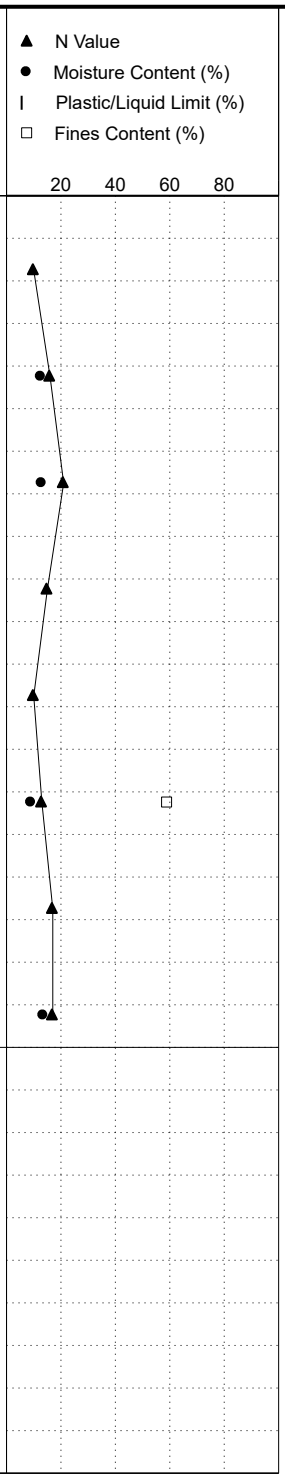
BOREHOLE NUMBER B-02

CLIENT City of Ann Arbor
PROJECT NAME Westgate Watermain – Jackson Avenue Crossing
PROJECT NUMBER 401.2300021.000
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 12-18-2024 **COMPLETED** 12-18-2024
POSITION N: 285311± ft E: 13281277± ft (NAD 1983 Michigan South (Intl Feet))
DRILLING CONTRACTOR The Mannik & Smith Group, Inc.
SURFACE ELEVATION 940± ft **FINAL DEPTH** 20.0 ft
DRILLING METHOD Direct Push
LOGGED BY MH **CHECKED BY** CGG
EQUIPMENT Geoprobe 3230DT **Operator** RJS
REMARKS Elevation obtained from Google Earth™.

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)
		0.5 TOPSOIL - 6 INCHES 939.5				
		Lean CLAY with sand (CL): stiff to very stiff; brown; moist.	SPT SS-1	61	5-5-5 (10)	4.00
			SPT SS-2	67	5-7-9 (16)	4.00
5	936		SPT SS-3	61	9-10-11 (21)	4.00
			SPT SS-4	100	6-7-8 (15)	4.00
10	931	11.0 929.0				
		Sandy Lean CLAY (CL): stiff to very stiff; brown; moist.	SPT SS-5	72	5-5-5 (10)	4.00
		- Qu = 5913 psf	SPT SS-6	78	4-4-9 (13)	3.50
15	926	16.0 924.0				
		Lean CLAY (CL): stiff to very stiff; gray; damp.	SPT SS-7	67	6-6-11 (17)	3.00
			SPT SS-8	78	9-9-8 (17)	1.25
20	921	20.0 920.0				
		Terminated at 20.00 ft. Reached Target Depth.				
25	916					
	911					



LEGEND:

▽ **AT TIME OF DRILLING**
▼ **AT END OF DRILLING**
▼ **AFTER DRILLING**

APPENDIX C

SOIL LABORATORY TEST DATA

LABORATORY TEST PROCEDURES

A brief description of the most common laboratory tests performed at the Geotechnical Engineering Laboratory at the Mannik Smith Group is provided in the following sections.

DESCRIPTION OF SOILS (VISUAL-MANUAL PROCEDURE) (ASTM D2488)
The visual classification of soil samples are performed in accordance with ASTM D2488 standard. Our engineers use this test method to describe each soil sample using visual examination and simple manual tests. Visual classification helps grouping similar soil samples so that only a minimum number of laboratory tests are required for positive soil classification.

POCKET PENETROMETER
In the pocket penetrometer test, the unconfined compressive strength of a cohesive soil sample is estimated by measuring the resistance of the sample to the penetration of a small, calibrated spring-loaded cylinder. The maximum capacity of the penetrometer is 4.5 tons per square foot.

NATURAL MOISTURE CONTENT (ASTM D2216)
Natural moisture content represents the ratio of the weight of water in a given amount of soil to the weight of solid particles. Natural moisture content is expressed as a percentage (%). In this test method the water content is measured in the laboratory by noting the weight loss after drying the soil at specific temperature for 24 hours.

ATTERBERG LIMITS (ASTM D4318)
The Atterberg Limits test is performed in accordance with ASTM D4318. Liquid Limit (LL), Plastic Limit (PL) and Plasticity Index (PI) of the soil sample are determined using this test method. The Liquid Limit is the moisture content at which the soil begins to behave as a liquid material and starts to flow. The Plastic Limit is the moisture content at which the soil changes from plastic to semi-solid stage. The Plasticity Index (PI = LL - PL) is the range of moisture content at which the soil is in a plastic stage. Typically, a soil's potential for volume change increases with increase of plasticity indices.

PARTICLE SIZE ANALYSIS (ASTM D421, D422 and D1140)
These tests are performed to determine the partial soil particle size distribution. The soil sample is prepared according to ASTM D421 test method. The amount of material finer than the openings on the No. 200 sieve (0.075 mm) is determined by wash sieve method according to ASTM D1140. The hydrometer test is used to determine particle size distribution of material finer than 0.075 mm according to ASTM D422 test method.

STANDARD PROCTOR COMPACTION TEST (ASTM D698)
The Standard Proctor compaction test is used to determine maximum dry density and optimum moisture content of the soil sample. In this test, the soil is compacted in the Proctor mold in three lifts of equal volume using a standard effort by the free falling of a 5.5 lb rammer from 12 inches above soil surface. The test procedure is repeated on samples at several different moisture contents and a parabolic graph showing the relationship between moisture content and dry density of the soil is established. The maximum dry unit weight of the compacted sample and the respective moisture content is reported as maximum dry density and optimum moisture content of the soil sample.

MODIFIED PROCTOR COMPACTION TEST (ASTM D1557)
Modified Proctor compaction is similar to the Standard Proctor test. In this test, the soil is compacted in the Proctor mold in five lifts of equal volume using a standard effort by the free falling of a 10 lb rammer from 18 inches above the soil surface. The maximum dry unit weight of the compacted sample and the respective moisture content is reported as maximum dry density and optimum moisture content of the soil sample.

LABORATORY CALIFORNIA BEARING RATIO (ASTM D1883)
The CBR value is the ratio of forces required for 0.1-inch penetration of a 2-inch diameter circular plunger at the rate of 0.05 inch/min into a compacted soil sample compared to the same penetration in a certain standard crushed stone.

LOSS ON IGNITION TEST (LOI) (ASTM D2974)
LOI tests are performed on peat or suspected organic soils. An oven-dried sample is ignited in a furnace at 440°C (Method C) or 750°C (Method D). The ash content of the soil sample is determined as a percentage of the weight of the oven-dried sample. The organic content is the loss of weight due to ignition and reported as a percentage of the weight of the oven-dried sample.

ONE-DIMENSIONAL CONSOLIDATION TEST (ASTM D2435)
The consolidation test data is used to estimate the magnitude and rate of both differential and total settlement of a structure. A one-dimensional consolidation test is performed in a consolidation ring that does not allow lateral displacement of the sample. The sample is subjected to various vertical loading and unloading cycles. The deformation of the sample due to loading and unloading is recorded and used for the plotting a void ratio-applied pressure graph. The pre-consolidation pressure for the soil can also be determined from this test.

UNCONFINED COMPRESSION TEST ON ROCK SAMPLES (ASTM D7012)
In the unconfined compression test, the unconfined compressive strength (q_u) of a rock sample is estimated by measuring the resistance of the sample in compression when an axial loading is applied to the cylindrical specimen (with a height to diameter ratio of approximately 2) to reach the failure condition.

UNCONFINED COMPRESSION TEST ON SOIL SAMPLES (ASTM D2166)
In the unconfined compression test, the unconfined compressive strength (q_u) of a cohesive soil sample is estimated by measuring the resistance of the sample in compression when an axial loading is applied to the cylindrical specimen (with a height to diameter ratio of 2 to 2.5) to reach the failure condition or 15 percent (%) of axial deformation, whichever is secured first.

UNCONSOLIDATED-UNDRAINED (UU) TRIAXIAL COMPRESSION TEST (ASTM D2850)
Triaxial Shear tests are used to determine the shear strength of soil samples under various loading conditions. The test is performed on a relatively undisturbed sample extruded from a Shelby tube. In this test method, fluid flow is not permitted into or out of the soil specimen as the load is applied (undrained condition), therefore pore pressure builds up in the sample. The compressive strength of a soil is determined in terms of the total stress. The various confining pressures help determining the shear strength of the soil at different depths.

CONSOLIDATED-UNDRAINED (CU) TRIAXIAL COMPRESSION TEST (ASTM D4767)
The shear characteristics of cohesive samples (collected from relatively undisturbed sample extruded from a Shelby tube) are measured in this test under undrained conditions. This test represents field conditions where fully consolidated soils under one set of stresses are subjected to a sudden change in stress without sufficient time for further consolidation (undrained condition). The data from this test is used to analyze the shear strength parameters of the soil at different depths. The compressive strength of a soil is reported in terms of the effective stress.

WATER SOLUBLE SULFATE, RESISTIVITY AND PH
To evaluate the corrosion potential of the site, MSG performs sulfates (Ohio DOT Supplement 1122), resistivity (ASTM G187), and pH tests (ASTM D4972) on select soil samples.

SPECIFIC GRAVITY (ASTM D854)
Specific gravity is defined as the ratio of the unit weight of soil solids only to unit weight of water at a specific temperature. MSG performs specific gravity tests for soils according to ASTM D854 test procedure.

PERMEABILITY (ASTM D2434 and ASTM D5084)
This test method covers laboratory measurements of the hydraulic conductivity (the coefficient of permeability) of water-saturated granular and cohesive materials. MSG performs multiple methods for permeability tests according to ASTM D2434 and ASTM D5084.

DIRECT SHEAR TEST (ASTM D3080)
The direct shear tests are performed to determine the maximum and residual shear strength. A horizontal load is applied at a constant rate of strain. The soil sample is placed in a box where the lower half of the box is mounted on rollers and is pushed forward at a uniform rate by a motorized apparatus. The upper half of the box bears against a steel proving ring, the deformation of which is shown on a dial gauge indicating the shear force. The various information that can be obtained from the results includes the maximum (peak) shear strength and the ultimate (residual) shear strength.

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SUMMARY OF LABORATORY RESULTS

AASHTO R18

CLIENT City of Ann Arbor

PROJECT NAME Westgate Watermain - Jackson Avenue Crossing

PROJECT NUMBER 401.2300021.000

PROJECT LOCATION Ann Arbor, Michigan

Boring No. / Sample No.	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Class-ification	Water Content (%)	Bulk Density (pcf)	Satur-ation (%)	Specific Gravity
SB-01 / SS-2	3.5							12.0			
SB-01 / SS-3	6.0							12.3			
SB-01 / SS-4	8.5	NP	NP	NP	19	20	SM				
SB-01 / SS-6	13.5							11.5	146.0		
SB-01 / SS-7	16.0							14.3			
SB-02 / SS-2	3.5							12.6			
SB-02 / SS-3	6.0							12.9			
SB-02 / SS-6	13.5				19	59		9.0	145.3		
SB-02 / SS-8	18.5							13.5			

LAB SUMMARY - GINT STD US LAB.GDT - 1/10/25 14:27 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\5 JACKSON ROAD WATERMAIN\GEOTECH\LAB\LAB TESTING.GPJ

GRAIN SIZE DISTRIBUTION

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www.manniksmithgroup.com

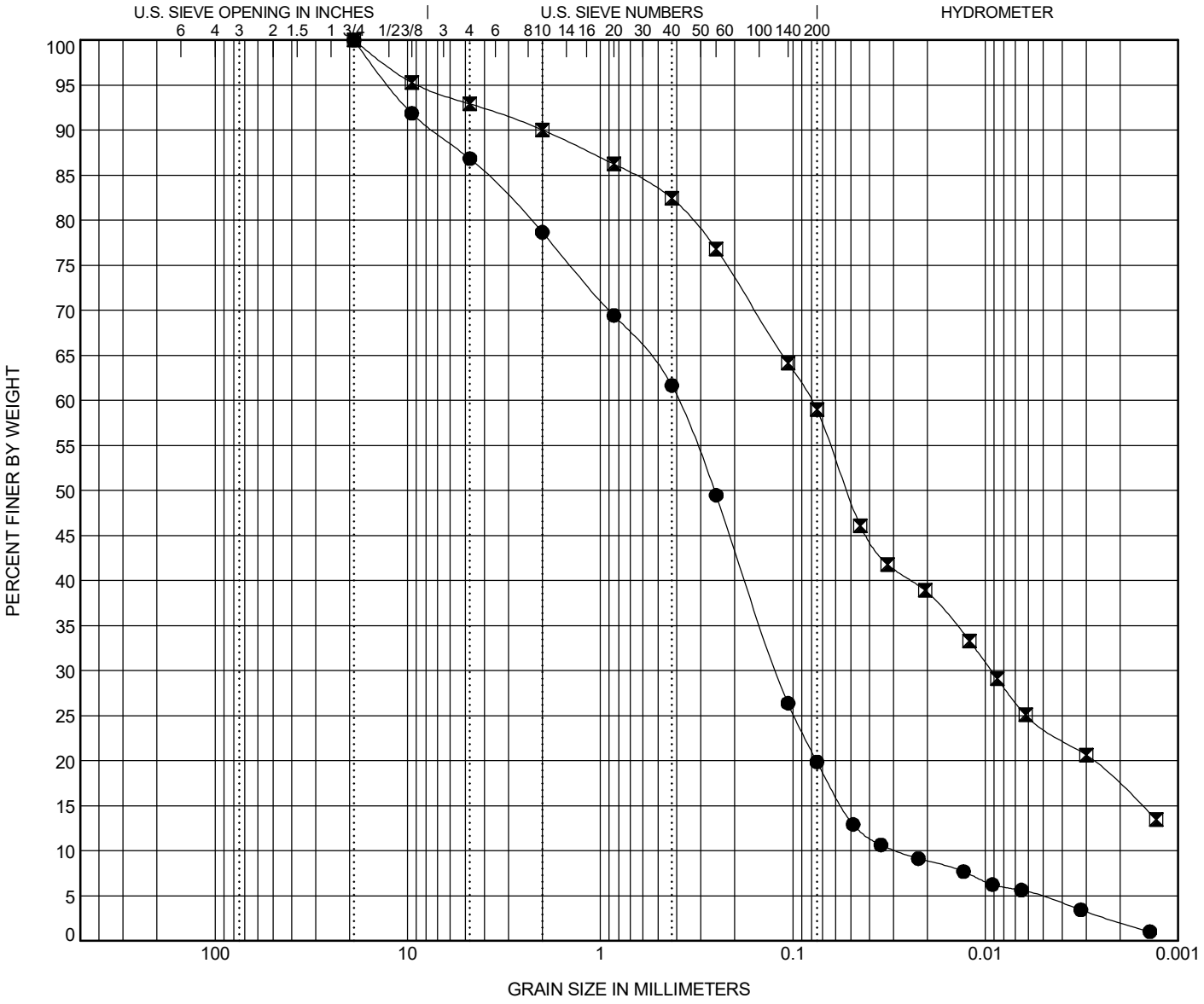
AASHTO R18

CLIENT City of Ann Arbor

PROJECT NAME Westgate Watermain - Jackson Avenue Crossing

PROJECT NUMBER 401.2300021.000

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-01 / SS-4**	**8.5**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**	**1.30**	**13.78**
⊠	**SB-02 / SS-6**	**13.5**						

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**SB-01 / SS-4**	**8.5**	**19**	**0.395**	**0.121**	**0.029**	**13.1**	**67.0**	**17.8**	**2.1**
⊠	**SB-02 / SS-6**	**13.5**	**19**	**0.08**	**0.009**		**7.1**	**33.9**	**41.8**	**17.2**

GRAIN SIZE - GINT STD US LAB.GDT - 1/10/25 14:27 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\5 JACKSON ROAD WATERMAIN\GEOTECH\LAB\LAB TESTING.GPJ

UNCONFINED COMPRESSION TEST

The Mannik & Smith Group, Inc.
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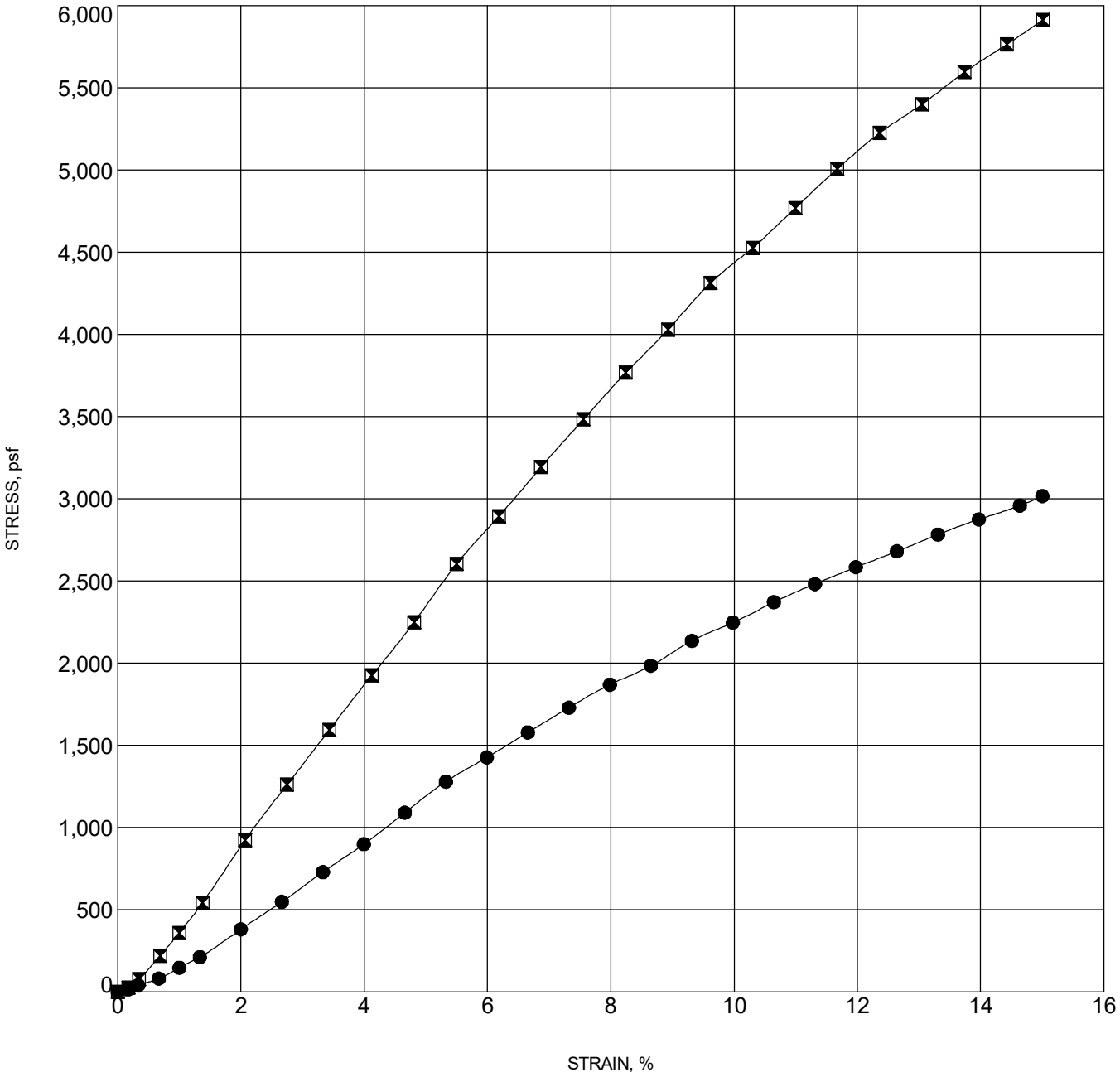
AASHTO R18

CLIENT City of Ann Arbor

PROJECT NAME Westgate Watermain - Jackson Avenue Crossing

PROJECT NUMBER 401.2300021.000

PROJECT LOCATION Ann Arbor, Michigan



Specimen Identification			Classification	UCS (psf)	γ_d	MC%
●	SB-01 / SS-6	13.5		3018	131	11
⊠	SB-02 / SS-6	13.5		5913	133	9

UNCONFINED - GINT STD US LAB.GDT - 1/10/25 14:26 - W:\PROJECTS\2023\401.2300001-00199\401.2300021.000\ADMIN\5 JACKSON ROAD WATERMAIN\GEOTECH\LAB\LAB TESTING.GPJ