CITY OF ANN ARBOR
INVITATION TO BID

2021 Miscellaneous Utilities Project

ITB No. 4669

~~Due Date: Tuesday, April 13, 2021 at 2:00PM (Local Time)~~
UPDATED Bid Due Date and Time: APRIL 15, 2021 at 10:00 AM (Local Time)

Public Services / Engineering

Issued By:

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

ADDENDUM No. 1

ITB No. 4669 - 2021 MISCELLANEOUS UTILITIES PROJECT

Updated Bid Due Date and Time:
APRIL 15, 2021 at 10:00 AM (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 one hundred forty-four (144) pages.**

Bidder is to acknowledge receipt of this Addendum No. 1, including all attachments (if any) in its Bid by so indicating on page ITB-1 of the Invitation to Bid Form. Bids submitted without acknowledgment of receipt of this addendum may be considered nonconforming.

The following forms provided within the ITB document must be included in submitted bids:

- **City of Ann Arbor Prevailing Wage Declaration of Compliance**
- **City of Ann Arbor Living Wage Ordinance Declaration of Compliance**
- **Vendor Conflict of Interest Disclosure Form**
- **City of Ann Arbor Non-Discrimination Ordinance Declaration of Compliance**

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

I. CORRECTIONS/ADDITIONS/DELETIONS

Changes to the Bid document which are outlined below are referenced to a page or Section in which they appear conspicuously. The Bidder is 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) As provided in ITB No. 4669 Bid Document:	**Change** As updated/replaced herein Addendum 1:
All mentions	Bid Due Date and Time in ITB Document: Friday, April 9, 2021 at 2:00pm (local time) As updated herein: Thursday, April 15, 2021 at 10:00am (local time)
Notice of Pre-Bid Conference	Pre-Bid Conference Summary added: Pages Addendum1-NP-2 to Addendum1-NP-3.
Bid Forms/ BF-1 to BF-6	Bid Form – Schedule of Prices, Pages Addendum1-BF-1 to Addendum1-BF-5. Pay Items revised: • New 210 “Remove and Salvage Modular Block Wall” • 213 renamed “HMA Pavement Removal” and units revised

Section/Page(s) As provided in ITB No. 4669 Bid Document:	**Change** As updated/replaced herein Addendum 1:
Bid Forms/ BF-1 thru BF-6	Pay Items revised (continued): • New 214 “Concrete Base Course Removal” • 215 quantity revised per revised Detailed Specification (DS) • 223-226 renumbered to 225-228 • 227-228 renumbered to 223-224 • New 229 “Reinstall Modular Block Wall” • Duplicate 234 renumbered to 236 • 235-239 renumbered to 238-242 • New 235 “HMA Pavement Leveling/Top 4E3” • New 237 “HMA Pavement Base 3E3” • New 243 “Concrete Base Course, Nonreinf” • New 244 “HMA Temporary Pavement” • 240 renumbered 245 • 241 “Conc. Curb (HE)” eliminated per revised DS 250 (formerly DS 246) • 242 renumbered to 246; revised quantity per new 250 • 243-244 renumbered to 247-248 • 245 renumbered to 249; revised quantity and units • New 250 “Integral Sidewalk Rolled Curb” • 246-247 renumbered to 251-252 • 250-251 renumbered to 253-254 • 252 renumbered to 256 • 253 renumbered to 255 • 254 renumbered to 258 • 255 renumbered to 257; Duplicate 255 renumbered to 259 • 256-258 renumbered to 260-262 • 260-273 renumbered to 263-276 • 284 renumbered to 430 • 295 renumbered to 315 • 322 revised quantity per new 323 and 324 • New 323 “24-inch Storm, Trench II (2)” • New 324 “24-inch Storm, Trench VII (7)” • 323 renumbered to 325 • 330 and 566 combined and renumbered to 290 • 340 renamed “Dr Inlet Structure, 24-inch dia” • 341 “Dr Structure, 36-inch dia” eliminated per 0 quantity • 342 renumbered to 341 and renamed “Dr Inlet Junction Structure, 48-inch dia” and revised quantity • 343 renumbered to 342 “Dr Inlet Junction Structure, 60-inch dia” and 343 “Dr Manhole Structure, 60-inch dia” • 344 renamed “Dr Manhole Structure, 72-inch dia” • 345 renumbered to 345 “Dr Manhole Structure, 84-inch dia” and 346 “Dr Manhole Structure over Existing, 84-inch dia” • 346 “Dr Structure, 96-inch dia” eliminated per 0 quantity • 360 “Type I Manhole, 60-inch dia” eliminated per 0 quantity • 366 “Inlet-Junction Chamber” eliminated per 0 quantity • 367 “Single Inlet” eliminated per 0 quantity

Section/Page(s) As provided in ITB No. 4669 Bid Document:	**Change** As updated/replaced herein Addendum 1:
Bid Forms/ BF-1 to BF-6	Pay Items revised (continued): • 401 revised quantity per new 402 and 403 • New 402 “8-inch Class 50 DIP w/ poly, Trench IV (4)”New 403 “8-inch Class 50 DIP w/ poly, Trench VI (6)” • 402-403 renumbered to 404-405New 406 “16-inch Class 50 DIP w/ poly, Trench VI (6)” • New 418 “12”x12”x12” Tee” • 420 added quantity • New 422 “12”x12”x8” Tee” • 440 revised quantity • 442 revised quantity • New 443 “16inch Gate Valve in Box” • New 445 “Pressure Reducing Valve” • 450 renamed “60” x 120” Conc Vault (PRV) • 563 renumbered 292 • 566 renumbered to 290 (as mentioned above in combination with 330) • 567 renumbered to 291 • New 701 “Erosion Control, Trench Drain Inlet Filter” • New 702 “Erosion Control, Inlet Protection” • New 703 “Erosion Control, Silt Fence”
Detailed Specifications/ Pages DS-1 to DS-3	Pages Addendum1-DS-1 to Addendum1-DS-3; to reflect updated scheduling at Crest at W. Huron and Newport/Bird Roads locations.
Detailed Specifications/ Pages DS-50 to DS-51	Pages Addendum1-DS-4 to Addendum1-DS-6; to specify new Pay Item #210.
Detailed Specifications/ Pages DS-52 to DS-53	Pages Addendum1-DS-7 to Addendum1-DS-8; to reflect revised Pay Item #213 and new Pay Item #214.
Detailed Specifications/ Pages DS-54 to DS-55	Pages Addendum1-DS-9 to Addendum1-DS-10; to reflect eliminated Pay Item #214 Sidewalk Grading and revised Pay Item #215.
Detailed Specifications	Pages Addendum1-DS-11; Pay Item #220 specification.
Detailed Specifications/ Pages DS-58 to DS-59	Pages Addendum1-DS-12 to Addendum1-DS-13; to reflect revised Pay Items #221 and #222, and to specify renumbered Pay Items #223 and #224.
Detailed Specifications/ Page DS-60	Page Addendum1-DS-14; to reflect renumbered Water Main Line Stop Pay Items #225 to #228.
Detailed Specifications/ Pages DS-61 to DS-63	Pages Addendum1-DS-15 to Addendum1-DS-17; to specify new Pay Item #229 and reflect revised Pay Item #230.

Section/Page(s) As provided in ITB No. 4669 Bid Document:	**Change** As updated/replaced herein Addendum 1:
Detailed Specifications/ Pages DS-67 to DS-69	Pages Addendum1-DS-18 to Addendum1-DS-21; to specify new Pay Items #235, #237, and #243; and to reflect renumbered HMA Pay Items #234 to #243.
Detailed Specifications/ Pages DS-70 to DS-73	Pages Addendum1-DS-22 to Addendum1-DS-25; to specify new Pay Items #244 and #250; to reflect renumbered and revised concrete Pay Items #244 to #251.
Detailed Specifications/ Pages DS-74 to DS-75	Pages Addendum1-DS-26 to Addendum1-DS-27; to reflect renumbering.
Detailed Specifications/ Page DS-76	Page Addendum1-DS-28; to reflect renumbered Pavement Marking Pay Items #253 to #262.
Detailed Specifications/ Pages DS-77 to DS-79	Pages Addendum1-DS-29 to Addendum1-DS-31; to reflect renumbered Temporary Traffic Control Pay Items #263 to #276.
Detailed Specifications/ Pages DS-77 to DS-79	Pages Addendum1-DS-32 to Addendum1-DS-33; to specify, and reflect renumbering of, Structure Adjustment Pay Items #290 to #291, and Structure Cover Pay Item #292.
Detailed Specifications/ Pages DS-91 to DS-92	Pages Addendum1-DS-34 to Addendum1-DS-35; to reflect renumbering.
Detailed Specifications/ Page DS-88	Page Addendum1-DS-36; to reflect renumbering.
Detailed Specifications	Pages Addendum1-DS-37 to DS-38; Pay Item #445 specification.
Detailed Specifications	Page Addendum1-DS-39; Pay Item #450 specification.
Detailed Specifications	Page Addendum1-DS-40; to specify new Pay Items #701, #702, and #703.
Appendix	Pages Addendum1-Apdx-66 to Addendum1-Apdx-68 Geotechnical Boring Logs from Crest with location map
Appendix	Pages Addendum1-Apdx-69 to Addendum1-Apdx-70 Huron Street Design Sheets provided by MDOT
Appendix	Pages Addendum1-Apdx-71 to Addendum1-Apdx-78 Wage Decision MI20210074
Appendix	Pages Addendum1-Apdx-79 to Addendum1-Apdx-84 W. Liberty St. Sanitary Sewer Televising Reports
Appendix	Pages Addendum1-Apdx-85 to Addendum1-Apdx-91 MDOT ADA Compliant Sidewalk Ramp Details R-28-J

Section/Page(s) As provided in ITB No. 4669 Bid Document:	**Change** As updated/replaced herein Addendum 1:
Appendix	Pages Addendum1-Apdx-92 to Addendum1-Apdx-95 Standard Casting Schedule and Structure Cover Details
Drawings/1	Revised Sheet List Table
Drawings/4, 6, 7	Added limits of machine grading
Drawings/9	Sheet 9 added trench details 2, 4, and 6
Drawings	New sheet 10 – Pressure Reducing Vault plan and section views New sheet 11 – Pressure Reducing Vault details
Drawings/24	(Renumbered Sheet 26) – Added trench detail call-outs, TD-II & VI, to profile
Drawings/27	(Renumbered Sheet 29) – Size of PRV vault changed to 10x5
Drawings	New sheets 37 and 38 – Flipped MOT for Liberty 1. Sheets 44 & 45 - Added GVIW's and removed GVIB's 2. Sheet 46 – work zone quantities 3. Sheet 54 – Added GVIW, removed GVIB and changed trench detail call-out
Drawings/40, 41	(Renumbered Sheets 44, 45) - Added GVIW's and removed GVIB's
Drawings/42	(Renumbered Sheet 46) - Work zone quantities
Drawings/50	(Renumbered Sheet 54) Sheet 54 – Added GVIW, removed GVIB and changed trench detail call-out

II. QUESTIONS AND ANSWERS

The following Questions have been received by the City. Responses are being provided in accordance with the terms of the ITB. Bidders are directed to take note in their 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: What is the Engineer's Estimate for this project?
Answer 1: $2,175,000.

Question 2: Is testing by the Owner?
Answer 2: Yes, testing to be performed by City's consultant.

Question 3: Is layout by the Owner?
Answer 3: Yes, staking to be provided by City's Surveyor.

Question 4: Do you know if the City will be performing inspection, or will inspection be by a third-party engineering firm?
Answer 4: Inspection is expected to be provided by City staff.

Question 5: Can you please provide the wage decision that will be used for the project?
Answer 5: The wage decision information, General Decision Number: MI20210074 01/01/2021, is included in Addendum No. 1.

Question 6: It appears that there are missing quantities for Pay Item 341, 346, 360, 366, 367 and 420.
Answer 6: Quantities and Pay Items have been clarified on the Bid Form.

Question 7: It appears that Pay Items 414 and 418 are duplicates.
Answer 7: Duplicate Pay Items have been eliminated.

Question 8: No soil erosion control pay items are included. In lieu of lumping this into “General Conditions”, can these items be added to the bid form.
Answer 8: Pay Items 701 thru 703 have been added for soil erosion control pay items.

Question 9: Please detail how the AREA for “Machine Grading” will be calculated. The specifications are silent as to how the transverse / longitudinal limits are to be determined.
Answer 9: Machine grading limits are calculated to the edge of the 1:1 slope outside of road grading as indicated in the street proposed typical sections on Sheets 4 thru 7. Additional clarification has been added to the Machine Grading specification section.

Question 10: Will the required removals associated with the “Temporary Water Main Line Stop” pay item(s) be paid for separately, or are they incidental to the Line Stop pay item?
Answer 10: Pavement removal and/or machine grading will be paid for separately.

Question 11: There is no SP for pay items 228 [Abandon Vault (PRV)] and 450 [72” x 96” Conc Vault (PRV)]. In addition, plan details are very limited and the scope of work for these items is not well defined. Please provide additional information as necessary.
Answer 11: An “Abandon Vault (PRV)” detailed specification has been added and renumbered 224. A “60” x 120” Concrete Vault (PRV)” detailed specification has been added.

Question 12: The proposed duration for the Newport Road/Bird Road section of work is not possible with the specified water main testing requirements and requested scope of work. Please revise the required duration for this area.
Answer 12: The proposed duration has been revised.

Question 13: The proposed duration for the Crest Avenue/West Huron Street section of work is not possible with the specified water main testing requirements and requested scope of work. Please revise the required duration for this area.
Answer 13: The proposed duration has been revised.

Question 14: I do not see a MOT plan for the north side (westbound) West Liberty Street construction. I assume that the provided MOT plan will be flip flopped to maintain eastbound traffic when this work is taking place, correct?
Are the long side water services and transverse water main items that cross West Liberty Street to be performed under traffic, or built part width to the construction limits during a “phase”? Please advise.

Answer 14: West Liberty Street MOT plans have been added for maintaining eastbound traffic on the south side of West Liberty Street.

Question 15: Although the specifications state that the aggregate materials must meet City Specifications, will the City consider a waiver for the uniformity coefficient (CLII sand) and loss by wash requirement (21AA LS) for these materials (assuming that they would still meet the MDOT specifications)?

Answer 15: The CLII sand and 21AA limestone will need to meet MDOT specifications, but the City's uniformity coefficient and loss by wash requirements, respectively will be waived.

Question 16: Are any lead or galvanized water services anticipated to be encountered on this project?
If so, what procedure(s) will be followed to remedy the deficient material?
Who is responsible for replacing the services past the curb stop (if required)?

Answer 16: It is anticipated that Public Works will have replaced any lead or galvanized water services on record by the time this project begins. However, should any lead or galvanized water services be encountered during construction, the Public Works Department should be notified immediately to remedy deficient material. The contractor could be requested to provide additional services paid for as "Excavate & Backfill for Water Service Tap and Lead". Services past the curb stop, as necessary, will be installed separate from this contract.

Question 17: Has the existing sanitary sewer been televised?
If so, please provide the inspection results with the locations of the lead connections for evaluation.

Answer 17: The existing sanitary sewer on West Liberty Street have been televised. The reports have been included in this addendum.

Question 18: What is the approximate age of the existing water main?

Answer 18: The City's records indicate the following installation years:
6-inch W. Liberty St. 1910
12-inch W. Liberty St. (Crest to Eberwhite) 1970
12-inch W. Liberty St. (Eberwhite to S. Seveth) 1950
6-inch Crest 1940
12-inch Crest Uncertain and 1970

Question 19: There are 2 bid items as number 255.

Answer 19: The bid items have been renumbered for clarification.

Question 20: There are 2 bid items called 8x6 Reducer (414 and 418)

Answer 20: Duplicate bid items have been eliminated.

Question 21: There are no bid items for 16" GVIB and 12x12x12 Tee.

Answer 21: Additional bid items have been added.

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

ADDENDUM No. 2

ITB No. 4669

2021 MISCELLANEOUS UTILITIES PROJECT

Bids Due: THURSDAY, APRIL 15, 2021 at 10:00AM (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 nine (9) pages.**

Bidder is to acknowledge receipt of this Addendum No. 2, including all attachments (if any) in its Bid by so indicating on page ITB-1 of the Invitation to Bid Form. Bids submitted without acknowledgment of receipt of this addendum may be considered nonconforming.

The following forms provided within the ITB document must be included in submitted bids:

- **City of Ann Arbor Prevailing Wage Declaration of Compliance**
- **City of Ann Arbor Living Wage Ordinance Declaration of Compliance**
- **Vendor Conflict of Interest Disclosure Form**
- **City of Ann Arbor Non-Discrimination Ordinance Declaration of Compliance**

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

I. CORRECTIONS/ADDITIONS/DELETIONS

Changes to the Bid document which are outlined below are referenced to a page or Section in which they appear conspicuously. The Bidder is 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) As provided in ITB No. 4669 Addendum 1:	**Change** As updated/replaced herein Addendum 2:
Bid Forms/ Add1-BF-1 to Add1-BF-5	Bid Form – Schedule of Prices, Pages Addendum2-BF-1 to Addendum2-BF-5. Pay Items revised: • 212 Revised Quantity • 232 Revised Quantity • 234 Revised Quantity • 236 New Pay Item HMA 4E1 High Strength • Pay Item HMA 4E1 (237) Revised Quantity • Pay Item HMA 3C (240) Revised Quantity • Pay Item HMA LVSP (241) Revised Quantity • Pay Item HMA Approach (242) Revised Quantity • Revised Pay Item Numbering 236-293

Section/Page(s) As provided in ITB No. 4669 Addendum 1:	**Change** As updated/replaced herein Addendum 2:
Drawings/4	• Revised HMA Application Estimate table replacing 5E1 HS Top Course with 4E1 HS Top Course. • Added Approach Cross Section
Drawings/10	• Revised plan to indicate flanged joint outside vault to be made with restrained push-on joint pipe and Megalug 1100HD. • Interior piping is 8-inch Class 50 Mechanical Joint, paid for as 8" Class 50 DIP.

II. QUESTIONS AND ANSWERS

The following Questions have been received by the City. Responses are being provided in accordance with the terms of the ITB. Bidders are directed to take note in their 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: How is the 23A aggregate surface to be paid for west of Main Street?
Answer 1: The 23A aggregate surface restoration shall be included in the Pay Item 24-inch storm pipe unit cost being installed.

Question 2: Where are 4E3 and 3E3 being used, as a pay item is included on the bid form?
Answer 2: 4E3 and 3E3 are the HMA mixes to be used on the Huron Road restoration over a matched depth of concrete. The cross section is included in Addendum 1 (Apdx-69 & Apdx-70).

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

TABLE OF CONTENTS

ATTACHMENTS

City of Ann Arbor Prevailing Wage Declaration Form
City of Ann Arbor Living Wage Forms
City of Ann Arbor Vendor Conflict of Interest Disclosure Form
City of Ann Arbor Non-Discrimination Ordinance Declaration Form and Notice

NOTICE OF PRE-BID CONFERENCE

A pre-bid conference for this project will be held on **Wednesday, March 24, 2021** at **1:30 p.m. (local time)** via Microsoft Teams:

Computer or Mobile App Link:
https://teams.microsoft.com/l/meetup-join/19%3ameeting_YjcxOGUzMzMtODY4ZC00NGVlLWJlY2UtNzNiODU5YTBhNTU0%40thread.v2/0?context=%7b%22Tid%22%3a%2248afa585-6375-4170-b9d1-e9c568bb92f3%22%2c%22Oid%22%3a%2271adb1fc-8f80-43e0-9506-385d0c15282a%22%7d

Or call in (audio only):
+1 734-412-6317,,645023446# United States, Ann Arbor
Phone Conference ID: 645 023 446#

Attendance at this conference is highly recommended. Administrative and technical questions regarding this project will be answered at this time. The pre-bid conference is for information only. Any answers furnished will not be official until verified in writing by the Financial Service Area, Procurement Unit. Answers that change or substantially clarify the bid will be affirmed in an addendum.

Pre-Bid Meeting Summary for the
2021 Miscellaneous Utilities Project
March 24, 2021 @ 1:30 p.m. via Microsoft Teams

I. Introductions & Recording

The City's meeting facilitator and project manager on this project, Theresa Bridges, (herein "the City") called the Pre-Bid Conference to order at 1:40 p.m. and asked for introductions of all in attendance:

- *Theresa Bridges, City of Ann Arbor Project Manager*
- *Chris Carson, City of Ann Arbor Project Civil Engineer*
- *Dave Fiegel, City of Ann Arbor Civil Engineering Specialist*
- *John Niemiec, E.T. Mackenzie*

Due to technical difficulties, virtual meeting could not be recorded.

II. Project Overview

a. N. Main Street Storm Sewer

Objective is to reroute storm sewer. Currently storm sewer alignment is under buildings at 1251 N. Main and 1254 N. Main.

i. Accessibility
- *Contractor's responsibility to maintain accessibility to Bandemer Park.*
- *Accessibility to 1250 N. Main Street has not been addressed with owner. Currently employees are generally working from home. Temporary parking for employees could be provided at Bandemer Park if owner is amenable.*

ii. Lake Shore Drive (Private)
- *Lake Shore Drive is not R.O.W.*
- *South half of Drive has easement for storm sewer work (and access). North half of drive has access easement and shall to be restored as necessary from damage incidental to project construction/access.*

iii. MDOT – Parks – 1251 N. Main, 1254 N. Main, 1250 N. Main, Railroad
- *Stake holders in the area.*
  a. *MDOT for N. Main Street.*
  b. *Parks for land north of 1251 N. Main and west of N. Main Street.*
  c. *1251 N. Main Street. Potential redevelopment site. Blanket easement for storm sewer.*
  d. *1254 N. Main Street, owned by First Martin. Do not have construction easement.*
  e. *1250 N. Main Street, owned by Peter Allen. Blanket easement for storm sewer.*
  f. *Railroad. Do not have Permit to Enter!*

iv. Utility Conflicts
- *Pole in Lake Shore Drive currently being relocated.*
- *Water service to 1254 N. Main Street in conflict and contractor to relocate.*

v. Storm sewers (including manholes) shall be cleaned and televised before final acceptance

b. Newport / Bird Pressure Reducing Valve Installation

Objective is to install new pressure reducing valve and abandon existing.

i. Detour and Accessibility
- *Detour plan provided. Option for contractor to keep one lane open on the north side of Bird with flagging.*

ii. Valve and Vault Purchase
- *Valve and Vault to be provided by contractor. Specifications to be provided in Addendum.*

c. W. Liberty and Crest
    i. Detour and Accessibility
    ii. Water Main – Installation and Testing
        - HMA removal for trench / storm replacements
        - Crest milling HMA prior to HMA placement
        - Water laterals tap by DPW and galvanized/lead replaced by DPW
    iii. Sanitary leads when conflicts exist.
    iv. Storm and sanitary sewers (including manholes) shall be cleaned (and televised if new) before final acceptance
    v. Sidewalk and ADA Ramps – ADA compliance MUST be achieved at all locations.

d. Standard Specifications and Detailed Specifications
    i. Project Schedule
        - Starting Date – May 17 insurance /contracts/bonds. City Council Award date will be May 3, 2021.
        - N. Main - June-July OR Sept-Oct
        - Newport / Bird – Complete by September 3 (Schedule being reviewed)
        - W. Liberty & Crest – Complete by Nov. 1
        - Huron / Crest – Complete by August 14 (Schedule being reviewed)
        - Hours of work: 7:00 a.m. to 8:00 p.m. Monday thru Saturday (Saturdays require notification; Sundays only with permission)
        - Holidays
    ii. Engineer's estimate - $2.2M
    iii. General Conditions
        - Street sweeping & dust control
        - Maintenance gravel
        - Maintaining drainage
    iv. Access to driveways - Contractor responsible for maintaining access to driveways during construction, and notifying residents when access will be unavailable (i.e. during water main installation, during paving, concrete work)

e. Certified Payroll Compliance – using Davis Bacon Wage Decision. Submit payroll weekly, see form at back of ITB.
    - *Wage Decision to be provided in Addendum.*

III. Addendum #1 – will include the following
a. Pre-Bid minutes, including Sign-in Sheet
b. Updated Plan Sheets
c. Updated Bid Form: Pay Items and Quantities
d. Additional and Updated Specifications
e. Required Wage Decision
f. Question and Answers
    i. Question Deadline is Monday, March 29, 2021 5:00pm in writing to tbridges@a2gov.org and cspencer@a2gov.og

Contact Information:
Theresa Bridges, Project Manager
Phone: (734) 794-6410 ext. 43672
E-mail: tbridges@a2gov.org

INSTRUCTIONS TO BIDDERS

General

Work to be done under this Contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents. All work to be done under this Contract is located in or near the City of Ann Arbor.

Any Bid which does not conform fully to these instructions may be rejected.

Preparation of Bids

Bids should be prepared providing a straight-forward, concise description of the Bidder's ability to meet the requirements of the ITB. Bids shall be written in ink or typewritten. No erasures are permitted. Mistakes may be crossed out and corrected and must be initialed and dated in ink by the person signing the Bid.

Bids must be submitted on the "Bid Forms" provided with each blank properly filled in. If forms are not fully completed it may disqualify the bid. No alternative bid will be considered unless alternative bids are specifically requested. If alternatives are requested, any deviation from the specification must be fully described, in detail on the "Alternate" section of Bid form.

Each person signing the Bid certifies that he/she is the person in the Bidder's firm/organization responsible for the decision as to the fees being offered in the Bid and has not and will not participated in any action contrary to the terms of this provision.

Questions or Clarifications / Designated City Contacts

All questions regarding this ITB shall be submitted via email. Emailed questions and inquires will be accepted from any and all prospective Bidders in accordance with the terms and conditions of the ITB.

All questions shall be due on or before **Monday, March 29, 2021 at 5 p.m. (local time)** and should be addressed as follows:

Specification/Scope of Work questions emailed to **tbridges@a2gov.org**
Bid Process and Compliance questions emailed to cspencer@a2gov.org

Any error, omissions or discrepancies in the specification discovered by a prospective contractor and/or service provider shall be brought to the attention of Theresa Bridges at **tbridges@a2gov.org** after discovery as possible. Further, the contractor and/or service provide shall not be allowed to take advantage of errors, omissions or discrepancies in the specifications.

Addenda

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

Each Bidder must in its Bid, to avoid any miscommunications, acknowledge all addenda which it has received, but the failure of a Bidder to receive, or acknowledge receipt of; any addenda shall

not relieve the Bidder of the responsibility for complying with the terms thereof.

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

Bid Submission

All Bids are due and must be delivered to the City of Ann Arbor Procurement Unit on or before **Friday, April 9, 2021 at 2:00 p.m. (local time).** Bids submitted late or via oral, telephonic, telegraphic, electronic mail or facsimile **will not** be considered or accepted.

Each Bidder must submit one (1) original Bid and **two (2)** Bid copies in a sealed envelope clearly marked: **ITB No. 4669, 2021 Misc. Utilities Project.**

Bids must be addressed and delivered to:

City of Ann Arbor
Procurement Unit,
c/o Customer Services, 1st Floor
301 East Huron Street
Ann Arbor, MI 48104

All Bids received on or before the Due Date will be publicly opened and recorded immediately. No immediate decisions are rendered.

The following forms provided within this ITB Document must be included in submitted bids.

- **City of Ann Arbor Prevailing Wage Declaration of Compliance**
- **City of Ann Arbor Living Wage Ordinance Declaration of Compliance**
- **Vendor Conflict of Interest Disclosure Form**
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Bids that fail to provide these forms listed above upon bid opening will be rejected as non-responsive and will not be considered for award.

Hand delivered bids may be dropped off in the Purchasing drop box located in the Ann Street (north) vestibule/entrance of City Hall which is accessible to the public at all hours. The City will not be liable to any Bidder for any unforeseen circumstances, delivery or postal delays. Postmarking to the Due Date will not substitute for receipt of the Bid. Each Bidder is responsible for submission of their Bid.

Additional time for submission of bids past the stated due date and time will not be granted to a single Bidder; however, additional time may be granted to all Bidders when the City determines in its sole discretion that circumstances warrant it.

Award

The City intends to award a Contract(s) to the lowest responsible Bidder(s). On multi-divisional contracts, separate divisions may be awarded to separate Bidders. The City may also utilize alternatives offered in the Bid Forms, if any, to determine the lowest responsible Bidder on each division, and award multiple divisions to a single Bidder, so that the lowest total cost is achieved for the City. For unit price bids, the Contract will be awarded based upon the unit prices and the

lump sum prices stated by the bidder for the work items specified in the bid documents, with consideration given to any alternates selected by the City. If the City determines that the unit price for any item is materially different for the work item bid than either other bidders or the general market, the City, in its sole discretion, in addition to any other right it may have, may reject the bid as not responsible or non-conforming.

The acceptability of major subcontractors will be considered in determining if a Bidder is responsible. In comparing Bids, the City will give consideration to alternate Bids for items listed in the bid forms. All key staff and subcontractors are subject to the approval by the City.

Official Documents

The City of Ann Arbor officially distributes bid documents from the Procurement Unit or through the Michigan Intergovernmental Trade Network (MITN). Copies of the bid documents obtained from any other source are not Official copies. Addenda and other bid information will only be posted to these official distribution sites. If you obtained City of Ann Arbor Bid documents from other sources, it is recommended that you register on www.MITN.info and obtain an official Bid. Bidders do not need to be shown on the plan holders list provided by MITN to be considered an official plan holder.

Bid Security

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

Withdrawal of Bids

After the time of opening, no Bid may be withdrawn for the period of sixty (60) days

Contract Time

Time is of the essence in the performance of the work under this Contract. The available time for work under this Contract is indicated on page C-2, Article III of the Contract. If these time requirements can not be met, the Bidder must stipulate on Bid Form Section 3 - Time Alternate its schedule for performance of the work. Consideration will be given to time in evaluating bids.

Liquidated Damages

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

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

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

Human Rights Information

All contractors proposing to do business with the City shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the Section 9:158 of the Ann Arbor City Code. Breach of the obligation not to discriminate as outlined in Section 5, beginning at page GC-2 shall be a material breach of the contract. Contractors are required to post a copy of Ann Arbor's Non-Discrimination Ordinance attached at all work locations where its employees provide services under a contract with the City.

Wage Requirements

Section 4, beginning at page GC-1, outlines the requirements for payment of prevailing wages and for payment of a "living wage" to employees providing service to the City under this contract. The successful bidder and its subcontractors must comply with all applicable requirements and provide proof of compliance.

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

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

For the purposes of this ITB the Construction Type of Heavy will apply.

Conflict Of Interest Disclosure

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

Major Subcontractors

The Bidder shall identify on Bid Form Section 4 each major subcontractor it expects to engage for this Contract if the work to be subcontracted is 15% or more of the bid sum or over $50,000, whichever is less. The Bidder also shall identify the work to be subcontracted to each major subcontractor. The Bidder shall not change or replace a subcontractor without approval by the City.

Debarment

Submission of a Bid in response to this ITB is certification that the Bidder is not currently debarred,

suspended, proposed for debarment, and declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal departments or agency. Submission is also agreement that the City will be notified of any changes in this status.

Disclosures

After bids are opened, all information in a submitter's bid is subjected to disclosure under the provisions of Michigan Public Act No. 442 of 1976, as amended (MCL 15.231 et seq.) known as the "Freedom of Information Act." The Freedom of Information Act also provides for the complete disclosure of contracts and attachments thereto except where specifically exempted.

Bid Protest

All Bid protests must be in writing and filed with the Purchasing Agent within five (5) business days of the award action. The bidder must clearly state the reasons for the protest. If a bidder contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/Unit shall refer the bidder to the Purchasing Agent. The Purchasing Agent will provide the bidder with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee whose decision shall be final.

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

Cost Liability

The City of Ann Arbor assumes no responsibility or liability for costs incurred by the Bidder prior to the execution of a contract with the City. By submitting a bid, a bidder agrees to bear all costs incurred or related to the preparation, submission and selection process for the bid.

Reservation of Rights

The City of Ann Arbor reserves the right to accept any bid or alternative bid proposed in whole or in part, to reject any or all bids or alternatives bids in whole or in part and to waive irregularity and/or informalities in any bid and to make the award in any manner deemed in the best interest of the City.

Idlefree Ordinance

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

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

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

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

In addition, generators and other internal combustion engines are covered

(1) Excluding Motor Vehicle engines, no internal combustion engine shall be operated except

when it is providing power or electrical energy to equipment or a tool that is actively in use.

Environmental Commitment

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

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

INVITATION TO BID

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

Ladies and Gentlemen:

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

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

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

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

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

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

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

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

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

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

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

SIGNED THIS _____ DAY OF _____, 202_.

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

LEGAL STATUS OF BIDDER

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

Bidder declares that it is:

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

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

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

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

_____

_____

_____

_____

_____

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

Authorized Official

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

(Print) Name _____ Title _____

Company: _____

Address: _____

Contact Phone ( ) _____ Fax ( ) _____

Email _____

BID FORM

SCHEDULE OF PRICES

Item	Description	Unit	Estimated Quantity		Unit Price			Total Price
130	Protective Fencing	FT	300	$			$	
140	Exploratory Excavation (0-10' deep)	EA	8	$			$	
201	Project Supervision, Max $40,000.00	LS	1	$			$	
202	General Conditions, Max. $60,000.00	LS	1	$			$	
203	Digital Audio Visual Coverage	LS	1	$			$	
204	Minor Traffic Devices, Max $50,000.00	LS	1	$			$	
205	Clean-Up & Restoration, Special, Max $15,000	LS	1	$			$	
206	"No Parking" Signs	EA	50	$			$	
207	Certified Payroll Compliance and Reporting	LS	1	$			$	
208	Allowance for Unforeseen Site Conditions	DLR	50000	$	1		$	50,000
210	Remove and Salvage Modular Block Wall	SFT	15	$			$	
211	Remove Concrete Curb or Curb and Gutter - Any Type	FT	1380	$			$	
212	Remove Concrete Sidewalk and Drive - Any Thickness	SFT	3800	$			$	
212	Cold Milling HMA Surfce	SYD	935	$			$	
213	HMA Pavement Removal, Any Depth	SYD	6900	$			$	
214	Concrete Subsurface Pavement Removal, Any Depth	SYD	5500	$			$	
215	Sidewalk Ramp Grading	EA	4	$			$	
216	Sewer, Any Size or Depth, Remove	FT	303	$			$	
217	Drainage Structure, Any Size or Depth, Remove	EA	8	$			$	
218	Additional Depth Structure Adjust/Repair	FT	20	$			$	
220	Remove Sanitary Sewer Lead	FT	200	$			$	
221	Water Main Pipe Abandonment, Modified	LS	1	$			$	
222	Fire Hydrant Assembly Abandonment	EA	2	$			$	
223	Abandon Gate Well	EA	12	$			$	
224	Abandon Vault (PRV)	EA	1	$			$	
225	Temporary Water Main Line Stop, Additional Rental Day	EA	2	$			$	
226	Temporary Water Main Line Stop, Less than 8 inch	EA	6	$			$	
227	Temporary 8 inch or 12 inch Water Main Line Stop	EA	4	$			$	
228	Temporary 16 inch Water Main Line Stop	EA	4	$			$	
229	Reinstall Modular Block Wall	SFT	15	$			$	
	TOTAL THIS PAGE (BF-1) (Also to be entered on BF-5)			$				

BID FORM

SCHEDULE OF PRICES

Item	Description	Unit	Estimated Quantity		Unit Price			Total Price
230	Machine Grading, Modified	SYD	6300	$			$	
231	Subgrade Undercutting - Type II	CYD	250	$			$	
232	Sand Subbase Course, Class II - C.I.P.	CYD	2100	$			$	
233	21AA Limestone, C.I.P.	CYD	100	$			$	
234	Aggregate Base Course, 21AA - C.I.P.	TON	3850	$			$	
235	HMA Pavement Leveling/Top Course 4E3	TON	30	$			$	
236	HMA Pavement Leveling/Top Course 4E1 High Strength	TON	185	$			$	
237	HMA Pavement Leveling/Top Course 4E1	TON	910	$			$	
238	HMA Pavement Base 3E3	TON	30	$			$	
239	HMA Pavement Base 2C	TON	145	$			$	
240	HMA Pavement Base 3C	TON	500	$			$	
241	HMA Pavement Leveling/Top – LVSP	TON	400	$			$	
242	HMA Approach	TON	175	$			$	
243	HMA Hand Patching	TON	20	$			$	
244	HMA Temporary Pavement	TON	50	$			$	
245	Concrete Base Course, Nonreinf	CYD	20	$			$	
246	Concrete Curb or Curb and Gutter - All Types	FT	1400	$			$	
247	4 Inch Concrete Sidewalk	SFT	2800	$			$	
248	6 Inch Concrete Sidewalk Ramp	SFT	140	$			$	
249	6 Inch Concrete Drive or Sidewalk - High Early	SFT	103	$			$	
250	4-inch integral sidewalk/curb	SFT	985	$			$	
251	4-inch integral sidewalk/rolled curb	SFT	193	$			$	
252	Driveway Opening, Conc, Detail M - High Early	FT	140	$			$	
253	Detectable Warning, Cast In Place	SFT	160	$			$	
254	Pavt Mrkg, Ovly Cold Plastic, 12 inch, Crosswalk	FT	780	$			$	
255	Pavt Mrkg, Ovly Cold Plastic, 24 inch, Stop Bar	FT	100	$			$	
256	Pavt Mrkg, Polyurea, Lt Turn Arrow Sym	EA	1	$			$	
257	Pavt Mrkg, Ovly Cold Plastic, Direction Arrow Sym, Bike	EA	4	$			$	
258	Pavt Mrkg, Ovly Cold Plastic, Bike, Small Sym	EA	4	$			$	
259	Pavt Mrkg, Ovly Cold Plastic, Sharrow Symbol	EA	3	$			$	
	TOTAL THIS PAGE (BF-2) (Also to be entered on BF-5)			$				

BID FORM

SCHEDULE OF PRICES

Item	Description	Unit	Estimated Quantity		Unit Price			Total Price
260	Pavt Mrkg, Polyurea, 4 inch, White	FT	250	$			$	
261	Pavt Mrkg, Polyurea, 4 inch, Yellow	FT	2420	$			$	
262	Pavt Mrkg, Polyurea, 6 inch, White	FT	1830	$			$	
263	Recessing Pavt Mrkg, Longit	FT	4500	$			$	
264	Pavt Mrg Cover, Type R, Black	FT	2260	$			$	
265	Pavt Mrkg, Wet Reflective, Type R, Tape, 4 inch, White, Temp	FT	4655	$			$	
266	Pavt Mrkg, Wet Reflective, Type R, Tape, 4 inch, Yellow, Temp	FT	6190	$			$	
267	Pavt Mrkg, Wet Reflective, Type R, Tape, 6 inch Crosswalk	FT	80	$			$	
268	Pavt Mrkg, Wet Reflective, Type R, Tape, 24 inch Stop Bar	FT	10	$			$	
269	Lighted Arrow Board, Furnish and Operate	EA	6	$			$	
270	Sign, Portable Changeable Message, Furnish and Operate	EA	8	$			$	
271	Plastic Drum - Lighted, Furnish and Operate	EA	478	$			$	
272	Barricade Type III - Lighted, Furnish and Operate	EA	36	$			$	
273	Temporary Sign, Type B, Furnish and Operate	SFT	1865.5	$			$	
274	Temporary Sign, Type B, Furnish and Operate, Special	SFT	200	$			$	
275	Channelizing Device, 42 Inch, Furnish and Operate	EA	200	$			$	
276	Pedestrian Type II Barricade, Temp	EA	200	$			$	
277	Sign Cover	EA	25	$			$	
278	Temporary Pedestrian Ramp	EA	20	$			$	
279	Temporary Pedestrian Mat	EA	20	$			$	
280	Audible Message Device	EA	10	$			$	
281	Fertilizer, Chemical Nutrient, Cl A	LBS	9	$			$	
282	Mulch Blanket, High Velocity	SYD	1233	$			$	
283	Seeding, Mixture THM	LBS	11	$			$	
285	Topsoil Surface, Furn, 4 inch	SYD	1233	$			$	
290	Underground Sprinkling Systems, Restore	DLR	10000	$	1		$	10,000
291	Adjust Structure Cover	EA	24	$			$	
292	Adjust Monument Box or Gate Valve Box	EA	4	$			$	
293	Structure Covers	LBS	11800	$			$	
	TOTAL THIS PAGE (BF-3) (Also to be entered on BF-5)			$				

BID FORM

SCHEDULE OF PRICES

Item	Description	Unit	Estimated Quantity		Unit Price			Total Price
315	6-Inch Wrapped Underdrain	FT	500	$			$	
320	12" CL IV RCP Storm Sewer Pipe, Trench Detail I	FT	135	$			$	
321	18" CL IV RCP Storm Sewer Pipe, Trench Detail I	FT	17	$			$	
322	24" CL IV RCP Storm Sewer Pipe, Trench Detail I	FT	15	$			$	
323	24" CL IV RCP Storm Sewer Pipe, Trench Detail II (2)	FT	85	$			$	
324	24" CL IV RCP Storm Sewer Pipe, Trench Detail VII (7)	FT	148	$			$	
325	36" CL IV RCP Storm Sewer Pipe, Trench Detail I	FT	425	$			$	
326	Sewer Tap, 12 inch	EA	5	$			$	
327	Sewer Tap, 24 inch	EA	2	$			$	
331	Dr Structure Cover, Type K	EA	14	$			$	
340	Dr Inlet Structure, 24 inch dia	EA	5	$			$	
341	Dr Inlet Junction Structure, 48 inch dia	EA	1	$			$	
342	Dr Inlet Junction Structure, 60 inch dia	EA	1	$			$	
343	Dr Manhole Structure, 60 inch dia	EA	1	$			$	
344	Dr Manhole Structure, 72 inch dia	EA	1	$			$	
345	Dr Manhole Structure, 84 inch dia	EA	2	$			$	
346	Dr Manhole Structure Over Existing, 84 inch dia	EA	1	$			$	
347	Dr Structure, Adj, Add Depth	FT	10	$			$	
353	4 inch SDR 35 PVC Sanitary Lead, Trench Detail I	FT	100	$			$	
354	6 inch SDR 35 PVC Sanitary Lead, Trench Detail I	FT	100	$			$	
400	6 inch Class 50 DIP w/polywrap, Trench Detail I	FT	20	$			$	
401	8 inch Class 50 DIP w/polywrap, Trench Detail I	FT	2070	$			$	
402	8 inch Class 50 DIP w/polywrap, Trench Detail IV (4)	FT	70	$			$	
403	8 inch Class 50 DIP w/polywrap, Trench Detail VI (6)	FT	33	$			$	
404	12 inch Class 50 DIP w/polywrap, Trench Detail I	FT	1505	$			$	
405	16 inch Class 50 DIP w/polywrap, Trench Detail I	FT	20	$			$	
406	16 inch Class 50 DIP w/polywrap, Trench Detail VI (6)	FT	15	$			$	
410	8" 11.25° Bend	EA	12	$			$	
411	8" 22.5° Bend	EA	22	$			$	
412	8" 45° Bend	EA	17	$			$	
	TOTAL THIS PAGE (BF-4) (Also to be entered on BF-5)			$				

BID FORM

SCHEDULE OF PRICES

Item	Description	Unit	Estimated Quantity		Unit Price			Total Price
413	8" 90° Bend	EA	4	$			$	
414	8" x 6" Reducer	EA	7	$			$	
415	12" 11.25° Bend	EA	3	$			$	
416	12" 22.5° Bend	EA	16	$			$	
417	12" 90° Bend	EA	2	$			$	
418	12" x 12" x 12" Tee	EA	1	$			$	
419	8" x 8" x 8" Tee	EA	4	$			$	
420	16" x 16" x 8" Tee	EA	4	$			$	
421	16" x 8" Reducer	EA	12	$			$	
422	12" x 12" x 8" Tee	EA	1	$			$	
430	Fire Hydrant Assembly	EA	3	$			$	
440	8" Gate Valve-in-Box	EA	8	$			$	
441	12" Gate Valve-in Box	EA	1	$			$	
442	8" Gate Valve-in Well	EA	5	$			$	
442	12" Gate Valve-in Well	EA	2	$			$	
443	16" Gate Valve-in Box	EA	1	$			$	
445	Pressre Reducing Valve	EA	1	$			$	
450	60" x 120" Conc Vault (PRV)	EA	1	$			$	
460	Excavate & Backfill for Water Service Tap and Lead	FT	1030	$			$	
701	Erosion Control, Trench Drain Inlet Filter	EA	1	$			$	
702	Erosion Control, Inlet Protection	EA	20	$			$	
703	Erosion Control, Silt Fence	FT	250	$			$	
	TOTAL THIS PAGE (BF-5) (Also to be entered below)			$				
	TOTAL FROM PAGE BF-1			$				
	TOTAL FROM PAGE BF-2			$				
	TOTAL FROM PAGE BF-3			$				
	TOTAL FROM PAGE BF-4			$				
	TOTAL FROM PAGE BF-5			$				
	TOTAL BASE BID			**$**				

BID FORM

Section 2 – Material, Equipment and Environmental Alternates

The Base Bid proposal price shall include materials and equipment selected from the designated items and manufacturers listed in the bidding documents. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

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

If an environmental alternative is bid the City strongly encourages bidders to provide recent examples of product testing and previous successful use for the City to properly evaluate the environmental alternative. Testing data from independent accredited organizations are strongly preferred.

Item Number	Description	Add/Deduct Amount

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

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

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 3 - Time Alternate

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

If the Bidder does not suggest any time alternate, the Bidder **MUST** complete the following statement:

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

Signature of Authorized Representative of Bidder _____ Date _____

BID FORM

Section 4 - Major Subcontractors

For purposes of this Contract, a Subcontractor is anyone (other than the Contractor) who performs work (other than or in addition to the furnishing of materials, plans or equipment) at or about the construction site, directly or indirectly for or on behalf of the Contractor (and whether or not in privity of Contract with the Contractor), but shall not include any individual who furnishes merely the individual's own personal labor or services.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision to Section 4 of the General Conditions covering subcontractor's employees who perform work on this contract.

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

Subcontractor (Name and Address)	Work	Amount

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

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

Signature of Authorized Representative of Bidder_____ Date _____

BID FORM

Section 5 – References

Include a minimum of three (3) references from similar projects completed within the past three (3) years.

[Refer also to Instructions to Bidders for additional requirements, if any]

1) _____ _____ _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

2) _____ _____ _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

3) _____ _____ _____
Project Name Cost Date Constructed

_____ _____
Contact Name Phone Number

BID FORM

Section 6 – Contractor Information and Responsible Contractor Criteria

Backup documentation may be requested at the sole discretion of the City to validate all of the responses provided herein by bidders. False statements by bidders to any of the criteria provided herein will result in the bid being considered non-responsive and will not be considered for award.

Failure to provide responses to all questions may result in being deemed non-responsive.

Attach additional pages as needed if space below is insufficient.

Pursuant to Sec 1:312(20) of the City Code which sets forth requirements of a responsible bidder, Bidder is required to submit the following:

1. Organization Name:_____

Social Security or Federal Employer I.D. #:_____

Address:_____

City:_____ State:_____ Zip:_____

Type of Organization (circle one below):

Individual Partnership Corporation Joint Venture Other

If "Other" please provide details on the organization:

_____

Year organization established: _____

2. Current owners/principals/members/managing members/partners of the organization:

_____

3. Assumed Names, "doing business as" d/b/a, and/or former organization names(s), if applicable: ___

Explanation of any business name changes:

_____

4. If applicable, please provide a list of all bidder's litigation and arbitrations currently pending and within the past five years, including an explanation of each (parties, court/forum, legal claims, damages sought, and resolution).

---

5. Qualifications of management and supervisory personnel to be assigned by the bidder:

---

6. State and local licenses and license numbers held by the bidder:

---

7. Will all subcontractors, employees and other individuals working on the construction project maintain current applicable licenses required by law for all licensed occupations and professions?

Yes No

8. Will contractors, subcontractors, employees, and other individuals working on the construction project be misclassified by bidder as independent contractors in violation of state or federal law?

Yes No

9. Submit a statement as to what percentage of your work force resides within the City of Ann Arbor, and what percentage resides in Washtenaw County, Michigan, and the same information for any major subcontractors.

---

10. Submit documentation as to employee pay rates.

11. Submit a statement whether bidder provides health insurance, pension or other retirement benefits, paid leave, or other benefits to its employees.

---

12. Submit a statement explaining bidder's Equal Employment Opportunity Programs for minorities, women, veterans, returning citizens, and small businesses along with supporting documentation or other evidence.

_____

13. Has bidder had any violations of state, federal or local laws or regulations, including OSHA or MIOSHA violations, state or federal prevailing wage laws, wage and hour laws, worker's compensation or unemployment compensation laws, rules or regulations, issued to or against the bidder within the past five years?

Yes No

If you answered "yes" to the question above, for each violation provide an explanation of the nature of the violation, the agency involved, a violation or reference number, any other individual(s) or party(ies) involved, and the status or outcome and resolution.

14. Does bidder have an existing Fitness for Duty Program (drugs and alcohol testing) of each employee working on the proposed jobsite?

Yes No

15. By attachment, please provide the following:

- Disclosure of any debarment by any federal, state or local governmental unit and/or findings of non-responsibility or non-compliance with respect to any public or private construction project performed by the bidder. Proof of insurance, including certificates of insurance, confirming existence and amount of coverage for liability, property damage, workers compensation, and any other insurances required by the proposed contract documents.

16. Does bidder have an on-going MIOSHA-approved safety-training program for employees to be used on the proposed job site?

Yes No

17. Does bidder have evidence of worker's compensation Experience Modification Rating ("EMR")?

Yes No

EMR = _____

18. Can bidder provide a ratio of masters and journeypersons to apprentices proposed to be used on the construction project job site, documentation of master or journeyperson certification or status and the source for same, and if not, the qualifications of employees who will be assigned to work on the project?

Yes No

If, yes, Ratio = _____

19. Can bidder provide documentation that it participates in a Registered Apprenticeship Program (RAP) that is registered with the United States Department of Labor Office of Apprenticeship or by a State Apprenticeship Agency recognized by the Office of Apprenticeship?

Yes No

If bidder answered “yes” to the question above and is selected for this project, bidder will be required to submit the RAP to the City.

If bidder answered “no” to the question above, please provide details on how your organization assess the skills and qualifications of any employees who do not have master or journeyperson certification or status, or are not participants in a Registered Apprenticeship Program identified above.

---

20. Will bidder comply with all applicable state and federal laws and visa requirements regarding the hiring of non-US citizens, and disclosure of any work visas sought or obtained by the bidder, any of the bidder’s subcontractors, or any of the bidder’s employees or independent contractors, in order to perform any portion of the project?

Yes No

21. Can bidder provide audited financial information current within the past twelve (12) months, such as a balance sheet, statement of operations, and bonding capacity?

Yes No

(Evidence that bidder has financial resources to start up and follow through on the project(s) and to respond to damages in case of default as shown by written verification of bonding capacity equal to or exceeding the amount of the bidder's scope of work on the project. The written verification must be submitted by a licensed surety company rated "B+" (or better) in the current A.M. Best Guide and qualified to do business within the State of Michigan, and the same audited financial information for any subcontractor estimated to be paid more than $100,000.00 related to any portion of the project.)

22. Can bidder provide evidence of a quality assurance program used by the bidder and the results of any such program on the bidder's previous projects?

Yes No

SAMPLE STANDARD CONTRACT

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

Administrative Use Only
Contract Date: _____

CONTRACT

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

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

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

ARTICLE I - Scope of Work

The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the project titled **2021 Miscellaneous Utilities Project, ITB 4669** in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, all of which are incorporated as part of this Contract:

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

ARTICLE II - Definitions

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

Project means **2021 Miscellaneous Utilities Project, ITB 4669**

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: Theresa Bridges whose job title is Project Manager. 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 sixty-six (166) 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 $500 for each calendar day of delay in the completion of all the work. If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

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

ARTICLE IV - The Contract Sum

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

_____Dollars ($_____)

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

ARTICLE V - Assignment

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

ARTICLE VI - Choice of Law

This Contract shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this Contract, the Contractor and the City agree to venue in a court of appropriate jurisdiction sitting within Washtenaw County for purposes of any action arising under

this Contract. The parties stipulate that the venue referenced in this Contract is for convenience and waive any claim of non-convenience.

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

ARTICLE VII - Relationship of the Parties

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

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

ARTICLE VIII - Notice

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

ARTICLE IX - Indemnification

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

ARTICLE X - Entire Agreement

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

ARTICLE XI – Electronic Transactions

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

FOR CONTRACTOR

By_____

Its:_____

FOR THE CITY OF ANN ARBOR

By_____
Christopher Taylor, Mayor

By_____
Jacqueline Beaudry, City Clerk

Approved as to substance

By_____

City Administrator

By_____

Services Area Administrator

Approved as to form and content

_____
Stephen K. Postema, City Attorney

PERFORMANCE BOND

(1) _____ of _____(referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for $ _____, the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written Contract with the City entitled _____ _____ _____, for ITB No. _____and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq.

(3) Whenever the Principal is declared by the City to be in default under the Contract, the Surety may promptly remedy the default or shall promptly:

(a) complete the Contract in accordance with its terms and conditions; or

(b) obtain a bid or bids for submission to the City for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a Contract between such bidder and the City, and make available, as work progresses, sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth in paragraph 1.

(4) Surety shall have no obligation to the City if the Principal fully and promptly performs under the Contract.

(5) Surety agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder, or the specifications accompanying it shall in any way affect its obligations on this bond, and waives notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work, or to the specifications.

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

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

_____
(Name of Surety Company)

By _____
(Signature)

Its_____
(Title of Office)

Approved as to form:

_____
Stephen K. Postema, City Attorney

_____
(Name of Principal)

By _____
(Signature)

Its _____
(Title of Office)

Name and address of agent:

_____

_____

_____

LABOR AND MATERIAL BOND

(1) _____

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

(2) The Principal has entered a written Contract with the Cityentitled _____

_____

_____

____, for ITB No. _____; and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963 as amended;

(3) If the Principal fails to promptly and fully repay claimants for labor and material reasonably required under the Contract, the Surety shall pay those claimants.

(4) Surety's obligations shall not exceed the amount stated in paragraph 1, and Surety shall have no obligation if the Principal promptly and fully pays the claimants.

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

SIGNED AND SEALED this _____ day of _____, 202_

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

Approved as to form:

_____
Stephen K. Postema, City Attorney

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

Name and address of agent:

_____

_____

_____

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

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

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

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

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

Section 2 - Order of Completion

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

Section 3 - Familiarity with Work

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

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

Section 4 - Wage Requirements

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

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

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

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

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

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

Section 5 - Non-Discrimination

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

Section 6 - Materials, Appliances, Employees

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

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

assigned.

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

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

Section 8 - Royalties and Patents

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

Section 9 - Permits and Regulations

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

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

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

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

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

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

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

Section 11 - Inspection of Work

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

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

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

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

Section 12 - Superintendence

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

Section 13 - Changes in the Work

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

In giving instructions, the Supervising Professional shall have authority to make minor changes in

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

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

Section 14 - Extension of Time

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

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

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

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

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

(5) Delay due to an act of Government;

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

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

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

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

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section 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

(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 SPECIFICATION
FOR
PROJECT SCHEDULE AND PAYMENT

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

1. By no later than the **Pre-Construction Meeting** the Contractor shall submit a detailed schedule of work for the Engineer's review and approval. The proposed schedule must fully comply with the scheduling requirements contained in this Detailed Specification. The Contractor shall update the approved work schedule each week and present it to the Engineer at the weekly progress meeting.

2. It is anticipated the Contractor will be authorized by City Council on May, 3, 2021. The contract will be sent to the contractor at least two weeks prior to the council Award, by April 19, 2021. The Contractor shall properly execute the Contract and return, with the required Bonds and Insurance Certificate, to the City **on or before May 4, 2021**.

3. The Contractor shall begin the work of this project upon receipt of the fully executed Contract and Notice to Proceed, anticipated by **May 17, 2021**. Appropriate time extensions shall be granted if the Notice to Proceed is delayed beyond this date. The Pre-Construction Meeting will be held the week of May 3, 2021.

4. This contract requires sewer or water main work at four separate locations, and shall be completed within timeframes listed below:

    1) W. Liberty Street and Crest Avenue – Work at this location consists of the installation of new water main, pavement resurfacing, and associated work. The work at this location shall commence upon Notice to Proceed, anticipated to be **May 17, 2021** and shall be completed **by November 1, 2021**, or within **one hundred ten (168) consecutive calendar days**. The entire work at this location as required by this Contract, includes, but is not limited to water main installation, chlorinating, pressure testing, and flushing; transfer of the water service leads; installation of storm water structures and sewer; pavement cold milling, the installation of new sidewalk and sidewalk ramps, permanent placement of hot mix asphalt and/or concrete, the restoration of all disturbed areas; and the removal of any and all traffic control devices.

    2) N. Main Street – Work at this location consists of the installation of new storm sewer and associated work. The utility work at this location, including all appurtenances, shall be completed within **thirty (30) consecutive calendar days** from commencing at this location. The entire work at this location as required by this Contract, including the stabilization of all disturbed areas and the removal of any and all traffic control devices shall be completed within **forty-five (45) consecutive calendar days** after commencing with the utility work at this location. The contractor shall choose one of the two following timeframes:

        - Commence **June 1, 2021** and complete by **July 14, 2021**; Or
        - Commence **September 7, 2021** and complete by **October 22, 2021**.

    3) Crest Avenue at W. Huron Street - Work at this location consists of the installation of new water main and associated work.
        - The work at this location shall commence no earlier than **July 19, 2021**.
        - Within twenty (20) calendar days from the time of commencing, the Contractor must complete the following tasks: install, swab, chlorinate, pressure test, and flush the new water main pipe. 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 $500 in “Liquidated Damages”, and not as a penalty, for each and every calendar

day beyond the allowed number of calendar days to complete the above specified work.

- After completion of all work outlined above (install, swab, chlorinate, pressure test, and flush the new water main pipe), the Contractor must successfully complete all the required bacteriological testing and place the new water main into service.
- All remaining work at this location shall be completed **by September 1, 2021** including, but not limited to the restoration of all disturbed areas, permanent placement of hot mix asphalt and concrete, and the removal of any and all traffic control devices. Failure to complete all work as specified herein within the times specified herein, including time extensions granted thereto as determined by the Engineer, shall entitle the City to deduct from the payments due the Contractor $500 in "Liquidated Damages", and not as a penalty, for each and every calendar day beyond the allowed number of calendar days to complete the above specified work

4) Newport/Bird Roads – Work at this consists of the installation of a new water pressure reducing valve and associated work.
   - The work at this location shall commence no earlier than **July 6, 2021**.
   - Within thirty (30) calendar days from the time of commencing, the Contractor must complete the following tasks: install, swab, chlorinate, pressure test, and flush the new water main pipe. 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 $500 in "Liquidated Damages", and not as a penalty, for each and every calendar day beyond the allowed number of calendar days to complete the above specified work.
   - After completion of all work outlined above (install, swab, chlorinate, pressure test, and flush the new water main pipe), the Contractor must successfully complete all the required bacteriological testing and place the new water main into service.
   - All remaining work at this location shall be completed **by August 14, 2021** including, but not limited to the restoration of all disturbed areas, permanent placement of hot mix asphalt, and the removal of any and all traffic control devices. Failure to complete all work as specified herein within the times specified herein, including time extensions granted thereto as determined by the Engineer, shall entitle the City to deduct from the payments due the Contractor $500 in "Liquidated Damages", and not as a penalty, for each and every calendar day beyond the allowed number of calendar days to complete the above specified work
   - Should extensions be granted, the area shall be passable for the Dexter-Ann Arbor Run the River event at no additional cost to the City.

5. **Work day, hour, and other work restrictions imposed by the City of Ann Arbor.**

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

- Monday – Friday: 7am-8pm
- Saturday: 7am-8pm; Notice given to City of Ann Arbor no less than 48 hours and no more than 5 days
- Sunday: only with approval from the City of Ann Arbor
- No work shall be performed during Holiday weekends as follows, unless approved by the Engineer:
  - Memorial Day, from 3:00 pm Friday, May 28 through 7:00 am Tuesday, June 1, 2021
  - Fourth of July, from 3:00 pm Friday, July 2 through 7:00 am Tuesday, July 6, 2021
  - Labor Day, from 8:00 pm Friday, September 3 through 7:00 am Tuesday, September 7, 2021

- No work shall be performed during University of Michigan home football games:
  - September 4, 2021
  - September 11, 2021
  - September 18, 2021
  - September 25, 2021
  - October 16, 2021
  - November 6, 2021

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.

The Engineer may delay or stop the work due to threatening weather conditions. The Contractor shall not be compensated for unused materials or downtime due to rain, or the threat of rain. The Contractor is solely responsible for repairing all damages to the work and to the site, including road infrastructures, road subgrades, and any adjacent properties, which are caused as a result of working in the rain.

The Contractor shall not work in the dark except as approved by the Engineer and only when lighting for night work is provided as detailed elsewhere in this contract. The Engineer may stop the work or may require the Contractor to defer certain work to another day, if, in the Engineer's opinion, the work cannot be completed within the remaining daylight hours, or if inadequate daylight is present to either properly perform or inspect the work. The Contractor will not be compensated for unused materials or downtime, when delays or work stoppages are directed by the Engineer for darkness and/or inadequate remaining daylight reasons. The Contractor is solely responsible for repairing all damages to the work and to the site, including road infrastructures, road subgrades, and any adjacent properties, which are caused as a result of working in the dark.

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 $____"

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, **$500.00** in Liquidated Damages, and not as a penalty, for delays in the completion of the work for each and every calendar day beyond the times for each sub-phase, as required by this Detailed Specification.

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.

DETAILED SPECIFICATION
FOR
MAINTENANCE OF TRAFFIC

DESCRIPTION

Traffic shall be maintained in accordance with the City of Ann Arbor Public Services Department Standard Specifications except as specified in Sections 104.11, 812, and 922 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, the Michigan Manual of Uniform Traffic Control Devices, Latest Revised Edition (MMUTCD) and as amended herein.

The Contractor shall furnish, erect, maintain and, upon completion of the work, remove all traffic control devices within the project and around the perimeter of the project for the safety and protection of local traffic. This includes, but is not limited to, advance, regulatory, and warning signs; barricades and channeling devices at intersections or on streets where traffic is to be maintained; barricades at the ends of the project and at right-of-way lines of intersecting streets; portable changeable message signs; lighted arrow boards, temporary signs, ramps and mat for pedestrian detours, and moving traffic control devices for construction operations. Payment shall be paid for as "Minor Traffic Devices, Max $_____".

MATERIALS

The materials and equipment shall meet the requirements specified in the corresponding sections of the MDOT 2012 Standard Specifications for Construction and the 2011 MMUTCD.

Maintenance of Local Traffic

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

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

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

A lane-closure permit shall be obtained by the Contractor from the Engineering Division, at least 48 hours in advance of any proposed lane or street closing. The Contractor shall acquire a PIN (password) from Customer Service, login to eTRAKIT and apply for the permit. The issued permit shall be printed and displayed on site at all times.

The hours of work on all Local streets are 7:00 a.m. to 8:00 p.m., Monday through Saturday, or as specified on the lane-closure permit. No equipment will be allowed in the street before or after these hours. Local streets may only be closed to through traffic (local access only) with written authorization of the Engineer. Aside from the detour, work must be completed each day such that all streets are re-opened to through traffic by 8:00 p.m. unless otherwise specified, directed, or authorized in writing by the Engineer. All major changes in traffic control shall be made either between 9:30 a.m. and 3:30 p.m., or between 7:00 p.m. and 8:00 p.m. in order to minimize interference with rush-hour traffic. All traffic controls must be in-place and ready for traffic each day by 7:00 a.m.

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

The Contractor shall maintain pedestrian traffic at all times covered under the pay item "Minor Traffic

Devices, Max $____". For maintaining normal pedestrian traffic while performing sidewalk and driveway repair, Type I barricades shall be placed by the Contractor, as directed by the Engineer. "Sidewalk Closed" and/or "Cross Here" signs shall be placed, by the Contractor, when directed by the Engineer.

During the construction of the water main, storm sewer, and road rehabilitation, parking of residences in the construction area will not be allowed. Temporary "No Parking" signs will be supplied by the City. "No Parking" signs shall be erected after MISS DIG clearance (at least 48 hours prior to enforcement), maintained throughout the project duration, and salvaged and returned to the City of Ann Arbor at the W. R. Wheeler Service Center at the completion of the project, as described in the Detailed Specification for "No Parking" Signs. They will be paid for at the Contract Unit Price for ""No Parking" Signs". The Contractor shall fill out the "Temporary Permission to Reserve Parking Lane for Work-Related Purposes" form for each street and submit to the City of Ann Arbor Engineering Unit at least five (5) business days in advance of sign installation. Any vehicle parked in the construction zone shall be ticketed and towed at the owner's expense.

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

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

The Contractor shall perform the work of this Contract while maintaining traffic in accordance with the Contract Documents as specified herein. No traffic shall be allowed on newly placed asphalt surfaces until rolling has been satisfactorily completed and the surface has cooled sufficiently to prevent damage from traffic (170 degrees Fahrenheit). This is to be accomplished by traffic regulators and by relocating traffic control devices to prevent traffic from entering the work area until such time that it can be safely maintained without damaging the new construction. The Contractor shall provide traffic regulators in sufficient number to maintain traffic as described herein, and to keep traffic off sections being surfaced, and provide for safe travel at all times as directed by the Engineer. "No Parking" signs shall stay in effect on all newly placed asphalt surfaces for at least three days.

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

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

DETAILED SPECIFICATION
FOR
COORDINATION AND COOPERATION WITH OTHERS

Coordination with Ann Arbor Public Works

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

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

The Contractor shall complete the water main work in a manner which minimizes the disruption of water service. No shut downs shall occur on Saturdays or Sundays. Shut downs shall not be for longer than 8.0 hours for any given shutdown event. Liquidated damages as detailed and described on page C-2 of these documents shall apply to any shut downs that occur on Saturday or Sunday or for a period of time longer than 8.0 hours in any given 24 hour period.

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

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

Cooperation with Right-of-Way Stakeholders

The Contractor is reminded as to the requirements of article 104.08 of the 2012 edition of the MDOT Standard Specifications, "Cooperation by the Contractor."

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

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

Existing Utilities

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

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

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

The City of Ann Arbor
Michigan Department of Transportation (MDOT)
DTE - MichCon (Michigan Consolidated Gas Company)
DTE - Edison (Detroit Edison Company)
Fiber Link Inc.

AT&T
Comcast
Light Core (Century Tel)
MCI Communications
Windstream Fiber Optics

The Owners of public or private utilities which will not interfere with the completed project and which do not present a hazard to the public or an extraordinary hazard to the Contractor's operations will not be required to move their facilities on or from the street right-of-way.

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

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

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

DETAILED SPECIFICATION
FOR
VACUUM TYPE STREET AND UTILITY
STRUCTURE CLEANING EQUIPMENT

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

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

DETAILED SPECIFICATION
FOR
MATERIALS AND SUPPLIES CERTIFICATIONS

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

- HMA materials
- Hot-poured Joint Sealants
- Cements, coatings, admixtures and curing materials
- Sands and Aggregates
- Steel and Fabricated metal
- Portland Cement Concrete Mixtures
- Reinforcing Steel for Concrete
- Reinforcing Fibers for Concrete
- Pre-cast Concrete products
- Storm Sewer Pipe
- Water Main Pipe
- High Density Polyethylene Pipe
- Edge Drain and Underdrain Pipe
- Geotextile Filter Fabric and Stabilization Fabric/Grids

The Contractor shall submit all certifications to the Engineer for review and approval a minimum of three business days prior to any scheduled delivery, installation, and/or construction of same.

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

Contract Drawings/Plans

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

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

Geotechnical Investigation Report

Data pertaining to existing soil borings and pavement sections included in these Contract Documents are provided to help the Engineer and Contractor determine the soil conditions existing within the construction area. The City in no way guarantees existing conditions to be the same as shown in the data. The Contractor is solely responsible for any and all conclusions he/she may draw from the data.

Quantities and Unit Prices

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

DETAILED SPECIFICATION
FOR
WATER MAIN INSTALLATION AND TESTING

Description

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

Construction Methods

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

1. Keep all pipe clean and neatly stacked a minimum of six-inches off of the ground at all times. Ends of pipe shall be covered to prevent entry of dust, dirt, small animals, and any other objectionable matter at all times. During installation of the water main and all appurtenances no dirt, soil, or non-potable water shall be allowed to enter the pipe. If dirt, soil, or non-potable water does enter the pipe, the Contractor shall completely remove it prior to installing the next segment of pipe. Segments of pipe that are have visible signs of contamination including, but not limited to; soil, dirt, mud, oil, grease, solvents, animal droppings, etc. shall have all visible traces of the offending substance completely removed by the Contractor in a manner acceptable to the Engineer. Sections of pipe or fittings that have been marked by the Engineer for cleaning shall not be approved for installation until such time as the Engineer has again approved them for use on the project. Acceptable methods of cleaning include flushing and/or power washing, compressed air, or other methods that the Engineer may approve. Approval by the Engineer of a cleaning method shall not be construed by the Contractor to include acceptance of the water main for the purposes of placing it into service. Water main pipe and fittings that have been placed shall remain covered on the advancing end until the next segment of pipe is connected. The Contractor may uncover no more than three segments of pipe in advance of placement. Water main pipe and fittings that have been laid out further in advance of the installation operation must remain covered.
2. Gasket lubricant shall only be applied immediately before connection to the next segment of pipe. Pipe with lubricant applied shall not come in contact with the ground. If the lubricated portion of the pipe end contacts the ground, it shall be thoroughly cleaned to the satisfaction of the Engineer, prior to its installation.
3. All water main shall be swabbed in accordance with the requirements of Section 3H, Flushing and Swabbing, of the current edition of the City of Ann Arbor Public Services Department Standards. During swabbing of the water main, the swab shall be flushed through the pipe in accordance with the manufacturer's recommendations and in a manner that is acceptable to the Engineer. The Contractor shall submit the product data of the swab from the manufacturer, for review and approval by the Engineer, at or before the pre-construction meeting.
4. Swabbing of the water main shall be followed immediately by flushing of the pipe so that any disturbed particles are washed out before they can resettle. The pipe shall be flushed in accordance with Section 3H, Flushing and Swabbing, of the current edition of the City of Ann Arbor Public Services Department Standard Specifications. The pipe shall be flushed until the water runs clear for a minimum of fifteen minutes or until two full pipe volumes have been flushed (whichever is longer.) Flushing from the existing water main that is to be replaced shall not be allowed.
5. During the chlorination process, the proper level of chlorination must be achieved throughout the entire length pipe. Chlorine levels shall be checked at intermediate locations as directed by the Engineer and the Contractor shall add chlorine until such time as the required levels are achieved

at all points. The "plug method" of chlorinating the pipe shall not be allowed. The Contractor shall chlorinate the proposed water main to a minimum residual concentration of 100 parts per million with commercial liquid chlorine solution. The chlorine concentrate shall be a minimum of 10% chlorine (sodium hypochlorite) by volume. Solid chlorine "pellets" or powder shall not be allowed. Any chlorine containing compound used on the project shall be approved by the Engineer. The minimum recommended dosage of chlorine (sodium hypochlorite) is as follows (based on 10% available chlorine):

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

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

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

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

Measurement and Payment

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

Payment for all water main pipe shall be as follows:

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

DETAILED SPECIFICATION
FOR
ASPHALTIC SEAL COATINGS
DUCTILE IRON PIPE & FITTINGS

DESCRIPTION

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

MEASUREMENT AND PAYMENT

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

DETAILED SPECIFICATION
FOR
CONCRETE DURABILITY

DESCRIPTION

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

MATERIALS

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

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

* Fine and coarse aggregates shall consist of natural aggregates as defined in the 2012 MDOT Standard Specifications Section 902.

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

Alkali-Silica Reactivity

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

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

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

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

The maximum substitution of cement with the fly ash permitted shall be 25% by weight of total cementitious material (cement plus fly ash). Additional requirements for the Fly Ash, Class F are that the Calcium Oxide (CaO) percent shall be less than 10 % and the available alkalis shall not exceed a maximum of 1.5%. A copy of the most recent mill test report shall be submitted to verify. Note: a

Class C fly ash with a minimum total oxides ($SiO_2 + Al_2O_3 + Fe_2O_3$) of 66% and a minimum SiO_2 of 38% may be used in lieu of Type F fly ash.

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

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

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

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

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

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

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

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

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

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

Air Entrainment

Air entrainment shall be accomplished by addition of an approved air entraining agent. Air content as determined by ASTM C 231 or ASTM C 173, shall be determined on each day of production as early and as frequently as necessary until the air content is consistently acceptable. If during the period of time while adjustments are being made to the concrete to create a mixture that is consistently acceptable, concrete is produced that does not meet the requirements of this Detailed Specification, the Engineer may reject the material and direct it to be removed from the jobsite. Any rejected material shall be removed from the

jobsite at the Contractor's sole expense. Quality Control testing performed by the Contractor to ensure compliance with the project specifications shall be performed on the grade ahead of the placement operation.

Paver placement: During production, the plastic concrete material shall be tested for acceptance at a point ahead of the paver. The air content of the concrete mixture that the Contractor shall provide shall be known as the Acceptance Air Content (AAC). The Contractor shall also provide additional entrained air in the concrete mixture to account for the air loss which occurs in the concrete mixture experienced during transportation, consolidation and placement of the concrete. The "air loss" shall be added to the air content of the concrete mixture as established on the approved concrete mix design. The AAC for the project will be 6.0% plus an amount equal to the air loss.

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

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

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

CONSTRUCTION METHODS

Aggregate Control

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

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

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

Mixing

Central mix plants - The total volume of the batch shall not exceed the designated size of the mixer or

the rated capacity as shown on the manufacturer's rating plate.

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

Ribbon mixers: After all solid materials are assembled in the mixer; the mixing time shall be a minimum of 30 seconds and a maximum of 2.5 minutes. The mixing time may be decreased if the ASTM C-94 11.3.3 mixer efficiency tests show that the concrete mixing is satisfactory. The Engineer may require an increase in the minimum mix time if the mixer efficiency test determines that the concrete is not being mixed satisfactorily. The minimum mixing time shall be indicated by an accurate timing device which is automatically started when the mixer is fully charged. Mixers shall be operated at the speed recommended by the manufacturer as mixing speed. The mixer shall be charged so that a uniform blend of materials reached the mixer throughout the charging cycle. After any additional slump water is added to the mixing chamber the mixing shall continue for a minimum of 10 seconds. Mixers shall not be used if the mixer is not clean or if the mixing blades are damaged or badly worn.

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

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

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

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

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

Curing

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

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

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

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

COMPLIANCE WITH STANDARDS

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

Acceptance sampling and testing will be performed using the sampling method and testing option selected by the Engineer. Acceptance testing will be performed at the frequency specified by the Engineer. Quality control measures to insure job control are the responsibility of the Contractor. The Engineer's testing and/or test results will not relieve the Contractor from his/her responsibilities to produce, deliver, and place concrete that meets all project requirements. The Engineer's test results are for acceptance purposes only.

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

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

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

MEASUREMENT AND PAYMENT

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

DETAILED SPECIFICATION
FOR
HMA PAVING

DESCRIPTION

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

CONSTRUCTION METHODS

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

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

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

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

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

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

The bond coat shall be applied at a minimum rate of 0.10 gallons/yd2. Before placing the bond coat, the existing pavement surface shall be thoroughly cleaned. The Contractor shall also thoroughly clean all joints, cracks, and edges to a minimum depth of one inch with compressed air, vac-all type equipment, or other approved mechanical or hand methods, to remove all dirt, debris, and all foreign material.

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

HMA placement shall not commence until a “Permit to Place” (no additional costs are required to obtain this permit) has been issued in writing by the Engineer. The Permit to Place shall be issued after the

aggregate base course or the adjacent, underlying layer of pavement section has been approved by the Engineer.

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

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

All HMA thickness dimensions are compacted-in-place.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MEASUREMENT AND PAYMENT

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

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

DETAILED SPECIFICATION
FOR
ACCEPTANCE OF HMA MIXTURES

A. DESCRIPTION

The HMA mixtures shall meet all the requirements of Section 501 of the MDOT 2012 Standard Specifications for Construction, except as modified herein.

B. CONTRACTOR QUALITY CONTROL

The Contractor must have a quality control plan as required by Section 501.03.M and as stipulated herein. The Quality Control (QC) Plan shall be submitted to the Engineer within 30 days of contract award or 14 days before the placement of any HMA materials, whichever date comes first. The QC Plan shall cover all aspects of HMA production, transportation, placement, and compaction. The Contractor shall have a QC representative on-site at all times during the paving operations to monitor and direct all paving-related operations. The placement of HMA shall not commence until such time as the QC Plan has been accepted by the Engineer. The Engineer's acceptance of the QC Plan shall not be construed as a basis of acceptance of any HMA materials, HMA placement results, or a waiver of any requirement(s) of the project specifications.

C. MATERIALS

Aggregates, mineral filler (if required), and asphalt binder shall be combined as necessary to produce a mixture proportioned within the specification requirements including aggregate gradation; the mix design criteria including volumetric properties; the Superpave Gyratory (SGC) compaction criteria; and the uniformity tolerances listed in Table 1. Topsoil, clay, or loam shall not be added to aggregates which are to be used in plant mixed HMA mixtures.

D. MIX DESIGNS

The Contractor shall submit mix designs for evaluation in accordance with the Michigan Department of Transportation Hot Mix Asphalt Production Manual. All mix designs shall be submitted for review a minimum of 3 weeks prior to the anticipated placement of the HMA. Do not begin production and placement of the HMA until receipt of the Engineer's approval of the JMF. The Contractor's production and paving schedules shall be considered to include the mix design review and approval process. Delays associated with the submittal, or re-submittal, of the required information shall not be a basis for an extension of contract time.

E. CONSTRUCTION

Target air voids shall be 3.5% in leveling courses, top courses and shoulders paved in the same operation as the leveling and top courses. Target air voids shall be 3% in base courses and shoulders not paved in the same operation as the leveling and top courses. Pedestrian paths shall have a target air void content of 3%.

After the job-mix-formula (JMF) is established, the parameters identified in Table 1 shall be maintained within the Range 1 tolerance limits of Table 1. However, if deviations are predominately either below, or above, the JMF, the Engineer may order alterations in the plant to bring the mixture into better conformance with the JMF.

The mixture will be considered out-of-specification, as determined by the acceptance tests, if for any one mixture, two consecutive tests per parameter (for Parameter 6, two consecutive aggregate gradations on one sieve) are outside Range 1 or Range 2 tolerance limits. If a parameter is outside of Range 1 tolerance limits and the second consecutive test shows that the parameter is outside of Range 2, then it will be considered to be a Range 1 out-of-specification. Consecutive refers to the production order and not necessarily the testing order. Out-of-specification mixtures are subject to rejection per Section f. Rejected Mixtures or a price adjustment per Section g. Price Adjustments of this special provision as determined by the Engineer.

Contractor paving operations will be suspended when the mixture is determined to be out-of-specification. Contract time will continue during periods when paving operations are suspended or when dispute resolution testing and investigations are occurring. The Engineer may issue a Notice of Non-Compliance with Contract Requirements (Form 1165), if the Contractor has not suspended operations and taken corrective action. The Contractor shall submit a revised JMF or proposed alterations to the plant and/or materials to achieve the JMF to the Engineer. Effects on the Aggregate Wear Index (AWI) and mix design properties shall be taken into consideration. Production and placement of HMA material shall not resume until receipt of the Engineer's approval to proceed.

For production/mainline-type paving, obtain the minimum number of samples as shown in Table 2, each being 20,000 grams, each day of production, for each mix type. The Engineer will sample the HMA and maintain possession of each sample. Sampling from the paver hopper is prohibited. Each sample will be divided into two 10,000 gram halves with one half being used for initial testing and the other half being held for possible dispute resolution testing. Obtain a minimum of three samples for each mix type regardless of the number of days of production.

Ensure all persons performing Quality Control (QC) and Quality Assurance (QA) HMA field sampling are "Local Agency HMA Sampling Qualified" samplers. The Engineer shall obtain the QA samples from the hauling units in accordance with MTM 313 (Sampling HMA Paving Mixtures.) The samples shall be representative of the day's paving. Sample collection shall be spaced throughout the planned tonnage as directed by the Engineer. At a minimum, one sample will be obtained in the first half of the planned tonnage and, as a minimum, the second sample will be obtained in the second half of the tonnage. If planned paving is reduced or suspended, when paving resumes, the remaining sampling must be representative of the original intended sampling timing.

Samples shall be taken from separate loads as directed by the Engineer.

Ensure all persons performing testing are Bit Level One certified or Bit QA/QC Technician certified. Acceptance testing will be performed by the Engineer using the testing method selected by the Engineer. Quality control measures to ensure job control are the sole responsibility of the Contractor.

The test method for measuring asphalt content (AC) shall be MTM 325 (Quantitative Extraction of Bitumen from HMA Paving Mixtures). Back calculations to determine AC content will not be allowed.

All labs performing local agency acceptance testing shall be qualified labs as defined in the HMA Production Manual and participate in the MDOT round robin process, or they must be AASHTO Materials Reference Laboratory (AMRL) accredited for AASHTO T 30 or T 27, and AASHTO T 164 or T 308. Independent testing labs must not have conflicts of interest with the Contractor or Local Agency. On non-National Highway System (NHS) routes, Contractor labs may be used, but they must be qualified labs as previously stated. The Contractor shall provide copies of this documentation to the Engineer for review a minimum of 21 calendar days prior to the performance of any paving operations on the project.

Contractor labs may not be used for acceptance testing on NHS routes.

Material acceptance testing will be completed by the Engineer within 5 calendar days, except holidays and Sundays, after the Engineer has obtained the samples. QA test results will be provided to the Contractor after the Engineer receives the QC test results. Failure on the part of the Engineer or the laboratory to provide Quality Assurance test results within the specified time frame does not relieve the Contractor of

their responsibility to provide an asphalt mix within specifications. The Contractor's schedule shall be deemed to include these material testing timeframes.

For production/mainline-type paving, the mixture may be accepted by visual inspection up to a quantity of 250 tons per mixture type, per project (not per day). For non-production-type paving defined as driveways, approaches, and patching, visual inspection may be allowed regardless of the tonnage.

The crushed particle content of the aggregate used in the HMA mixture shall not be more than 10 percentage points above or below the crushed particle content used in the JMF, nor less than the minimum specified for the aggregates in the contract documents.

Pavement density will be measured by the Engineer with a nuclear density gauge using the Gmm from the JMF for the density control target. The required in-place density of the HMA shall be between 92.0 and 96.0 percent of the density control target. The Contractor is responsible for establishing a rolling pattern that will achieve the required in-place density. Should the specified target densities not be met, the material shall be considered to have a Range 2 failure and shall be rejected. If the Engineer determines that the material is suitable to remain in place, a 50% reduction to the base price of all material affected shall be enacted by the Engineer. Should the Engineer determine that the material cannot remain in place, the affected material will be removed and replaced at the Contractor's sole expense as detailed in the Section F. "Rejected Mixtures."

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

Ensure the initial breakdown roller is capable of vibratory compaction and is a maximum of 500 feet behind the paving operations. The maximum allowable speed of each roller is 3 miles per hour (mph) or 4.5 feet per second. Ensure all compaction rollers complete a minimum of two complete rolling cycles prior to the mat temperature cooling to 180 degrees Fahrenheit (F). Continue finish rolling until all roller marks are eliminated and no further compaction is possible. The Engineer will verify and document that the roller pattern has been followed and density has been achieved. The Engineer can stop the placement of HMA when the roller pattern is not followed and density is not obtained. Contract time shall continue during this period and the Contractor shall be responsible for any additional costs incurred due to this work stoppage.

Pavement in-place density tests will be completed by the Engineer during paving operations and prior to traffic staging changes. Pavement in-place density acceptance testing will be completed by the Engineer prior to the Contractor being allowed to pave subsequent lifts of HMA or the newly placed HMA being opened to traffic.

HMA Acceptance Criteria
Table 1 – Uniformity Tolerance Limits for HMA Mixtures

Parameter		Top and Leveling Courses		Base Course	
		*Range 1	Range 2	*Range 1	Range 2
Number	Description				
1	Air Voids	± 0.60	± 1.00	± 0.60	± 1.00
2	VMA	± 0.60	± 1.00	± 0.60	± 1.00
3	G_{mm} (maximum specific gravity of mixture)	± 0.013	± 0.020	± 0.013	± 0.020
4	Fines to Effective Binder Ratio (this parameter is independent of JMF)	0.6 to 1.2	0.6 to 1.4	0.6 to 1.2	0.6 to 1.4
5	Binder Content	± 0.30	± 0.40	± 0.30	± 0.40
6	Percent Passing No. 8 and Larger Sieves	± 5.0	± 8.0	± 7.0	± 9.0
	Percent Passing No. 30 Sieve	± 4.0	± 6.0	± 6.0	± 9.0
	Percent Passing No. 200 Sieve	± 1.0	± 2.0	± 2.0	± 3.0
7	Crushed Particle Content	Below 10%	Below 15%	Below 10%	Below 15%

*This range allows for normal mixture and testing variations. The mixture shall be proportioned to test as closely as possible to the Job-Mix-Formula.

The tolerances specified in Table 1, with the exception of the Fines to Effective Binder Ratio, reflect variations from the approved job-mix formula.

Parameter Number 6 as shown in Table 1 is aggregate gradation. Each sieve will be evaluated on one of the three gradation tolerance categories. If more than one sieve is exceeding Range 1 or Range 2 tolerances, the sieve with the largest difference from the JMF will be counted as the gradation parameter. The master gradation should be maintained throughout production; however, price adjustments will come by Table 1.

Extraction/gradation and volumetric tests will be performed by the Engineer to confirm conformance to the specifications and the tolerances identified in Table 1. The minimum number of samples to be obtained and tested shall be in accordance with Table 2.

Table 2 – Minimum Number of Samples

Quantity (tons) of Single Mixture Placed per Day	Minimum Number of Samples per Mixture per Day
<100	0
101 – 250	1
251 – 1,500	3
1,501 – 3,000	5
3,001 – 4,500	as directed by the Engineer

F. REJECTED MIXTURES

If, for any one mixture, two consecutive tests per parameter (for Parameter 6, two consecutive aggregate gradations on one sieve) are outside Range 1 or Range 2 tolerance limits the mixture is considered out-of-specification and will be rejected. If a parameter is outside of Range 1 tolerance limits and the second consecutive test shows that the parameter is outside of Range 2, then it will be considered to be a Range 1 out-of-specification. If, for any one mixture, two consecutive tests do not meet the minimum requirements for crushed particle content specified in the project documents, the portion of the mixture with insufficient crushed particle content will be considered out-of-specification and will be rejected.

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

If out-of-specification mixtures are placed in a pavement, the Contractor has 4 calendar days from receipt of the acceptance test results to notify the Engineer, in writing, that dispute resolution testing is requested. The Contractor's QC test results for the corresponding QA test results must result in an overall payment greater than QA test results, otherwise the QA tests will not be allowed to be disputed. The Engineer has 4 calendar days to send the dispute resolution sample to the MDOT Central Laboratory once dispute resolution testing is requested. The remaining 10,000 gram portion of the field samples (split samples) will be sent to the Central Laboratory to complete all Dispute Resolution testing and return test results to the Engineer, who will provide them to the Contractor, within 13 calendar days upon receiving the Dispute Resolution samples. The Contractor may only take pavement cores if approved in writing by the Engineer. If the Central Laboratory test results do not confirm the original field test results, then no price adjustments will be made for the mixture involved.

If the Central Laboratory test results confirm the original test results and, if in the Engineer's judgment, the mixture warrants removal, the Contractor shall remove and replace the rejected (out-of-specification) mixture, at the Contractor's expense, with a mixture meeting the specification requirements. These costs shall be deemed to include all costs associated with the material removal and replacement including, but not limited to; costs associated with re-mobilization of labor and equipment; traffic control; removal and disposal of the rejected material; transportation costs to provide material meeting the requirements of the specification; and, any other cost associated with the work. Contract time shall continue during the period of time that the rejected material is investigated and re-tested, as well as, during the removal and replacement operations.

If the Central Laboratory test results confirm the original test results and, if in the Engineer's judgment, the mixture can remain in place, the base and/or unit price for the rejected (out-of-specification) mixture will be decreased as described in the Section G., "Price Adjustments."

If no field extractions are performed on a given day because the quantity being placed is less than 100 tons, and if there is reason to believe that the mixture contains material parameters that exceed Range 2 tolerances, or if the crushed particle content is less than the established criteria, a price adjustment may also be applied, or removal may be required, based on extraction, gradation, and volumetric tests performed by the Engineer from pavement cores following the procedures outlined herein.

G. PRICE ADJUSTMENTS

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

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

The price adjustments will be determined by the Engineer from the combination of sample test result parameters of the out-of-specification (rejected) material that create the largest total price adjustment for the material. The price adjustments shall be determined based on Tables 3 and 4. The Engineer is not obligated to accept a price adjustment for out-of-specification (rejected) material that exceeds Range 2 limits in lieu of requiring the material to be removed and replaced at the Contractor's expense in accordance with Section F, Rejected Mixtures.

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

Table 3: Penalty Per Parameter

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

Table 4
Calculating Total Price Adjustment

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

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

If acceptance tests, as described in Section e. of this special provision, show that a Table 1 mixture parameter exceeds the Range 1, but not the Range 2, tolerance limits, that mixture parameter will be subject to a 10 percent penalty. The 10 percent penalty will be assessed based on the acceptance tests only unless the Contractor requests that the 10,000 gram sample part retained for possible dispute resolution testing be tested. The Contractor has 4 calendar days from receipt of the acceptance test results to notify the Engineer, in writing, that dispute resolution testing is requested. The Contractors QC test results for the corresponding QA test results must result in an overall payment greater than QA test results, otherwise the QA tests will not be allowed to be disputed. The Engineer has 4 calendar days to send the dispute resolution sample to the MDOT Central Laboratory and the resultant dispute test results will be used to determine the penalty per parameter, if any. If the dispute testing results show that the mixture parameter is out-of-specification, the Contractor will pay for the cost of the dispute resolution testing and the contract unit and/or base price for the material will be adjusted, based on all test result parameters from the dispute tests, as shown in Table 3 and Table 4. If the dispute test results do not confirm the mixture parameter is out-of-specification, then the Local Agency will pay for the cost of the dispute resolution testing and no price adjustment is required.

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

and/or base price for the material will be adjusted, based on all parameters, as shown in Table 3 and Table 4.

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

H. MEASUREMENT AND PAYMENT

The completed work, as described herein, will be measured and paid for using applicable pay items as described in subsection 501.04 of the Standard Specifications for Construction, or the contract, except as modified in Section G. Price Adjustments.

DETAILED SPECIFICATION
FOR
HMA APPLICATION ESTIMATE

DESCRIPTION

This work shall consist of furnishing and placing (HMA) hot mix asphalt on the prepared surfaces in accordance with the details shown on the plans and as specified in Section 501 of the Michigan Department of Transportation Standard Specifications for Construction, 2012 Edition with the exceptions and additions specified herein.

MATERIALS

HMA (Mainline):

The HMA, LVSP used for top course shall have a yield of 220 pounds per square yard with a PG 58-28 binder. The HMA, LVSP used for top course shall have an AWI = 260 minimum.

The HMA, LVSP used for leveling course shall have a yield of 220 pounds per square yard with a PG 58-28 binder.

HMA Approach:

The HMA, LVSP used for the top course of HMA Approach shall have a yield of 220 pounds per square yard with a PG 58-28 binder. The HMA, LVSP used for the top course of HMA Approach shall have an AWI = 260 minimum.

The HMA, LVSP used for leveling course of HMA Approach shall have a yield of 220 pounds per square yard with a PG 58-28 binder.

Hand Patching:

The HMA, LVSP used for Hand Patching shall have a yield of 440 pounds per square yard with a PG 58-28 binder. The HMA, LVSP used for Hand Patching shall have an AWI = 260 minimum.

CONSTRUCTION METHOD

A bond coat shall be applied before each lift of HMA mixture is placed. The rate of application shall be 0.05 to 0.15 gallons per square yard.

MEASUREMENT AND PAYMENT

Measurement shall be based on load weight tickets from a certified scale and accepted at the job site by a City agent.

Payment for HMA (Mainline) shall include all labor, equipment and materials to complete this work.

Payment for Hand Patching shall include all labor, equipment and materials to complete this work.

DETAILED SPECIFICATION
FOR
PROJECT DOCUMENTATION
SUBMITTAL COMPLIANCE

DESCRIPTION

This work consists of submitting all required project documentation to the Engineer within 45 calendar days from the latest Open to Traffic or Final Acceptance of the punch list work date, whichever comes first. Failure by the Contractor to meet this deadline shall result in the creation of a negative adjustment to the contract for failure to submit final project documentation as supplied by the Michigan Department of Transportation via their latest construction procedures and documentation manual. The time requirement may be extended if needed for claim or dispute issues. The Contractor shall promptly make these requests in writing to the Engineer. The Contractor shall be assessed $250.00 for each calendar day that project documentation is not submitted after the aforementioned 45 day period. The duration related to the negative adjustment shall include all calendar days until all required project documentation has been submitted by the Contractor and approved by the Engineer.

MATERIALS

None specified.

CONSTRUCTION METHODS

None specified.

MEASUREMENT AND PAYMENT

The Engineer shall assess a negative adjustment to the contract based on the total number of calendar days the Contractor fails to submit final required project documentation including, but not limited to; progress schedule; subcontracts; shop drawings; certifications; certified payrolls; material source lists (MSLs); and the like.

DETAILED SPECIFICATION
FOR
ITEM #201 - PROJECT SUPERVISION, MAX $40,000

DESCRIPTION

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

The Project Supervisor shall not be an active crew member of the Contractor, shall not be an active member or employee of any subcontractor's work force, and shall not perform general or specialized labor tasks.

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

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

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

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

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

DUTIES AND RESPONSIBILITIES

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

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

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

The Project Supervisor shall be responsible for proper and adequate maintenance (emissions, safety, and general operation) of all of the Contractor's, subcontractors' and suppliers' equipment and vehicles.

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

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

The Project Supervisor shall coordinate and schedule the work of any independent survey crews that may be retained by the City to witness and reset existing and new geographic/benchmark monuments. Failure to have existing monuments witnessed and reset may result in delays to the Contractor's work. Costs for such delays will be the Contractor's sole responsibility.

The Project Supervisor shall coordinate and schedule both Testing inspectors and City inspectors in a timely manner, to assure proper and timely testing and inspection of the work.

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

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

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

ADDITIONAL PERFORMANCE REQUIREMENTS

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

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

Second Notice – A second warning will be issued in writing to the contractor further detailing the deficiencies in the Project Supervision. The contractor must respond within 7 calendar days in writing with a plan to correct the stated deficiencies. Failure to respond within 7 calendar days will result in the issuing of a third notice. A deduction of 10% will be made from the original Project Supervision contract amount. At this time, the City

reserves the right to meet with personnel with the necessary authority within the Contractor's organization to discuss the deficiencies in the Project Supervision.

Third Notice – An additional deduction of 25% will be made from the original Project Supervision contract amount, and the Project Supervisor shall be removed from the project, and replaced immediately with another individual to be approved by the Supervising Professional.

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

MEASUREMENT AND PAYMENT

This item of work will be paid for on a pro rata basis at the time of each progress payment. Measurement will be based on the ratio between work completed during the payment period and the total contract amount. When all of the work of this Contract has been completed, the measurement of this item shall be 1.0 Lump Sum, minus any deductions incurred for inadequate performance as described herein. This amount will not be increased for any reason, including extensions of time, extras, and/or additional work.

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

PAY ITEM	**PAY UNIT**
Project Supervision, Max $40,000	Lump Sum

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

DETAILED SPECIFICATION
FOR
ITEM #202 - GENERAL CONDITIONS, MAX. $60,000

DESCRIPTION

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

- Coordination of, and cooperation with, other contractors, agencies, departments, and utilities
- Protection and maintenance of Utilities
- Placing, maintaining, and removing all soil erosion and sedimentation controls (as specified herein or as shown on project plans)
- Maintaining drainage
- Maintaining driveway drive openings, sidewalks, bike paths, mail deliveries, and solid waste/recycle pick-ups. This includes the placement and maintenance of gravel in driveway openings as directed by the Engineer
- Using quantities of dust palliative, maintenance aggregate, and hot patching mixture for use as temporary base, surfacing, and dust control at utility crossings, side roads and driveways.
- Storing all materials and equipment off lawn areas
- Site clean-up
- Coordination efforts to furnish various HMA mixtures as directed by the Engineer
- Coordination efforts to furnish and operate various-size vehicles/equipment as directed by the Engineer
- Furnishing and operating vacuum-type street cleaning equipment a minimum of once per week or more frequently as directed by the Engineer
- Furnishing and operating vacuum-type utility structure cleaning equipment
- Furnishing and operating both vibratory plate and pneumatic-type (“pogo-stick”) compactors
- Furnishing and operating a backhoe during all work activities
- Furnishing and operating a jackhammer and air compressor during all work activities
- Noise and dust control
- Mobilization(s) and demobilization(s)
- Furnishing submittals and certifications for materials and supplies
- Disposing of excavated materials and debris
- Removal of shrubs, brush, trees, and stumps less than 8” diameter as directed by Engineer
- Trimming of trees to accommodate intersection sight distance as shown on plans and directed by Engineer.
- Fencing to protect excavations over one foot (1’) in depth during non-work hours or as directed by the Engineer. The fencing must be a minimum of 36” high, be constructed of orange HDPE material, and reasonably secured to prevent access.
- All miscellaneous and incidental items such as overhead, insurance, and permits.

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

MEASUREMENT AND PAYMENT

This item of work will be paid for on a pro rata basis at the time of each progress payment. Measurement will be based on the ratio between work completed during the payment period and the total contract amount. When all of the work of this Contract has been completed, the measurement of this item shall be 1.0 Lump Sum. This amount will not be increased for any reason, including extensions of time, extras, and/or additional work.

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

PAY ITEM	PAY UNIT
General Conditions, Max. $60,000	Lump Sum

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

DETAILED SPECIFICATION
FOR
ITEM #203 - DIGITAL AUDIO VISUAL COVERAGE

DESCRIPTION

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

The Audio-Visual recording shall be:

1. Of professional quality, providing a clear and accurate Audio and Visual record of existing conditions.
2. Prepared prior to the preconstruction meeting.
3. Furnished to the Engineer a minimum of two (2) days prior to bringing any materials or equipment within the areas described in this special provision.
4. Furnished to the Engineer either at, or prior to, the preconstruction meeting.
5. Carried-out under the supervision of the Engineer.

The Contractor shall furnish two (2) copies of the completed recording to the Engineer at, or prior to, the preconstruction meeting. An index of the recording, which will enable any area of the project to be easily found on the recording, shall be included. The Contractor shall retain a third copy of the recording for his/her own use.

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

PRODUCTION

The Audio-Visual recording shall be completed in accordance with the following minimum requirements:

1. DVD Format / No Editing.- The Audio-Visual recording shall be performed using equipment that allows Audio and Visual information to be recorded simultaneously and in color. The recording shall be provided on compact discs in DVD format. The quality of the recording shall be equal to or better than the standard in the industry. The recording shall not be edited.

2. Perspective / Speed / Pan / Zoom.- To ensure proper perspective, the distance from the ground to the camera lens shall not be less than 12 feet and the recording must proceed in the general direction of travel at a speed not to exceed 5 miles per hour. Pan and zoom rates shall be controlled sufficiently so that playback will ensure quality of the object viewed.

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

   On streets or in areas where there is no project stationing, assumed stationing shall be used, starting with 0+00 and progressing from west to east or from south to north.

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

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

COVERAGE

The Audio-Visual recording coverage shall include the following:

1. General Criteria.- This general criteria shall apply to all recording and shall include all areas where construction activities will take place or where construction vehicles or equipment will be operated or parked and/or where materials will be stored or through which they will be transported. The recording shall extend an additional 50 feet outside of all areas. The recording shall include all significant, existing man-made and natural features such as driveways, sidewalks, utility covers, utility markers, utility poles, other utility features, traffic signal structures and features, pubic signs, private signs, fences, landscaping, trees, shrubs, other vegetation, and other similar or significant features.

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

3. Road Construction Area.- The recording coverage shall:
    a. Extend to 50 feet outside of the right-of-way and easements area as shown on the plans.
    b. Extend 50 feet outside the construction limits on all streets, including side streets.

    Both sides of each street shall be recorded separately.

4. Detour Route / Maintenance of Traffic Areas. The entire detour route and maintenance of traffic areas shall be recorded as indicated in this special provision except as follows:
    a. The recording must proceed in the general direction of travel at a speed not exceeding 25 miles per hour.
    b. The coverage area shall include the street and not go beyond the curb except in areas where there is a fair possibility that the detoured traffic will drive over the curb, such as at intersections.
    c. The recording shall focus in particular at sidewalk ramps and other features likely to have been damaged or likely to be damaged as a result of existing traffic, temporary detoured traffic and or construction traffic. In these areas, recording may need to proceed much more slowly.

    Only the side of street with the detoured traffic must be recorded. However, the Contractor is advised that portions of the detour routes may operate in opposite directions at different times. In these cases, both sides of the street shall be recorded separately.

5. Private Property bordering the project limits or work areas. Record all areas bordering the project where work is scheduled to occur or where construction traffic could damage the private property. This is to including buildings, driveways, decks, landscaping, trees, and all other similar features.

6. Other Areas. The Contractor shall record at his sole expense other areas where, in his/her opinion, the establishment of a record of existing conditions is warranted. The Contractor shall notify the Engineer in writing of such areas.

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

AUDIOVISUAL RECORDING SERVICES

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

1. Construction Video Media
2. Pre-Construction Media
3. Midwest Company
4. Topo Video, Inc.
5. Video Media Corp.
6. Paradigm 2000, Inc.
7. Finishing Touch Photo and Video

MEASUREMENT AND PAYMENT

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

PAY ITEM	PAY UNIT
Digital Audio Visual Coverage	Lump Sum

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

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

DETAILED SPECIFICATION
FOR
ITEM #204 - MINOR TRAFFIC DEVICES, Max. $50,000

DESCRIPTION

The work of Temporary Traffic Devices shall consist of protecting and maintaining vehicular and pedestrian traffic as shown on the plans, in the Maintenance of Traffic specification, and as directed by the Engineer, in accordance with Sections 103.05, 103.06, and 812 of the 2012 MDOT Standard Specifications for Construction; Part 6 of the Michigan Manual of Uniform Traffic Control Devices, Latest Revised Edition (MMUTCD); and the City Standard Specifications, except as modified herein. These devices include, but 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; changeable message signs; lighted arrow boards; sign/signal covers and pavement marking cover tape for construction operations.

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

- The furnishing and operating of miscellaneous signs, warning devices, flag-persons, and cones;
- The operation of additional signs furnished by the City;
- Furnishing and installing meter bags;
- Coordinating with the City to have meter heads removed and reinstalled;
- Maintaining pedestrian traffic;
- Temporarily covering traffic controls;
- Temporarily covering existing signs as directed;
- Temporarily covering existing pavement markings and symbols as directed;
- Any and all other miscellaneous and/or incidental items which are necessary to properly perform the work.

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

MATERIALS, EQUIPMENT, AND CONSTRUCTION METHODS

General

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

All temporary traffic/pedestrian control devices furnished by the Contractor shall remain the property of the Contractor. The City shall not be responsible for stolen or damaged signs, barricades, barricade lights or other traffic maintenance items. The Contractor shall replace missing traffic control devices immediately, at no additional cost to the City.

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

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 expense.

Lighted Plastic Drums; Barricades; Temporary Signs; Portable Changeable Message Signs; Lighted Arrow Boards; Pavement Marking Cover Tape; Temporary Pavement Markings

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

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

Lighted plastic drums shall be sufficiently ballasted to minimize tipping.

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

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

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

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 as directed by the Engineer and shall be removable.

MEASUREMENT AND PAYMENT

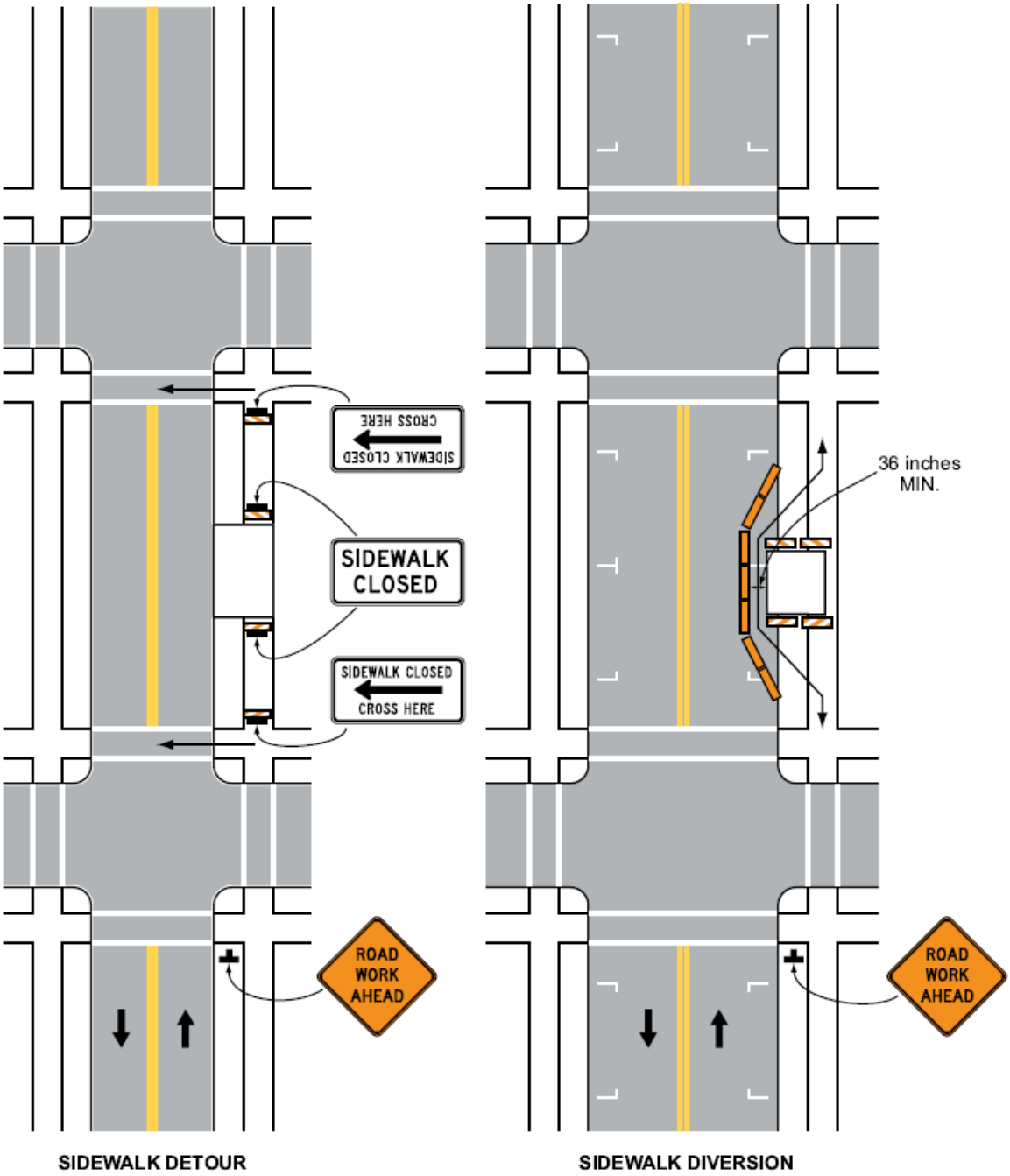
This item of work will be paid for on a pro rata basis at the time of each progress payment. Measurement will be based on the ratio between work completed during the payment period and the total contract amount. When all of the work of this Contract has been completed, the measurement of this item shall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

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

PAY ITEM	PAY UNIT
Minor Traffic Devices, Max $50,000	Lump Sum

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

Figure 6H-28. Sidewalk Detour or Diversion (TA-28)



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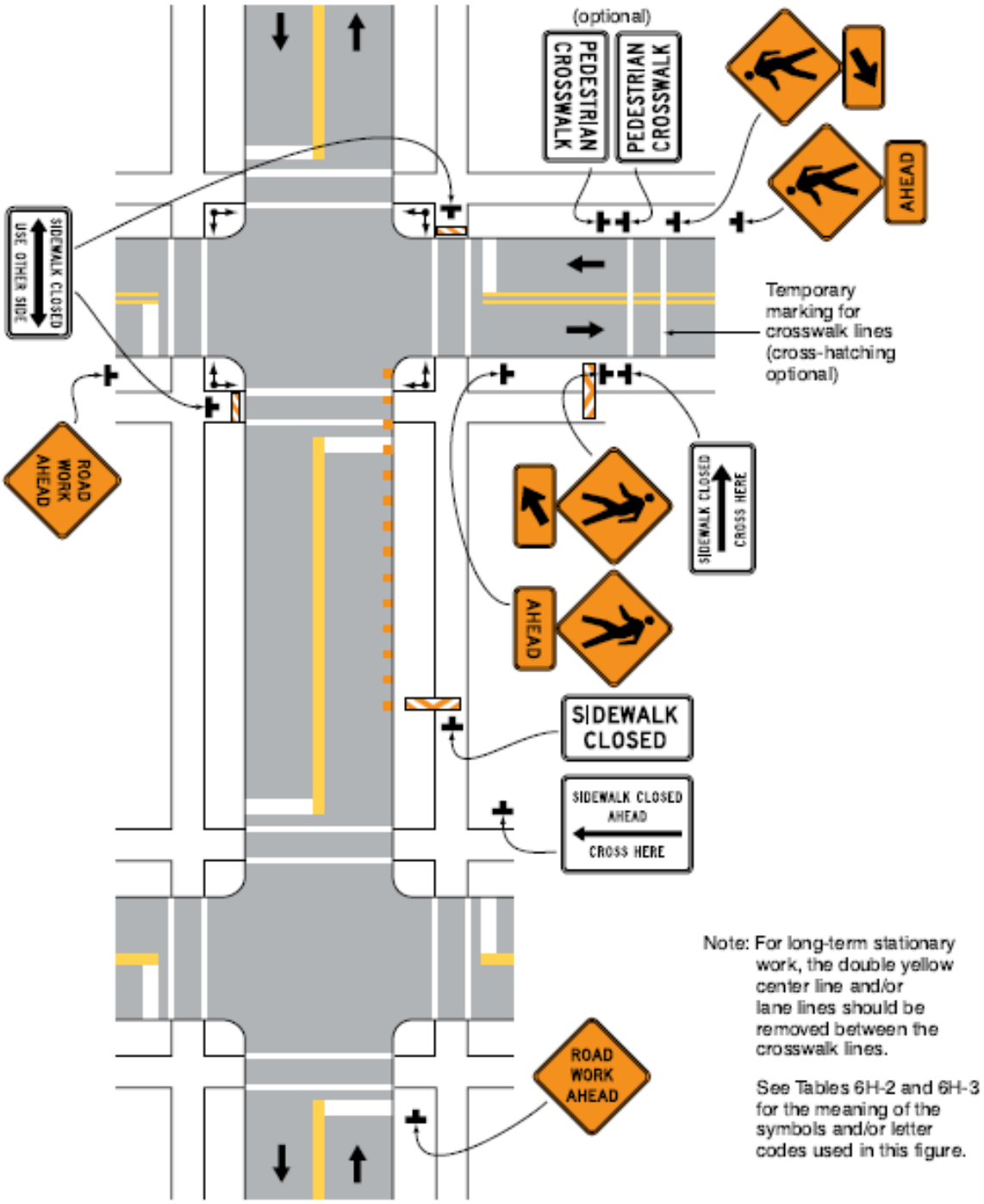
Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Figure 6H-29. Crosswalk Closures and Pedestrian Detours (TA-29)



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DETAILED SPECIFICATION
FOR
ITEM #205 - CLEAN-UP AND RESTORATION, SPECIAL, MAX $15,000

DESCRIPTION

This item of work shall conform to Division IX, Section II, "Clean-Up & Restoration" of the Public Services Area Standard Specifications, except as specified herein.

This work shall include the removal of all surplus materials from the site including; but not limited to; tools, dirt, rubbish, construction debris, and excess excavated material. This work shall also include the restoration of all existing lawn areas, road surfaces, culverts, drives, and sidewalks disturbed by the work.

CONSTRUCTION METHODS

Cleanup and Restoration must be performed upon the completion of each stage of work, to prevent erosion, and not as one single operation at the completion of the entire project. Restoration work must be performed within one week of the placement of the wearing course for each street.

The Contractor shall restore all disturbed areas to better than or equal to their original condition.

MEASUREMENT AND PAYMENT

Measurement and payment for this item of work shall conform to Division IX, Section 2, "Clean-Up & Restoration" of the Public Services Area Standard Specifications except as modified herein.

The completed work for "Clean-Up & Restoration, Special, Max $15,000" will be paid for on a lump sum (LS) basis. 80% of said lump sum shall be paid upon completion and approval of the site by the Engineer. By May 31st of the year following the completion of the project, the Engineer will inspect the seeded turf to ensure that the end product is well established; weed free, and in a growing and vibrant condition. If the Engineer determines that the restored areas meet the project requirements, the remaining 20% of the lump sum will be paid. If the Engineer determines that the restored areas do not meet the project requirements, the Contractor will continue with any and all measures necessary to meet the project requirements. All costs associated with the remedial measures shall be borne entirely by the Contractor.

Pay Item	Pay Unit
Clean-Up & Restoration, Special, Max $15,000	Lump Sum

DETAILED SPECIFICATION
FOR
ITEM #206 - "NO PARKING" SIGNS

DESCRIPTION

This work shall consist of installing, maintaining and removing of "No Parking" signs and posts, as outlined herein and as referenced on the plans. "No Parking" signs shall be installed in accordance with the Public Services Department Standard Specifications and the most recent version of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD).

MATERIAL

All materials for this work shall conform to the requirements of the Public Services Department Standard Specifications.

CONSTRUCTION METHODS

Prior to the commencement of any construction activity, the Contractor will be required to place "No Parking" signs where directed by the Engineer. The Contractor shall obtain a form for "Temporary Permission to Reserve Parking Lane for Work-Related Purposes" for each street from the City of Ann Arbor Engineering Unit. This form shall be submitted a minimum of five (5) days prior to the posting of "No Parking" signs. The issued permit must be printed and displayed on site at all times.

The City will furnish "No Parking" signs to the Contractor at no cost. The Contractor shall furnish the signposts and shall securely bolt the signs to the signposts as directed by the Engineer. After MISS DIG Clearance, the Contractor shall install the signposts at least two feet deep into the ground, and there shall be a minimum 6-foot and maximum 7-foot clearance maintained between the bottom of the sign and the ground. The signs are to be placed at 150-foot intervals (or as necessary) to eliminate parking in the construction area.

The installation of "No Parking" signs shall be in accordance with the permit. "No Parking" signs shall be installed by the Contractor, as directed by the Engineer, at least 48 hours prior to the proposed start-of-work/enforcement date. "No Parking" signs shall be returned to the City at the completion of the work. The cost of unreturned signs will be back-charged to the Contractor. "No Parking" signs shall be covered by the Contractor, thereby allowing on-street parking, whenever there is no work being performed for a period of time longer than 72 hours.

MEASUREMENT AND PAYMENT

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

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

PAY ITEM	PAY UNIT
"No Parking" Signs	Each

DETAILED SPECIFICATION
FOR
ITEM #207 - CERTIFIED PAYROLL COMPLIANCE AND REPORTING

DESCRIPTION

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

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

GENERAL

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

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

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

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

UNBALANCED BIDDING

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

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

MEASUREMENT AND PAYMENT

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

PAY ITEM	PAY UNIT
Certified Payroll Compliance and Reporting	Lump Sum

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

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

DETAILED SPECIFICATION
FOR
ITEM #208 - ALLOWANCE FOR UNFORESEEN SITE CONDITIONS

DESCRIPTION

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

MEASUREMENT AND PAYMENT

The completed work shall be paid for at the negotiated price:

PAY ITEM	PAY UNIT
Allowance for Unforeseen Site Conditions	Dollars

Payment shall include all labor, material, and equipment to complete the authorized work.

DETAILED SPECIFICATION
FOR
ITEM #210 – REMOVE AND SALVAGE MODULAR BLOCK WALL
ITEM #211 - REMOVE CONCRETE CURB OR CURB & GUTTER – ANY TYPE
ITEM #212 – REMOVE CONCRETE SIDEWALK AND DRIVE – ANY THICKNESS

DESCRIPTION

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

CONSTRUCTION METHOD

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

The Contractor shall remove and salvage the modular retaining wall for reinstallation upon final grading and restoration. Neatly stack and protect the blocks until such time.

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

The Contractor shall perform full-depth saw cutting at removal limits, including those necessary to construct 2-foot wide City of Ann Arbor Type M drive openings, and including those necessary to provide for the partial removal of existing drive approaches as shown on the Plans, as directed by the Engineer, and as marked for removal. The Contractor shall cut steel reinforcement bars as directed by the Engineer at all areas of removal.

The Contractor shall remove, salvage, deliver to W. R. Wheeler Service Center (4251 Stone School Road, Ann Arbor, MI 48108), and neatly stack/stockpile all bricks, if present, as directed by the Engineer.

The Contractor shall excavate, cut, remove stumps, remove brush, grade, and trim as needed and as directed, and shall import, furnish, fill, place, grade, and compact granular material as needed to: construct new concrete items; to repair or replace existing concrete items; to relocate existing concrete items to their new specified/directed elevations/locations, including all necessary grading at elevation changes of curb and gutter, sidewalks and ramps; and at locations where existing concrete items are to be removed and turf is to be established in its place.

The Contractor shall coordinate with the Urban Forestry and Natural Resources Planning Coordinator prior to the removal of any tree roots 2 inches or larger in size.

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

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

The Engineer may direct aggregate base materials to be either removed from or added to the job-site, to properly complete the work. Where the Engineer directs the addition of such materials, they shall be paid for as either the Item of Work: "21AA Limestone - C.I.P.", “Aggregate Base Course, 21AA - C.I.P.” or

"Sand Subbase Course, CL II - C.I.P.". Where the Engineer directs such materials to be removed, they will not be paid for separately, but shall be included in the appropriate concrete removal item.

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

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

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

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

The Contractor shall restore all disturbed areas to better than or equal to their original condition. This includes the placement and compaction of 4 inches of topsoil, followed by placement of grass seed, followed by the placement fertilizer and mulch blanket at all turf restoration locations, and at locations where concrete items are removed and turf is to be established. All restoration work and materials shall be in accordance with the Detailed Specifications “Clean-up & Restoration, Special”, “Fertilizer, Chemical Nutrient, Cl A”, “Mulch Blanket, High Velocity”, “Seeding Mixture THM”, and “Topsoil Surface, Furn, 4 inch.”

MEASUREMENT AND PAYMENT

Payment for “Remove and Salvage Modular Block Wall” shall be measured and paid for face area square foot.

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

Payment for saw cutting to create or modify Type M openings, and to allow for the partial removal of existing drives shall be included in the price of the item of work, “Remove Concrete Curb - Any Type”, and will not be paid for separately.

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

Restoration work, including backfilling and compacting will not be paid for separately, but shall be included in the appropriate associated items of work.

DETAILED SPECIFICATION
FOR
ITEM #210 – REMOVE AND SALVAGE MODULAR BLOCK WALL
ITEM #211 - REMOVE CONCRETE CURB OR CURB & GUTTER – ANY TYPE
ITEM #212 – REMOVE CONCRETE SIDEWALK AND DRIVE – ANY THICKNESS

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

PAY ITEM	**PAY UNIT**
Remove and Salvage Modular Block Wall	Square Feet
Remove Concrete Curb or Curb and Gutter - Any Type	Foot
Remove Concrete Sidewalk and Drive - Any Thickness	Square Feet

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

DETAILED SPECIFICATION
FOR
ITEM #213 HMA PAVEMENT SURFACE REMOVAL, ANY DEPTH
ITEM #214 CONCRETE BASE COURSE REMOVAL, ANY DEPTH

DESCRIPTION

This work includes removal of pavement in accordance with as shown on the Plans, as detailed in the Specifications, and as directed by the Engineer, in accordance with Section 204 of the 2012 edition of the MDOT Standard Specifications for Construction, except as specified herein, and as directed by the Engineer.

CONSTRUCTION METHOD

The Contractor shall remove HMA pavement and concrete base course, all regardless of the thickness, and all as shown on the Plans, as detailed in the Specifications, and as directed by the Engineer.

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

The Contractor shall perform full-depth saw cutting at removal limits, as shown on the Plans, as directed by the Engineer, and as marked for removal.

Butt joints are included in the pay item “HMA Pavement Surface Removal”.

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

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

The Engineer may direct aggregate base materials to be either removed from or added to the job-site, to properly complete the work. Where the Engineer directs the addition of such materials, they shall be paid for as either the Item of Work: "21AA Limestone - C.I.P.", “Aggregate Base Course, 21AA - C.I.P.” or "Sand Subbase Course, CL II - C.I.P.". Where the Engineer directs such materials to be removed, it will paid with “Subgrade Undercutting = Type II.”

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

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

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

The Contractor shall restore all disturbed areas to better than or equal to their original condition. This includes the placement and compaction of 4 inches of topsoil, followed by placement of grass seed, followed by the placement fertilizer and mulch blanket at all turf restoration locations. All restoration work and materials shall be in accordance with the Detailed Specifications “Clean-up & Restoration, Special”, “Fertilizer, Chemical Nutrient, Cl A”, “Mulch Blanket, High Velocity”, “Seeding Mixture THM”, and “Topsoil Surface, Furn, 4 inch.”

MEASUREMENT AND PAYMENT

All saw-cutting to establish a neat line required for removals shall be included in the appropriate item of work, and will not be paid for separately.

Finish work, including backfilling and compacting will not be paid for separately, but shall be included in the appropriate associated items of work.

HMA Pavement Surface Removal and Concrete Base Course Removal items shall be field measured and paid for at the Contract Unit Prices for their respective Contract (Pay) Items as follows:

PAY ITEM	PAY UNIT
HMA Pavement Surface Removal, Any Depth	Square Yard
Concrete Base Course Removal, Any Depth	Square Yard

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

DETAILED SPECIFICATION
FOR
ITEM #215 – SIDEWALK RAMP GRADING

DESCRIPTION

Remove miscellaneous structures and materials and complete all earthwork required to construct ADA compliant sidewalk ramps within the construction limits shown on the plans or stated in this detailed specification. All lines and grades will be as shown on the plans and as directed by the Engineer to comply with ADA requirements. Complete this work according to the MDOT 2012 Standard Specifications for Construction and this detailed specification.

MATERIALS

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

CONSTRUCTION METHOD

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

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

MEASUREMENT AND PAYMENT

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

Pay Item	Pay Unit
Sidewalk Ramp Grading	Each

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

DETAILED SPECIFICATION
FOR
ITEM #216 – SEWER, ANY SIZE OR DEPTH, REMOVE
ITEM #217 – DRAINAGE STRUCTURE, ANY SIZE OR DEPTH, REMOVE

DESCRIPTION

This work shall include abandoning existing sewers and drainage structures of various size and depth as required by the Plans. All work shall be done in accordance with Section 203 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, as directed by the Engineer, and as described herein.

MATERIALS

Granular Material Class II…….Section 902

METHODS OF CONSTRUCTION

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

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

MEASUREMENT AND PAYMENT

The completed work shall be paid for at the Contract Unit Price for the following Contract Items:

PAY ITEM	PAY UNIT
Sewer, Any Size or Depth, Remove	Foot
Drainage Structure, Any Size or Depth, Remove	Each

Payment for the above items shall include all labor, material, and equipment to complete the work.

DETAILED SPECIFICATION
FOR
ITEM #218 – ADDITIONAL DEPTH STRUCTURE ADJUST/REPAIR

DESCRIPTION

This work shall consist of removing and disposing of portions of existing brick or block masonry drainage structures, and rebuilding drainage structures of concrete block masonry in conformance with Section 403 of the Michigan Department of Transportation 2012 Standard Specifications for Construction except as specified herein. Water main gate wells and gate box covers shall be considered to be included in this item of work.

This shall also cover the repair of manholes and structures where less than the substantial rebuilding of the structure, as determined by the Engineer, is required.

MATERIALS

The materials shall meet the requirements as specified in Section 403.02 of the Michigan Department of Transportation 2012 Standard Specifications except as specified herein.

Concrete masonry units shall conform to the requirements for concrete masonry units for catch basins and manholes, ASTM C 139.

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

CONSTRUCTION METHODS

The Construction Methods shall met the requirements of Section 403.03, except that the provisions of Section 403.03.D shall not apply to the work covered by this special provision.

The Contractor shall furnish and install pre-cast manhole tops (flat-tops) for the structures where needed. The flat-tops shall be included in this item of work and will be paid for separately.

MEASUREMENT AND PAYMENT

The completed work as measured for "Structure, Additional Depth Adjust/Repair" shall be paid for at the contract unit price for the following contract item (pay item):

PAY ITEM	PAY UNIT
Additional Depth Structure Adjust/Repair	Foot

"Additional Depth Structure Adjust/Repair" will be measured by depth in feet from a point 15 inches below finish grade of the structure down to the grade of the remaining structure, and will be paid for at the contract unit price per foot, which price shall be payment in full for all labor, equipment and materials needed to accomplish this work.

DETAILED SPECIFICATION
FOR
ITEM #220 – REMOVE SANITARY SEWER LEAD

DESCRIPTION

This work shall consist of removing and replacing existing sanitary lead pipe in new utility trenches as directed by engineer when conflicts with new utilities are identified or when the condition of the existing pipe prevents proper utility protection. Work includes cutting lead, carefully removing, replacing with SDR 35 PVC pipe and fittings along with Fernco connections. All materials need to accomplish this work is included in this pay item. All work shall be done in accordance with the City of Ann Arbor Public Services Department Standard Specifications, and as directed by the Engineer.

CONSTRUCTION METHODS

The Construction Methods shall meet all requirements of the City of Ann Arbor Standard Specifications.

Sewer leads are private and no official City records are kept. Approximate locations of leads have been placed on plans per survey data when available. Contractor to carefully excavate leads, not dig through lead but to saw cut out of way. Lead to be kept clean, have positive fall, and replaced as soon as possible. Contractor to coordinate with homeowner as needed to complete work. Trench must be carefully backfilled to prevent damage. Prior to placement of HMA contractor will have entire lead televised to verify condition of repaired sections and to verify sufficient slope has been provided. Any defects in the repaired sections shall be exposed and repaired at contractor's expense.

MEASUREMENT AND PAYMENT

The unit price for the pay item "Remove Sanitary Sewer Lead" includes all labor, material and equipment costs associated with the complete installation of the sewer lead, as specified herein, including but not limited to, excavation MDOT CL II backfill, compaction.

Payment shall include all labor, equipment, and materials necessary to remove and store the existing sewer lead as directed by the Engineer.

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

PAY ITEM	PAY UNIT
Remove Sanitary Sewer Lead	Foot

DETAILED SPECIFICATION
FOR
ITEM #221 – WATER MAIN PIPE ABANDONMENT, MODIFIED
ITEM #222 – FIRE HYDRANT ASSEMBLY ABANDONMENT
ITEM #223 – ABANDON GATE WELL
ITEM #224 – ABANDON VAULT (PRV)

DESCRIPTION

This work shall include abandoning existing water mains, valves, valve wells, valve boxes, pressure regulating valve vault, and fire hydrant assemblies of various sizes as required by the Plans. All work shall be done in accordance with the City of Ann Arbor Public Services Department Standard Specifications, and as directed by the Engineer.

MATERIALS

All materials shall meet the requirements specified in Division 7 and 9 of the MDOT 2003 Standard Specifications for Construction as follows:

Mortar Type II Section 702

MDOT Class II Sand Section 902

Masonry Units Section 913

Push-on joint plugs, caps, air relief assemblies (for grouting purposes), and thrust blocks shall conform to the City of Ann Arbor Standard Specifications.

METHODS OF CONSTRUCTION

The Construction Methods shall meet all requirements of the City of Ann Arbor Standard Specifications.

In locations as shown on the Plans or where abandoned water main, valves or valve wells are within 2.5 feet of the proposed subgrade, the pipe, valves or valve wells shall be removed completely. The resulting hole or trench shall be backfilled with Class II Sand, in maximum lifts of 12 inches, and be compacted to 95% of its maximum unit weight, if located within the influence paved surfaces or structures. Otherwise, backfill shall be Engineer approved native material, compacted to 90% of its maximum unit weight, in lifts of 12 inches or less, unless otherwise noted on the plans. Caps or plugs shall be installed in accordance with plans or as specified by Engineer.

Abandoned (salvaged) valve operating nuts, fire hydrant assemblies, structure covers, and pressure regulating valve shall be delivered to the City of Ann Arbor Field Services Unit located at the W.R. Wheeler Service Center at 4251 Stone School Road, Ann Arbor, MI 48108 within two days of their removal. Valve boxes should be disposed of at the contractor's sole expense.

MEASUREMENT AND PAYMENT

The unit price for the Pay Item "Water Main Pipe Abandonment, Modified" shall be paid for on a lump sum (LS) basis and includes all labor, material and equipment costs necessary to abandon or remove the pipe including, but not limited to, excavation, cutting of pipe, push-on joint plugs, caps and thrust blocks, brick and mortar bulkheads, the furnishing, placement, and compaction of approved granular backfill material,

as required, and the removal and proper disposal off-site of excess materials. In addition, this pay item includes the removal and salvage of valves and covers, and disposal of valve boxes.

The unit price for the pay item "Fire Hydrant Assembly Abandonment," includes all labor, material and equipment costs associated with the complete removal of the existing fire hydrant assembly, as specified herein, including but not limited to, excavation, MDOT CL II Backfill and compaction; pipe cutting; thrust block removal; pipe plug; thrust block; salvaging of fire hydrant, valve and valve box and delivery of fire hydrant, valve and valve box to the City of Ann Arbor Field Services Unit.

The unit price for the Pay Item "Abandon Gate Well" includes all labor, material and equipment costs necessary to remove and salvage the valve and cover, and deliver to the City of Ann Arbor Field Services Unit; the removal of the top 4 feet of valve wells; breaking out the valve well base; the furnishing, placement, and compaction of approved granular backfill material, as required; and the removal and proper disposal off-site of excess materials.

The unit price for the Pay Item "Abandon Vault (PRV)" includes all labor, material and equipment costs necessary to remove the concrete well, piping, fittings and accessories as necessary to construct water main in accordance with City of Ann Arbor Specifications. The pay item includes, but is not limited to, excavation and cutting of pipe; removal and salvaging the pressure regulating valve and the manhole cover, and deliver to the City of Ann Arbor Field Services Unit; the removal of the top 4 feet of the vault and the portion of the vertical walls as necessary to install the replacement piping indicated on the plans; breaking out the valve well base; the furnishing, placement, and compaction of approved granular backfill material, as required; and the removal and proper disposal off-site of excess materials.

Installation of piping shall be paid for separately as "__ inch Class 50 DIP w/ polywrap, Trench Detail __".

PAY ITEM	**PAY UNIT**
Water Main Pipe Abandonment, Modified	Lump Sum
Fire Hydrant Assembly Abandonment	Each
Abandon Gate Well	Each
Abandon Vault (PRV)	Each

The Item of work "Water Main Pipe Abandonment, Modified" will be paid for on a pro rata basis at the time of each progress payment. Measurement will be based on the ratio between work completed during the payment period and the total contract amount. When all of the work of this Contract has been completed, the measurement of this item shall be 1.0 Lump Sum, minus any deductions incurred for inadequate performance as described herein. This amount will not be increased for any reason, including extensions of time, extras, and/or additional work.

DETAILED SPECIFICATION
FOR
ITEM #225 – TEMPORARY WATER MAIN LINE STOP, ADDITIONAL RENTAL DAY
ITEM #226 – TEMPORARY WATER MAIN LINE STOP, LESS THAN 8 INCH
ITEM #227 – TEMPORARY WATER MAIN LINE STOP, 8 OR 12 INCH
ITEM #228 – TEMPORARY WATER MAIN LINE STOP, 16 INCH

DESCRIPTION

This work shall include all excavations, line stop contractor labor, materials, and backfill required to install a line stop on an existing water main. All work shall be done in accordance with the City of Ann Arbor Public Services Department Standard Specifications, and as directed by the Engineer.

CONSTRUCTION METHODS

Construction shall meet all requirements of the City of Ann Arbor Standard Specifications. All excavation shall be of sufficient size that work can be performed safely. Line stop work shall be coordinated with proposed water main shut down. The line stop Contractor must be on site at all times during the line stop operation.

MEASUREMENT AND PAYMENT

The unit prices for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification. "Temporary Water Main Line stop, Additional Rental Day" will be paid for each day after the first installation and use day of a temporary water main line stop, regardless of size, until the line stop is no longer needed.

PAY ITEM	PAY UNIT
Temporary Water Main Line Stop, Additional Rental Day	Each
Temporary Water Main Line Stop, Less than 8 inch	Each
Temporary 8 inch or 12 inch Water Main Line Stop	Each
Temporary 16 inch Water Main Line Stop	Each

Removal items associated with installation of line stops, such as HMA Pavement Removal and Machine Grading, will be paid for separately.

Backfill items associated with patching the excavation created by installing the line stop, such as Aggregate Base Course, 21AA- C.I.P. and Handpatching or HMA Pavement Leveling/Top - LVSP, will be paid for separately.

DETAILED SPECIFICATION
FOR
ITEM #229 – REINSTALL MODULAR BLOCK WALL
ITEM #230 – MACHINE GRADING, MODIFIED

DESCRIPTION

This work shall consist of constructing earth grades by excavating, cutting, filling, trimming, and grading; general restoration, and sign removals in accordance with the Detailed Specifications elsewhere herein; and maintaining the work in a finished condition until such time that it is accepted by the Engineer. This work shall be done as shown on the Plans, as detailed in the Specifications, and as directed by the Engineer, and in accordance with Section 205 of the 2012 edition of the MDOT Standard Specification for Construction, except as specified herein.

CONSTRUCTION METHOD

The Contractor shall construct earth grades as required to develop the typical and/or detailed cross-section(s) as shown on the Plans, as detailed in the Specifications, and as directed by the Engineer. This shall include, but not be limited to, the excavation of concrete and HMA pavement, soil, rocks of any size, stumps, trees less than 8 inches, logs, and bricks; the removal and proper disposal off-site of surplus excavated material; the scarifying, plowing, disking, moving and shaping of earth; the trimming, grading, compaction and proof-rolling of the prepared subgrade; the importing, furnishing, placement and compaction of embankment and/or fill materials; the full depth saw-cutting of pavement at the removal limits; the grading of sideslopes; general restoration in accordance with the Detailed Specifications elsewhere herein and the general items of the work as specified herein. Road subbase and base materials shall be paid for separately.

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

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

The Contractor shall remove other surface features, including signs, located within the grading limits and not otherwise identified, as directed by the Engineer. Signs shall be salvaged and provided to City as directed by the Engineer.

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

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

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

The Contractor is solely responsible for the maintenance and protection of the subgrade. Further, any

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

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

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

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

The Contractor shall take any and all steps necessary to avoid interruption in the mail delivery, and solid waste, recycling, and compostable pick-up within the project limits. This shall include the temporary relocation of mailboxes, where required by the Engineer, as well as moving of all solid waste/recycling/compost containers to the nearest cross street.

The Contractor shall coordinate with the Urban Forestry and Natural Resources Planning Coordinator prior to the removal of any tree roots 2 inches or larger in size.

The Contractor shall install the salvaged modular retaining/landscape bricks per approved manufacturer’s specifications, including but not limited to installation of underdrain or geogrid.

The Contractor shall restore all disturbed areas to better than or equal to their original condition. This includes the placement and compaction of 4 inches of topsoil, followed by placement of grass seed, followed by the placement fertilizer and mulch blanket at all turf restoration locations. All restoration work and materials shall be in accordance with the Detailed Specifications “Clean-up & Restoration, Special”, “Fertilizer, Chemical Nutrient, Cl A”, “Mulch Blanket, High Velocity”, “Seeding Mixture THM”, and “Topsoil Surface, Furn, 4 inch.”

MEASUREMENT AND PAYMENT

Measurement for payment for the item “Reinstall Modular Block Wall” shall be measured along the surface area of the wall constructed.

Measurement for payment for the item “Machine Grading” shall be computed as the area of excavated material (pavement, soil, rock, brick, etc.) within the footprint of the proposed road section including to the edge of the 1:1 slope outside of road grading. Embankment, fill, subgrade protection/maintenance, drainage maintenance quantities will not be paid for separately, and are included in this item of work.

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

PAY ITEM	**PAY UNIT**
Reinstall Modular Block Wall	Square Foot
Machine Grading, Modified	Square Yard

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

DETAILED SPECIFICATION
FOR
ITEM #231 – SUBGRADE UNDERCUTTING – TYPE II

DESCRIPTION

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

CONSTRUCTION METHOD

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

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

The Contractor shall remove, salvage, deliver to W.R. Wheeler Service Center (4251 Stone School Road, Ann Arbor, MI 48108), and neatly stack/stockpile all bricks, if present, as directed by the Engineer.

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

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

MEASUREMENT AND PAYMENT

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

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

PAY ITEM	PAY UNIT
Subgrade Undercutting - Type II	Cubic Yard

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

DETAILED SPECIFICATION
FOR
ITEM #232 –SAND SUBBASE COURSE, CLASS II – C.I.P.
ITEM #233 – 21AA LIMESTONE – C.I.P.
ITEM #234 - AGGREGATE BASE COURSE, 21AA – C.I.P.

DESCRIPTION

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

MATERIAL

The materials used for this work shall be MDOT 21AA, and Class II granular material, as modified meeting the requirements of the City of Ann Arbor Standard Specifications.

CONSTRUCTION METHOD

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

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

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

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

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

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

The Contractor shall maintain the base, subbase and subgrade in a smooth, well drained condition at all times.

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

Sand subbase shall be compacted to not less than 95% of their respective maximum unit weights, as determined by the AASHTO T-180 test.

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

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

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

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

MEASUREMENT AND PAYMENT

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

Where granular materials are used as fill for undercuts at locations other than Machine Grading areas, item of work "21AA Limestone - C.I.P." shall be measured and paid accordingly.

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

PAY ITEM	PAY UNIT
Sand Subbase Course, Class II - C.I.P.	Cubic Yard
21AA Limestone - C.I.P.	Cubic Yard
Aggregate Base Course, 21AA - C.I.P.	Ton

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

DETAILED SPECIFICATION
FOR
ITEM #235 –HMA PAVEMENT LEVELING/TOP – 4E3
ITEM #236 –HMA PAVEMENT LEVELING/TOP – 4E1
ITEM #237 –HMA PAVEMENT BASE – 3E3
ITEM #238 –HMA PAVEMENT BASE – 2C
ITEM #239 –HMA PAVEMENT BASE – 3C
ITEM #240 –HMA PAVEMENT LEVELING/TOP - LVSP
ITEM #241 – HMA APPROACH
ITEM #242 – HANDPATCHING
ITEM #243 – HMA TEMPORARY PAVEMENT

DESCRIPTION

This work shall consist of constructing HMA pavement leveling and top courses in accordance with Division 5 and Section 904 of the 2012 edition of the MDOT Standard Specifications, current supplemental MDOT specifications, and the City of Ann Arbor Standard Specifications, except as modified herein, and as directed by the Engineer.

MATERIALS AND EQUIPMENT

General

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

WORK ITEM	MDOT HMA MIXTURE #
HMA Pavement Leveling/Top	4E1 and 4E3 and LVSP (Superpave)
HMA Pavement Base	2C and 3C and 3E3
HMA Approach	LVSP (Superpave)
Handpatching	LVSP (Superpave)
HMA Temporary Pavement	LVSP (Superpave)

Binders for LVSP Superpave mixes shall be PG 58-28; PG 64-28 or PG 70-28 for 4E1, as directed by Engineer. These shall meet the requirements specified in Section 904 of the 2012 edition of the MDOT Standard Specifications, and any current supplemental MDOT specifications.

The Aggregate Wear Index (AWI) number is 260 for 4E1 and 220 for LVSP. This AWI number applies to all aggregates used in all top course mixtures. Blending aggregates to achieve this AWI requirement is permitted in accordance with current MDOT Standards, and Supplemental Specifications.

Reclaimed Asphalt Pavement (RAP) in HMA Mixtures

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

CONSTRUCTION METHODS

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

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

Prior to placing the bond coat, the Contractor shall remove all vegetation (within the area to be paved), shall thoroughly clean all joints & cracks in the existing pavement (and any gutter to be overlaid) with compressed air and/or vacuum-type street cleaning equipment to remove all dirt and debris to a depth of at least 1-inch, and shall thoroughly clean the entire surface to be paved, with a Vac-All or similar vacuum-type street cleaning equipment.

MDOT SS-1h bond coat shall be applied at a uniform rate of 0.10 gallons/square yard, on all exposed, existing HMA and concrete surfaces which will come in contact with the new HMA material. The Contractor shall take extra care

to avoid covering surfaces which are not to be paved. If work after October 15, 2021 is allowed by the Engineer, the SS-1h bond coat shall not be diluted by more than 25%.

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

Construction of butt joints, where directed by the Engineer, shall be measured and paid for as "HMA Surface Remove".

The Contractor shall schedule the paving operation to avoid longitudinal cold joints.

HMA Pavement Leveling/Top – 4E3 top and leveling courses shall be placed in 2-inch lifts.

HMA Pavement Leveling/Top – 4E1 top and leveling courses shall be placed in 1-½-, 2-, or 2-½-inch lifts.

HMA Pavement Base – 3E3 base course shall be placed in a 3-½-inch lift.

HMA Pavement Base – 2C base course shall be placed in a 3-½-inch lift.

HMA Pavement Base – 3C base course shall be placed in a 2-inch lift.

HMA Pavement Leveling/Top - LVSP top and leveling courses shall be placed in a 2-inch lift.

HMA Approach top and leveling courses shall be placed in a 2-inch lift.

Handpatching shall be placed in 0-inch to 4-inch lifts.

Temporary HMA LVSP shall be placed in 2-inch lifts.

All specified HMA thickness dimensions are compacted-in-place.

The Contractor shall construct the pavement courses to provide the final cross-slopes (crowns) specified by the Engineer.

The Contractor shall construct feather joints, and shall feather the top course at structures, in drive approaches, and at intersection joints, as directed by the Engineer. Feather joints shall vary the thickness of the asphalt from 0.0-inches to the required full paving thickness (approximately 2 inches) over a 5-foot to 15-foot distance, or as directed by the Engineer. The Contractor shall rake all large aggregates out of the HMA mixture in feather joints, prior to compaction.

The Contractor shall provide a minimum of two rakers during the placement of all top courses. Further, the Contractor shall provide, when directed by the Engineer, a second "Break-Down" roller in order to achieve the specified asphalt densities.

The Contractor shall provide a minimum of 24-hour notice to the Engineer prior to paving, and shall obtain a "Permit To Pave" from the Engineer in advance of scheduling paving.

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

contaminated sections of pavement, including sections that are weak or unstable. Once the Contractor or his representative is notified by the Engineer that the material being placed is out of allowable tolerances, or there is a problem with the paving operation, the Contractor shall stop the paving operation at once, and shall not be permitted to continue placing HMA material until again authorized by the Engineer.

During the placement of all courses, the speed of the paving machine(s) shall not exceed 50-feet per minute.

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

Each layer of HMA mixture shall be compacted to between 92 to 96 percent (or as determined acceptable by the engineer) of the theoretical maximum density, as listed on the approved Job Mix Formula.

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

MEASUREMENT AND PAYMENT

Measurement of this HMA paving item shall be by the ton, in place. Unused portions of material loads shall be returned to the plant and re-weighed, and the corrected weight slip shall be provided to the Engineer. All weight slips must include the type of mixture (codes are not acceptable), as well as vehicle number, gross weight, tare weight and net weight.

Corrective action shall be enforced as described in the "Acceptance of HMA Mixtures" Detailed Specification and will be based on the City's testing reports.

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

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

PAY ITEM	PAY UNIT
HMA Pavement Leveling/Top – 4E3	Ton
HMA Pavement Leveling/Top – 4E1	Ton
HMA Pavement Base – 3E3	Ton
HMA Pavement Base – 2C	Ton
HMA Pavement Base – 3C	Ton
HMA Pavement Leveling/Top – LVSP	Ton

PAY ITEM	**PAY UNIT**
HMA Approach	Ton
Handpatching	Ton
HMA Temporary Pavement	Ton

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

DETAILED SPECIFICATION
FOR
ITEM #244 – CONCRETE BASE COURSE, NONREINFORCED
ITEM #245 –CONCRETE CURB OR CURB AND GUTTER – ALL TYPES
ITEM #246 – 4-INCH CONCRETE SIDEWALK
ITEM #247 – 6-INCH CONCRETE SIDEWALK RAMP
ITEM #248 – 6-INCH CONCRETE DRIVE OR SIDEWALK (HIGH EARLY)
ITEM #249 – 4-INCH CONCRETE INTEGRAL SIDEWALK/CURB
ITEM #250 – 4-INCH CONCRETE INTEGRAL SIDEWALK/ROLLED CURB
ITEM #251 – DRIVEWAY OPENING, CONC, DETAIL M (HIGH EARLY)

DESCRIPTION

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

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

MATERIALS

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

Concrete Item	Concrete Mixture	MDOT Section
Concrete Base Course	P1, 6-sack	601
Curb or Curb & Gutter	P1, 6-sack	601
4" or 6" Sidewalk or Ramp	P1, 6-sack	601
6" Drive or Sidewalk - High-Early	P-NC, 7-sack	601
Integral Sidewalk/Curb or Sidewalk/Rolled Curb	P1, 6-sack	601
Driveway Opening, Detail M – High Early	P-NC, 7-sack	601

CONSTRUCTION METHODS

General

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

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

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

The Contractor shall excavate, cut, remove stumps, remove brush, remove pavement, grade, and trim as needed and as directed, and shall import, furnish, fill, place, grade, and compact Class II granular material and 21AA Aggregate material as needed to: construct new concrete items; to repair or replace existing concrete items; to relocate existing concrete items to their new specified/directed elevations/locations, including all necessary grading at elevation changes of curb and gutter, sidewalks and ramps; and at locations where existing concrete items are to be removed and turf is to be established in its place.

At locations where the constructed subbase becomes either disturbed, saturated or otherwise damaged, and where directed by the Engineer, the Contractor shall remove a minimum 6-inch thick layer of the subbase and replace it with "Sand Subbase Course, CL II - C.I.P.". If additional subgrade requires removal as directed by the Engineer refer to specification for “Subgrade Undercutting – Type II”.

The Contractor shall coordinate with the Urban Forestry and Natural Resources Planning Coordinator prior to the removal of any tree roots with diameters 2" or greater.

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

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

The Contractor shall perform full-depth saw cutting at removal limits, including those necessary to construct 2-foot wide Type M drive openings, and including those necessary to provide for the partial removal of existing drive approaches, as shown on the Plans, as directed by the Engineer, and as marked for removal.

The subbase and adjacent concrete shall be sufficiently wet-down with water prior to placing concrete, to prevent water loss from the new concrete, and to form a better bond between old and new concrete. If a cold-joint becomes necessary, (the) existing concrete surface(s) shall be cleaned with compressed air to expose the aggregate in the concrete.

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

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

Where concrete items are placed adjacent to existing pavement that is within areas scheduled for subsequent pavement removal and/or milling, the adjacent pavement area shall, within 48-hours of the removal of concrete formwork, be backfilled with MDOT 21AA aggregate, as modified, compacted in place to 98% of its maximum unit weight, up to the elevation of the bottom of the adjacent pavement.

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

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

Contraction Joints in Sidewalk

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

Expansion Joints in Sidewalks

¾-inch wide expansion joints shall be placed through concrete sidewalks in line with the extension of all property

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

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

Expansion Joints in Curb and Gutter

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

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

Plane of Weakness Joints in Curb and Gutter

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

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

MEASUREMENT AND PAYMENT

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

The removal of existing subgrade, or the installation of subbase or base necessary to construct item per City of Ann Arbor standards will be paid as “Machine Grading, Modified”, “Sand Subbase Course, Class II – C.I.P”, and “Aggregate Base Course, 21AA – C.I.P”. Removal of a greater depth, as directed by the Engineer, shall be paid for as “Subgrade Undercutting – Type II”. Replacement with approved "21AA Limestone, C.I.P.” will be paid for separately. Removal of existing earth where new sidewalk is installed will be paid for as “Sidewalk Ramp Grading.”

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

Curb, gutter, curb and gutter, shall be paid as "Concrete Curb and Gutter – All Type", with the exception of Detail M Driveway Opening, which shall be paid as “Driveway Opening, Conc, Detail M”.

Payment for “4 Inch Concrete Integral Sidewalk/Curb” and “4 Inch Concrete Integral Sidewalk/Rolled Curb” shall be measured by the area of the sidewalk in square feet.

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

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

The Item, "Detectable Warning, Cast In Place" will be measured and paid for by the square foot of area stamped, typically 2' x 5'. This measurement/payment is in addition to the measurement/payment for the concrete ramp placement.

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

PAY ITEMS	**PAY UNIT**
Concrete Base Course, Nonreinforced	Cubic Yard
Concrete Curb or Curb and Gutter – All Types	Feet
4 Inch Concrete Sidewalk	Square Feet
6 Inch Concrete Sidewalk Ramp	Square Feet
6 Inch Concrete Drive or Sidewalk - High Early	Square Feet
4 Inch Concrete Integral Sidewalk/Curb	Square Feet
4 Inch Concrete Integral Sidewalk/Rolled Curb	Square Feet

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

DETAILED SPECIFICATION
FOR
ITEM #252 –DETECTABLE WARNING, CAST IN PLACE

DESCRIPTION

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

MATERIALS AND CONSTRUCTION METHODS

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

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

   Length: 24"

   Width: The full width of the approaching walk (60" for typical sidewalk)

   Depth: 1.375" (1-3/8") (+/-) 5% max.

   Face Thickness: 0.1875" (3/16") (+/-) 5% max. Warpage of Edge: 0.5% max.

   Embedment Flange Spacing: shall be no greater than 3.1"
2. Water Absorption of Tile when tested by ASTM D 570-98 not to exceed 0.05%.
3. Slip Resistance of Tile when tested by ASTM C 1028-96 the combined Wet and Dry Static Co-Efficient of Friction not to be less than 0.80 on top of domes and field area.
4. Compressive Strength of Tile when tested by ASTM D 695-02a not to be less than 28,000 psi.
5. Tensile Strength of Tile when tested by ASTM D 638-03 not to be less than 19,000 psi.
6. Flexural Strength of Tile when tested by ASTM D 790-03 not to be less than 25,000 psi.
7. Chemical Stain Resistance of Tile when tested by ASTM D 543-95 (re approved 2001) to withstand without discoloration or staining - 10% hydrochloric acid, urine, saturated calcium chloride, black stamp pad ink, chewing gum, red aerosol paint, 10% ammonium hydroxide, 1% soap solution, turpentine, Urea 5%, diesel fuel and motor oil.
8. Abrasive Wear of Tile when tested by BYK - Gardner Tester ASTM D 2486-00 with reciprocating linear motion of 37± cycles per minute over a 10" travel. The abrasive medium, a 40 grit Norton Metallite sand paper, to be fixed and leveled to a holder. The combined mass of the sled, weight and wood block is to be 3.2 lb. Average wear depth shall not exceed 0.060 after 1000 abrasion cycles when measured on the top surface of the dome representing the average of three measurement locations per sample.
9. Resistance to Wear of Unglazed Ceramic Tile by Taber Abrasion per ASTM C501-84 (re approved 2002) shall not be less than 500.
10. Fire Resistance of Tile when tested to ASTM E 84-05 flame spread shall be less than 15.
11. Gardner Impact to Geometry "GE" of the standard when tested by ASTM D 5420-04 to have a mean failure energy expressed as a function of specimen thickness of not less than 550 in. Ibf/in. A failure is noted when a crack is visible on either surface or when any brittle splitting is observed on the bottom plaque in the specimen.

12. Accelerated Weathering of Tile when tested by ASTM G 155-05a for 3000 hours shall exhibit the following result - □E <4.5, as well as no deterioration, fading or chalking of surface.
13. Accelerated Aging and Freeze Thaw Test of Tile and Adhesive System when tested to ASTM D 1037-99 shall show no evidence of cracking, delamination, warpage, checking, blistering, color change, loosening of tiles or other detrimental defects.
14. Salt and Spray Performance of Tile when tested to ASTM B 117-03 not to show any deterioration or other defects after 200 hours of exposure.
15. AASHTO HB-17 single wheel HS20-44 loading "Standard Specifications for Highways and Bridges". The Cast In Place Tile shall be mounted on a concrete platform with a ½" airspace at the underside of the tile top plate then subjected to the specified maximum load of 10,400 lbs., corresponding to an 8000 lb individual wheel load and a 30% impact factor. The tile shall exhibit no visible damage at the maximum load of 10,400 lbs.
16. Embedment flange spacing shall be no greater than 3.1" center to center spacing as illustrated on the product Cast In Place drawing.

CONSTRUCTION METHODS

The contractor shall follow manufacturer specifications for installation, except where they conflict with MDOT Standard Detail R-28 Series (included in Appendix).

MEASUREMENT AND PAYMENT

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

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

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

DETAILED SPECIFICATION
FOR
ITEM #253 - PAVT MRKG, OVLY COLD PLASTIC, 12 INCH, CROSSWALK
ITEM #254 - PAVT MRKG, OVLY COLD PLASTIC, 24 INCH, STOP BAR
ITEM #255 - PAVT MRKG, OVLY COLD PLASTIC, DIRECTION ARROW SYM, LEFT TURN
ITEM #256 - PAVT MRKG, OVLY COLD PLASTIC, DIRECTION ARROW SYM, BIKE
ITEM #257 - PAVT MRKG, OVLY COLD PLASTIC, BIKE SYM
ITEM #258 - PAVT MRKG, OVLY COLD PLASTIC, SHARROW SYMBOL
ITEM #259 PAVT MRKG, POLYUREA, 4 INCH, WHITE
ITEM #260 PAVT MRKG, POLYUREA, 4 INCH, YELLOW
ITEM #261 PAVT MRKG, POLYUREA, 6 INCH, WHITE
ITEM #262 RECESSING PAVT MRKG, LONGIT

DESCRIPTION

This work consists of providing and placing permanent pavement markings in accordance with the Michigan Manual of Uniform Traffic Control Devices (MMTUTCD), lasted version published at time of advertisement. Provide pavement markings that conform to the Plans, the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, MDOT Pavement Marking Standard Plans, City of Ann Arbor Special Details, and as specified herein.

MATERIALS

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

CONSTRUCTION METHODS

The preparation and placement of permanent markings shall conform to section 811 of the MDOT 2012 Standard Specifications, the Plans, and as specified herein.

MEASUREMENT AND PAYMENT

Completed work, as described, will be measured and paid for at Contract Unit Prices for the following Contract (Pay) Items:

PAY ITEMS	PAY UNIT
Pavt Mrkg, Ovly Cold Plastic, 12 inch, Crosswalk	Foot
Pavt Mrkg, Ovly Cold Plastic, 24 inch, Stop Bar	Foot
Pavt Mrkg, Ovly Cold Plastic, Direction Arrow Sym, Left Turn	Each
Pavt Mrkg, Ovly Cold Plastic, Direction Arrow Sym, Bike	Each
Pavt Mrkg, Ovly Cold Plastic, Bike Symbol	Each
Pavt Mrkg, Ovly Cold Plastic, Sharrow Symbol	Each
Pavt Mrkg, Polyurea, 4 inch, White	Foot
Pavt Mrkg, Polyurea, 4 inch, Yellow	Foot
Pavt Mrkg, Polyurea, 6 inch, White	Foot
Recessing Pavt Mrkg, Longit	Foot

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the MDOT 2012 Standard Specifications for Construction and as modified by this Detailed Specification.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
RECESSED PAVEMENT MARKINGS

PMK:MKB 1 of 2 APPR:MWB:MRB:02-05-19
FHWA:APPR:02-21-19

a. Description. This work consists of providing all equipment and labor required to prepare (grooving) the pavement surface for recessed longitudinal, transverse, and guide line pavement markings in accordance with section 811 of the Standard Specifications for Construction, the plans, and this special provision.

b. Materials. None specified.

c. Construction. Install a recess (groove) in accordance with the pavement marking material manufacturer's installation instructions. Ensure all recessing configurations are in accordance with the *MMUTCD* and the Department Pavement Marking Standards.

1. Grooving Concrete and Hot Mix Asphalt Pavement. If there are no markings on the pavement, it is the Contractor's responsibility to provide layout for exactly where the permanent markings will be placed. If there are temporary painted pavement markings, use these layout lines as a template for the grooving operation. If there are existing permanent pavement markings in place, remove them in accordance with 12SP-812P - Longitudinal Pavement Marking Removal prior to grooving operations.

Use equipment and methods approved by the manufacturer of the pavement marking material to be recessed for forming grooves in pavement surfaces. Dry-cut the grooves in a single pass using stacked diamond cutting heads on self-vacuuming equipment capable of producing a finished groove ready for pavement marking material installation.

Ensure that the bottom of the groove has a fine corduroy finish. If a coarse tooth pattern results, increase the number of blades and decrease the spaces on the cutting head until the required finish is achieved.

2. Groove Dimensions. Ensure grooves for recessed pavement markings are in accordance with the following:

<u>Longitudinal Markings</u>

Groove Width:	Material width +1 inch, (±1/8 inch)
Groove Depth:	As recommended by the manufacturer, (±5 mils)
Groove Position:	Center/Lane Lines: 2 inches from joint line, (±1/8 inch)
	Edge Lines: On lane, 2-4 inches in from the joint line, (±1/8 inch)
	Edge Lines for 14 foot paved lanes: as directed by the Engineer

<u>Transverse Markings - Stop Bars, Crosswalks, and Cross Hatching</u>

Groove Width:	Material width +1 inch, (±1/8 inch)
Groove Depth:	As recommended by the manufacturer, (±5 mils)

Groove Position: In the exact location where the transverse marking will be placed

Transverse Markings - Legends

Groove Width: For legends groove a rectangle encompassing the entire legend. The size of the rectangle must be the legend dimensions +1 inch (±1/8 inch) on each side.

Groove Depth: As recommended by the manufacturer, (±5 mils)

Groove Position: In the exact location where the transverse marking will be placed

Transverse Markings - Symbols

Groove Width: When grooving for arrow heads use a grinding head not larger than 7 inches in width and match the shape of the arrow head as closely as possible. For arrow stems and other symbols groove to the material shape +1 inch (±1/8 inch) on each side. If the symbol shape cannot be followed, such as the bicycle and arrow symbols, determine an acceptable grooving layout with the Engineer.

Groove Depth: As recommended by the manufacturer, (±5 mils)

Groove Position: In the exact location where the transverse marking will be placed

Guide Line Markings

Groove Width: Material width +1 inch, (±1/8 inch)

Groove Depth: As recommended by the manufacturer, (±5 mils)

Groove Position: In the exact location where the guide line markings will be placed

3. Placing Recessed Pavement Markings. Place the pavement marking material in the grooves within 24 hours of the grooves being made. Ensure the grooves are clean and dry prior to placing pavement marking material. Locate the groove so the entire marking can be placed within the groove.

d. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay items:

Pay Item	**Pay Unit**
Recessing Pavt Mrkg, Longit	Foot
Recessing Pavt Mrkg, Transv	Square Foot
Recessing Pavt Mrkg, Guide Line	Foot

Recessing Pavt Mrkg, Longit; Recessing Pavt Mrkg, Transv; and **Recessing Pavt Mrkg, Guide Line** includes layout of the pavement markings, when required, and all work as described in this special provision.

Permanent pavement marking materials, temporary retroreflective pavement markings required for traffic control, and removal of existing permanent pavement markings will be paid for separately using the appropriate pay items.

DETAILED SPECIFICATION
FOR
ITEM #263 PAVT MRKG COVER, TYPE R, BLACK
ITEM #264 PAVT MRKG, WET REFLECTIVE, TYPE R, TAPE, 4 INCH, WHITE, TEMP
ITEM #265 PAVT MRKG, WET REFLECTIVE, TYPE R, TAPE, 4 INCH, YELLOW, TEMP
ITEM #266 PAVT MRKG, WET REFLECTIVE, TYPE R, TAPE, 6 INCH CROSSWALK
ITEM #267 PAVT MRKG, WET REFLECTIVE, TYPE R, TAPE, 24 INCH STOP BAR
ITEM #268 – LIGHTED ARROW BOARD, FURNISH AND OPERATE
ITEM #269 – SIGN, PORTABLE CHANGEABLE MESSAGE, FURNISH AND OPERATE
ITEM #270 – PLASTIC DRUM – LIGHTED, FURNISH & OPERATE
ITEM #271 – BARRICADE TYPE III – LIGHTED, FURNISH AND OPERATE
ITEM #272 – TEMPORARY SIGN - TYPE B, FURNISH AND OPERATE
ITEM #273 – TEMPORARY SIGN - TYPE B, FURNISH AND OPERATE, SPECIAL
ITEM #274 – CHANNELIZING DEVICE, 42 INCH, FURNISH AND OPERATE
ITEM #275 – PEDESTRIAN TYPE II BARRICADE, TEMP
ITEM #276 – SIGN COVER

DESCRIPTION

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

MATERIALS, EQUIPMENT, AND CONSTRUCTION METHODS

General

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

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

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

All temporary traffic/pedestrian control devices furnished by the Contractor shall remain the property of the Contractor, EXCEPT Temporary Curb for Bump-out. The City shall not be responsible for stolen or damaged signs, barricades, barricade lights or other traffic maintenance items. The Contractor shall replace missing traffic control devices immediately, at no additional cost to the City.

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

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

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

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

Installation shall follow the manufacturer's installation requirements.

Plastic Drum –Lighted, Furnish and Operate; Barricade Type III – Lighted, Furnish and Operate; Temporary Sign, Type B, Furnish and Operate, Temporary Sign, Type B, Furnish and Operate, Special; Channelizing Device, 42 Inch, Furnish and Operate; Pedestrian Type II Barricade, Temp

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

Temporary Signs, Type B, Special are specially made for this project and are not in the MMUTCD. See Sheet W. Liberty St. Traffic Control Sheets POE-Sta.6+00 (35 and 37).

Type II pedestrian barricades and type III barricades shall have standard orange-and-white stripes on both sides of the barricade.

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

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

MEASUREMENT AND PAYMENT

General

All temporary traffic/pedestrian control devices furnished by the Contractor shall remain the property of the Contractor. The City shall not be responsible for stolen or damaged signs, barricades, barricade lights or other traffic maintenance items. The Contractor shall replace missing traffic control devices immediately, at no additional cost to the City.

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

Pavt Mrkg Cover, Type R, Black
Payment for Type R Black Pavt Mrkg shall be for the maximum quantity used on each street.

Pavt Mrkg, Type R, Tape
Payment for Type R Tape shall be for the maximum quantity used on each street.

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

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

Temporary Sign - Type B, Furnish and Operate
Payment for Type B signs shall be for the maximum quantity used on each street.

Temporary Sign - Type B, Furnish and Operate, Special
Payment for Type B signs shall be for the maximum quantity used on each street.

Channelizing Device, 42 Inch, Furnish and Operate
There will be a one-time payment for each street for the maximum number of channelizing devices in-place (operated) at any one time, as directed by the Engineer.

Pedestrian Type II Barricade, Temp
Payment for furnishing and operating type II pedestrian barricades shall be for the maximum quantity in-place at any one time during the work of the entire project (all streets).

Lighted Arrow Board, Furnish and Operate
Measurement for furnishing and operating lighted arrow board will be for the maximum quantity in-place at any one time during the work of the entire project (all streets).

Sign, Portable Changeable Message, Furnish and Operate
Measurement for furnishing and operating portable changeable message signs will be for the maximum quantity in-place at any one time during the work of the entire project (all streets).

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

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

PAY ITEM	PAY UNIT
Pavt Mrkg Cover, Type R, Black	Foot
Pavt Mrkg, Wet Reflective, Type R, Tape, 4 inch, White, Temp	Foot
Pavt Mrkg, Wet Reflective, Type R, Tape, 4 inch, Yellow, Temp	Foot
Pavt Mrkg, Wet Reflective, Type R, Tape, 6 inch Crosswalk	Foot
Pavt Mrkg, Wet Reflective, Type R, Tape, 24 inch Stop Bar	Foot
Lighted Arrow Board	Each
Sign, Portable Changeable Message, Furnish and Operate	Each
Plastic Drum - Lighted - Furnish& Operate	Each
Barricade Type III - Lighted - Furnish and Operate	Each
Temporary Sign, Type B - Furnish and Operate	Square Foot
Temporary Sign, Type B - Furnish and Operate, Special	Square Foot
Channelizing Device, 42 inch, Furnish and Operate	Each
Pedestrian Type II Barricade, Temp	Each
Sign Cover	Each

DETAILED SPECIFICATION
FOR
ITEM #277 - TEMPORARY PEDESTRIAN RAMP
ITEM #278 – TEMPORARY PEDESTRIAN MAT

DESCRIPTION

This work consists of furnishing, installing, maintaining, relocating, and removing a temporary pedestrian ramp as identified in the proposal or on the plans. Use temporary pedestrian ramps to facilitate pedestrian travel on accessible facilities over curbs or other uneven terrain features with a vertical difference of 1/2 inch or greater. Damaged pedestrian ramps will be replaced as directed by the Engineer.

MATERIALS

A. Temporary Pedestrian Ramp

Provide materials to construct a temporary pedestrian ramp in accordance with the *Americans with Disabilities Act (ADA)*, the standard specifications, and the following:

1. Ensure the material used to construct the temporary pedestrian ramp is firm, stable, skid resistant, and forms a continuous hard surface. Ensure the surface does not warp, buckle or otherwise become uneven, and materials support the weight of pedestrians as well as motorized scooters and wheelchairs. Suitable materials to construct the surface of the ramp include asphalt materials, Oriented Strand Board (OSB) or plywood, dimensional lumber, certain reclaimed or other materials as approved by the Engineer. Compacted soils, aggregate and sand are prohibited.

2. Provide a handrail on both sides of the ramp if the ramp is not exposed to vehicle traffic and has a total rise greater than 6 inches, and a length greater than 72 inches. Ensure the handrail is between 1.25 and 1.5 inches wide and configured to be a "graspable" cross-section. See construction subsection 2.A for additional details. When the ramp is exposed to traffic, in lieu of handrails, use a protective edge 2.5 inches minimum height above the ramp surface or 1:10 flare on both sides of the ramp.

3. Ensure the surface of the ramp is free draining; in addition provide features that allow drainage to move past the ramp installation (i.e. along the gutter pan underneath the ramp if the ramp is installed on a curb).

4. Provide materials to construct detectable edging along open sides of the ramp if required.

5. If asphalt materials are not used to construct the surface of the ramp, provide an antiskid coating or surface treatment approved by the Engineer.

B. Temporary Pedestrian Mat

Provide materials for a temporary pedestrian mat in accordance with the *Americans with Disabilities Act (ADA)*, the standard specifications, and the following:

1. Ensure the material used for the temporary pedestrian mat is firm, stable, skid resistant, and forms a continuous hard surface. Ensure the surface does not warp, buckle or otherwise become uneven, and materials support the weight of pedestrians as well as motorized scooters and wheelchairs. Suitable materials will be determined by the Engineer after shop drawings or products information is provided.

2. Mats shall be at least 60 inches wide and not have traversable edges more than ½ inch high.

3. Ensure the surface of the mat is free draining.

CONSTRUCTION METHOD

Construct the temporary pedestrian ramp in accordance with the manufacturer's recommendations (if applicable), *ADA*, the plans, and the following:

1. Ensure the useable surface of the ramp is 48 inches wide and does not deflect due to pedestrian traffic. Ensure an anti-skid surface treatment is applied to the useable area of the ramp if it is not made from asphalt materials. The maximum cross slope of the ramp is 2 percent. Ensure both ends of the ramp smoothly transitions to the adjacent surface, with 1/4 inch or less vertical difference.

Construct the ramp to maintain a longitudinal slope from 1:10 to 1:12 where possible. Otherwise, a longitudinal slope from 1:8 to 1:10 may be used for a maximum rise of 3 inches. Temporary pedestrian ramps with longitudinal slopes greater than 1:8 are prohibited.

A. Provide a handrail on both sides of the ramp if required as stated herein. Ensure the top of the handrail is between 34 and 38 inches above the surface of the ramp. Ensure a minimum width of 36 inches is maintained between the handrails, with a minimum clearance of 1.5 inches behind and 18 inches above.

Construct the handrail such that the bending stress applied by a bending moment created by a 250 pound force is less than the allowable stress for the materials and the construction of the handrail. Construct the handrail to withstand the shear stress induced by a 250 pound force. Ensure all fasteners, mounting devices and support structures are also able to withstand shear stress induced by a 250 pound force.

2. Construct a detectable edging anytime a handrail is required, and anytime the path changes direction. This includes a turn onto the ramp from the path. Detectable edging must begin a maximum of 2.5 inches above the ramp surface, and extend at least 6 inches above the ramp surface.

3. Ensure a clear space (minimum 48 inches by 48 inches) is provided above and below the ramp.

4. Avoid locating ramps in areas of drainage collection, ponding or running water, which can produce slippery or unsafe conditions. If the ramp is located over a gutter pan or other drainage structure, provide features to facilitate water movement around or under the ramp as approved by the Engineer.

5. Ensure all debris and construction material is cleared from the surface of the ramp throughout its use. Ensure snow and ice is removed; the use of an approved de-icing agent may be required. Repair or replace the ramp if it becomes uneven, unstable, or displaces due to weather events, construction activities, or other causes as directed by the Engineer.

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
Temporary Pedestrian Ramp	Each
Temporary Pedestrian Mat	Each

Temporary Pedestrian Ramp and Temporary Pedestrian Mat includes all labor, equipment, and materials to furnish, install and remove a temporary pedestrian ramp at the locations shown on the plans, as well as all costs for maintaining, clearing debris, deicing, reconfiguring, and relocating the temporary pedestrian ramps and mats throughout the life of the contract.

DETAILED SPECIFICATION
FOR
ITEM #279 – AUDIBLE MESSAGE DEVICE

DESCRIPTION

This work shall consist of furnishing and installing temporary audible message devices to be used in Temporary Pedestrian Alternate Routes (TPAR) for pedestrians with visual impairments in compliance with the latest version of the Michigan Manual on Uniform Traffic Control Devices (MMUTCD) and the Public Right-of-Way Accessibility Guidelines (PROWAG), published in November 2005. All work shall be in accordance with the Special Provision for "Maintenance of Traffic" and as indicated on the plans, and as modified herein.

CATEGORIES

Audible message devices (AMDs) will have two categories:

1. AMDs without a pushbutton
    - These devices will operate based on a proximity sensor; the audible message content will be given when the sensor is activated.
2. AMDs with a pushbutton and locator tone
    - These devices will have the capability of utilizing a locator tone for pedestrians with visual impairments to locate the pushbutton on the AMD. The pushbutton on the AMD will activate the audible message content. The AMD may continuously sound the locator tone, or the locator tone may be activated with a proximity sensor.

CRITERIA

Following are the necessary criteria for all types of AMDs to be on the APL:

- Compliant with the latest version of the Michigan Manual on Uniform Traffic Control Devices (MMUTCD) and the Public Right-of-Way Accessibility Guidelines (PROWAG), published in November 2005.
- Be weatherproof and fully operational between -20° F to +130° F and in a humidity range of 0-100% non-condensing.
- Be able to be battery operated.
- Proximity sensor shall be able to detect pedestrians from 15 feet away.
- The ability to verbalize a custom voice messages for a minimum of 60 seconds.
- Volume requirements
    - Volume measured at 3 feet from the AMD shall be 2 dB minimum and 5 dB maximum above ambient noise level in standard operations and shall be responsive to ambient noise level changes.
    - The ability to maximize volume at 100 dBA

Following are the additional necessary criteria for AMDs with pushbuttons and locator tones:

- The device shall be designed such that the pushbutton is within the Reach Ranges identified in PROWAG when the device is placed on level ground. In addition, the pushbutton shall be placed approximately at 42 inches (but no more than 48 inches) from the bottom of the device.
- Pushbuttons shall incorporate a locator tone at the pushbutton. Pushbutton locator tone volume

measured at 3.0 feet from the pushbutton shall be 2 dB minimum and 5 dB maximum above ambient noise level and shall be responsive to ambient noise level changes. The duration of the locator tone shall be 0.15 seconds maximum and shall repeat at intervals of one second. The locator tone may be activated by a proximity sensor.

MATERIALS

Approved Temporary Audible Message Devices are as follows:

- Model 400ADA audible Device, manufactured by Empco-Lite, 1675 Shanahan Drive, South Elgin, IL USA 60177.
  - The 400ADA is an audible information device that can be mounted on various safety devices like the ADA Wall, 42" Cones, and the Safety Wall. Or it can just be a stand-alone device.
  - Easily program your message with built-in microphone and speaker.
  - Record up to a 60 second message.
  - Customize message for each location. See "Messages for Audible Information Devices" for message guidelines and helpful information.
  - When routes are blocked (especially mid-block closings), there are alternate crossings or alternate routes that are not continuous, these units provide positive guidance for the visually impaired by providing needed audible information. See 2009 MUTCD Section 6D.01 E, Section 6D.02, Section 6F.14, Section 6F.16 and notes on Figure 6H-28 and Figure 6H-29 (see PDF).
  - Unit can be mounted on a standard barricade light housing utilizing two 6V spring terminal batteries or can be a self contained unit operating on four D-Cell batteries.
  - Unit is triggered by motion detector when pedestrians get within 15 feet of the unit.

- SpeakMaster 500, manufactured by MDI Worldwide, 38271 W Twelve Mile Road, Farmington Hills, MI 48331.
  - The ADA SpeakMaster™ is an audible warning device that alerts pedestrians of a sidewalk closure ahead and provides navigation instructions Rugged design, simple to install and programmable through Bluetooth connectivity, the 9” DFB sign promotes safety where ever they’re installed.
  - The all aluminum ADA SpeakMaster stands 5.5 feet high, is completely weather resistant, and ADA compliant. The two-sided frame at the top has snap-open side rails to easily change custom signs. The frame can rotate 360° to accommodate the different requirements of multiple urban areas. The unit is powered by an extended-life battery stored in a key-locked compartment in the base, and the base can be weighted for added stability and security. The electronics are housed in the upright, also in a key-locked compartment, and messages can be programmed on site, by cell phone, or computer. The base tilts and rolls on hidden wheels.
  - The ADA SpeakMaster is positioned approximately 100 feet before the actual sidewalk closure. As the pedestrian approaches, he hears a unique locator tone, which the visually impaired have been taught to recognize. The tone is either on continuously or is activated by an optional motion sensor and indicates that there is more information. The pedestrian locates the push button and activates the voice module to hear navigation instructions. He can then safely pass through the temporary pedestrian accessible route.

CONSTRUCTION METHOD

Installer's Qualifications: Engage an experienced Installer who has successfully completed AMD installations similar in material, design, and extent to that indicated for this Project.

The contractor shall follow manufacturer specifications for installation, except where they conflict with MMUTCD or other project requirements.

MEASUREMENT AND PAYMENT

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

PAY ITEM	PAY UNIT
Audible Message Device	Each

The unit prices for this item of work shall include all labor, material, and equipment costs required to complete the work.

DETAILED SPECIFICATION
FOR
ITEM #280 – FERTILIZER, CHEMICAL NUTRIENT, CL A
ITEM #281 – MULCH BLANKET, HIGH VELOCITY
ITEM #282 – SEEDING, MIXTURE THM
ITEM #283 – TOPSOIL SURFACE, FURN, 4 INCH

DESCRIPTION

This work shall consist of furnishing and installing turf restoration items to reestablish and permanently stabilize disturbed areas within the project as shown on the plans, including all labor, equipment, and material required.

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

MATERIALS

The materials shall meet the requirements specified in the MDOT 2012 Standard Specifications as designated, as specified herein, and as approved by the Engineer:

- Seed shall be THM (Turf Loamy to Heavy) seed mixture as described in MDOT Table 816-1.
- Fertilizers shall be a Class A. The percentages by weight shall be 12- 12- 12, or as approved by the Engineer.
- Water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances.
- Mulch blankets shall be High Velocity Straw Mulch Blankets as specified in MDOT section 917.
- Topsoil shall be 4 inches furnished as specified in MDOT section 917

CONSTRUCTION METHODS

These items shall be constructed as required in the MDOT 2012 Standard Specifications for Construction. Mulch Blankets must be secured with materials that are biodegradable.

MAINTENANCE AND ACCEPTANCE

It is the responsibility of the Contractor to establish a dense lawn of permanent grasses, free from mounds and depressions prior to final acceptance and payment of this project. Any portion of a seeded area that fails to show a uniform germination shall be reseeded. Such reseeding shall be at the Contractor's expense and shall continue until a dense lawn is established. The Contractor is responsible for restoring all areas disturbed by his construction.

The Contractor shall maintain all lawn areas until they have been accepted by the Engineer. Lawn maintenance shall begin immediately after the grass seed is in place and continue until final acceptance with the following requirements:

Lawns shall be protected and maintained by watering, mowing, and reseeding as necessary, until the period of time when the final acceptance and payment is made by the Engineer for the project, to establish a

uniform, weed-free, stand of the specified grasses. Maintenance includes furnishing and installing additional topsoil, and reseeding all as may be required to correct all settlement and erosion until the date of final acceptance.

Damage to seeded areas resulting from erosion shall be repaired by the Contractor at the Contractor's expense. Scattered bare spots in seeded areas will not be allowed over three (3) percent of the area nor greater than 6"x 6" in size.

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

Restoration must be performed upon the completion of each stage of work, to prevent erosion, and not as one single operation at the completion of the entire project. Restoration work must be performed within one week of the placement of the wearing course for each street.

The Contractor shall restore all disturbed areas to better than or equal to their original condition.

MEASUREMENT AND PAYMENT

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

PAY ITEM	PAY UNIT
Fertilizer, Chemical Nutrient, Cl A	Lbs
Mulch Blanket, High Velocity	Syd
Seeding, Mixture THM	Lbs
Topsoil Surface, Furn, 4 inch	Syd

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

DETAILED SPECIFICATION
FOR
#285 – UNDERGROUND SPRINKLING SYSTEMS, RESTORE

DESCRIPTION

Restore existing privately owned underground sprinkling systems within the project site as described herein. This work shall be paid with an allowance for the actual work required to restore and modify existing privately owned underground sprinkling systems. The Contractor shall take care to avoid disturbance of existing underground sprinkling systems within the project site. These typically will be encountered in the parkway adjacent to the roadway.

MATERIALS

Materials used to restore or modify existing underground sprinkling systems shall be of the same brand, model and specifications as the removed or damaged portion(s) of the sprinkling system and shall be compatible with the rest of the system.

CONSTRUCTION METHOD

The Contractor shall take precautions to prevent or minimize damage and disruption to private lawn sprinkling systems, including, but not limited to, completing visual inspections of the project site to determine areas in which lawn sprinkling equipment exists. This work of inspection shall be considered incidental to the disturbing work in the project area.

The Contractor shall repair or replace all lawn sprinkling systems disturbed by his/her operations and shall contact and coordinate any necessary work with the appropriate owners of such sprinkling systems. The Contractor shall obtain written permission from property owners prior to completing any work outside the R.O.W. on private property and shall provide copies of these documents to the Engineer for the project file.

The Contractor shall employ an underground sprinkling specialist to make necessary repairs or modifications to the affected underground sprinkling systems. During construction activities, the disturbed portions of the system shall be isolated and/or removed in such a way that the undisturbed portions of the system remain operational until the entire system is completely restored. The existing underground sprinkling systems shall be restored or modified so that spray from the sprinkler heads does not spray over sidewalks or into driving lanes of the road.

MEASUREMENT AND PAYMENT

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

Pay Item	**Pay Unit**
Underground Sprinkling Systems, Restore	Dollar

Payment for Underground Sprinkling Systems, Restore will be paid for as an allowance after all disturbed sprinkling systems have been repaired and/or replaced, whichever occurs later. The Contractor shall supply the Engineer with actual invoices from the underground sprinkling specialist for this work effort and may add up to 5% markup.

The Contractor waives all claim for damages or delay which he/she may suffer by reason of the presence of lawn sprinkling equipment within the project site and understands that no extra compensation will be paid to him/her due to any lawn sprinkling equipment encountered.

DETAILED SPECIFICATION
FOR
ITEM #290 – ADJUST STRUCTURE COVER
ITEM #291 – ADJUST MONUMENT BOX, VALVE BOX, OR GAS BOX
ITEM #292 – STRUCTURE COVERS

DESCRIPTION

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

MATERIALS

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

CONSTRUCTION METHODS

General

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

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

The pointing of structures is included in all adjustments.

Adjust Structure Cover

This item includes the final adjustment of castings of any type (including drop inlets) to their respective finished elevations, up or down. All materials required to make the adjustments shall be included in this item of work.

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

The Contractor is responsible to coordinate and arrange for the adjustment of all non-City utility manholes and valves (Edison, Gas, Cable, Ameritech, etc.) during this project. The Contractor will not be given any additional compensation for delays due to other utilities work. The work of coordinating with other utilities shall be paid for under the Contract Item “General Conditions.”
All structure covers, utility covers, valve boxes or monument boxes shall be backfilled with MDOT P-NC concrete from the depth of excavation necessary for adjustment, up to an elevation 2-inches below the top flange of the adjusted

casting. This work shall be included in the respective items of work, and will not be paid for separately.

Adjust Monument Box or Valve Box, and Traffic Signal Handhole

This item includes the final adjustment of existing or new covers/castings and traffic signal handholes (traffic signal handhole adjustments will be paid for as "Adjust Structure Cover") up or down, to their finished elevations. This also includes the replacement of the top half of the water boxes and monument boxes (furnished by the City) where required, and shall be included in this item of work.

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

Structure Covers

This item shall consist of replacing covers and/or castings for manhole structures and inlet structures as directed by the Engineer. All covers and/or castings shall conform to the model(s) specified in appendix.

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

MEASUREMENT AND PAYMENT

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

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

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

PAY ITEM	PAY UNIT
Adjust Structure Cover	Each
Adjust Monument Box, Valve Box, or Gas Box	Each
Structure Cover	Pounds

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

DETAILED SPECIFICATION
FOR
#315 – 6-INCH WRAPPED EDGE DRAIN

DESCRIPTION

This work shall consist of furnishing and installing 6-inch diameter geotextile-wrapped, perforated or slotted underdrain pipe, using MDOT 2NS, as directed by the Engineer, for all backfill material.

MATERIALS

The materials shall meet the requirements referenced in Section 404 of the 2012 edition of the MDOT Standard Specifications, except as specified herein.

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

CONSTRUCTION METHODS

Geotextile wrapped underdrain shall be installed as shown on the Plans or as directed by the Engineer and in accordance with Section 404 of the 2012 edition of the MDOT Standard Specifications, except as specified herein.

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

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

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

The underdrain shall be installed at the line, grade, and depth specified on the Plans or as directed by the Engineer. The minimum percent grade shall be 0.5%, and the minimum cover from top-of-pipe to finished top-of-curb grade shall be 4-feet. The Contractor shall maintain line and grade by means of a laser. The Engineer will not provide line, grade or staking.

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

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

During the construction of underdrain runs, the Engineer may direct the Contractor to terminate or modify underdrain construction due to conflicts with buried obstructions or if the minimum 4-foot cover cannot be maintained. There will be no adjustment to the Contract Unit Price due to changes in quantity.

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

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

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

MEASUREMENT AND PAYMENT

Connecting (tapping) underdrain(s) into drainage structure(s) will not be paid for separately, but shall be included in the bid price for this item of work.

Underdrain will be measured in-place by length in lineal feet.

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

PAY ITEM	PAY UNIT
6-Inch Wrapped Underdrain	Foot

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

DETAILED SPECIFICATION
FOR
#430 – FIRE HYDRANT ASSEMBLY

DESCRIPTION

This Detailed Specification is intended to supplement the current City of Ann Arbor Standard Specifications for Construction with regard to Fire Hydrant Assembly.

MATERIALS

Fire hydrants shall be either the East Jordan Model Watermaster 5BR250 with traffic flange, or the Waterous Pacer Model WB67-250 with traffic flange. All fire hydrants shall have the following features: a 6 inch push-on tyton joint connection, ANSI/AWWA C111/A2l.ll; one 5 inch storz connection; one 3-3/8 inch threaded Ann Arbor Standard pumper connection with 7-l/2 threads per inch and 4.05 in. O.D.; l-3/8 inch pentagon operating and cap nuts (l-3/8 in. point-to-flat at top; l-7/l6 in. point-to-flat at base); open left; breakable flange construction; no barrel drain; and a painted red finish. Depth of bury (bottom of pipe to ground surface) is generally 6 feet but may vary depending on specific site conditions. The pumper nozzles must be 2l in. ± 3 in. above finished grade, and the breakable traffic flange must be between finished grade and 8 in. above finished grade. Fire hydrant extensions for Waterous hydrants shall be Waterous Part # K562. Extensions for East Jordan hydrants shall be hydrant model 5BR250 extension kits. All fire hydrants must be certified by Underwriters Laboratory (UL) or the National Sanitation Foundation (NSF) for use in a potable water system.

MEASUREMENT AND PAYMENT

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

PAY ITEM	PAY UNIT
Fire Hydrant Assembly	Each

Fire hydrant assemblies shall be measured per unit constructed and paid for on the basis of unit price each. The unit price for fire hydrant assemblies shall include a 6-inch gate valve in box, 3 lineal feet of 6 inch pipe, an approved hydrant with traffic flange, and a thrust block. Any required extension will be paid for separately, on a per each installed basis.

DETAILED SPECIFICATION
FOR
ITEM #445 –PRESSURE REDUCING VALVE

1.01 PRESSURE REDUCING VALVE

A. Supply a *10 inch* Singer Model *106*– PR Pressure Reducing Control Valve. To ensure compliance with city standards and consistency of equipment throughout the water distribution system, alternate manufacturers will not be considered.
   a. The valve shall be equipped with the following available options:
      i. X107 position indicator with bleeed/vent cock
      ii. (3) stainless steel pilot system isolation valves
      iii. Stainless steel 40 mesh strainer
      iv. Stainless steel open/close speed control valves
      v. Braided stainless steel pilot tubing
B. Function: The valve shall be a pilot operated pressure reducing valve which will reduce a high inlet pressure to a low outlet pressure. The valve shall maintain a relatively constant downstream pressure regardless of fluctuations in supply pressure or flow rate.
C. Operation: The pilot shall be a normally open Singer Model 160 Pressure Reducing Pilot that reacts to small changes in downstream pressure which acts to modulate the main valve bonnet pressure to hydraulically adjust the inner valve assembly position to maintain a constant downstream pressure.

1.02 Quality Assurance

A. The control valve shall be tested prior to shipment. The standard test shall include a functional stroke, pressure and leak test of valve body, seat, fitted pilots and accessories.
B. The control valve shall be covered by a minimum three (3) year warranty against defects in materials and workmanship. The AISI 316 stainless steel seat ring shall be covered by a lifetime guarantee.
C. All control valve maintenance and repairs shall be possible without removing the main valve body from the line, when installed in accordance with manufacturer's recommendations.

1.03 Main Valve

A. The main valve shall be a Singer *106*-PG single chamber, diaphragm actuated *full* port model.
B. Main valves, 6" (150mm) and larger, shall provide smooth frictionless motion to ensure a low flow stability to *1 USGPM*, achieved using SRD-Single Rolling Diaphragm technology.
C. The main valve, bonnet and removable stem cap shall be constructed of ASTM A536 (Grade 65/45/12) ductile iron.
D. Main valves of 2.5" (65mm) and larger shall have a removable stem cap for access to the main valve stem for alignment check, spring installation and ease of service and assembly.
E. The main valve bonnet shall be located using two or more locating guide pins to maintain the inner valve assembly alignment and for ease of maintenance.
F. The main valve trim, consisting of seat ring and stem shall be constructed of AISI 316 stainless steel. The valve stem shall have wrench flats for ease of maintenance.
G. The main valve shall provide a drip-tight seal using a mechanically retained resilient disc, having a rectangular cross section, against the stationary AISI 316 stainless steel seat ring.
H. The stationary AISI 316 stainless steel seat ring of main valves 2.5" (65mm) and larger shall be held in place using Spiralock® self locking screws and seat ring retainers.
I. All internal and external ferrous components, including all mating surfaces, shall be coated with an NSF-61 approved fusion bonded epoxy to a minimum of 10 mils DFT-Dry Film Thickness.
J. The main valve elastomers: diaphragm, resilient disc and seals, shall be of EPDM or Buna-N.
K. All main valve fasteners (bolts, nuts, studs, cap screws) shall be supplied as AISI 18-8 or 304 stainless steel. All bonnet bolts shall be fitted with stainless steel washers to prevent damage to the bonnet coating.

L. Valve shall have flanged end connections. Flanged connections shall be *ANSI/ASME B16.42 Class 150#* flange drilled, faced and rated. Threaded connections shall be *specify NPT*.
M. Due to the potential for noise, vibration and erosion damage from cavitation, the valve manufacturer shall provide, upon request, a computerized sizing and cavitation analysis, using independent third party software. Cavitation analysis shall provide the status of cavitation based on customer supplied parameters as to valve size, flow rate requirements and pressure conditions. The cavitation analysis shall also provide information as to Cv factor, percent of valve lift, cavitation index and noise level.
N. The valve manufacturer shall be able to supply cavitation control trim which shall be engineered to be optimized to the actual operating parameters of the control valve application and warranted to perform correctly and prevent main valve cavitation damage under the stated conditions. Orifice plates or other non-engineered cavitation control devices shall not be used to prevent or minimize valve cavitation.
O. Valve body shall have additional 1” body tap to accommodate installation of a single point insertion (SPI) meter.

1.04 Pilot Controls

A. The pressure reducing pilot shall be a Singer Model 160 normally open pilot with a spring to adjust the pressure setting. The pilot shall be self-cleaning and self-flushing with the outlet of the pilot located at the bottom of the pilot flow with the pilot stem out of the waterway and guide free from any debris build-up.
B. The pilot trim, consisting of a seat ring, stem and yoke shall be constructed of AISI 316 stainless steel.
C. The pilot elastomers: diaphragm, inner valve and seals, shall be of EPDM or Buna-N.
D. The adjustable pilot spring range shall be supplied with a spring range of 20 to 200psi.. The pilot shall be factory preset at *specify setpoint* psi.
E. The pilot body and spring casing shall be constructed of *ASTM A351 CF8M stainless steel)*.
F. A fixed restriction shall be supplied as AISI 303 stainless steel with an orifice bore selected by the manufacturer based on the valve size and operation.
G. The adjustable flow stabilizer shall be a Singer Model 26 self-cleaning opening speed control, supplied as a stainless steel assembly. Optional for main valve sizes 10” (250mm) and larger.
H. The pilot fittings shall be supplied as *AISI 316 stainless steel)*.
I. The pilot tubing shall be supplied as *PTFE lined flexible braided stainless steel)*.
J. For valves 4” (100mm) and larger, (3) pilot isolation ball valves shall be supplied as standard. Pilot isolation ball valve(s) shall be constructed of *316 stainless steel)* with stainless steel handle operator.
K. For valves 4” (100mm) and larger, a pilot strainer shall be supplied as standard. Strainer material to be ASTM A351 CF8M stainless steel with a 40-mesh or 80-mesh 316 stainless steel screen. The external pilot strainer shall have a removable plug for easy maintenance access to the pilot screen and have provision for installation of a ball valve for pilot screen flushing.

DETAILED SPECIFICATION
FOR
ITEM #450 – 60” x 120” CONCRETE VAULT (PRV)

DESCRIPTION

This work shall consist of furnishing, transporting, and installing a precast concrete vault for water main pressure reducing valve in accordance with the City of Ann Arbor Standard Specifications, as shown on the plans, and as specified herein.

MATERIALS

All concrete shall have a 28 day compressive strength of 4500 psi. Reinforcing steel shall comply with ASTM A615 Grade 60 rebar. Bar bending and placement shall comply with the latest ACI standards. Standard structural design based on AASHTO HS20 wheel loading. One-inch butyl rubber rope mastic is required for placement between top and bottom sections of vault.

Structure covers shall be paid for separately.

MEASUREMENT AND PAYMENT

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

PAY ITEM	PAY UNIT
60” x 120” Concrete Vault (PRV)	Each

DETAILED SPECIFICATION
FOR
ITEM #701 – EROSION CONTROL, TRENCH DRAIN INLET FILTER
ITEM #702 – EROSION CONTROL, INLET PROTECTION
ITEM #703 –EROSION CONTROL, SILT FENCE

DESCRIPTION

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

This work consists of installing and maintaining inlet filters and silt fence in accordance with Section 208 of the 2012 Michigan Department of Transportation Standard Specifications for Construction and as shown on the plans. Filters in existing and proposed inlets, as well as silt fence downstream of construction area, shall be installed in order to minimize the erosion of soil and the sedimentation of water courses. The related work includes the installation, maintenance, and removal of the filters and fence, cleaning as required during the performance of the project work, removing and disposing of accumulated sediment, and replacement of filters if required by the Engineer so as to provide a properly working inlet filter and a well-drained site.

MATERIALS

The inlet protection filters shall be in accordance with the REGULAR FLOW SILTSACK® manufactured by ACF Environmental (800) 448-3636; FLEXSTORM® Style FX manufactured by Advanced Drainage Systems, Inc. (800) 821-6710; CATCH-ALL® manufactured by Price & Company (866) 960-4300, SLOT GUARD® manufactured by Ertec Environmental Systems (866) 521-0724, or Engineer approved equal.

The Contractor shall submit product data sheets and a sample of the filter material for inlet filters and silt fence for Engineer approval prior to ordering materials.

METHODS OF CONSTRUCTION

The Contractor shall install, maintain, clean, and re-install and/or replace inlet filters and silt fence in accordance with the manufacturer's specifications and as directed by the Engineer. The Contractor shall dispose of debris off-site.

MEASUREMENT AND PAYMENT

Soil erosion and sedimentation control items shall be field measured and paid for at the Contract Unit Prices for their respective Contract (Pay) Items as follows:

PAY ITEM	PAY UNIT
Erosion Control, Trench Drain Inlet Filter	Each
Erosion Control, Inlet Protection	Each
Erosion Control, Silt Fence	Foot

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

APPENDIX

Geotechnical Investigation Report

2020 Miscellaneous Geotechnical Services

Ann Arbor, Michigan

CTI Project No. 1208070085

Prepared for

City of Ann Arbor
Public Services Area
Project Management Services Unit
301 East Huron Street
Ann Arbor, MI 48107
734.794.6110
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December 2020

Prepared by

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248.486.5100
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December 22, 2020

Mr. Igor V. Kotlyar, P.E.
Project Manager
City of Ann Arbor – Engineering
Ann Arbor, MI 48107

RE: 2020 Miscellaneous Geotechnical Services
City of Ann Arbor
Ann Arbor, Michigan
CTI Project No. 1208070085

Dear Mr. Kotlyar:

As requested, CTI and Associates, Inc. (CTI) has completed a geotechnical investigation as part of the 2020 Miscellaneous Geotechnical Services Contract. A total of 43 soil borings and 41 pavement cores were completed through City of Ann Arbor (City) streets. The number, depth, and locations of the soil borings were selected by the City.

The enclosed report presents the results of our findings and an engineering interpretation of these findings with respect to the soil related phases of the project including estimates of resilient moduli to be used for pavement design. Recommendations for the construction observation and preparation of the encountered subgrade soils to improve their suitability for pavement construction are included in the report sections that follow. Table 2 in the enclosed report identifies borings where conditions requiring special attention, such as very loose, soft, or very wet soils were encountered.

Our evaluation was performed in general accordance with the scope of services outlined in CTI Proposal No. 119PRO8070-025 dated November 21, 2019 and the Professional Services Agreement between the City of Ann Arbor and CTI dated May 5, 2020. We appreciate the opportunity to be of service to you on this project. If you have any questions regarding this report or if we can be of further assistance, such as providing field monitoring and quality control inspection services during construction, please contact our office.

Sincerely,

CTI and Associates, Inc.

Mohammad Kabalan, P.E.
Project Engineer

Amber Spears, E.I.T.
Project Engineer

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Appendix

- **Boring Location Maps**
- **Soil Boring Logs**
- **Core Photo Log**
- **General Notes for Soil Classificaiton**

1.0 INTRODUCTION

1.1 GENERAL

This report presents the results of the geotechnical investigation performed by CTI and Associates, Inc. (CTI) as part of the 2020 Miscellaneous Geotechnical Services Contract. A total of 43 soil borings and 41 pavement cores were completed through City of Ann Arbor (City) streets. The number, depth, and locations of the soil borings were selected by the City. This report presents the results of CTI's findings and an engineering interpretation of these findings with respect to the soil related phases of the project including estimates of resilient moduli to be used for pavement design.

In general, soils encountered at several locations will require preparation as outlined in Section 5 of this report to be able to support new pavement. The soils encountered at some of these locations were found to have deficiencies and it is advisable that they be undercut and replaced as discussed in this report. Recommendations for the construction observation and preparation of the encountered subgrade soils to improve their suitability for pavement construction are included in the report sections that follow. Table 2 of the report identifies borings where conditions requiring special attention, such as very loose, soft, or very wet soils were encountered.

CTI's evaluation was performed in general accordance with the scope of services outlined in CTI Proposal No. 119PRO8070-025 dated November 21, 2019 and the Professional Services Agreement between the City of Ann Arbor and CTI dated May 5, 2020.

1.2 PURPOSE AND SCOPE

The purpose of this study was to determine the general subsurface conditions beneath each street by drilling test borings and to evaluate the encountered soils for suitability with respect to pavement support, drainage, and utility support. Specifically, the report presents our evaluations and recommendations regarding the following items:

A. General subsurface (soil and groundwater) conditions at the site.

B. Design recommendations, specifically pavement design parameters including estimates of resilient moduli of encountered soils.

C. Construction recommendations including include site preparation and earthwork operations, groundwater conditions and controls, potential construction problems and recommendations regarding quality control during construction.

The evaluations and recommendations discussed in this report are based on the soil conditions encountered in the test borings performed at the specific boring locations, and on the date indicated on the boring logs. The soil conditions may vary at locations other than the actual soil boring locations. These variations may not become evident until the time of construction.

If variations in the reported soil conditions are encountered, CTI should be contacted immediately. In such a case, it may be necessary for CTI to reevaluate the recommendations of this report. Such a reevaluation may be possible from on-site observations or may require additional investigations. If any such variations are revealed, they may result in increased construction costs. A contingency should be provided in the project budget to accommodate such variations.

CTI's authorized scope of services included a geotechnical study of the subject site and did not include an environmental assessment for determining the presence or absence of hazardous or toxic materials in the soil or groundwater at, below or around the site. The presence or absence of contaminated material is

not implied, inferred, or suggested by this report or the results of this study. Any statement contained within this report or presented on the soil boring logs regarding odors, colors, or unusual items are strictly for informational purposes only. If any recognized environmental concerns are identified for this site, the evaluations and/or recommendations presented in this report may require amendment.

2.0 SITE AND PROJECT CHARACTERISTICS

2.1 PROJECT DESCRIPTION

CTI was awarded the 2020 Miscellaneous Geotechnical Services bundle on May 5, 2020. The bundle included a total of 41 boring locations and 39 pavement cores on 6 different streets within the City. The proposed boring locations were marked in the field by City personnel prior to field activities. Following the boring location marking by the City, CTI requested the Miss Dig service to locate the existing underground utility locations at each boring location. Several borings were offset from the marked locations due to conflicts with underground utilities, overhead obstructions (trees and overhead electric lines), and/or to maintain traffic flow. Two additional locations on Main Street were drilled due to underground obstructions encountered. Table 1 presents the specific breakdown of the number of requested borings per street, the boring depths, and the limits of exploration. All the completed soil borings were located within the streets.

Table 1. Summary of requested soil borings

Street	Cross Streets	No. of Borings	No. of Pavement Cores	Depth (ft)	Abbreviation*
Scio Church Road	S. Maple to S. Seventh Street	8	7	5	SCI
S. Seventh Street	Scio Church Road to Greenview Drive	3	3	5	SEV
S. Seventh Street	Scio Church Road to Greenview Drive	4	4	20	SEV
Greenview Drive	Scio Church Road to S. Seventh Street	7	7	5	GRV
N. Main Street	N. Main Street to Lake Shore Drive	5**	5**	20	MAI
Newport Road	Newport Road to Bird Drive	1		15	NEW
W. Liberty Street	S. Seventh Street to Crest Avenue	5	5	5	LIB
Plymouth Road	Point Lane to Maiden Lane	8	8	5	PLY
	Total	**41**	**39**		

*Note: this abbreviation is used throughout the report and appendices to aid the reader in correlating the results of the field and laboratory tests and observations.
**Note: two additional borings were completed on Main Street due to underground obstructions at initial locations.

The recommendations presented in this report are based on the provided and/or assumed project information and the results of our geotechnical exploration. If any of the above noted project information is considered incorrect or is changed, CTI should be informed in writing so that a review can be performed and any necessary revisions to our recommendations can be made.

3.0 INVESTIGATION PROCEDURES

3.1 FIELD INVESTIGATION

CTI's field investigation consisted of drilling 43 soil borings and 41 pavement cores through 7 different streets within Ann Arbor City limits. The approximate as-drilled locations of the borings are listed on the

boring location maps, included in the appendix of this report. As requested, the borings were extended to different depths below the top of pavement as shown in Table 1.

Several boring locations were in conflict with overhead and underground utilities and were relocated as a result. Borings were relocated in a way that maintained proper coverage (i.e., boring spacing) of the investigated area to the extent possible.

The borings were located in the field by City personnel prior to the drilling activities. The drilling operations were performed under direction of CTI personnel between December 1 and December 10, 2020. Prior to drilling the soil borings, the pavement structure was explored with a core drill equipped with six-inch nominal diameter core barrels. After extraction of the cores at each location, when possible, the core samples were measured and labeled. The soil borings were then drilled with a truck-mounted drill rig using hollow stem augers. Soil samples were obtained at 2.5-foot-intervals by the Standard Penetration Test Method (ASTM D1586), whereby a 2-inch outside diameter split-barrel sampler is driven into the soil with a 140-pound weight falling freely through a distance of 30 inches. The sampler is generally driven three successive 6-inch increments, with the number of blows for each increment being recorded. The number of blows required to advance the sampler from 6 to 18 inches is termed the Standard Penetration Resistance, N.

The soil samples obtained with the split-barrel sampler were sealed in glass jar containers and transported to our laboratory along with the retrieved pavement core samples for further classification and testing. After completion of the drilling operations, the boreholes were backfilled with excavated soil (i.e., auger cuttings) and disturbed pavement patched with a cold asphalt patching mix.

Soil and groundwater conditions observed in the test borings have been evaluated and are presented on the boring logs included in the Appendix. To aid in understanding the data presented on the boring logs, “General Notes for Soil Classification,” describing nomenclature used in soil descriptions, are also included in the Appendix. It should be noted that the soil descriptions reported on the test boring logs are based upon field logs prepared by experienced drillers with modifications made based on the results of laboratory testing and engineering review

3.2 Laboratory Testing

The laboratory testing program was directed towards determining the general soil classification and physical properties of the soil pertinent for pavement design and site preparation. All laboratory testing was performed in general accordance with applicable ASTM test method standards. The laboratory testing consisted of visual soil classification of every sample and natural moisture content testing of cohesive soil samples. The unconfined compressive strength of selected cohesive samples was also estimated based on the resistance to a calibrated spring-loaded hand penetrometer. At the time of the preparation of this report, no further lab testing was requested by the City.

The soil samples were visually classified in general accordance with the Unified Soil Classification System (USCS). The estimated USCS group symbol is shown in parentheses following the written description of the various strata on the boring logs. The results of all laboratory tests are indicated on the boring logs at the depths the samples were obtained and/or on the “Summary of Laboratory Test Results” included in the Appendix.

4.0 GENERAL SUBSURFACE CONDITIONS

The following paragraphs present generalized soil and groundwater conditions encountered at the subject site based on the available test borings.

Greenview Street: The pavement encountered on Greenview Street consisted of approximately 3 ½ to 6 ½ inches of asphalt. The subgrade material mostly consisted of very stiff and hard silty clay.

Liberty Street: The pavement encountered on Ashley street consisted of approximately 4 to 6 ½ inches of asphalt. Underneath the asphalt, a layer of concrete ranging in thickness from 4 to 8 ½ inches was encountered. The subgrade material mostly consisted of loose sands with varying amounts of silt and clay. These soils will require improvement as outlined in Section 5 of this report.

Main Street: The pavement encountered on Main Street consisted of approximately 5 ½ to 9 ¾ inches of asphalt. The asphalt was underlain by a layer of concrete between 7 and 8 inches thick. At two of the planned locations (MAI-2 and MAI-3), an obstruction was encountered at a depth of approximately 5 feet which therefore led to abandoning drilling at those locations. Two alternate locations (MAI-2A and MAI-3A) were identified and drilled instead. Stiff and medium stiff fine-grained soils were encountered at several locations and would require improvement as outlined in Section 5 of this report.

Plymouth Road: The pavement encountered on Plymouth Road consisted of approximately 6 to 7 ½ inches of asphalt. The subgrade material mostly consisted of sand with varying amounts of silt and clay. Gravelly sand was encountered underneath the sand layer at PLY-1 and PLY-2.

Scio Church Road: The pavement thickness on Scio Church Road ranged from approximately 3 ½ inches to 8 ½ inches of asphalt. SCI-7 was drilled in the median and therefore no pavement was encountered. Except for thin layers of sand encountered underneath the pavement, Silty Clays were mostly encounted throughout the entire depth of exploration with a few exceptions. Therefore, the deeper soils at this location are not suitable for underground stormwater infiltration features because of the relatively low permeability of silty clays. Medium stiff silty clays were encountered at locations of SCI-2, SCI-3, and SCI-7 which would require improvement as outlined in Section 5 of this report.

Seventh Street: The pavement on Seventh Street consisted of approximately 3 ¼ to 11 ¼ inches of asphalt. The subgrade material mainly consisted of Clay and Silty Clay material. Five of the borings on this street were drilled to a depth of 20 feet below ground surface. The deeper strata also mainly consisted of Clay and Silty Clay, which is typically not suitable for underground stormwater infiltration options. Soft and stiff clays were encountered between SEV-4 and SEV-7 which would require improvement as outlined in Section 5 of this report.

Table 2 below identifies areas where conditions requiring special attention were encountered. For a more detailed description of the subsurface conditions encountered at the site, please refer to the individual soil boring logs and the Boring Location Plan provided in the appendix. For a complete list of pavement core measurements, refer to Table A.1 at the end of the report.

Table 2. Areas requiring special attention

Boring Number	Notes
MAI-4	Very loose sands encountered near surface
PLY-6	Soft clays encountered near surface.
SEV-3	Soft clays encountered near surface

4.1 Soil and Groundwater Conditions

4.1.1 Summary

The above subsurface description is of a generalized nature and is intended to highlight the major stratification features and material characteristics. The individual test boring logs should be reviewed for specific information. The stratification depths shown on the test boring logs represent the soil conditions at the actual boring locations only. Variations may occur between and/or beyond the boring locations. The nature and extent of any variations may not become evident until the time of construction. If significant variations in the soil conditions are discovered during construction, it should be immediately brought to the attention of CTI, before removal.

Table 3 below presents a summary of the encountered subgrade conditions in addition to an estimate of the resilient modulus of the subgrade materials, located under the existing road base at each location. These estimates are based on the assumption that the base material will be removed, and the subgrade will be prepared according to the recommendations presented in Section 5. If the City decides to reuse part or all of the existing base material, leaving the subgrade in its current condition, CTI should be informed of the proposed design to determine if it will be necessary to revise the values given below.

Table 3. Summary of subgrade conditions at explored locations

Street	No. of Borings	Depth (ft)	Ex. Asphalt Pavement Thickness (in)	Ex. Concrete Pavement Thickness * (in)	Ex. Base Thickness (in)	Base Type	Subgrade Soil Description	Estimated Resilient Modulus, M_r (ksi)**
Scio Church Road	7	5	3.5-6.5	N/A	6-20	Sand with gravel	Silty clay with varying amounts of sand and gravel	6
Scio Church Road	1	20	N/A	N/A	N/A	N/A	Silty clay with sand and gravel	6
S. Seventh Street	3	5	4.75-8.5	N/A	2.5-8	Sand with gravel	Silty clay with sand and gravel	6
S. Seventh Street	5	20	3.25-11.25	N/A	1-16	Sand with gravel	Silty clay and clay	6
Greenview Drive	7	5	N/A	N/A	3-8.5	Sand with gravel	Silty clay with varying amounts of sand and gravel	6
N. Main Street	5	20	5.5-9.75	7-8	6-15	gravel / sand	Fine to coarse sand with silty clay underneath	10
Newport Road.	1	15	N/A	N/A	N/A	N/A	Fine to medium sand with small amounts of silt	11
W. Liberty Street	5	10	4-6.5	4-8.5	4	Silty sand	Fine to coarse sand with varying amounts of silt and clay Gravelly sand in 1 location	11
Plymouth Road	9	5	6-7.5	N/A	5	Sand with gravel	Fine to coarse sand with varying amounts of silt and clay	11

*Note that concrete was not found in all boring locations

**Note: The resilient modulus values were conservatively estimated based on the classification of the subgrade material using correlations presented in the Federal Highway Administration Geotechnical Aspects of Pavements Reference Manual

4.2 GROUNDWATER CONDITIONS

The drillers looked for indications of groundwater seepage both during and upon completion of the drilling operations. Groundwater seepage was not observed within any of the test borings either during or after drilling. During drilling, water was encountered at relatively shallow depths (less than 5 feet) in one boring on Plymouth Road (PLY-6). After drilling, water was observed in 7 borings at depths ranging from 2.8 to 11.6 feet below the top of pavement.

The short-term groundwater level observations from the borings are not necessarily indicative of the static, long-term groundwater conditions. The groundwater conditions discussed herein and indicated on the soil boring logs represent those encountered at the time of the field investigation. The groundwater levels, including perched groundwater accumulations, should be expected to fluctuate seasonally, based on variations in precipitation, evaporation, surface run-off and other factors not evident at the time of our investigation. Typically, groundwater levels and volumes are expected to be higher in the winter and spring seasons compared to the summer and fall months. The actual groundwater levels at the time of construction may vary from those provided herein.

The above soil and groundwater conditions represent a generalized summary of the subsurface conditions and material characteristics. The individual Test Boring Logs should be reviewed for specific information and details relating to specific areas of the site.

5.0 ANALYSIS AND DESIGN RECOMMENDATIONS

At the time this report was prepared, the overall project was in the planning and design stage. The following recommendations have been developed based on the previously assumed/described project characteristics and subsurface conditions. If there is any significant change in the project characteristics from those presented earlier, a review should be made by CTI to determine if any modifications in the evaluations and recommendations included in this report will be required.

In general, soils encountered near the surface (shallower than 5 feet) in the several of the locations will require preparation as outlined in this section in order to be able to support new pavement. For the purpose of this report, these soils were identified for improvement using the following criteria:

- Are granular and classified as having loose or very loose relative density (N < 11)
- Are cohesive and exhibit an unconfined compressive strength less than 4000 psf when tested with a pocket penetrometer
- Contain organic material

Based on the above criteria, soils on Liberty Street, Main Street, Scio Church Road, and Seventh Street will require improvement as discussed in the following sections. Regardless if improvement is needed or not, general site preparation methods presented in the following sections should be applied to develop a suitable subgrade for the placement of pavement materials. CTI assumes that the full existing pavement section including the base material will be removed to allow the preparation of the subgrade. If the owner is willing to assume the risks related to decreased pavement life/serviceability, some of this material could be left in place. However, CTI must be notified to determine if any modifications in the estimated resilient modulus value is necessary. It is advisable that the inadequate soils encountered at locations described in Table 2 above be undercut and replaced as discussed in Section 5.1 as the soils at these locations were found to be very loose or soft.

5.1 SITE PREPARATION

At the start of earthwork operations, all existing pavement and any deleterious material should be removed in their entirety from the new pavement areas. The thickness of the existing pavement, aggregate base and near surface fill layer (where present) should be expected to vary across the site. The depth of unsuitable soil to be removed should be determined by CTI at the time of stripping and rough grading. A CTI representative should also be on-site during the subgrade preparation operations to determine the suitability of the subgrade for pavement support.

The subgrade soils should be evaluated and prepared during construction as follows. After rough grade has been achieved in cut areas and prior to fill placement in fill areas, the exposed subgrade should be thoroughly proofrolled. Proofrolling should be performed with a heavily loaded front-end loader, tandem-axle dump truck or other suitable rubber-tired vehicles. The purpose of the proofrolling operations is to locate localized areas of excessively loose, soft or weak subgrade soils which may be present at the time of construction. Soils that are observed to rut or deflect excessively during proofrolling should be removed or stabilized by conventional methods such as disking, drying, and re-compacting. The loose sands encountered in the majority of the boring locations can be improved using these methods. Note that these conditions may exist elsewhere between borings.

If it is not feasible to dry and re-compact the unsuitable subgrade soils due to unfavorable weather conditions, scheduling, etc., it may be necessary to remove such soils and replace them with engineered fill. The thickness of the undercut will depend on the severity of the unstable soils encountered at specific locations. If significant subgrade instability is observed, a layer of crushed aggregate may be necessary to stabilize the subgrade before placement of the selected engineered fill material. The use of a woven geotextile below the crushed aggregate layer could also be considered to provide additional subgrade stability.

It should be noted that the actual locations and depths of any undercutting and/or stabilization should be established in the field at the time of construction. The extent to which yielding subgrades may be a problem is difficult to predict beforehand since it is dependent upon several factors including seasonal conditions, precipitation, construction practices, etc.

Once the site has been evaluated, proofrolled, and/or stabilized, the inspected area should not be allowed to remain exposed more than one day or to appreciable precipitation or other wet conditions. it should also not be subjected to construction traffic, otherwise a re-evaluation should be made. The site earthwork operations should be carried out during a period of dry weather, if possible. This should minimize potential subgrade problems, although they may not be eliminated. The severity of subgrade instability will depend to a high degree on the weather conditions prevailing during construction.

5.2 Fill Materials and Compaction

After subgrade preparation and observation have been completed, engineered fill placement may begin. Any fill placed below the proposed pavement area should be an approved material that is free of topsoil, organics, frozen soil or any other unsuitable material.

If clay soils or granular soils containing greater than 12 percent clay are used as fill, close moisture content control will be required to achieve the recommended degree of compaction. Cohesive fill materials should be low to medium in plasticity, with a liquid limit less than 40 and plasticity index less than 20. Wet cohesive soils are difficult to compact and the specified compaction may not be achieved. Wet cohesive soils may require drying or mixing with dry soil to facilitate compaction. If water must be added to dry soil, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying.

The engineered fill should be placed in uniform horizontal layers not exceeding 8 to 12 inches in loose thickness for clean granular soils and 4 to 6 inches in loose thickness for clay soils (or clayey granular soils exhibiting cohesive characteristics), depending on the type and size of compaction equipment used. The lift thickness for sands that have an appreciable amount of fines (i.e., silt or clay) should be decreased accordingly. The engineered fill should be compacted to achieve a density of not less than 95 percent of the maximum dry density as determined by the Modified Proctor Compaction Test (ASTM D1557). Also, the upper 12 inches of the subgrade soils should be compacted, prior to any fill placement, to achieve a density of not less than 95 percent of the maximum dry density as determined by the Modified Proctor test. The as-compacted moisture content of the engineered fill should be within 2 to 3 percent of the optimum moisture content for the soil. The placement and testing of engineered fill should be observed and properly documented in the field by CTI.

We recommend that the contract specifications include provisions for moisture conditioning of any on-site soils that are to be used as engineered fill. Some of the native soils may require moisture conditioning to allow for proper compaction. The success of aeration and drying of clay soils will be dependent on the time of year, the prevailing weather conditions and the contractor's effort. During cold and/or wet periods of the year, the saturated or disturbed clay soils will be more difficult to dry. In this case, the contractor may have to use drier on-site soils or imported sand.

If site grading or other construction activity is planned during cold weather, it is recommended that proper winter construction practices are followed. All snow and ice should be removed from cut and fill areas prior to grading. Frozen materials should not be used as engineered fill and no fill, footings, slabs or pavement should be placed on soils that are frozen or contain frozen material.

5.3 Support of Pavement

The subgrade soils should be prepared in accordance with the methods presented in Section 5.1 of this report for support of the pavement sections. Special attention should be paid to the areas of concern mentioned in Section 5.0 and Table 2. As discussed previously, we recommend the subgrade be subjected to a comprehensive proofrolling and evaluation program to determine the overall suitability at the time of construction. The areas requiring subgrade improvement should be determined in the field by CTI through proper inspection and evaluation at the time of construction. Provisions should be established in the construction documents for this purpose.

The long-term performance of the pavement will typically be a function of the quality of the subgrade soil at the time of construction along with the quality, thickness and strength of the overall pavement section. The most critical portion of the subgrade is the 3-4 feet immediately beneath the pavement section, which provides the primary strength needed for pavement section support. Beyond that, the impact of poor soils then starts to diminish with depth. Soils in a saturated condition, uncontrolled fill and/or organic materials present within the upper 2 to 3 feet of the pavement subgrade can be detrimental if the design does not account for this substandard soil condition, especially during the spring freeze-thaw cycles.

The pavement system should be properly drained to reduce the potential for weakening the subgrade. Provisions should be made to prevent surface run-off water from accumulating within the aggregate base course of the pavement. The pavement and underlying subgrade should be suitably crowned or sloped to promote effective surface drainage and prevent water ponding.

We anticipate that the pavement surface will drain via storm sewers (where present) and via run-off methods where storm sewers are not available. Where the reconstruction project includes the installation of a storm sewer system in clay soils, finger drains should be installed at all catch basin locations to provide drainage for surface water that may become trapped in the pavement aggregate base course. At a minimum, a system of finger drains or stub drains should be placed around all catch basins within the pavement areas to minimize the accumulation of water in the frost susceptible subgrade soils. These under drains should be installed below the aggregate base course layer of the pavement system and be properly protected with free-draining coarse aggregate material and filter fabric.

All pavements require regular maintenance and occasional repairs to keep them in a serviceable condition. Of particular value is timely sealing of joints and cracks, which if left un-repaired, can serve to permit water to enter the pavement section and cause rapid deterioration of the pavement during freeze-thaw cycles. The need for such routine maintenance and repair is not necessarily indicative of premature pavement failure. However, if appropriate maintenance and repairs are not performed on a timely basis, the serviceable life of the pavement can be reduced significantly.

Actual pavement section thickness should be provided by the design civil engineer based on design traffic loads and volume and the owner's design life requirements. All pavement materials and procedures should conform to standard MDOT and City of Ann Arbor requirements.

Based on the results of the soil borings performed, Resilient Modulus values (M_r) for the encountered soils have been estimated and are presented in Table 3, along with a summary of the encountered pavement and subgrade conditions. The resilient modulus values were conservatively estimated based on

the classification of the subgrade material using correlations presented in the Federal Highway Administration Geotechnical Aspects of Pavements Reference Manual

6.0 GENERAL CONSTRUCTION PROCEDURES AND RECOMMENDATIONS

6.1 GENERAL

Experience indicates that variations in soil conditions are encountered during construction. In order to permit correlation between the soil boring data and the actual soil conditions encountered during construction, it is recommended that a continuous inspection and review of the soil related phases of construction work be carried out. We recommend the site preparation activities, engineered fill placement and foundation construction be observed by a qualified engineering technician. The technician should perform the appropriate type and number of field tests needed to verify compliance with construction specifications and that the pavement subgrade soils are suitable.

The existing clayey soils found in various boring locations noted above could be potentially troublesome for some earthwork operations, depending on the prevailing moisture content. These soils have relatively poor drainage characteristics and are susceptible to ponding, subsequent softening and pumping due to construction traffic. During a wet season or periods of heavy precipitation, the silty and clayey subgrade soils may become unstable and provide limited support for some rubber-tired construction equipment. If pumping of the subgrade occurs due to construction traffic, an evaluation of the site and construction procedures should be made by a geotechnical engineer.

6.2 UTILITY EXCAVATIONS

In general, all excavations should be safely sheeted, shored, sloped or braced in accordance with OSHA guidelines. Construction traffic, stockpiles of soil and construction materials should be kept away from the edges of the excavations a lateral distance at least 1.5 times the depth of the excavation.

Utility excavations are generally expected to consist of open-cut methods. In this regard, the utility trench sidewalls should be adequately braced or sloped back to prevent sloughing and caving. In any case, appropriate measures will be required to maintain the stability of excavation sidewalls. The required measures will depend on the depth and width of excavations and groundwater conditions at specific locations. The excavation support system for utilities could consist of internally braced sheeting, trench boxes or sliding trench shields. If material is stored or equipment is operated near an excavation, stronger shoring must be used to resist the extra pressure due to the superimposed loads.

The angle of the excavation side slopes should be decided based on the soil type and unconfined compressive strength of the excavated soil per MIOSHA requirements. For excavations greater than 5 feet and less than 20 feet in depth, MIOSHA has different sloping requirements for a variety of soil types. The table presented below provides a summary of the requirements for informational purposes only. Prior to designing or constructing a stable and safe excavation, the contractor must refer to MIOSHA standards.

Table 4. Maximum Allowable Angle of Repose for the Side of an Excavation

Soil Type	Maximum Allowable Excavation Side Slope		Maximum Angle of Repose (Degrees)
	Horizontal	Vertical	
Clay with minimum unconfined compressive strength of 2.5 tsf	1	2	63
Clay with minimum unconfined compressive strength of 1.5 tsf	2	3	56
Clay with minimum unconfined compressive strength of 1.0 tsf; Dry granular soils; Dry sand and clay mixtures	1	1	45
Granular soil with wet clay or silt seams; Clay with a minimum unconfined compressive strength of 1.0 tsf that contains running sand seams	1½	1	34
Saturated granular soil; Clay with an unconfined compressive strength less than 1.0 tsf	2	1	26
Running/sloughing soil (sand or clay)	3	1	18

Soils exposed in the bases of all satisfactory excavations should be protected against any detrimental change in conditions such as disturbances from rain and freezing. Surface run-off water should be drained away from the excavations and not allowed to pond. If possible, all utilities should be placed the same day the excavation is made. If this is not possible, the footing excavations should be adequately protected.

6.3 Groundwater Control

Based on the observed groundwater conditions in the test borings, no significant groundwater related problems are anticipated during pavement construction. However, the conditions encountered at the majority of the boring locations are conducive to the development of perched water accumulations within the granular soils. If perched accumulations occur, some groundwater seepage could be encountered.

Proper groundwater control measures should be maintained during all earthwork activities in order to limit the disturbance of the subgrade soils. These measures should include a provision of temporary drainage ditches to discharge any perched water outside the construction area. For relatively shallow excavations, it appears that minor perched groundwater accumulations, if encountered, should be controllable by conventional pumping methods from standard sump pits extending into the natural clay soils.

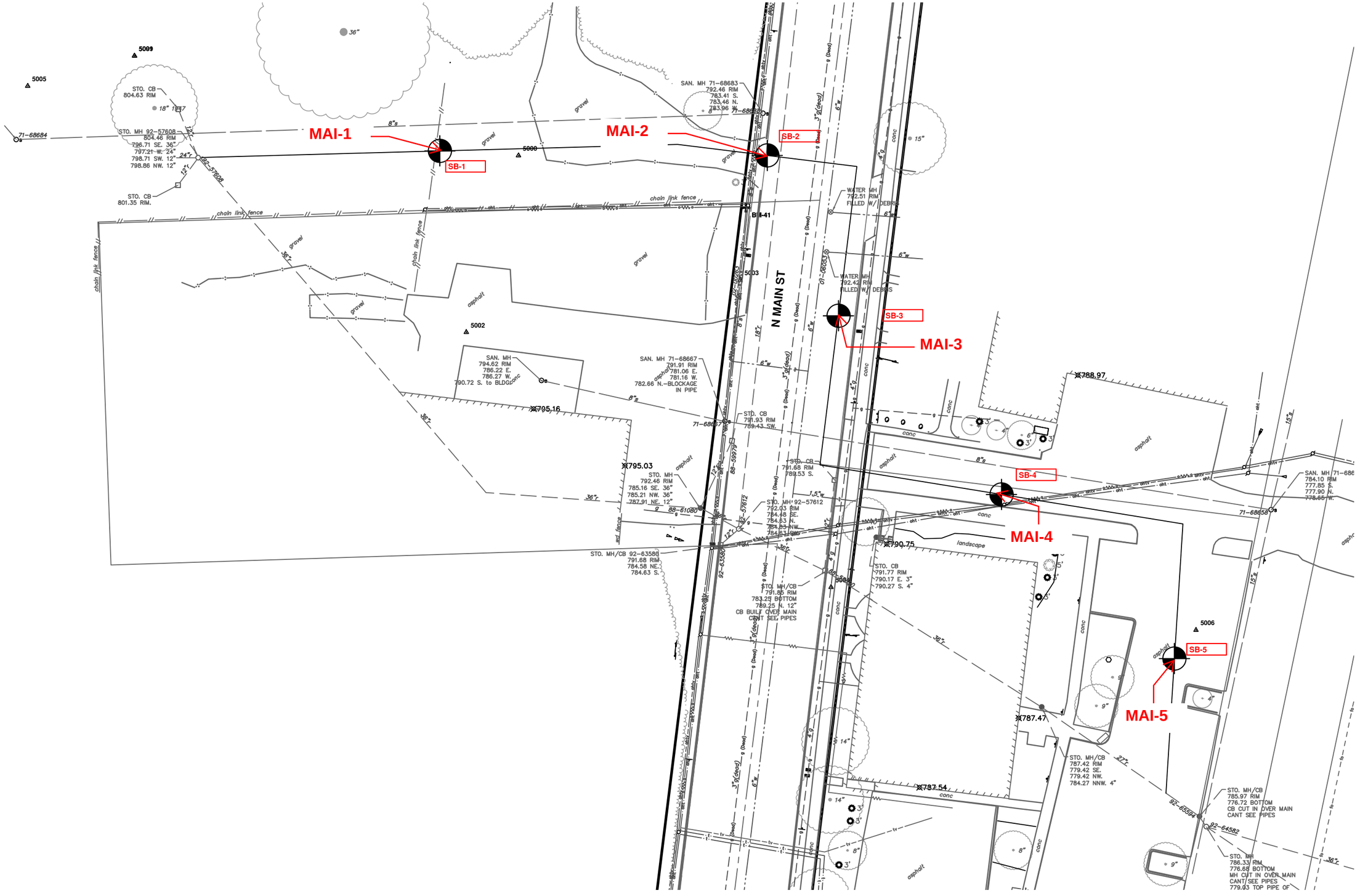
Any groundwater related problems should be evaluated in the field by a qualified geotechnical engineer so that the best remedial measures can be determined.

Table A.1. Measured thickness of pavement cores (to nearest ¼")

Core Number	Surface Material	Surface Material Thickness (in)	Underlying Pavement Material	Underlying Material Thickness (in)
SCI-1	Asphalt	6.38	None	
SCI-2	Asphalt	4.17	None	
SCI-3	Asphalt	5.27	None	
SCI-4	Asphalt	3.43	None	
SCI-5	Asphalt	3.93	None	
SCI-6	Asphalt	5.78	None	
SCI-8	Asphalt	5.53	None	
SEV-1	Asphalt	8.15	None	
SEV-2	Asphalt	8.43	None	
SEV-3	Asphalt	11.23	None	
SEV-4	Asphalt	3.38	None	
SEV-5	Asphalt	5.13	None	
SEV-6	Asphalt	3.94	None	
SEV-7	Asphalt	7.61	None	
SEV-8	Asphalt	4.79	None	
GRV-1	Asphalt	6.63	None	
GRV-2	Asphalt	5.33	None	
GRV-3	Asphalt	4.21	None	
GRV-4	Asphalt	6.07	None	
GRV-5	Asphalt	2.18	None	
GRV-6	Asphalt	6.60	None	
GRV-7	Asphalt	3.54	None	
MAI-2	Asphalt	9.71	Concrete	7.27
MAI-3	Asphalt	9.08	Concrete	7.64
MAI-4	Asphalt	8	None	
MAI-5	Asphalt	5.52	None	
LIB-1	Asphalt	4.11	Concrete	8.43
LIB-2	Asphalt	4.84	Concrete	7.85
LIB-3	Asphalt	4.15	Concrete	4.05
LIB-4	Asphalt	4.55	Concrete	7.13
LIB-5	Asphalt	6.31	Concrete	7
PLY-1	Asphalt	6.67	None	
PLY-2	Asphalt	6.90	None	
PLY-3	Asphalt	6.74	None	
PLY-4	Asphalt	7.43	None	
PLY-5	Asphalt	6.67	None	
PLY-6	Asphalt	6.64	None	
PLY-7	Asphalt	6.77	None	
PLY-8	Asphalt	6.03	None	
PLY-9	Asphalt	7.35	None	

Appendix

Boring Location Plans


MAI-1
MAI-2
MAI-3
MAI-4
MAI-5
SB-1
SB-2
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SB-4
SB-5
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5005
5009
5000
5003
5002
5006
B-41
STO. CB
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STO. MH 92-57608
804.46 RIM
796.71 SE. 36"
797.21 W. 24"
798.71 SW. 12"
798.86 NW. 12"
STO. CB
801.35 RIM.
SAN. MH 71-68683
792.46 RIM
783.41 S.
783.46 N.
783.96 W.
WATER MH
792.51 RIM
FILLED W/ DEBRIS
WATER MH
792.42 RIM
FILLED W/ DEBRIS
SAN. MH
794.62 RIM
786.22 E.
786.27 W.
790.72 S. to BLDG
SAN. MH 71-68667
791.91 RIM
781.06 E.
781.16 W.
782.66 N.-BLOCKAGE IN PIPE
STO. CB
791.93 RIM
789.43 SW.
STO. CB
791.68 RIM
789.53 S.
STO. MH
792.46 RIM
785.16 SE. 36"
785.21 NW. 36"
787.91 NE. 12"
STO. MH 92-57612
792.03 RIM
784.48 SE.
784.63 N.
784.83 NW.
784.63 SW.
STO. MH/CB 92-63586
791.68 RIM
784.58 NE.
784.63 S.
STO. MH/CB
791.85 RIM
783.25 BOTTOM
789.25 N. 12"
CB BUILT OVER MAIN
CANT SEE PIPES
STO. CB
791.77 RIM
790.17 E. 3"
790.27 S. 4"
STO. MH/CB
787.42 RIM
779.42 SE.
779.42 NW.
784.27 NNW. 4"
STO. MH/CB
785.97 RIM
776.72 BOTTOM
CB CUT IN OVER MAIN
CANT SEE PIPES
STO. MH
786.33 RIM
776.68 BOTTOM
MH CUT IN OVER MAIN
CANT SEE PIPES
779.03 TOP PIPE OF
SAN. MH 71-68
784.10 RIM
777.85 S.
777.90 N.
778.65 W.
795.16
795.03
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787.47
787.54
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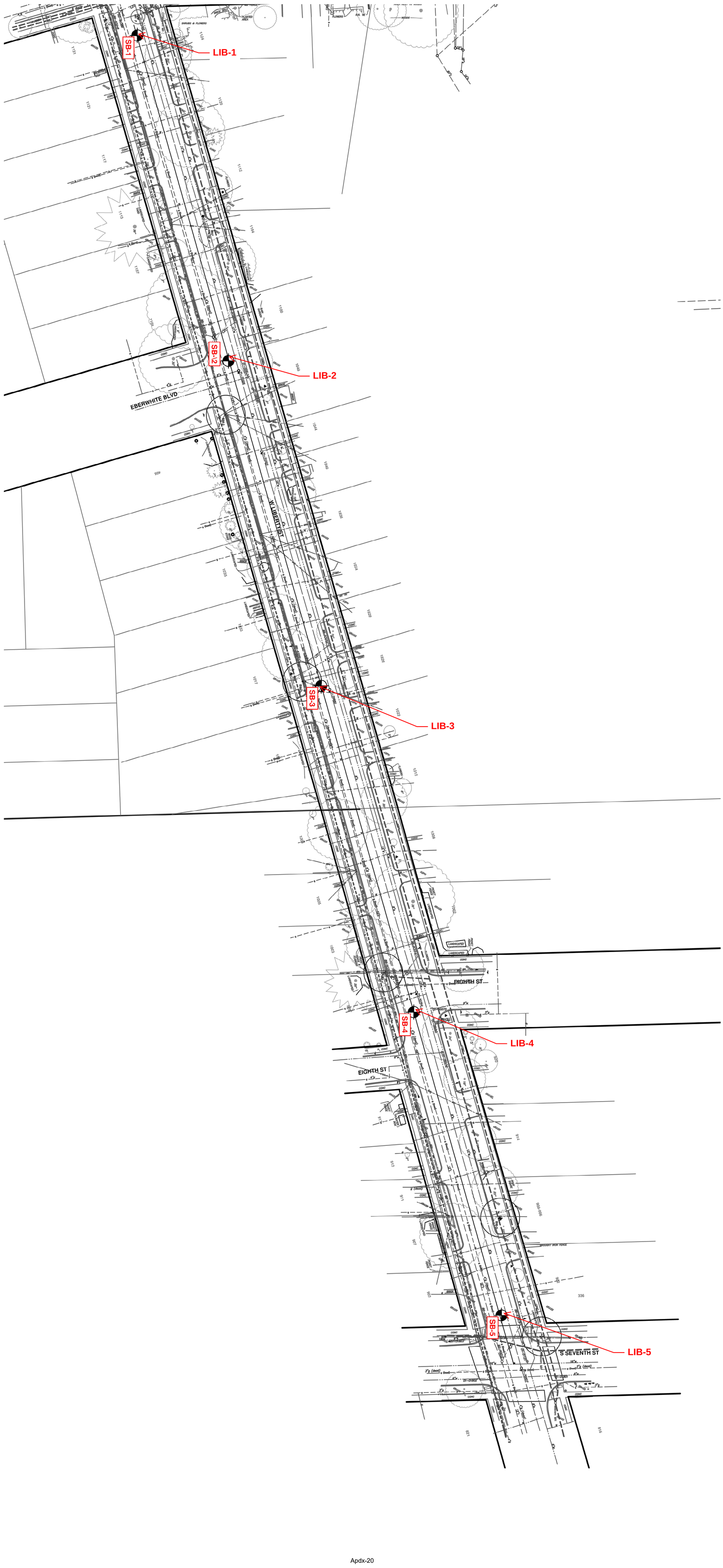
gravel
asphalt
landscape
conc

Scale is 1240

11/19/2020

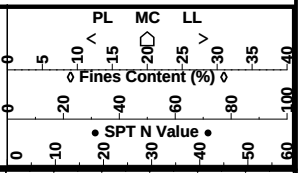

SB-1
LIB-1
SB-12
LIB-2
EBERWHITE BLVD
W LIBERTY ST
SB-3
LIB-3
EIGHTH ST
SB-4
LIB-4
EIGHTH ST
SB-5
LIB-5
S SEVENTH ST

Soil Boring Logs

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/7/20 Completed: 12/7/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: LIB-1
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
0	4.11 inches of ASPHALT pavement.					
	8.43 inches of CONCRETE.					
	SILTY SAND (SP) - brown, loose					
	SANDY SILT (ML) - brown, with clay, medium stiff, moist		SS-1		3-3-3 (6)	1
	SILTY CLAY (CL) - brown, dry, with sand and gravel, very stiff, moist		SS-2		3-4-5 (9)	3.5
5	SILTY CLAY (CL) - brown, with sand and gravel, hard, moist		SS-3		3-5-8 (13)	4.25
	SILTY CLAY (CL) - brown, with sand and gravel, very stiff, moist		SS-4		4-7-7 (14)	3.5
10						



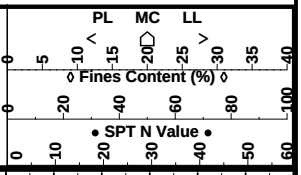
Groundwater During Drilling: NA
Groundwater After Drilling: NA
Cave-in Depth: 6.25 ft.
End of Boring: 10'

Notes: No water encountered

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/7/20 Completed: 12/7/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: LIB-2
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
0	4.84 inches of ASPHALT pavement.					
	7.85 inches of CONCRETE.					
	CLAYEY SAND (SP) - brown, fine grained, with gravel, loose, moist		SS-1		3-2-4 (6)	1
	SAND (SP) - brown, fine grained, with silt, medium dense, moist		SS-2		4-6-5 (11)	
5			SS-3		4-5-6 (11)	
			SS-4		4-7-7 (14)	
10						



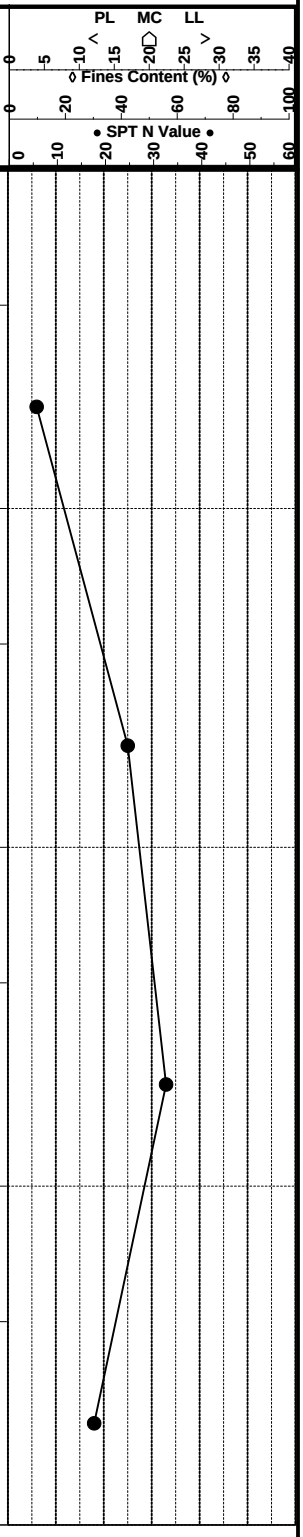
Groundwater During Drilling: NA
Groundwater After Drilling: NA
Cave-in Depth: 5.583 ft.
End of Boring: 10'

Notes: No water encountered

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/9/20 Completed: 12/9/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: LIB-3
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
0	4.15 inches of ASPHALT pavement.					
	4 inches of CONCRETE.					
	CLAYEY SAND (SP) - brown, fine to medium grained, with gravel, loose, moist		SS-1		3-3-3 (6)	
	SAND (SP) - brown, fine to coarse grained, with clay and gravel, medium dense, moist		SS-2		9-10-15 (25)	
5			SS-3		13-17-16 (33)	
			SS-4		6-8-10 (18)	
10						



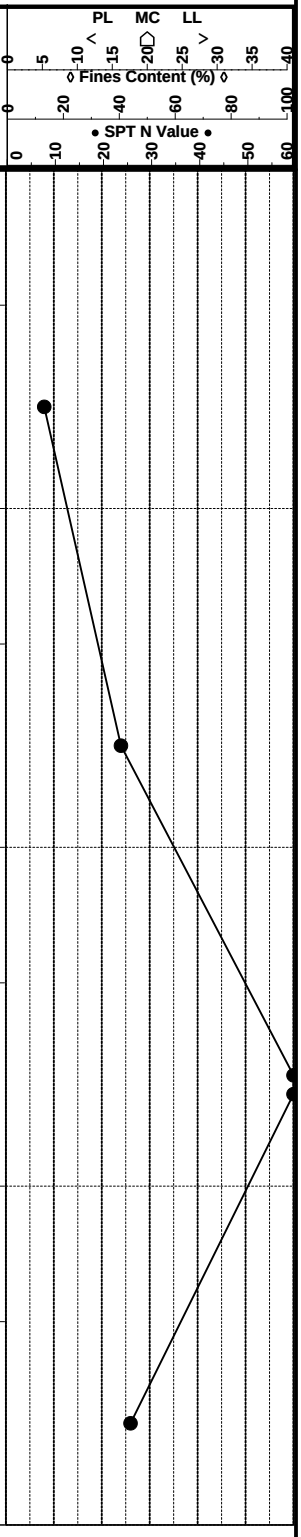
Groundwater During Drilling: NA
Groundwater After Drilling: NA
Cave-in Depth: 6.33 ft.
End of Boring: 10'

Notes: No water encountered

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/9/20 Completed: 12/9/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: LIB-4
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
0	4.55 inches of ASPHALT pavement.					
	7.13 inches of CONCRETE.					
	GRAVELLY SAND (SP) - brown, fine to medium grained, loose, dry		SS-1		4-5-3 (8)	
	GRAVELLY SAND (SP) - brown, fine to coarse grained, medium dense, moist		SS-2		3-9-15 (24)	
5	SAND (SP) - brown, fine to coarse grained, with gravel, very dense, moist		SS-3		28-29-32 (61)	
	SAND (SP) - brown, fine to medium grained, with gravel, medium dense, moist		SS-4		5-11-15 (26)	
10						



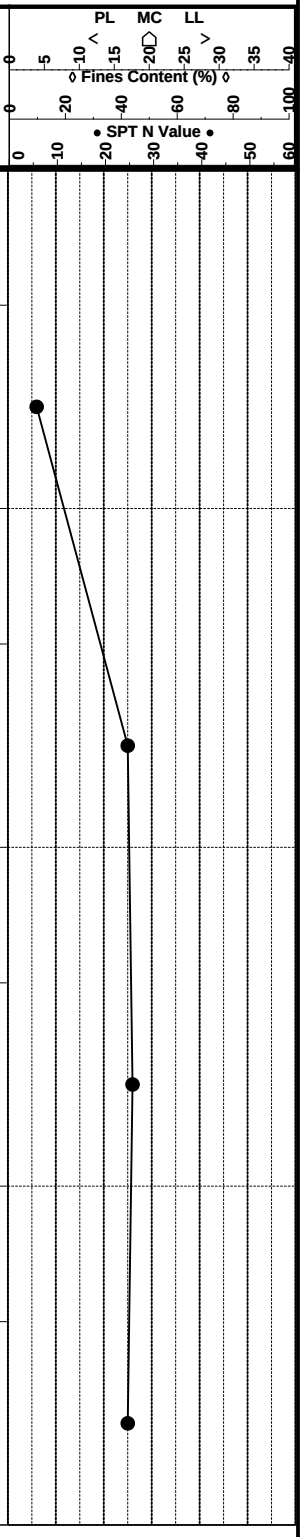
Groundwater During Drilling: NA
Groundwater After Drilling: NA
Cave-in Depth: 5.83 ft.
End of Boring: 10'

Notes: No water encountered

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/9/20 Completed: 12/9/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: LIB-5
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
0	6.31 inches of ASPHALT pavement.					
	7 inches of CONCRETE.					
	SILTY SAND (SP) - brown, fine to medium grained, with gravel, loose, moist		SS-1		3-3-3 (6)	
	SAND (SP) - brown, fine to medium grained, with gravel, medium dense, moist		SS-2		6-12-13 (25)	
5			SS-3		12-16-10 (26)	
			SS-4		7-11-14 (25)	
10						



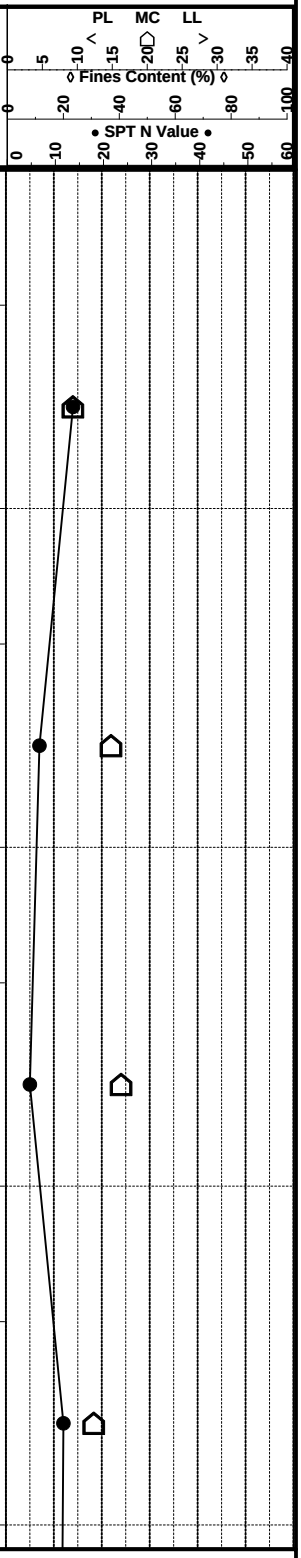
Groundwater During Drilling: NA
Groundwater After Drilling: NA
Cave-in Depth: 6.167 ft.
End of Boring: 10'

Notes: No water encountered

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/1/20 Completed: 12/2/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: MAI-1
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
0	SAND (SP) - brown, with gravel, loose					
	SILTY CLAY (CL) - brown, trace gravel, very stiff, dry		SS-1		5-8-6 (14)	4
	SANDY SILT (ML) - brown, with gravel, very stiff, moist		SS-2		3-3-4 (7)	2.7 5
5	SILTY CLAY (CL) - brown, with sand and gravel, medium stiff, moist		SS-3		3-3-2 (5)	1
	SILTY CLAY (CL) - gray, with sand and gravel, very stiff, moist.		SS-4		4-6-6 (12)	4
10						



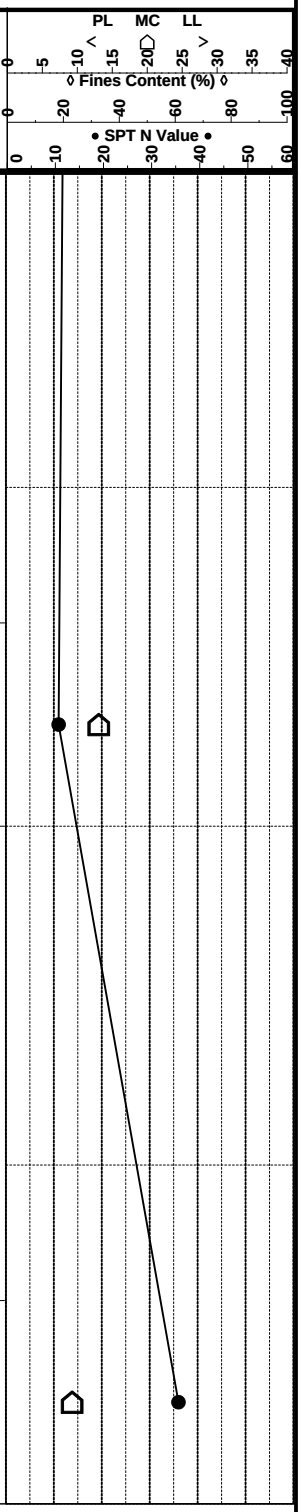
Groundwater During Drilling: none
Groundwater After Drilling: 5.583 ft.
Cave-in Depth: 8.583 ft.
End of Boring: 20'

Notes:

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/1/20 Completed: 12/2/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: MAI-1
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
15			SS-5		3-5-6 (11)	4
20	SILTY CLAY (CL) - gray, with sand and gravel, hard, moist		SS-6		15-19-17 (36)	4.2 5
	End of Borehole = 20.0'. Borehole					



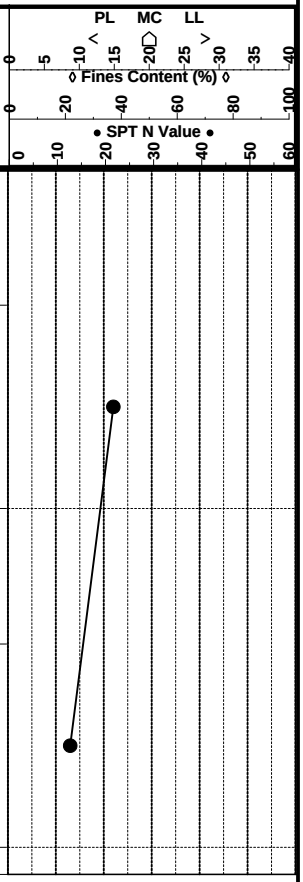
Groundwater During Drilling: none
Groundwater After Drilling: 5.583 ft.
Cave-in Depth: 8.583 ft.
End of Boring: 20'

Notes:

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/2/20 Completed: 12/2/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: MAI-2
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
0	9.71 inches of ASPHALT pavement.					
	7.27 inches of CONCRETE.					
	GRAVELLY SAND (SP) - brown, fine to medium grained, medium dense, moist		SS-1		6-11-11 (22)	1.5
	SANDY GRAVEL (GP) - brown, fine to coarse grained, with silt and clay, medium dense, moist		SS-2		3-3-10 (13)	
5	Refusal. End of Borehole = 4 ft. 9 in. Borehole backfilled upon completion.					



Groundwater During Drilling: NA
Groundwater After Drilling: NA
Cave-in Depth: NA
End of Boring: 5'

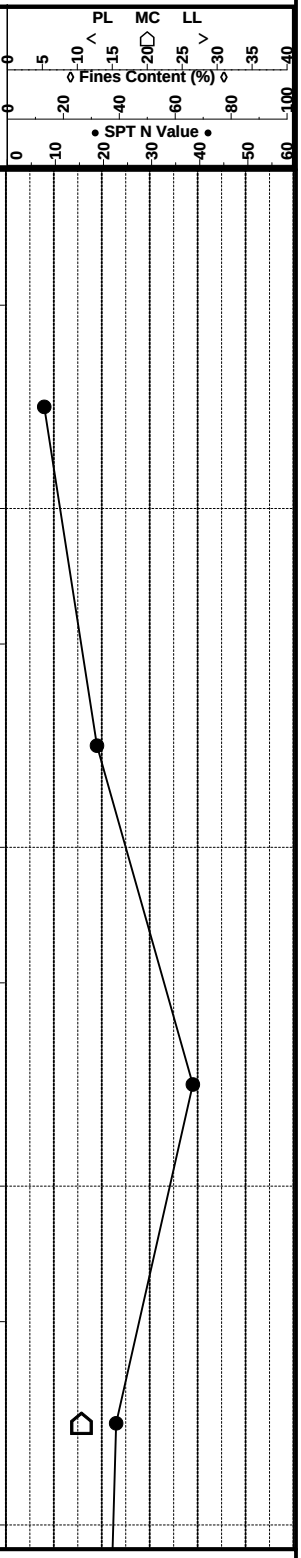
Notes: Refusal at 4 ft. 9 in.

Suspected old gas line. No gas marks

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/8/20 Completed: 12/8/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: MAI-2A
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
0	9.71 inches of ASPHALT pavement.				
	7.27 inches of CONCRETE.				
	GRAVELLY SAND (SP) - brown, fine to coarse grained, loose, moist	SS-1		2-3-5 (8)	
	GRAVELLY SAND (SP) - brown, fine to coarse grained, medium dense, moist	SS-2		2-8-11 (19)	
5	SANDY GRAVEL (GP) - brown, fine to coarse, dense, moist	SS-3		18-20-19 (39)	
	SILTY CLAY (CL) - brown, with sand and gravel, hard, moist	SS-4		5-12-11 (23)	
10					



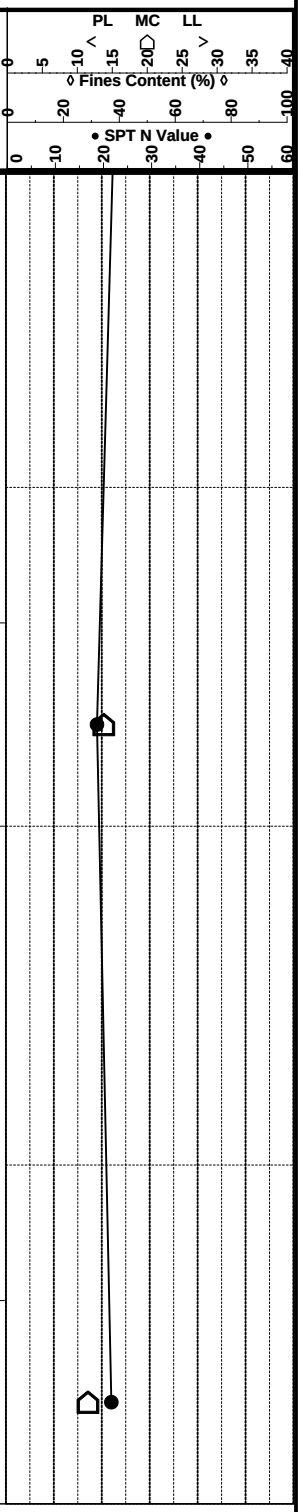
Groundwater During Drilling: NA
Groundwater After Drilling: NA
Cave-in Depth: 7.583 ft.
End of Boring: 20'

Notes: No water encountered

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/8/20 Completed: 12/8/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: MAI-2A
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
15	SILTY CLAY (CL) - brown, with sand and gravel, occasional sand lens, hard, moist		SS-5		5-6-13 (19)	
20			SS-6		9-10-12 (22)	
	End of Borehole = 20.0'. Borehole					



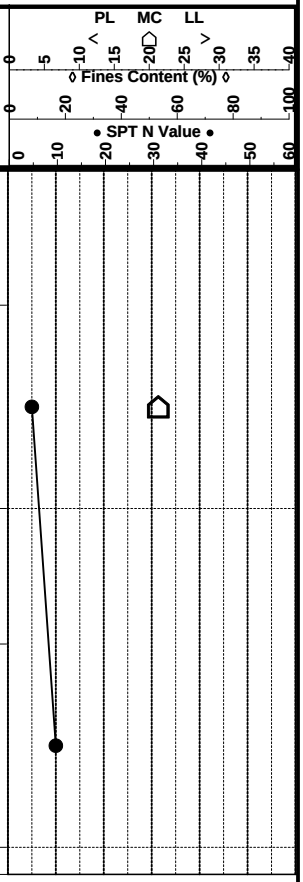
Groundwater During Drilling: NA
Groundwater After Drilling: NA
Cave-in Depth: 7.583 ft.
End of Boring: 20'

Notes: No water encountered

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/2/20 Completed: 12/2/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: MAI-3
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
0	9 inches of ASPHALT pavement.					
	7.64 inches of CONCRETE.					
	CLAYEY SILT (ML) - brown, with sand and gravel, stiff, moist		SS-1		2-2-3 (5)	1.5
			SS-2		2-3-7 (10)	1.25
5	Refusal. End of Borehole = 5 ft. 2 in. Borehole backfilled upon completion.					



Groundwater During Drilling: NA
Groundwater After Drilling: NA
Cave-in Depth: NA
End of Boring: 5'

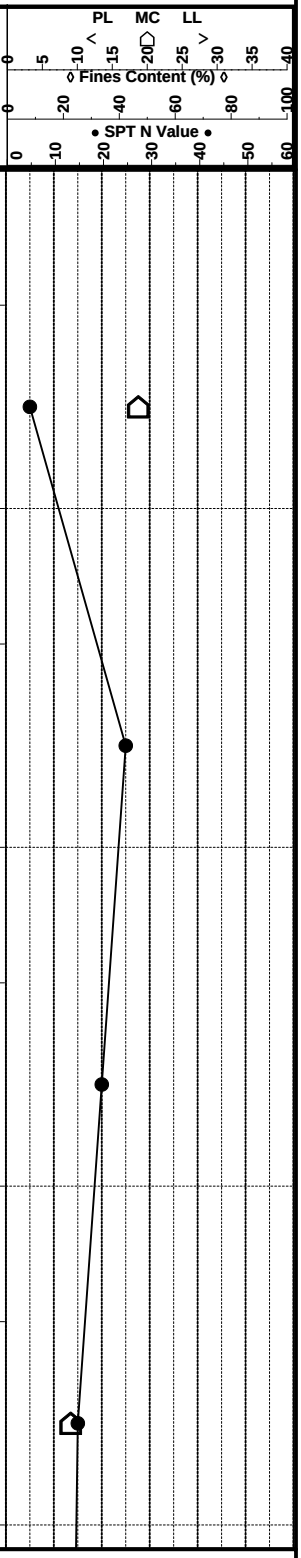
Notes: Refusal at 5 ft. 2 in.

Suspected old gas line

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/8/20 Completed: 12/8/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: MAI-3A
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
0	9 inches of ASPHALT pavement.					
	7.64 inches of CONCRETE.					
	SANDY CLAY (CL) - brown, with gravel, loose, moist		SS-1		2-2-3 (5)	
	SAND (SP) - brown, fine to coarse grained, with gravel, medium dense, moist		SS-2		4-7-18 (25)	
5	GRAVELLY SAND (SP) - brown, fine to coarse grained, medium dense, moist		SS-3		10-12-8 (20)	
	SILTY CLAY (CL) - brown, with sand and gravel, very stiff, moist		SS-4		5-7-8 (15)	
10						



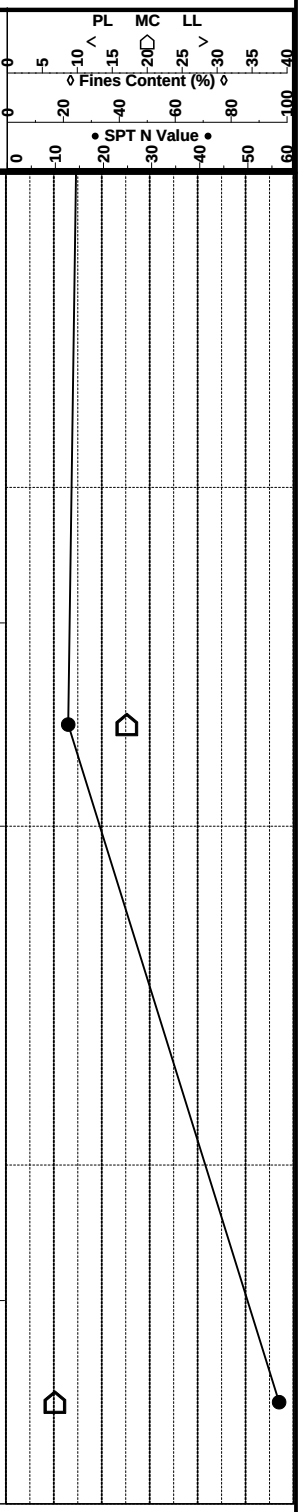
Groundwater During Drilling: NA
Groundwater After Drilling: NA
Cave-in Depth: 11.33 ft.
End of Boring: 20'

Notes: No water encountered

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/8/20 Completed: 12/8/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: MAI-3A
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
15			SS-5		3-6-7 (13)	
	SILTY CLAY (CL) - brown, with sand and gravel, hard, moist		SS-6		17-26-31 (57)	
20	End of Borehole = 20.0'. Borehole					



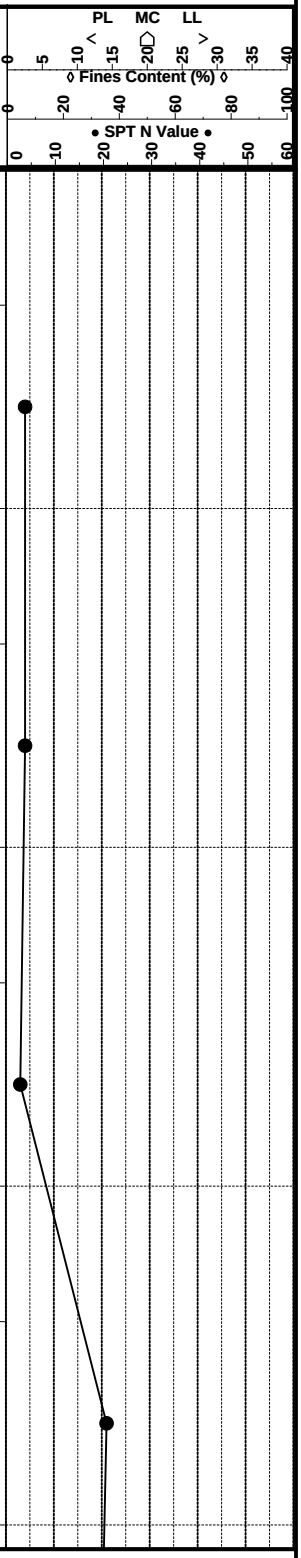
Groundwater During Drilling: NA
Groundwater After Drilling: NA
Cave-in Depth: 11.33 ft.
End of Boring: 20'

Notes: No water encountered

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/2/20 Completed: 12/2/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: MAI-4
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
0	8 inches of ASPHALT pavement.					
	CLAYEY SAND (SP) - brown, fine to medium grained, with gravel, stiff, moist		SS-1		3-2-2 (4)	1.25
			SS-2		2-2-2 (4)	1
5	CLAYEY SAND (SP) - brown, fine to coarse grained, with gravel, very loose, moist		SS-3		1-2-1 (3)	
	SILTY SAND (SP) - brown, medium dense, wet		SS-4		4-8-13 (21)	
10						



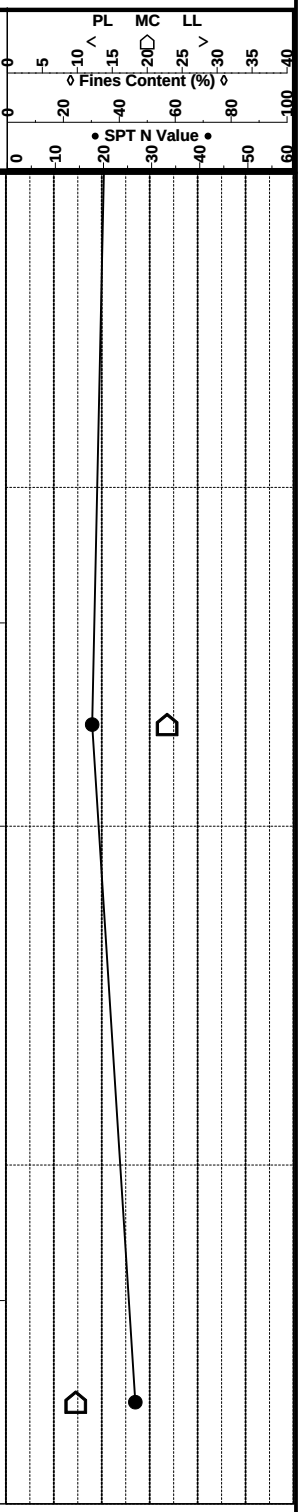
Groundwater During Drilling: none
Groundwater After Drilling: 11.583 ft.
Cave-in Depth: 12.083 ft.
End of Boring: 20'

Notes:

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/2/20 Completed: 12/2/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: MAI-4
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
15	SANDY SILT (ML) - gray, medium stiff, moist		SS-5		8-8-10 (18)	1
20	SILTY CLAY (CL) - gray, with sand and gravel, hard, moist		SS-6		9-12-15 (27)	4.5
	End of Borehole = 20.0'. Borehole					



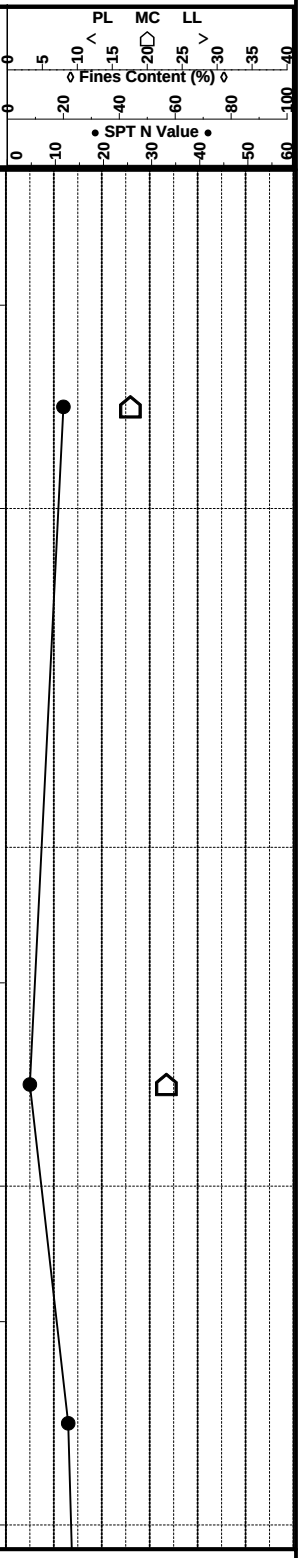
Groundwater During Drilling: none
Groundwater After Drilling: 11.583 ft.
Cave-in Depth: 12.083 ft.
End of Boring: 20'

Notes:

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/1/20 Completed: 12/1/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: MAI-5
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
0	5.52 inches of ASPHALT pavement.					
	SILTY SAND (SP) - brown, dense					
	GRAVELLY SAND (SP) - brown, fine to medium grained, with silt and clay, soft, moist		SS-1		5-6-6 (12)	0.5
5	SILTY CLAY (CL) - gray, with sand and gravel, stiff, moist					
	SANDY CLAY (CL) - brown, with gravel, medium stiff, moist		SS-2		2-2-3 (5)	1
	SANDY GRAVEL (GP) - brown, fine to coarse grained, with clay, medium dense, wet		SS-3		1-3-10 (13)	
10						



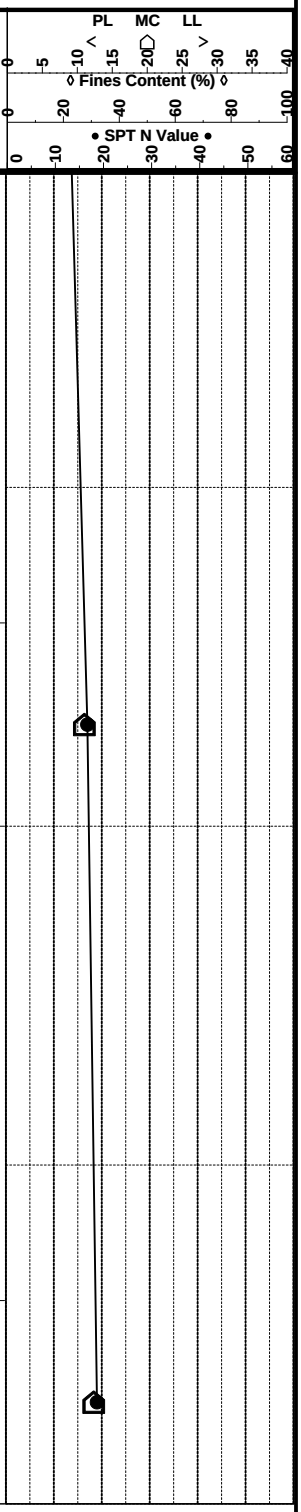
Groundwater During Drilling: none
Groundwater After Drilling: 8.583 ft.
Cave-in Depth: 8.67 ft.
End of Boring: 20'

Notes:

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/1/20 Completed: 12/1/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: MAI-5
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
	SILTY CLAY (CL) - gray, with sand and gravel, hard, moist		SS-4		6-6-9 (17)	4.5
15			SS-5		6-9-10 (19)	4.25
20	End of Borehole = 20.0'. Borehole					



Groundwater During Drilling: none
Groundwater After Drilling: 8.583 ft.
Cave-in Depth: 8.67 ft.
End of Boring: 20'

Notes:

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/3/20 Completed: 12/3/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: NEW-1
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
0	SANDY TOPSOIL - brown, loose SILTY SAND (SP) - brown, fine to medium grained, with clay and gravel, medium dense, moist		SS-1		4-9-5 (14)	1.75
	SAND (SP) - brown, fine to medium grained, with silt and gravel, medium dense, moist		SS-2		2-3-11 (14)	
5			SS-3		4-4-7 (11)	
			SS-4		4-5-7 (12)	
10						

PL MC LL
Fines Content (%)
SPT N Value

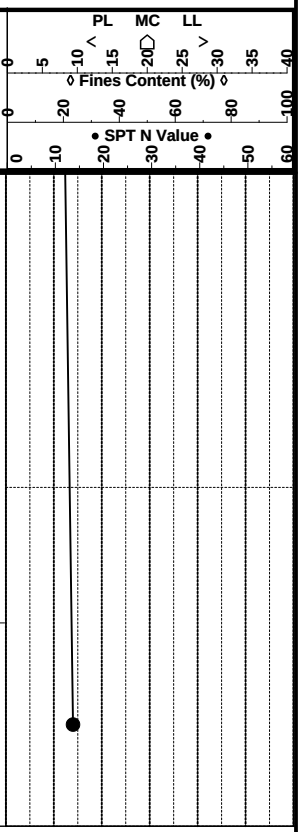
Groundwater During Drilling: none
Groundwater After Drilling: 6.67 ft.
Cave-in Depth: 6.67 ft.
End of Boring: 15'

Notes:

Project Number: 1208070085
Project Name: City of Ann Arbor
Misc Geotechnical Services
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor
Date Started: 12/3/20 Completed: 12/3/20
Time Started: Completed:
Logged By: R. Jackson Checked By: A. Spears

Boring No: NEW-1
Longitude: Latitude:
Surface Elevation (ft):
Drilling Firm: BRAX Drilling
Driller Name: Al Guzdzial
Drilling Method: HSA
Drill Rig Model:
Auger Size: 3.25"
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	BLOW COUNTS (N VALUE)	UCS (tsf)
15	End of Borehole = 15.0'. Borehole backfilled upon completion.		SS-5		4-7-7 (14)	



Groundwater During Drilling: none
Groundwater After Drilling: 6.67 ft.
Cave-in Depth: 6.67 ft.
End of Boring: 15'

Notes:

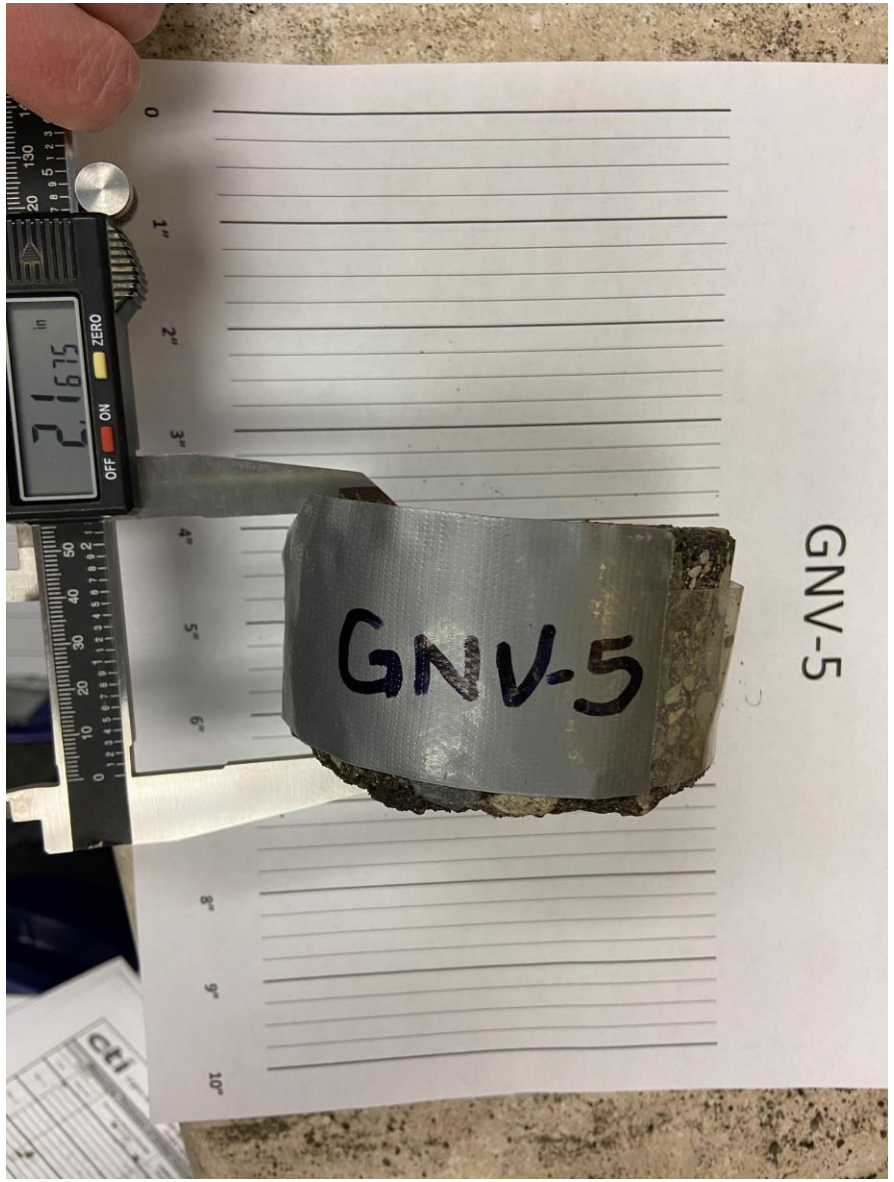
Core Photo Log

GNV (1)

GNV (2)

GNV (3)

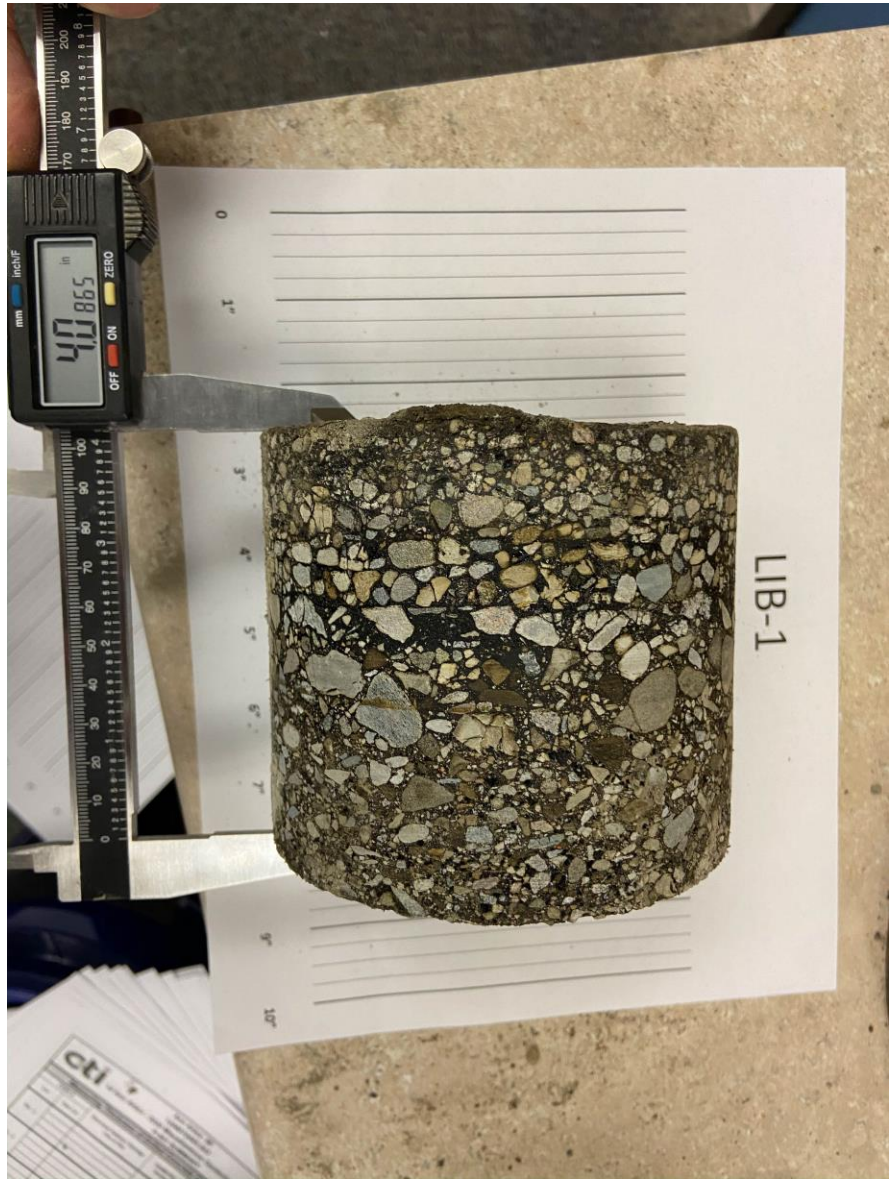
GNV (4)



GNV (5)

GNV (6)

GNV (7)



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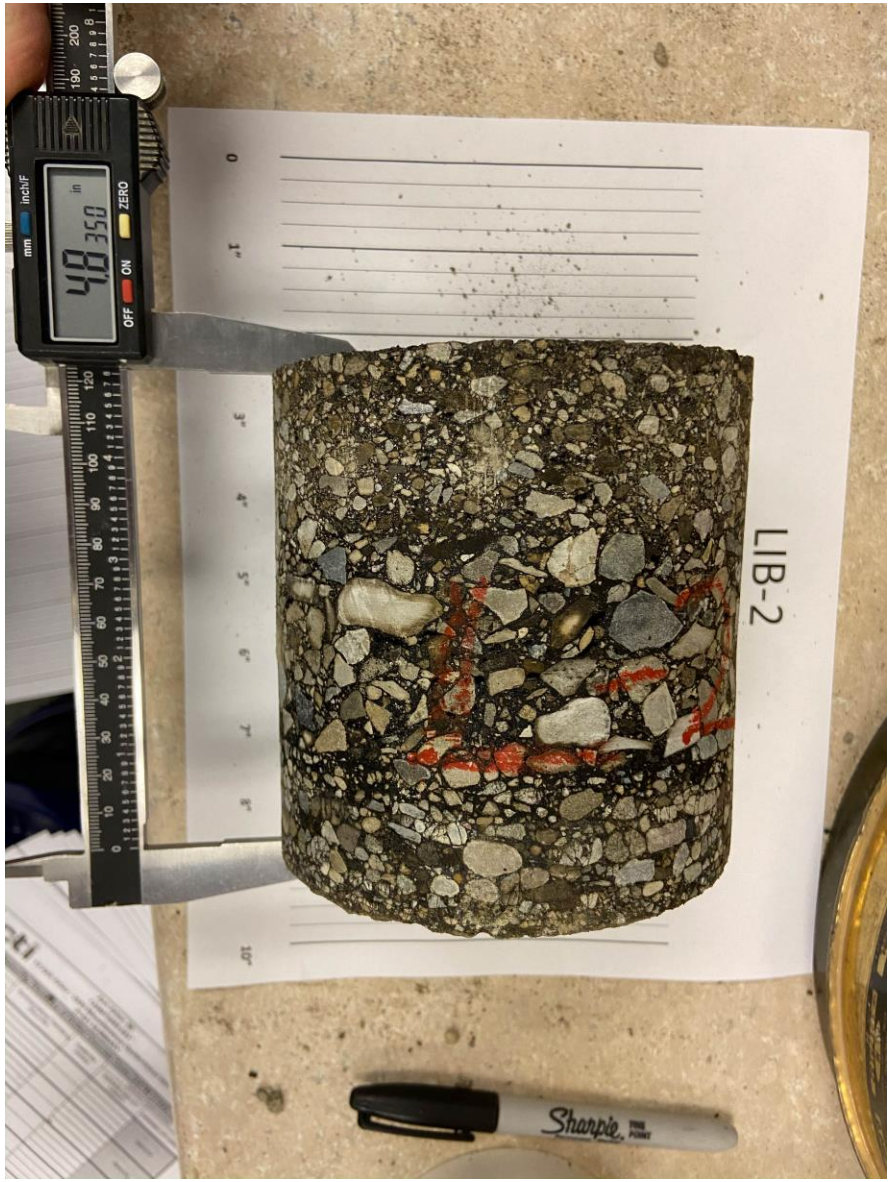

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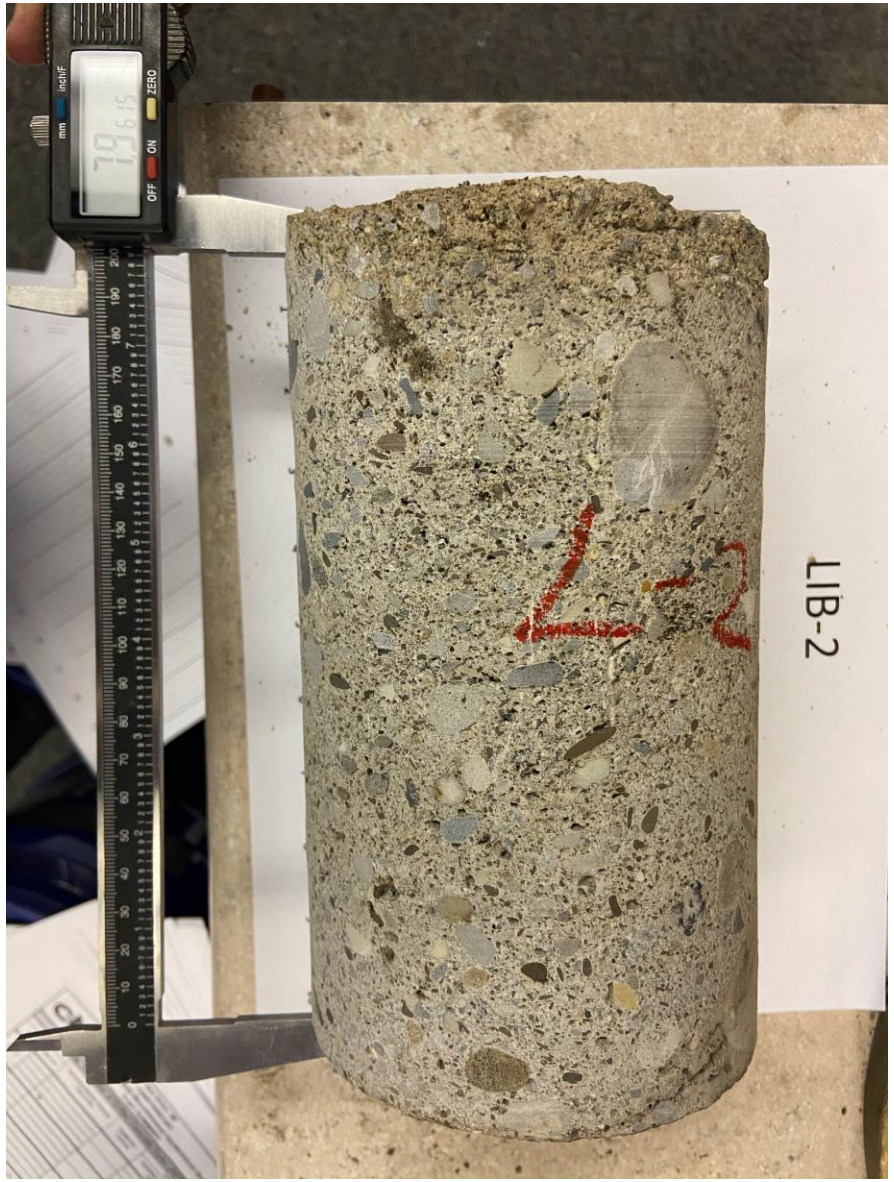

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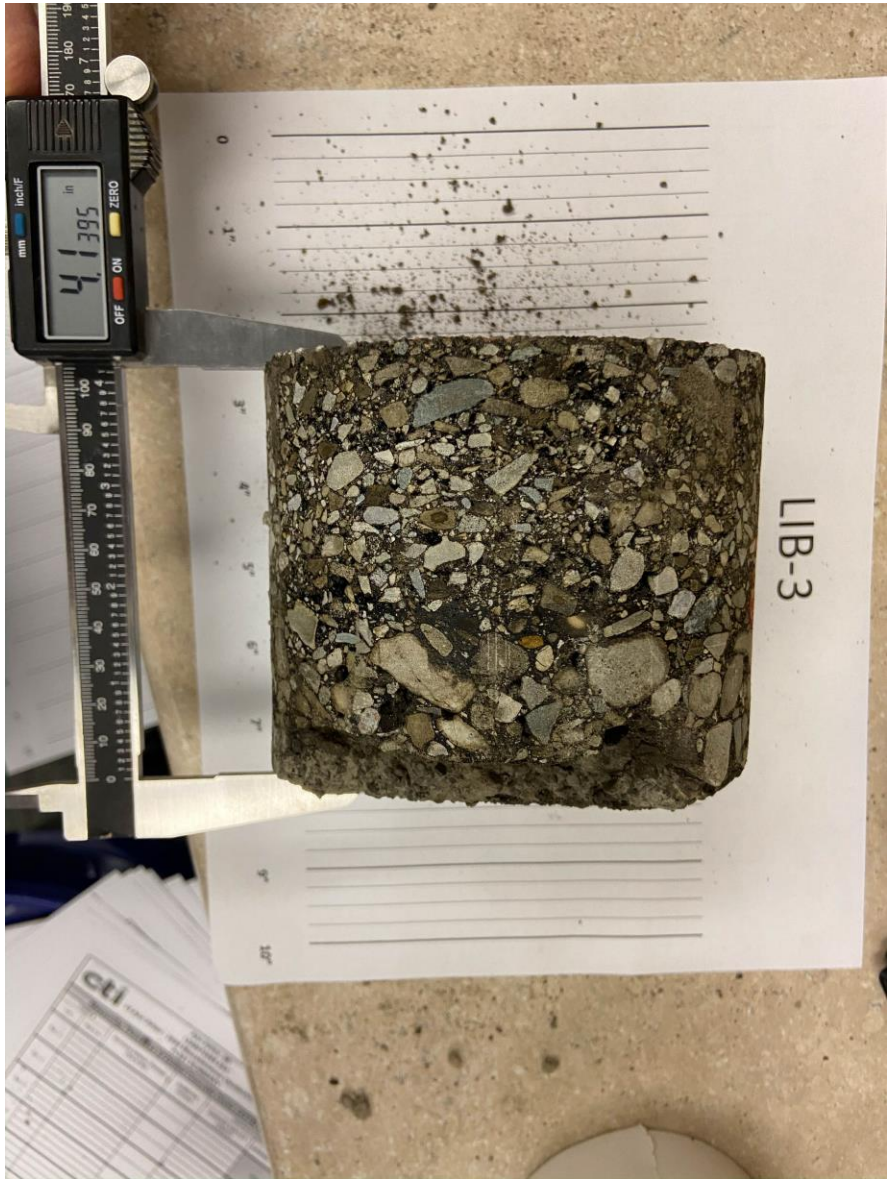

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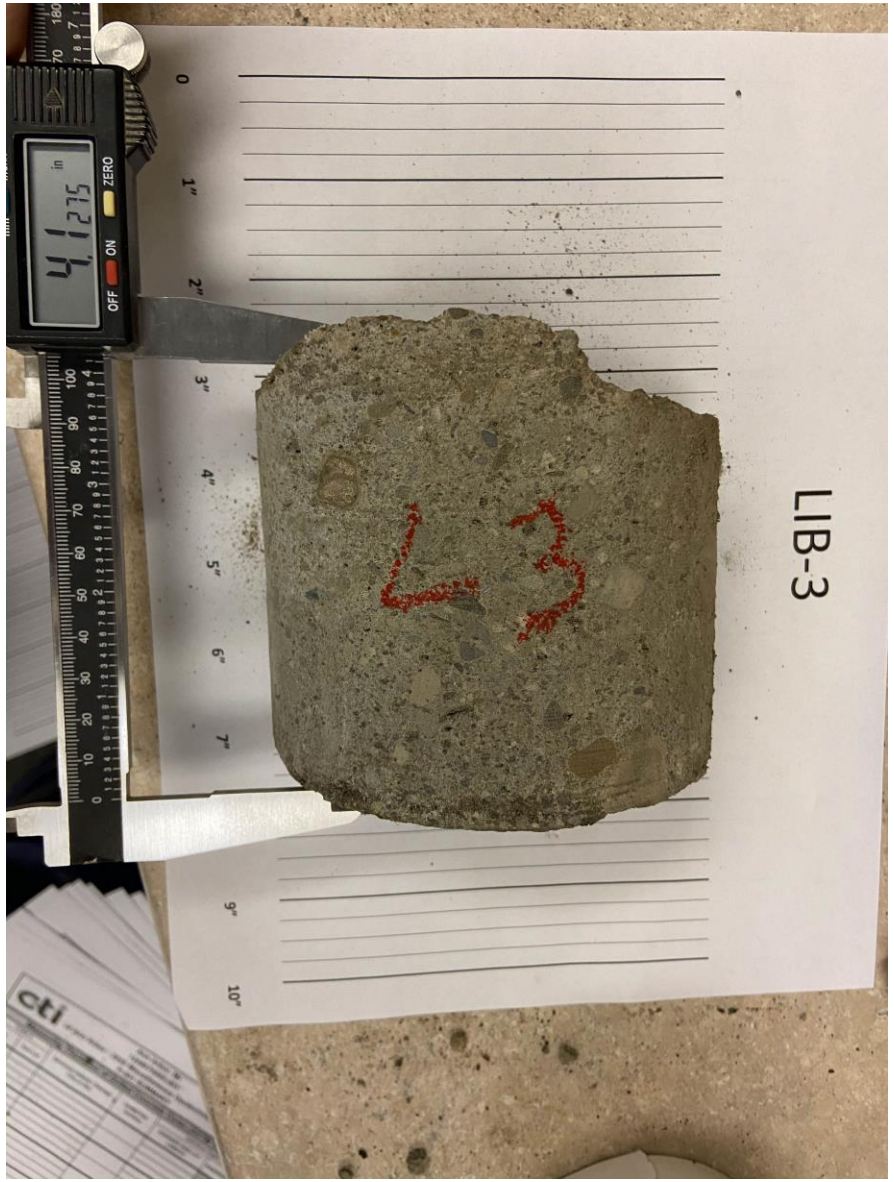

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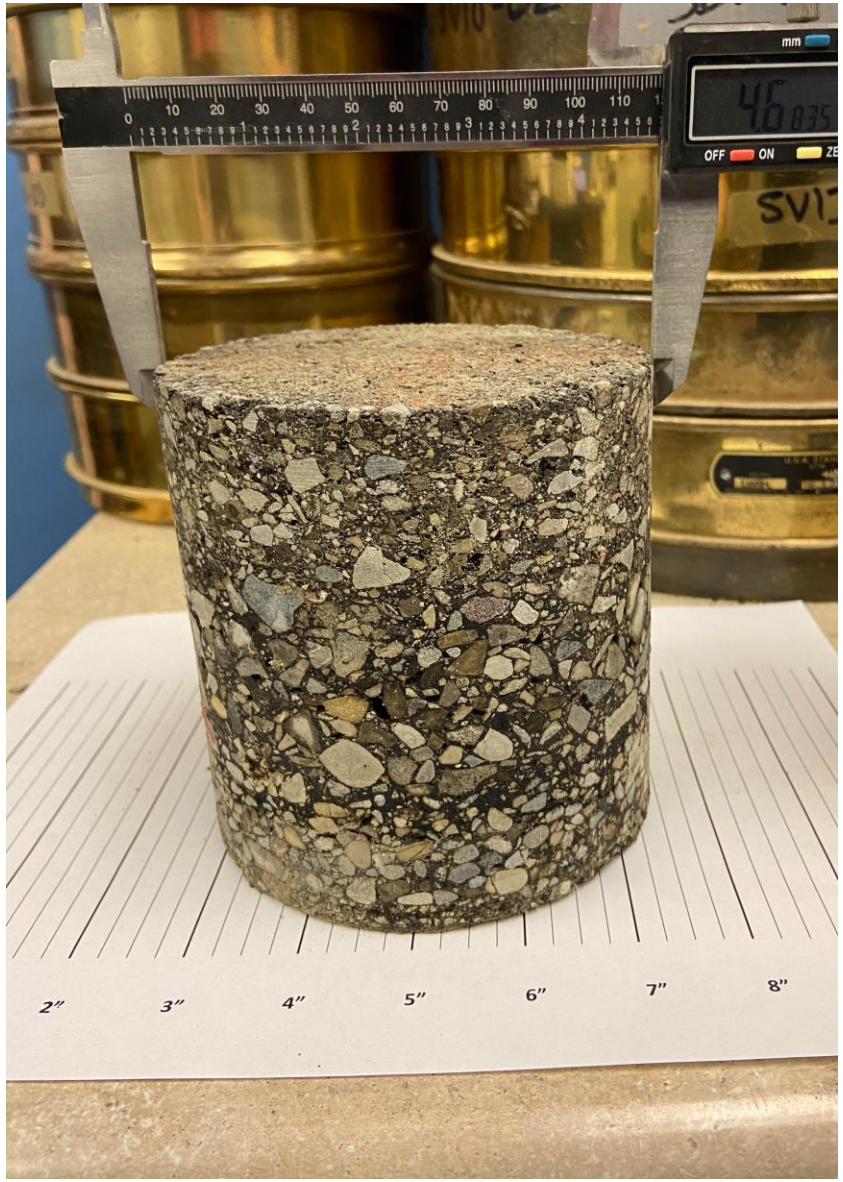

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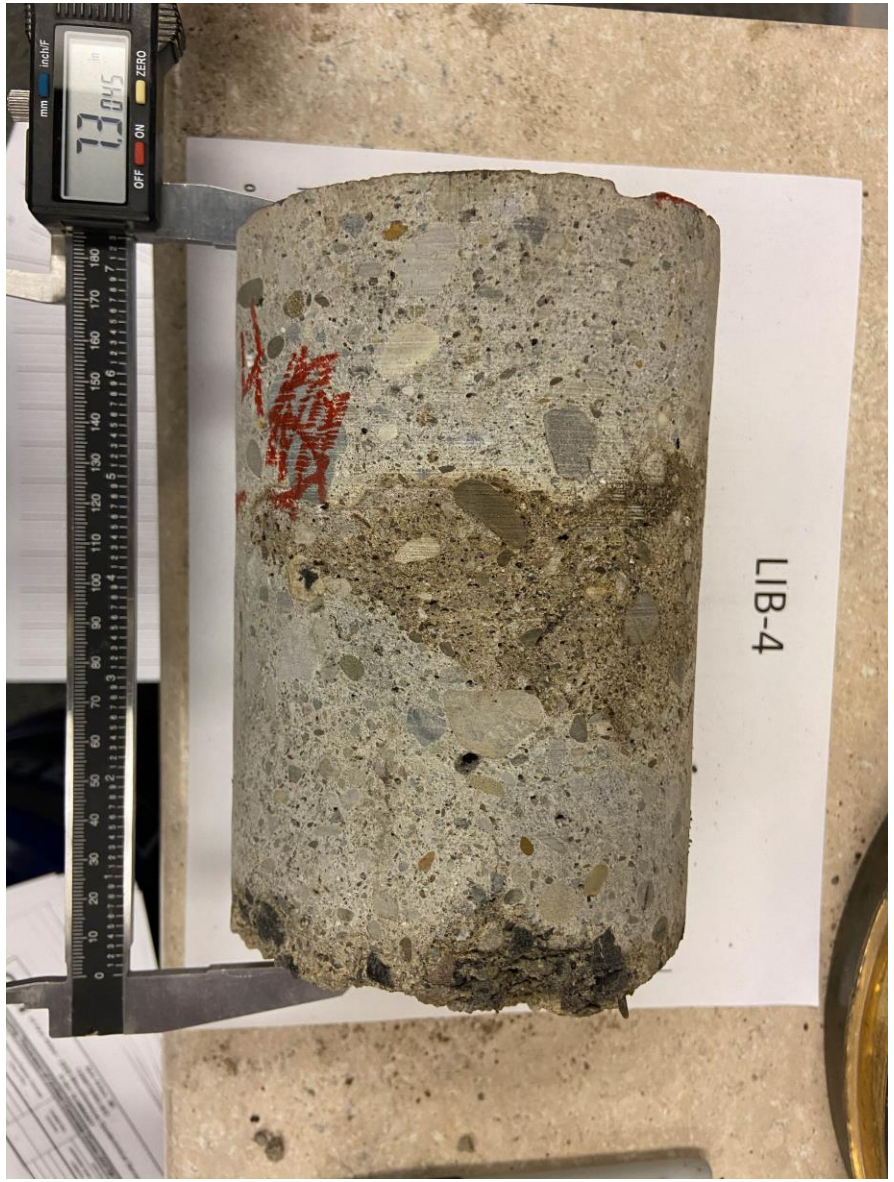
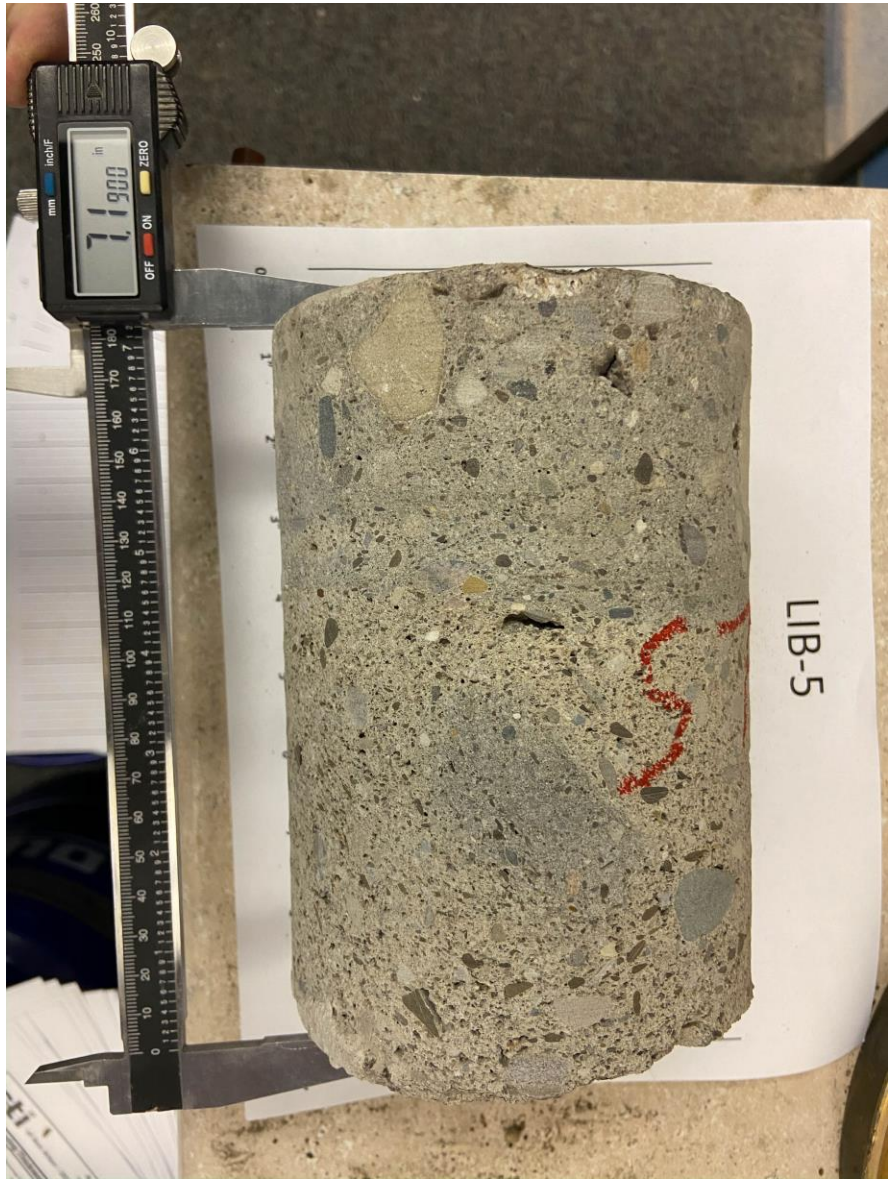


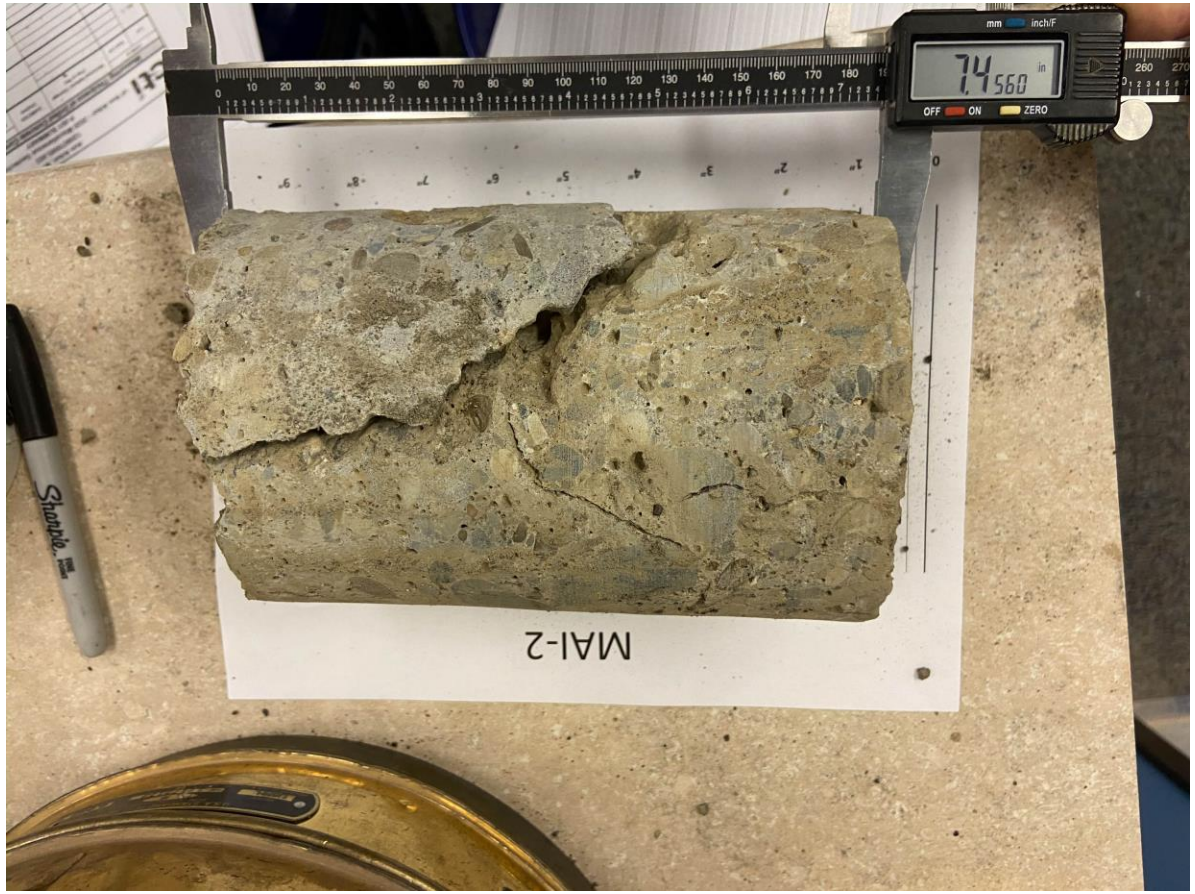
LIB (4.1)

LIB (5)



LIB (5.1)

MAI (2)



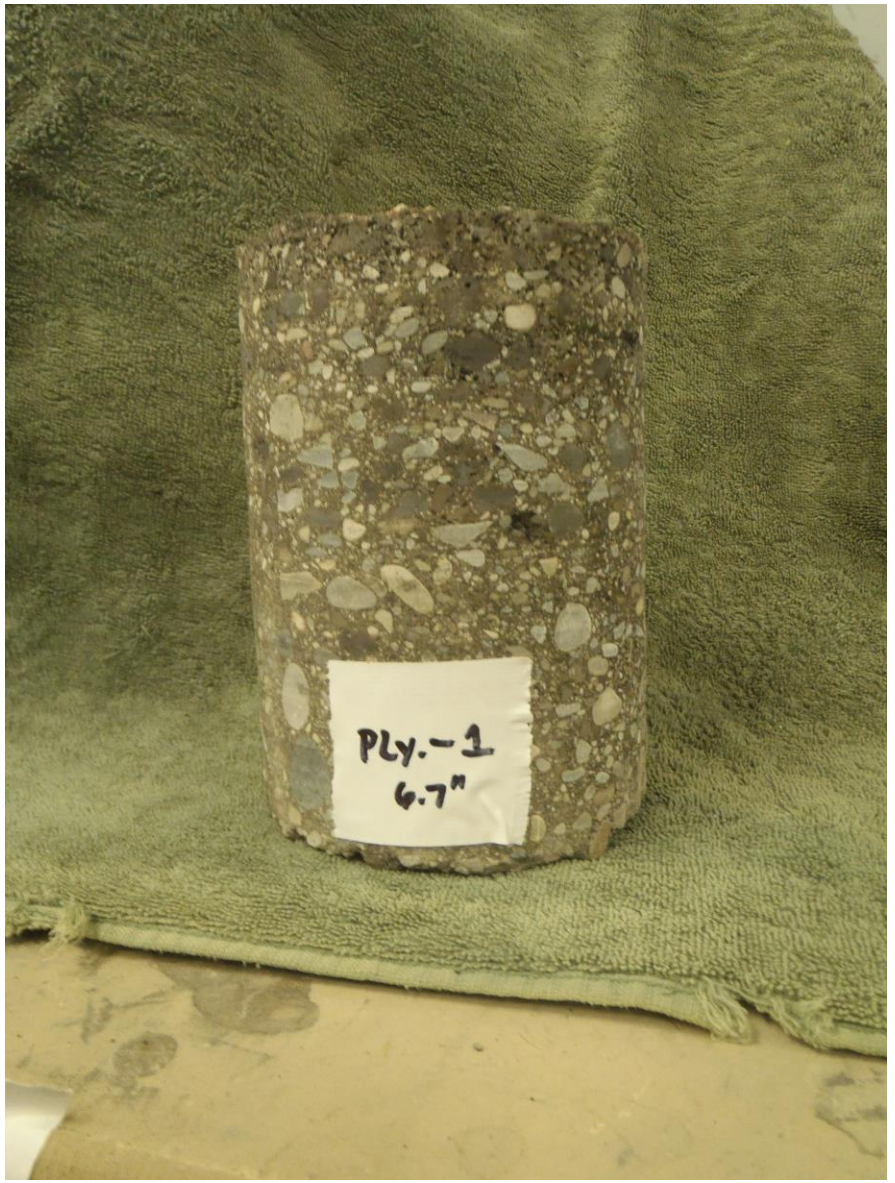
MAI (2.1)

MAI (3)

MAI (3.1)

MAI (4)

MAI (5)



PLY (1)

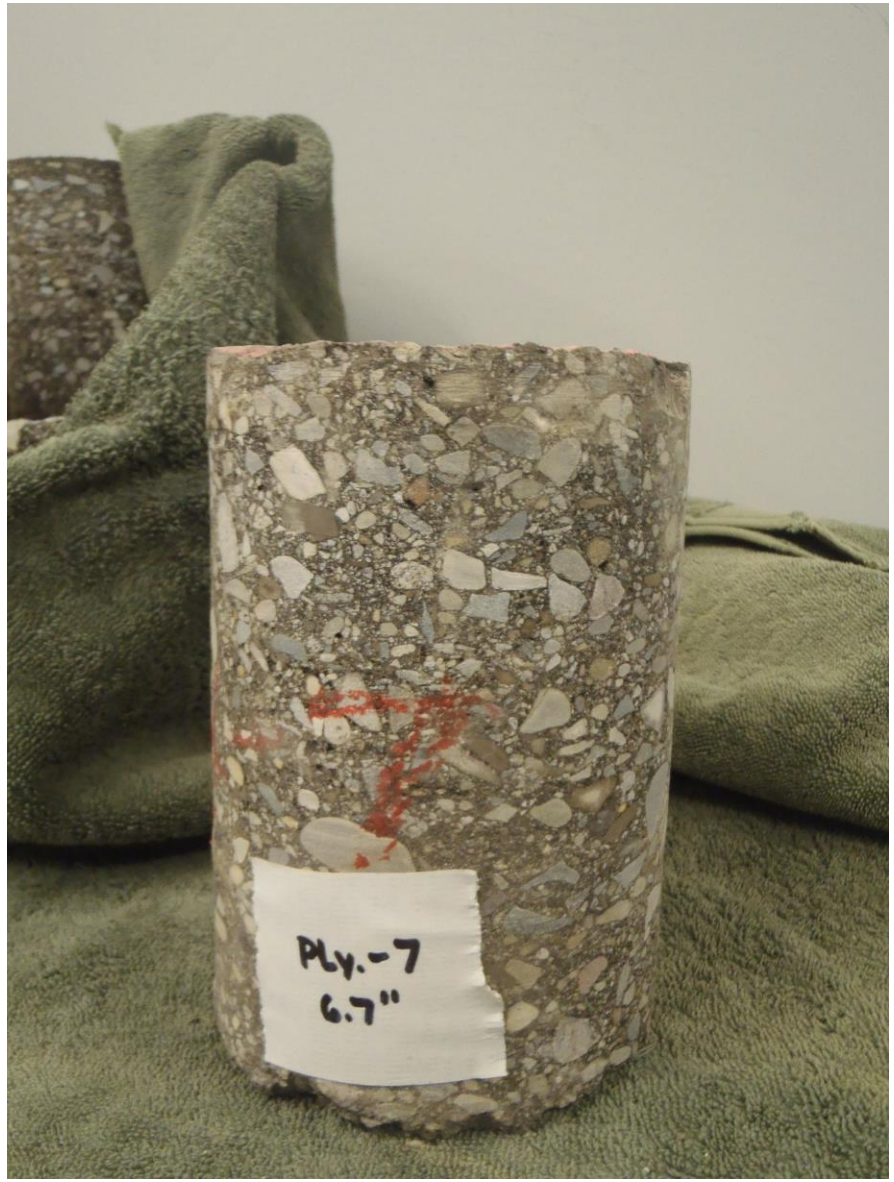
PLY (2)

PLY (3)

PLY (4)

PLY (5)

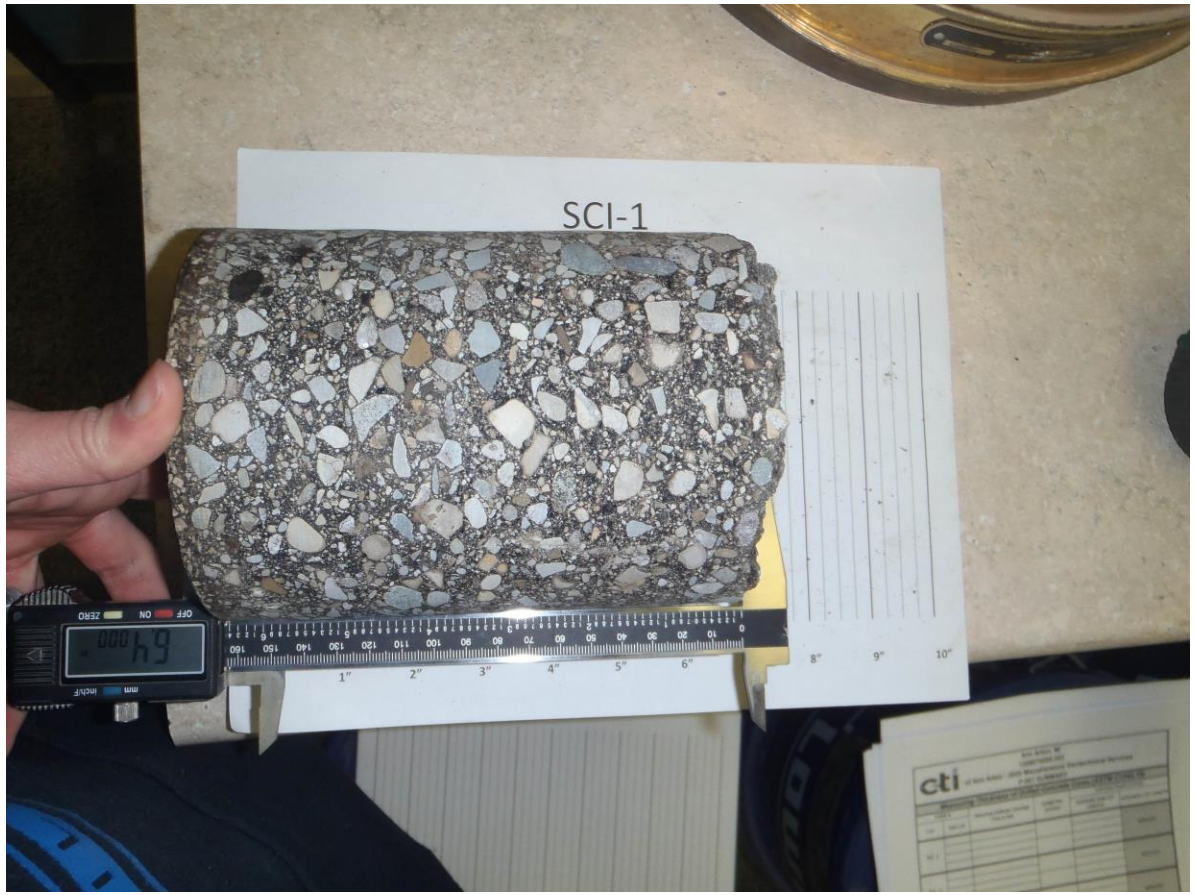
PLY (6)



PLY (7)

PLY (8)

PLY (9)

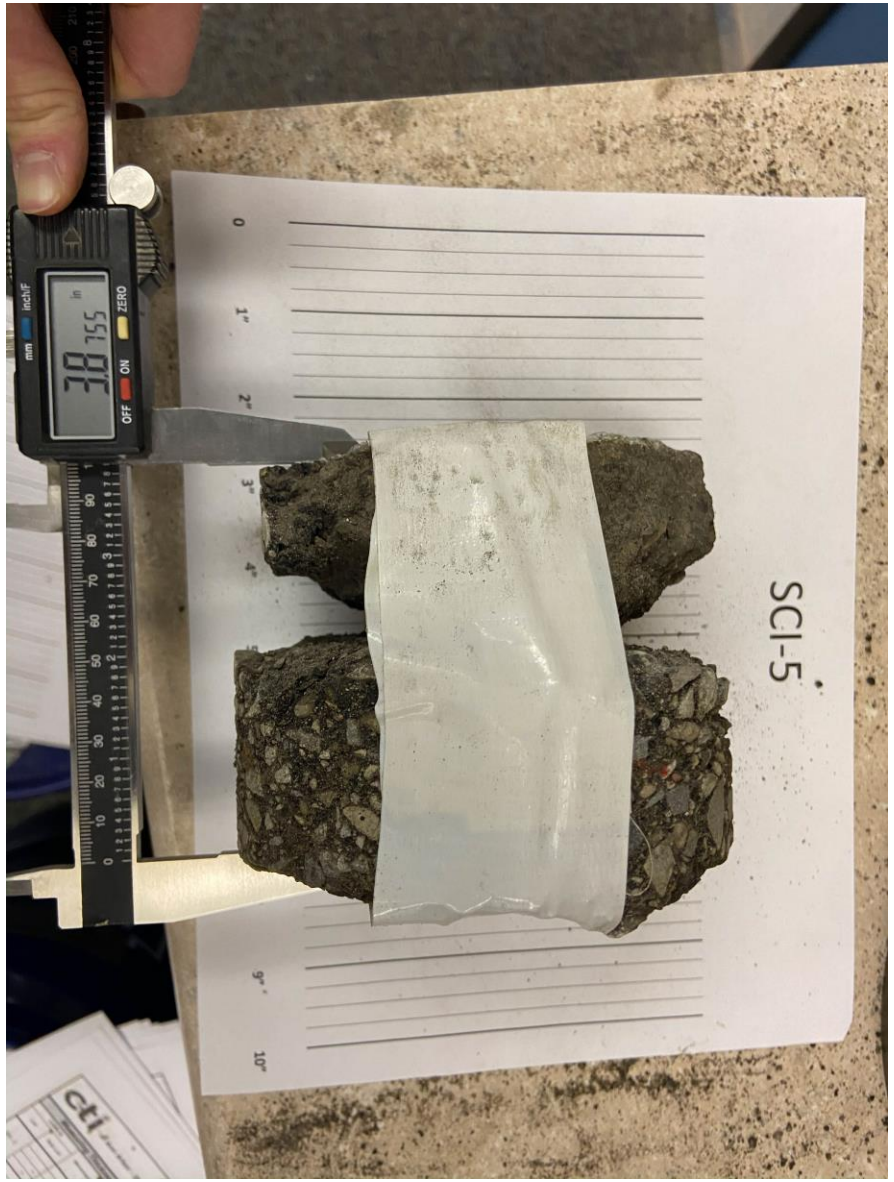


SCI (1)

SCI (2)

SCI (3)

SCI (4)



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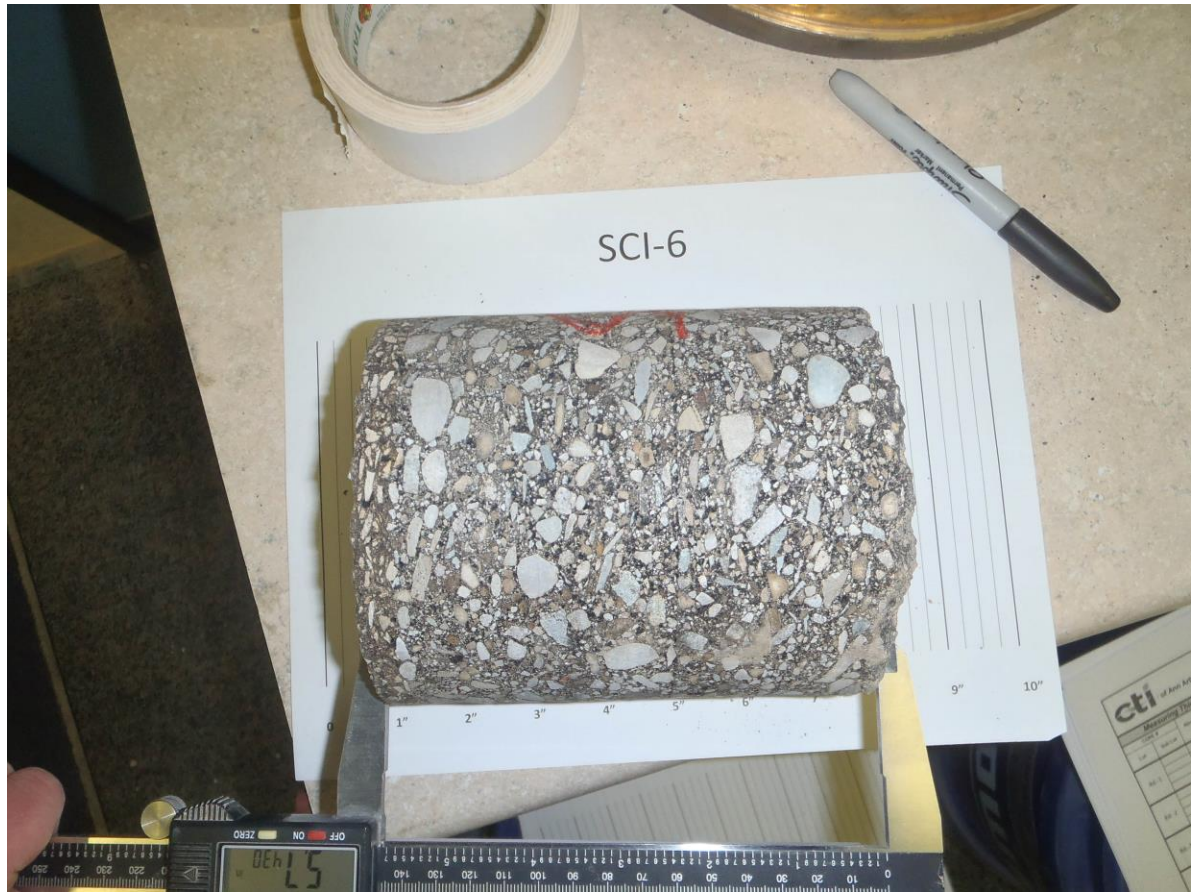

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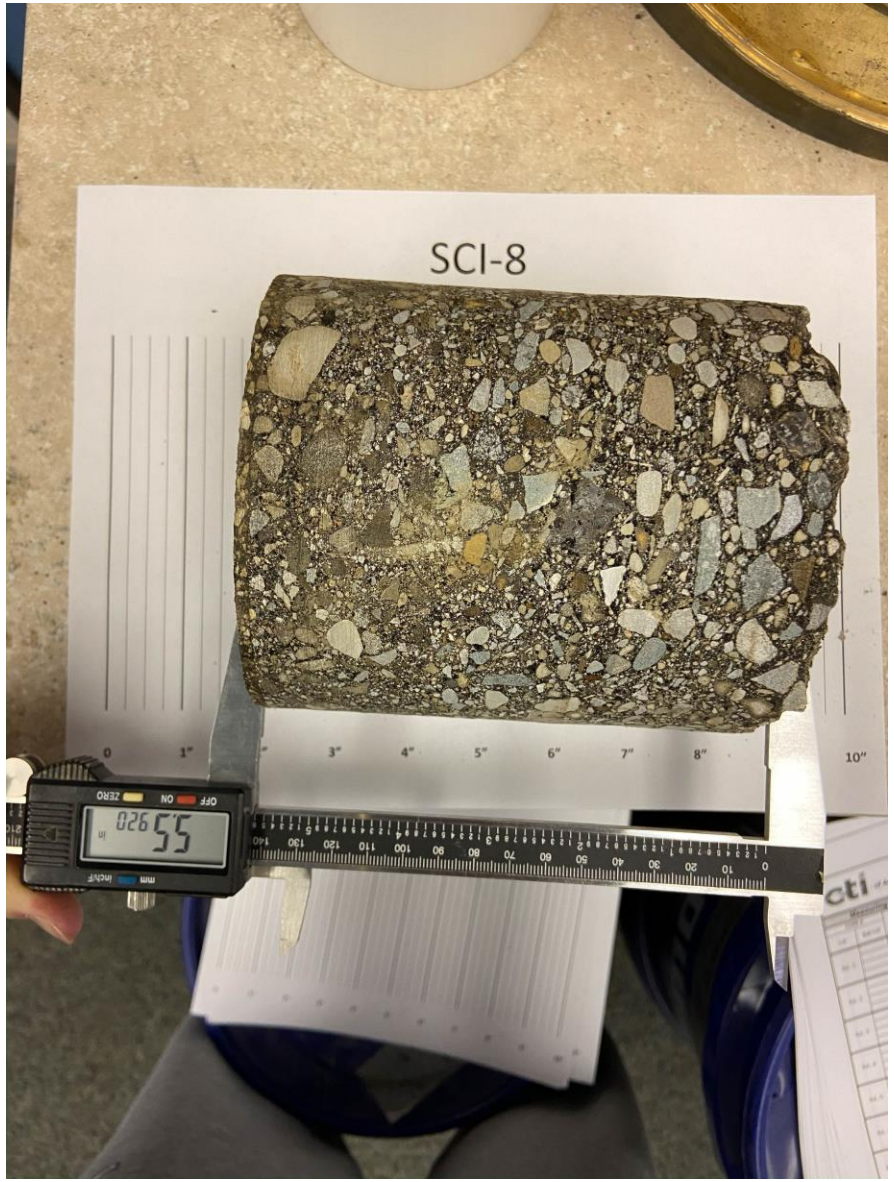
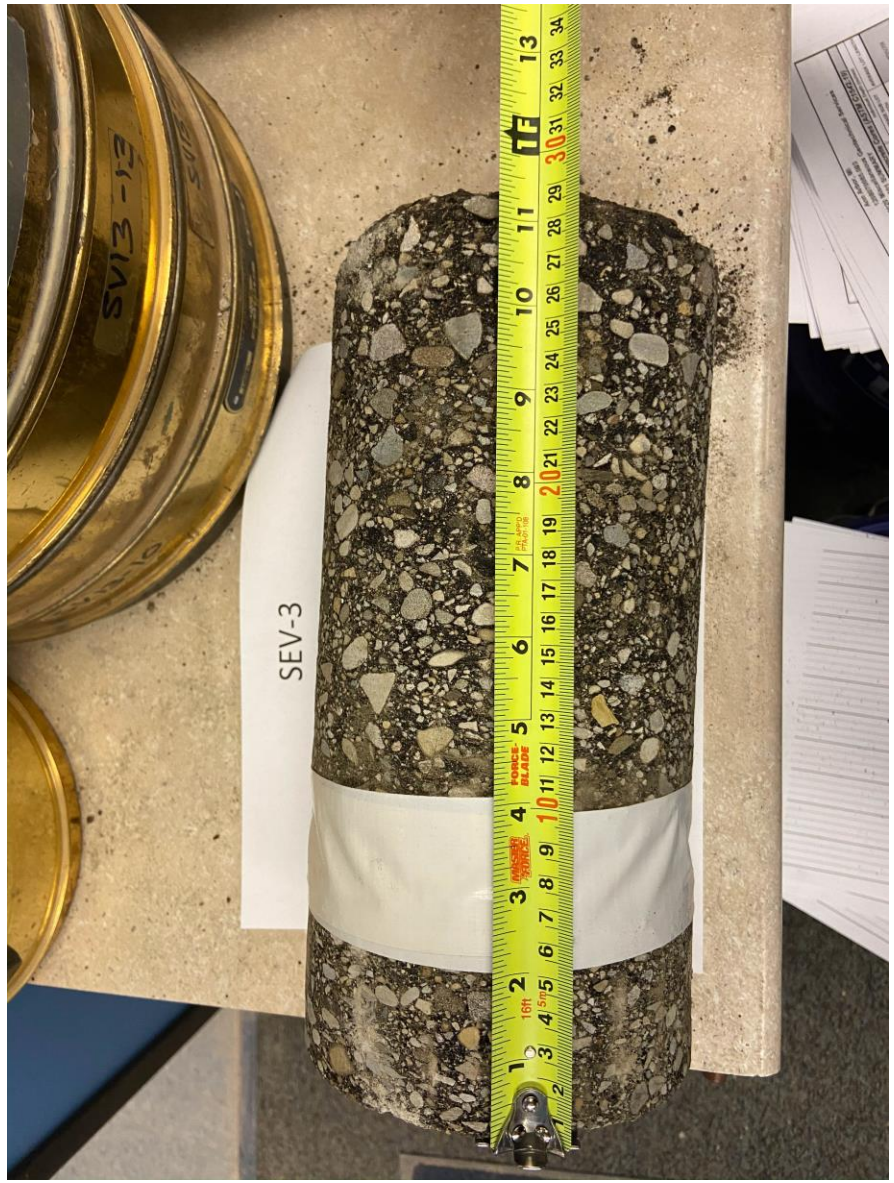


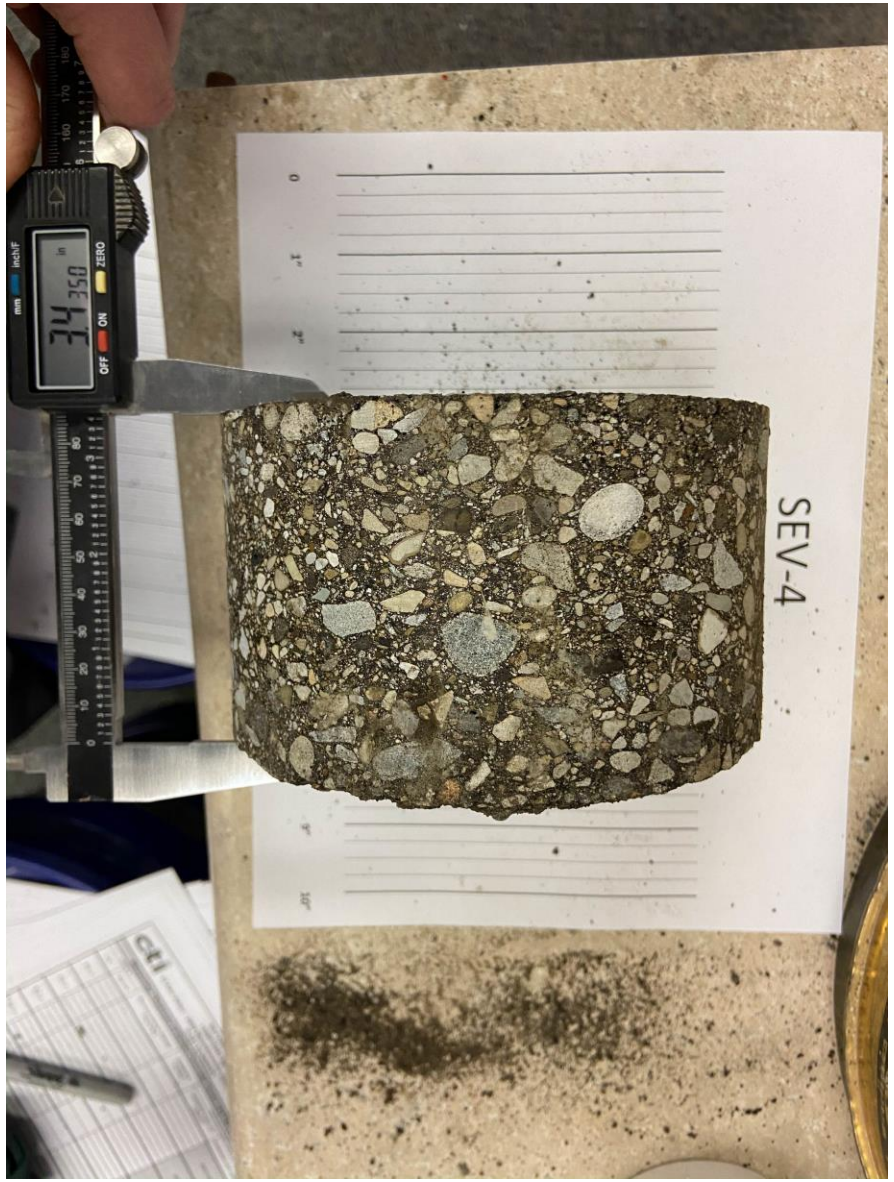
SCI (8)

SEV (1)

SEV (2)



SEV (3)



SEV (4)

SEV (5)

General Notes for Soil Classification

CTI and Associates, Inc.

GENERAL NOTES FOR SOIL CLASSIFICATION

STANDARD PENETRATION TEST: Driving a 2" outside diameter, 1-3/8" inside diameter sampler a distance of 18 inches into undisturbed soil with a 140 pound hammer free falling a distance of 30 inches. The sampler is driven three successive 6-inch increments. The number of blows required for the last 12 inches of penetration is termed the Standard Penetration Resistance (N).

GROUNDWATER: Observations are made at the times indicated on logs. Porosity of soil strata, weather conditions and site topography may cause changes in the water levels.

SOIL CLASSIFICATION PROCEDURE: Classification on the logs is generally made by visual inspection. For fine-grained soils (silt, clay and combinations thereof), the classification is primarily based upon plasticity. For coarse-grained soils (sand and gravel), the classification is based upon particle size distribution. Minor soil constituents are reported as "trace" (0-5%), "some" (5-12%) and "with" (15-29%). Where the minor constituents are in excess of 29%, an adjective is used preceding the major constituent name (i.e. for sands containing 35% silt, the soil is classified as silty sand).

PARTICLE SIZE DISTRIBUTION

Boulders	-	Greater than 12 inches average diameter
Cobbles	-	3 inches to 12 inches
Gravel –		
Coarse	-	¾ inches to 3 inches
Fine	-	No. 4 (4.75mm) to ¾ inches
Sand –		
Coarse	-	No. 10 (2.00mm) to No. 4 (4.75mm)
Medium	-	No. 40 (0.425mm) to No. 10 (2.00mm)
Fine	-	No. 200 (0.075mm) to No. 40 (0.425mm)
Silt and Clay	-	Less than 0.075mm, Classification based upon plasticity. Generally silt particles size ranges from 0.005mm to 0.075mm and clay particle size is less than 0.005mm.

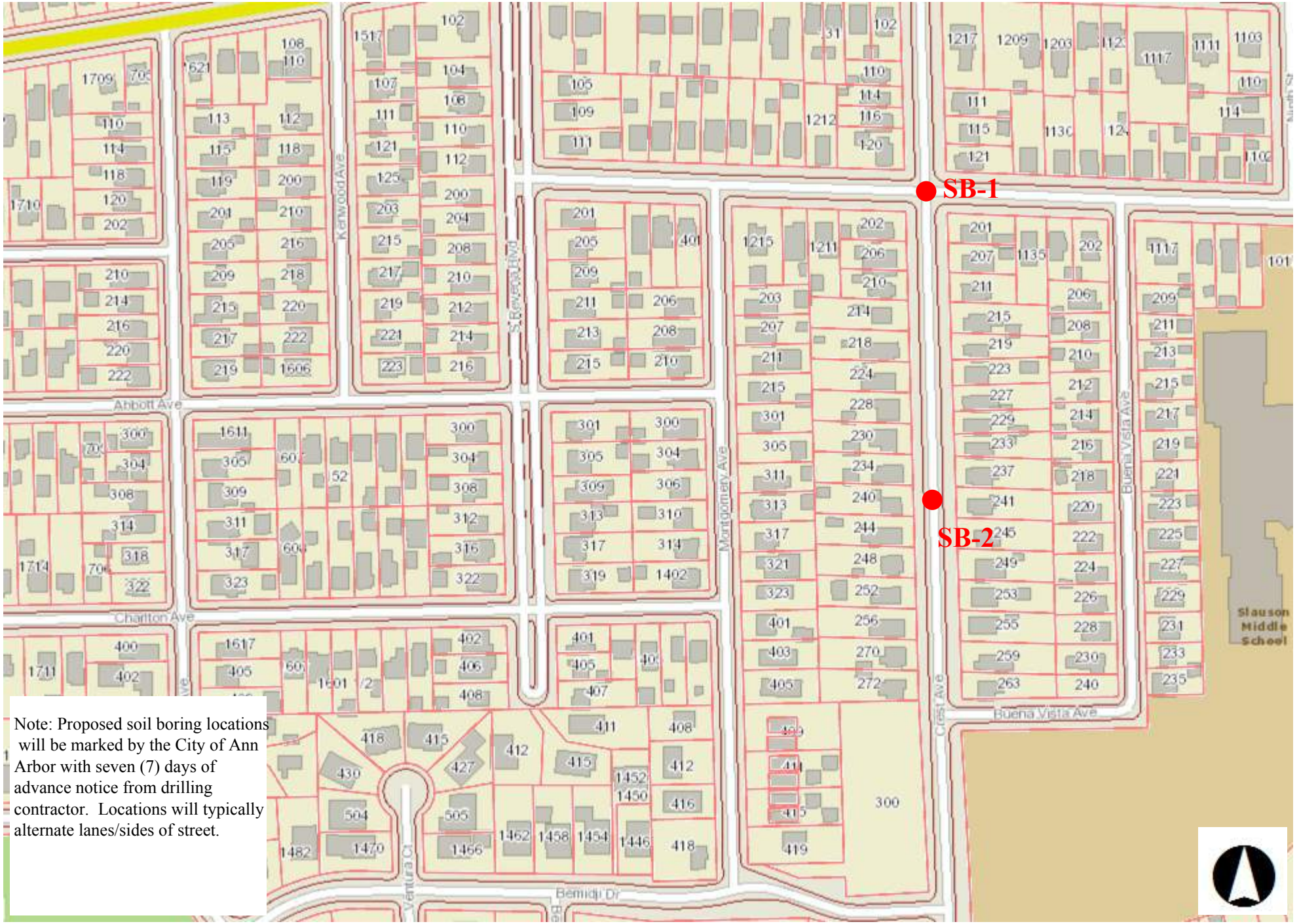
CONSISTENCY OF FINE GRAINED SOILS IN TERMS OF UNCONFINED COMPRESSIVE STRENGTH AND N-VALUES

Consistency	Unconfined Compressive Strength (Tons per square foot)	Approximate range of N
Very Soft	Less than 0.25	0 - 2
Soft	0.25 to 0.5	3 - 4
Medium Stiff	0.5 to 1.0	5 - 8
Stiff	1.0 to 2.0	9 - 15
Very Stiff	2.0 to 4.0	16 - 30
Hard	over 4.0	over 31

RELATIVE DENSITY OF COARSE GRAINED SOILS ACCORDING TO N-VALUES

Density Classification	Relative Density, %	Approximate Range of N
Very Loose	0 – 15	0 – 4
Loose	16 – 35	5 – 10
Medium Dense	36 - 65	11 - 30
Dense	66 - 85	31 – 50
Very Dense	86 – 100	over 50

Relative density of cohesionless soils is based upon an evaluation of the Standard Penetration Resistance (N), modified as required for overburden pressure.



Note: Proposed soil boring locations will be marked by the City of Ann Arbor with seven (7) days of advance notice from drilling contractor. Locations will typically alternate lanes/sides of street.

SOIL BORING LOCATION MAP
Crest Ave/W Huron St/Buenta Vista Ave

Scale is 12,400

6/14/2017

Project Number: 1178070011
Project Name: 2017 Misc. Geotech
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor

Date Started: 9/8/17 Completed: 9/8/17
Time Started: Completed:
Logged By: M.Partenio Checked By:

Boring No: Crest SB-1
Offset: 15' NE of SW Washgtn. intersection
Street Name: Crest Ave.
Drilling Firm: Stearns Drilling
Driller Name: M. Hefferan
Drilling Method: HSA
Drill Rig Model: CME 55/300
Auger Size: 2.25" HSA
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	UCS (tsf) *hand penetrometer	MOISTURE (%)	PL : MC (LL 7 & Fines Content (%) & , SPT N Value ,
0	5.25" ASPHALT PAVEMENT						
	SAND (SW) - brown, fine to coarse, some gravel, dry						
	SAND (SW) - brown, fine to coarse, some silt, trace gravel, occasional clay pockets, medium dense, moist		SS-1	14			
	SAND (SW) - brown, fine to coarse, some gravel and silt, occasional clay pockets, medium dense, moist		SS-2	18			
5	End of Boring						
10							

Groundwater During Drilling: N/A
Groundwater After Drilling: N/A
Cave-in Depth: N/A
End of Boring: 5 ft

Notes: Filled with auger cuttings and patched

PAGE 1 of 1

Project Number: 1178070011
Project Name: 2017 Misc. Geotech
Project Location: Ann Arbor, MI
Client Name: City of Ann Arbor

Date Started: 9/8/17 Completed: 9/8/17
Time Started: Completed:
Logged By: M.Partenio Checked By:

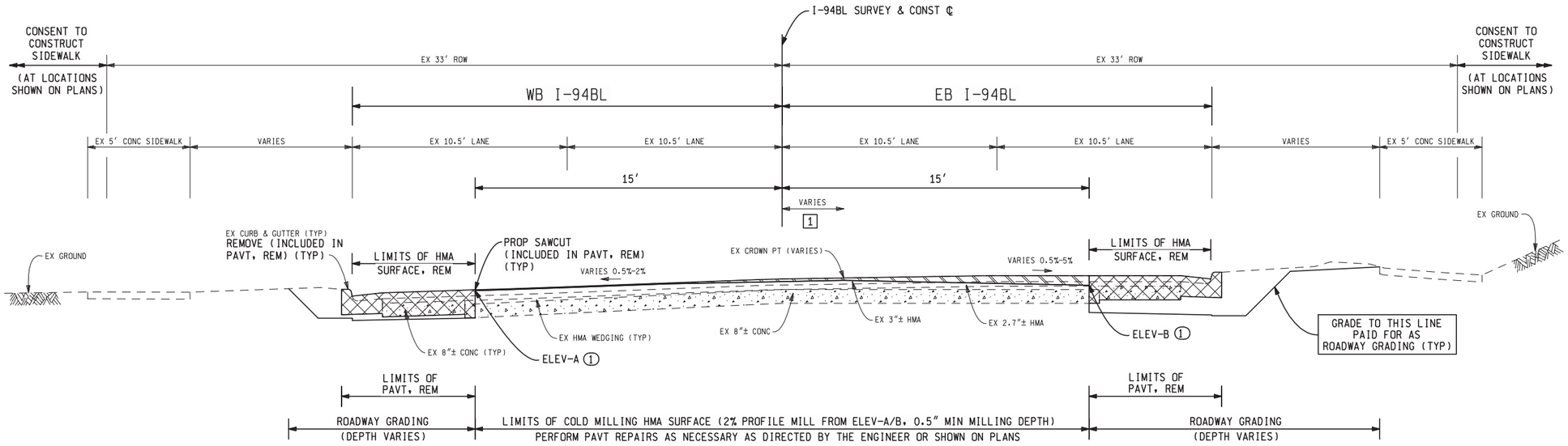
Boring No: Crest SB-2
Offset: 18' E of curb, across f/ 240
Street Name: Crest Ave.
Drilling Firm: Stearns Drilling
Driller Name: M. Hefferan
Drilling Method: HSA
Drill Rig Model: CME 55/300
Auger Size: 2.25" HSA
Weather:

DEPTH (ft)	DESCRIPTION OF STRATA	LEGEND	SAMPLE	RECOVERY (in)	UCS (tsf) *hand penetrometer	MOISTURE (%)	PL : MC (LL 7 / & Fines Content (%) & / , SPT N Value ,
0	4.5" ASPHALT PAVEMENT						
	SAND (SW) - brown, fine to coarse, some gravel, dry						
	SAND (SW) - brown, fine to coarse, some silt, trace gravel, occasional clay pockets, medium dense, moist		SS-1	18		8.5	
	Boring Terminated on Obstruction						
5							
10							

Groundwater During Drilling: N/A
Groundwater After Drilling: N/A
Cave-in Depth: N/A
End of Boring: 5 ft

Notes: Filled with auger cuttings and patched

PAGE 1 of 1



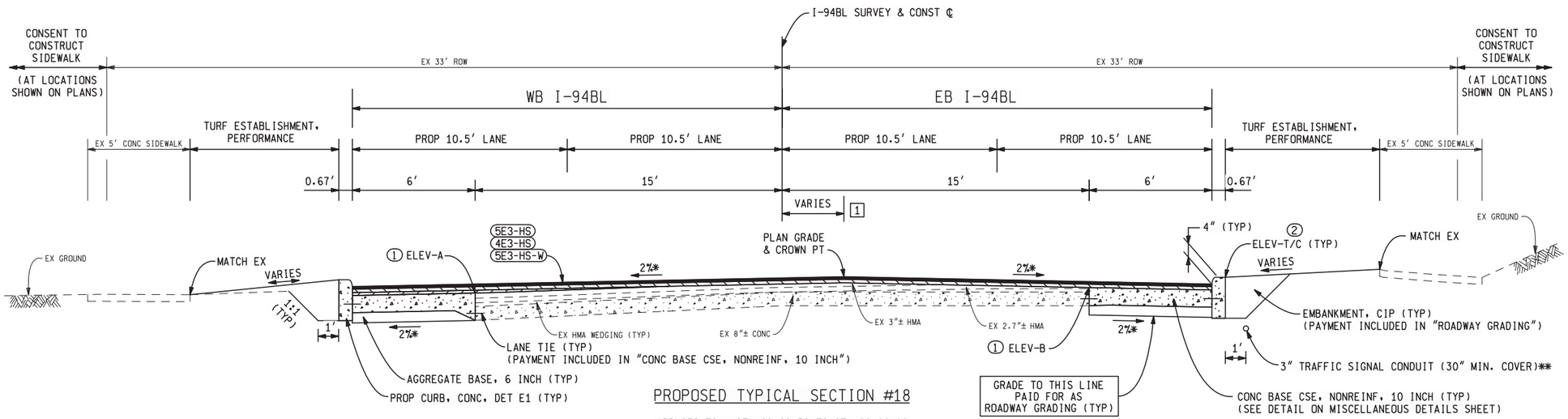
EXISTING TYPICAL SECTION #18

APPLIES TO: STA 68+69.32 TO STA 96+00.00

EX AND PROP CROWN POINT

1 STA 68+69.32 TO STA 76+00
DISTANCE = 0'
STA 76+00 TO STA 77+00
DISTANCE VARIES 0' TO 10.5'
STA 77+00 TO STA 92+50
DISTANCE = 10.5'
STA 92+50 TO STA 93+50
DISTANCE VARIES 10.5' TO 0'
STA 93+50 TO STA 96+00
DISTANCE = 0'

1 ELEV-A AND ELEV-B ARE COLD MILLED SURFACE ELEVATIONS AT SAW CUT LINE, SEE PROFILE.
2 ELEV-T/C IS TOP OF CURB ELEVATIONS, SEE PROFILE.



PROPOSED TYPICAL SECTION #18

APPLIES TO: STA 68+69.32 TO STA 96+00.00

* PROPOSED CROSS SLOPE VARIES FROM 2% TO MATCH EXISTING FROM STA 95+50 TO STA 96+00
** SEE TRAFFIC SIGNAL SHEETS FOR DETAILS. COORDINATE ALL SIGNAL WORK WITH ROAD WORK.

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

NCI NORTHWEST CONSULTANTS, INC. CIVIL - STRUCTURAL - TRANSPORTATION

MDOT Michigan Department of Transportation

0 VERT. (FT) VARIES
0 HORZ. (FT) 6

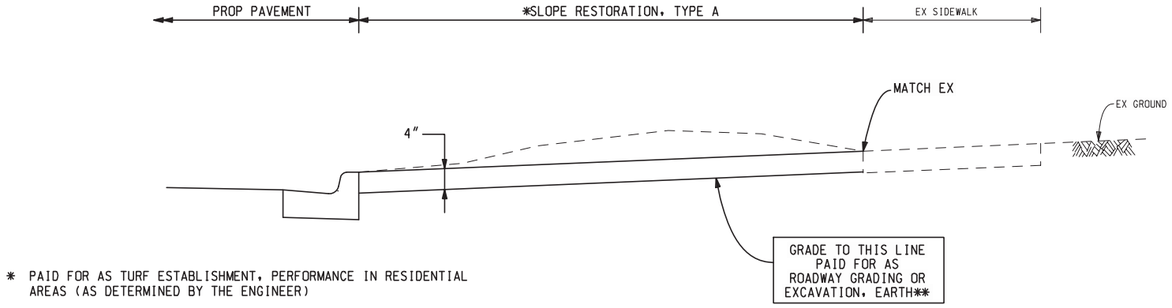
FILE: 87521_I94BL_TYPXS_019.dgn

DATE: 08/01/13
DESIGN UNIT: KIRBY
TSC: BRIGHTON

CS: 81101
JN: 87521A

TYPICAL CROSS SECTIONS
I-94BL

DRAWING: I-94BL TYPXS 019
SHEET: SECT 1

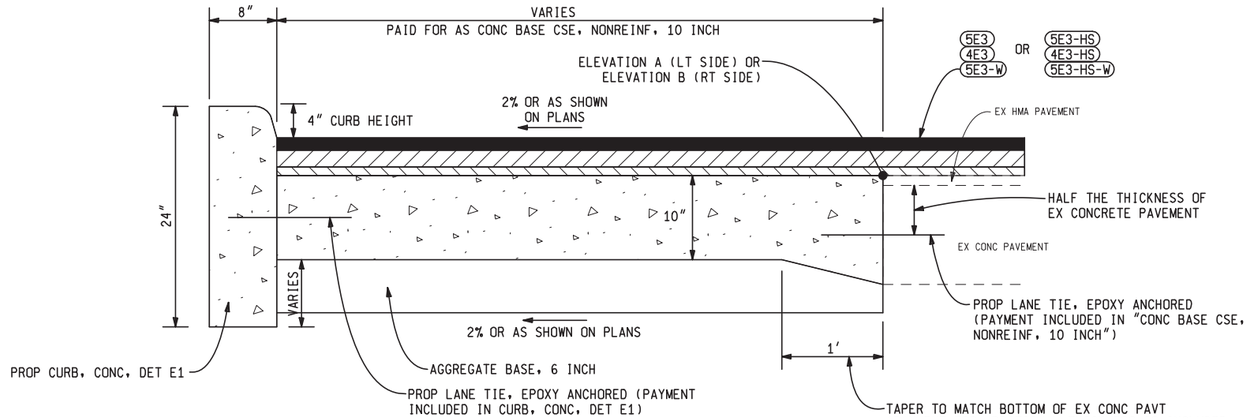


* PAID FOR AS TURF ESTABLISHMENT, PERFORMANCE IN RESIDENTIAL AREAS (AS DETERMINED BY THE ENGINEER)

** PAID FOR AS ROADWAY GRADING FROM POB TO STA 100+00.00
PAID FOR AS EXCAVATION, EARTH FROM STA 100+00.00 TO POE

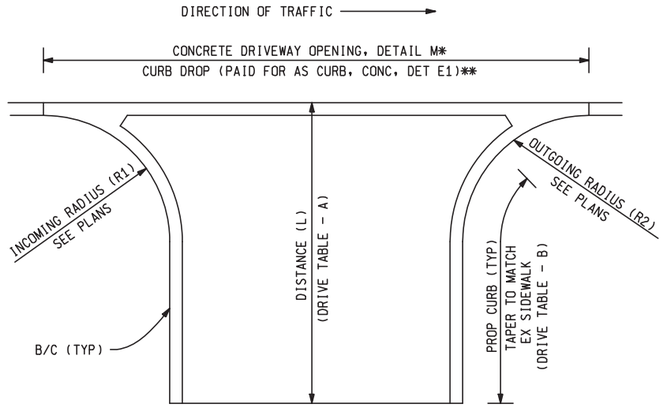
OVERBURDEN REMOVAL DETAIL

TO APPLY: AS DIRECTED BY THE ENGINEER



CONC CURB E1 W/ CONC BASE COURSE DETAIL

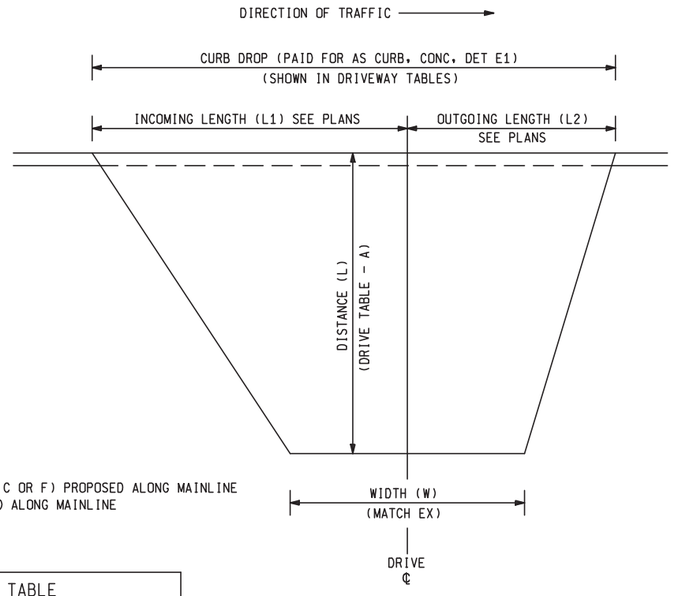
APPLIES TO: AS SHOWN ON PLANS



* WHEN CURB AND GUTTER (DET C OR F) PROPOSED ALONG MAINLINE
** WHEN CURB (DET E) PROPOSED ALONG MAINLINE

DRIVEWAY DETAIL #1

APPLIES TO: AS SHOWN ON PLANS



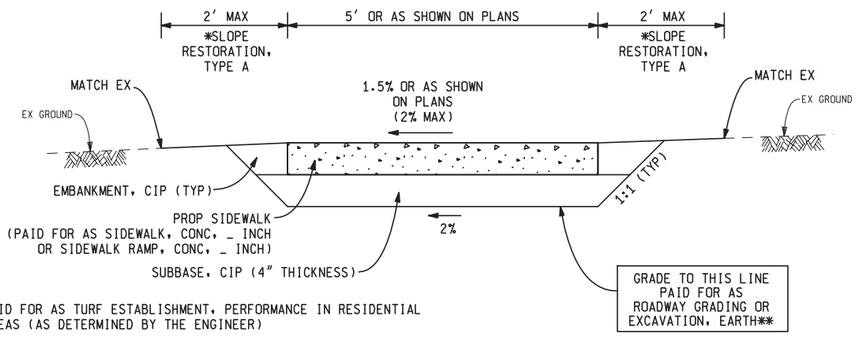
DRIVEWAY DETAIL #2

APPLIES TO: AS SHOWN ON PLANS

DRIVE TABLE

DRIVEWAY TYPE	SURFACE MATERIAL	A	B
RESIDENTIAL	HMA	(HA-1)	AS SHOWN ON PLANS
	CONC	DRIVEWAY, NONREINF CONC, 6 INCH	
COMMERCIAL*	HMA	(HA-2)	
	CONC	DRIVEWAY, NONREINF CONC, 7 INCH	

* FIRE STATION CONCRETE DRIVE SHALL BE 9 INCHES THICK

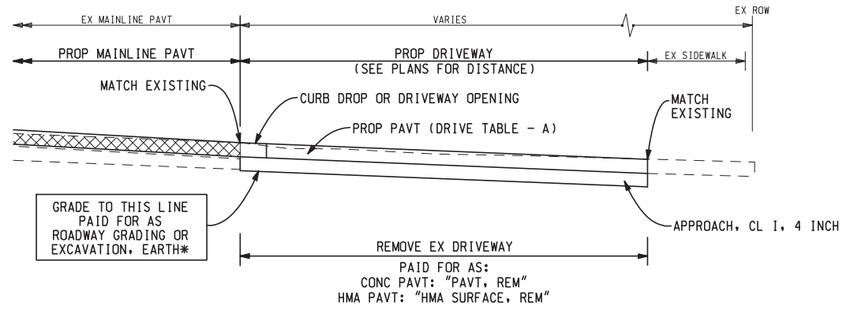


* PAID FOR AS TURF ESTABLISHMENT, PERFORMANCE IN RESIDENTIAL AREAS (AS DETERMINED BY THE ENGINEER)

** PAYMENT INCLUDED IN ROADWAY GRADING FROM POB TO STA 100+00.00
PAID FOR AS EXCAVATION, EARTH FROM STA 100+00.00 TO POE

SIDEWALK AND SIDEWALK RAMP TYPICAL SECTION

APPLIES TO: AS SHOWN ON PLANS



* PAID FOR AS ROADWAY GRADING FROM POB TO STA 100+00.00
PAID FOR AS EXCAVATION, EARTH FROM STA 100+00.00 TO POE

DRIVEWAY DETAIL #3

APPLIES TO: AS SHOWN ON PLANS

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

NCI NORTHWEST CONSULTANTS, INC. CIVIL - STRUCTURAL - TRANSPORTATION

MDOT Michigan Department of Transportation

NO SCALE

FILE: 87521_I94BL_MISDET_002.dgn

DATE: 08/01/13
DESIGN UNIT: KIRBY
TSC: BRIGHTON

CS: 81101/81062/81072/81073/81104
JN: 87521A

MISCELLANEOUS DETAILS
I-94BL

DRAWING: I-94BL MISDET 002
SHEET: SECT 1

"General Decision Number: MI20210074 01/01/2021

Superseded General Decision Number: MI20200074

State: Michigan

Construction Type: Heavy

County: Washtenaw County in Michigan.

Heavy, Includes Water, Sewer Lines and Excavation (Excludes Hazardous Waste Removal; Coal, Oil, Gas, Duct and other similar Pipeline Construction)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/01/2021

CARP0687-006 06/01/2020

	Rates	Fringes
CARPENTER, Includes Form Work	$ 34.20	28.82

ELEC0252-009 06/01/2020

	Rates	Fringes
ELECTRICIAN	$ 47.46	23.16

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* ENGI0325-019 09/01/2020

POWER EQUIPMENT OPERATORS: Underground Construction (Including Sewer)

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1	$ 35.88	24.85
GROUP 2	$ 31.15	24.85
GROUP 3	$ 30.42	24.85
GROUP 4	$ 29.85	24.85

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Backhoe/ Excavator, Boring Machine, Bulldozer, Crane, Grader/ Blade, Loader, Roller, Scraper, Trencher (over 8 ft. digging capacity)

GROUP 2: Trencher (8-ft digging capacity and smaller)

GROUP 3: Boom Truck (non-swinging, non- powered type boom)

GROUP 4: Broom/ Sweeper, Fork Truck, Tractor, Bobcat/ Skid Steer /Skid Loader

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ENGI0326-008 06/01/2020

EXCLUDES UNDERGROUND CONSTRUCTION

	Rates	Fringes
OPERATOR: Power Equipment		
GROUP 1	$ 42.69	24.95
GROUP 2	$ 41.19	24.95
GROUP 3	$ 39.69	24.95
GROUP 4	$ 39.39	24.95
GROUP 5	$ 38.57	24.95
GROUP 6	$ 37.71	24.95
GROUP 7	$ 36.74	24.95
GROUP 8	$ 35.03	24.95

GROUP 9.....$ 26.69 24.95

FOOTNOTES: Tower cranes: to be paid the crane operator rate determined by the combined length of the mast and the boom.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Crane with boom & jib or leads 400' or longer

GROUP 2: Crane with boom & jib or leads 300' or longer

GROUP 3: Crane with boom & jib or leads 220' or longer

GROUP 4: Crane with boom & jib or leads 140' or longer

GROUP 5: Crane with boom & jib or leads 120' or longer

GROUP 6: Regular crane operator

GROUP 7: Backhoe/Excavator, Bobcat/Skid Loader, Boring Machine, Broom/Sweeper, Bulldozer, Grader/Blade, Loader, Roller, Scraper, Tractor, Trencher

GROUP 8: Forklift

GROUP 9: Oiler

IRON0025-006 06/01/2019

	Rates	Fringes
IRONWORKER		
Reinforcing	$ 30.98	27.99
Structural	$ 36.77	29.03

LABO0334-009 06/01/2019

EXCLUDES OPEN CUT CONSTRUCTION

	Rates	Fringes
Landscape Laborer		
GROUP 1	$ 20.75	7.10
GROUP 2	$ 18.75	7.10

LANDSCAPE LABORER CLASSIFICATIONS

GROUP 1: Landscape specialist, including air, gas and diesel equipment operator, lawn sprinkler installer and skidsteer

(or equivalent)

GROUP 2: Landscape laborer: small power tool operator, material mover, truck driver and lawn sprinkler installer tender

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LABO0334-018 09/01/2018

SCOPE OF WORK:
OPEN CUT CONSTRUCTION: Excavation of earth and sewer, utilities, and improvements, including underground piping/conduit (including inspection, cleaning, restoration, and relining)

	Rates	Fringes
LABORER		
(1) Common or General	$ 23.75	12.85
(2) Mason Tender-Cement/Concrete	$ 23.86	12.85
(4) Grade Checker	$ 24.05	12.85
(5) Pipelayer	$ 22.90	12.75
(524.20) Pipelayer	$ 22.90	12.85
(7) Landscape	$ 18.14	12.85

LABO0499-020 08/01/2019

EXCLUDES OPEN CUT CONSTRUCTION

	Rates	Fringes
LABORER		
GROUP 1	$ 29.37	40.40
GROUP 2	$ 29.58	40.40
GROUP 3	$ 29.71	40.40

LABORER CLASSIFICATIONS

GROUP 1: Common or General; Grade Checker

GROUP 2: Mason Tender - Cement/Concrete

GROUP 3: Pipelayer

PAIN0022-005 07/01/2008

	Rates	Fringes

PAINTER
     Brush & Roller.....$ 25.06 14.75
     Spray.....$ 25.86 14.75

 PLAS0514-002 06/01/2018

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 31.47	13.81

 PLUM0190-010 06/01/2020

	Rates	Fringes
PLUMBER	$ 42.26	23.70

 TEAM0007-006 06/01/2020

	Rates	Fringes
TRUCK DRIVER		
Dump Truck under 8 cu. yds.; Tractor Haul Truck	$ 27.90	.50 + a+b
Dump Truck, 8 cu. yds. and over	$ 28.00	.50 + a+b
Lowboy/Semi-Trailer Truck	$ 28.15	.50 + a+b

FOOTNOTE:
a. $470.70 per week.
b. $68.70 daily.

  SUMI2010-072 11/09/2010

	Rates	Fringes
TRUCK DRIVER: Off the Road Truck	$ 20.82	3.69

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide

employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on

a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

Infrastructure Technologies
4921 Alexander Blvd
Albuquerque, NM
877-ITpipes

Defect Listing

Pipe Segment Reference	City	Street	Material		Location Code	Sewer Use
74-71212	Ann Arbor	W Liberty St	Vitrified Clay Pipe			Sanitary
Upstream MH	Total Length	Year Laid	Shape		Location Details	
71-71026			Circular			
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint Length	
71-71025	25.9		8			

SPR	2	MPR	0	PO Number	Customer
SPRI	2	MPRI	0		
QSR	2100	QMR	0000	Work Order	Purpose

OPR	Surveyed By	Direction	Date	Media label	
2	JBELL	Downstream	03/25/2021		
OPRI	Certificate Number	Pre-Cleaning	Time	Weather	
2	U-1117-07009559	No Pre-cleaning	09:23	Dry	
Date Cleaned			End Time	Additional Info	
			09:26		

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0	Access Point Manhole					☐			
Remarks: 71-71026									
0	Water Level				5	☐			
4.5	Surface Spalling					☐	12		2
11.3	Tap Factory Made		4			☐	3		
25.9	Access Point Manhole					☐			
Remarks: 71-71025									

Infrastructure Technologies
4921 Alexander Blvd
Albuquerque, NM
877-ITpipes

Defect Listing

Pipe Segment Reference	City	Street	Material		Location Code	Sewer Use
74-71211	Ann Arbor	W Liberty St	Vitrified Clay Pipe			Sanitary
Upstream MH	Total Length	Year Laid	Shape		Location Details	
71-71025			Circular			
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint Length	
71-71024	320.9		8			

SPR	3	MPR	12	PO Number	Customer
SPRI	3	MPRI	1.2		
QSR	3100	QMR	2218	Work Order	Purpose

OPR	Surveyed By	Direction	Date	Media label	
15	JBELL	Downstream	03/25/2021		
OPRI	Certificate Number	Pre-Cleaning	Time	Weather	
1.4	U-1117-07009559	No Pre-cleaning	09:27	Dry	
Date Cleaned			End Time	Additional Info	
			09:39		

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0	Access Point Manhole					☐			
Remarks: 71-71025									
0	Water Level				5	☐			
32	Tap Factory Made Active		4			☐	10		
54.3	Tap Factory Made		4			☐	2		
65.3	Fracture Longitudinal					☐	10		3
96.2	Tap Factory Made		4			☐	10		
99.1	Tap Factory Made Capped		4			☐	10		
105.3	Tap Factory Made		4			☐	2		
116.5	Infiltration Weeper					☐	12		2
142.7	Deposits Attached Grease				5	☐	6		2
158.4	Tap Factory Made		4			☐	10		
170.7	Tap Factory Made		4			☐	2		
224	Tap Factory Made		4			☐	10		
228	Tap Break-In		4			☐	10		
236.1	Tap Factory Made		4			☐	2		
281.1	Roots Fine Joint	S01				☑	12		1
295.2	Tap Factory Made		4			☐	2		
297.4	Tap Factory Made		4			☐	10		
319.2	Roots Fine Joint	F01				☑	12		1
320.9	Access Point Manhole					☐			
Remarks: 71-71024									

Infrastructure Technologies
4921 Alexander Blvd
Albuquerque, NM
877-ITpipes

Defect Listing

Pipe Segment Reference	City	Street	Material		Location Code	Sewer Use
74-71210	Ann Arbor	W Liberty St	Vitrified Clay Pipe			Sanitary
Upstream MH	Total Length	Year Laid	Shape		Location Details	
71-71024			Circular			
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint Length	
71-71023	67.7		8			

SPR	0	MPR	3	PO Number	Customer
SPRI	0	MPRI	1		
QSR	0000	QMR	1300	Work Order	Purpose

OPR	Surveyed By	Direction	Date	Media label	
3	JBELL	Upstream	03/25/2021		
OPRI	Certificate Number	Pre-Cleaning	Time	Weather	
1	U-1117-07009559	No Pre-cleaning	12:36	Dry	
Date Cleaned			End Time	Additional Info	
			12:40		

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0	Access Point Manhole					☐			
Remarks: 71-71046									
0	Water Level				5	☐			
11.9	Roots Fine Joint					☑	12		1
43.8	Tap Factory Made		4			☐	10		
52.5	Roots Fine Joint					☑	12		1
56	Tap Factory Made		4			☐	2		
56.7	Roots Fine Joint					☑	12		1
67.7	Access Point Manhole					☐			
Remarks: 71-71024									

Infrastructure Technologies
4921 Alexander Blvd
Albuquerque, NM
877-ITpipes

Defect Listing

Pipe Segment Reference	City	Street	Material		Location Code	Sewer Use
74-71209	Ann Arbor	W Liberty St	Vitrified Clay Pipe			Sanitary
Upstream MH	Total Length	Year Laid	Shape		Location Details	
71-71023			Circular			
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint Length	
71-71046	214.1		8			

SPR	21	MPR	24	PO Number	Customer
SPRI	3.5	MPRI	2		
QSR	5142	QMR	3616	Work Order	Purpose

OPR	Surveyed By	Direction	Date	Media label	
45	JBELL	Downstream	03/25/2021		
OPRI	Certificate Number	Pre-Cleaning	Time	Weather	
2.5	U-1117-07009559	No Pre-cleaning	11:50	Dry	
Date Cleaned			End Time	Additional Info	
			12:04		

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0	Access Point Manhole					☐			
Remarks:	71-71023								
0	Water Level				5	☐			
27.4	Tap Break-In		4			☐	10		
32.7	Tap Factory Made		4			☐	2		
69.4	Tap Factory Made		4			☐	10		
85.7	Tap Break-In		4			☐	10		
88	Tap Factory Made		4			☐	2		
105.6	Tap Break-In Defective		4			☐	9		3
105.6	Hole Soil Visible					☐	10		5
Remarks:	Mortar around hammer tap has failed and has created a hole								
131.5	Crack Spiral					☐	9	3	2
133.6	Crack Multiple					☐	12	3	3
144	Roots Fine Joint	S01				☑	12		1
145.7	Crack Multiple					☐	12	4	3
154.8	Tap Factory Made		4			☐	2		
170.2	Fracture Multiple					☐	12	3	4
173.5	Tap Factory Made		4			☐	10		
173.5	Roots Fine Joint	F01				☑	12		1
174.6	Roots Medium Joint	S02			15	☑	9		3
189.2	Roots Medium Joint	F02			15	☑	9		3
198.9	Roots Medium Joint	S03			15	☑	3		3
200.9	Fracture Multiple					☐	7	3	4
208.4	Roots Medium Joint	F03			15	☑	3		3
214.1	Access Point Manhole					☐			
Remarks:	71-71046								

Infrastructure Technologies
4921 Alexander Blvd
Albuquerque, NM
877-ITpipes

Defect Listing

Pipe Segment Reference	City	Street	Material		Location Code	Sewer Use
74-70321	Ann Arbor	W Liberty St	Vitrified Clay Pipe			Sanitary
Upstream MH	Total Length	Year Laid	Shape		Location Details	
71-71046			Circular			
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint Length	
71-70794	274.5		8			

SPR	162	MPR	6	PO Number	Customer
SPRI	3	MPRI	1.5		
QSR	3I00	QMR	2212	Work Order	Purpose

OPR	Surveyed By	Direction	Date	Media label	
168	JBELL	Downstream	03/26/2021		
OPRI	Certificate Number	Pre-Cleaning	Time	Weather	
2.9	U-1117-07009559	Heavy Cleaning	09:32	Heavy Rain	
Date Cleaned			End Time	Additional Info	
			09:42		

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0	Access Point Manhole					☐			
Remarks:	71-71046								
0	Water Level				5	☐			
2	Tap Factory Made		4			☐	2		
5.1	Fracture Spiral	S01				☑	9	3	3
14	Tap Factory Made		4			☐	10		
63.2	Tap Factory Made		4			☐	2		
67	Tap Factory Made		4			☐	10		
104.1	Tap Factory Made		4			☐	10		
140.5	Tap Factory Made		4			☐	2		
147.8	Roots Fine Joint					☑	12		1
168.9	Tap Factory Made		4			☐	10		
178.2	Roots Fine Joint					☑	12		1
190.2	Tap Break-In		4			☐	2		
209.9	Tap Factory Made		4			☐	10		
211.7	Tap Factory Made Defective		4			☐	2		2
Remarks:	Packed with roots								
218.5	Tap Break-In Intruding		4	1		☐	2		2
274.5	Fracture Spiral	F01				☐	9	3	3
274.5	Access Point Manhole					☐			
Remarks:	71-70794								

Infrastructure Technologies
4921 Alexander Blvd
Albuquerque, NM
877-ITpipes

Defect Listing

Pipe Segment Reference	City	Street	Material		Location Code	Sewer Use
74-70980	Ann Arbor	W Liberty St	Vitrified Clay Pipe			Sanitary
Upstream MH	Total Length	Year Laid	Shape		Location Details	
71-70794			Circular			
DS Manhole	Length surveyed	Year Renewed	Height	Width	Pipe Joint Length	
71-70507	344.7		8			

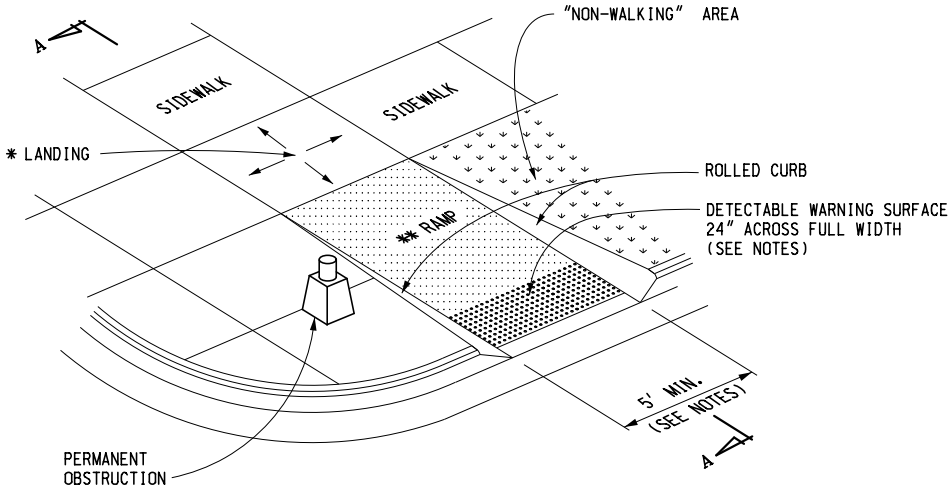
SPR	18	MPR	1	PO Number	Customer
SPRI	2.6	MPRI	1		
QSR	4132	QMR	1100	Work Order	Purpose

OPR	Surveyed By	Direction	Date	Media label	
19	JBELL	Downstream	03/26/2021		
OPRI	Certificate Number	Pre-Cleaning	Time	Weather	
2.4	U-1117-07009559	No Pre-cleaning	09:45	Dry	
Date Cleaned			End Time	Additional Info	
			09:58		

Distance	Condition	Cont. Dfct.	Values			Joint	Clock Position		Grade
			1st	2nd	%		At/From	To	
0	Access Point Manhole					☐			
Remarks: 71-70794									
0	Water Level				5	☐			
9.5	Roots Fine Joint					☑	12		1
27.3	Crack Spiral					☐	8	4	2
94	Tap Factory Made		4			☐	10		
104.2	Tap Factory Made		4			☐	2		
124.8	Tap Factory Made		4			☐	10		
130.3	Fracture Circumferential					☐	12	6	2
130.9	Surface Spalling					☐	9		2
132.4	Fracture Spiral					☐	10	2	3
167.6	Tap Factory Made		4			☐	2		
174.9	Tap Factory Made		4			☐	2		
212	Tap Break-In		4			☐	10		
215.8	Tap Factory Made		4			☐	3		
236.2	Tap Factory Made		4			☐	10		
260.6	Tap Factory Made		4			☐	2		
273.2	Tap Factory Made		4			☐	10		
276.3	Crack Spiral					☐	11	1	2
313.7	Broken Pipe					☐	12		3
332.7	Fracture Multiple					☐	9	12	4
344.7	Access Point Manhole					☐			
Remarks: 71-70507									

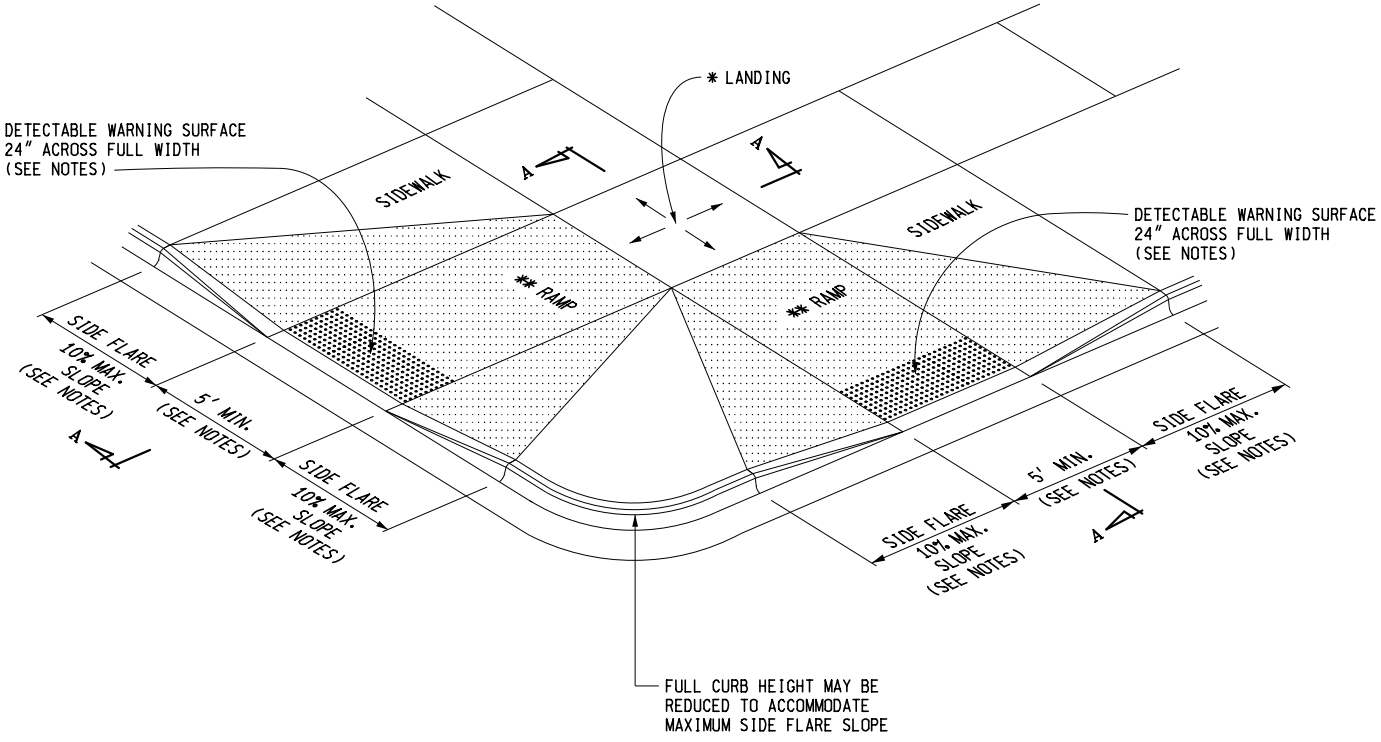
* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5′ x 5′. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% – 7% (8.3% MAXIMUM). SEE NOTES.



CURB RAMP TYPE R

(ROLLED SIDES)



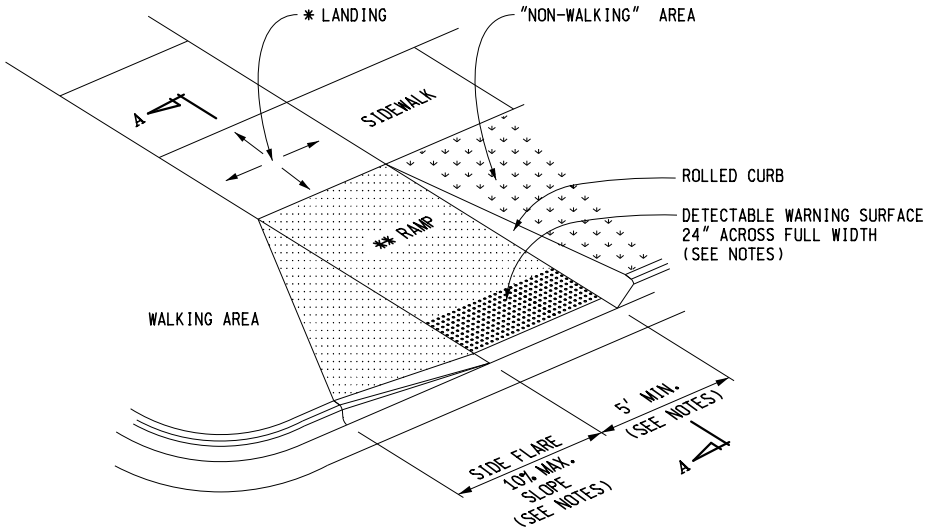
CURB RAMP TYPE F

(FLARED SIDES, TWO RAMPS SHOWN)

MDOT Michigan Department of Transportation PREPARED BY DESIGN DIVISION DRAWN BY: B.L.T. CHECKED BY: W.K.P.	DEPARTMENT DIRECTOR Paul C. Ajegba APPROVED BY: _____ DIRECTOR, BUREAU OF FIELD SERVICES APPROVED BY: _____ DIRECTOR, BUREAU OF DEVELOPMENT	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR **CURB RAMP AND DETECTABLE WARNING DETAILS** F.H.W.A. APPROVAL | 5-8-2020 PLAN DATE | R-28-J | SHEET 1 OF 7

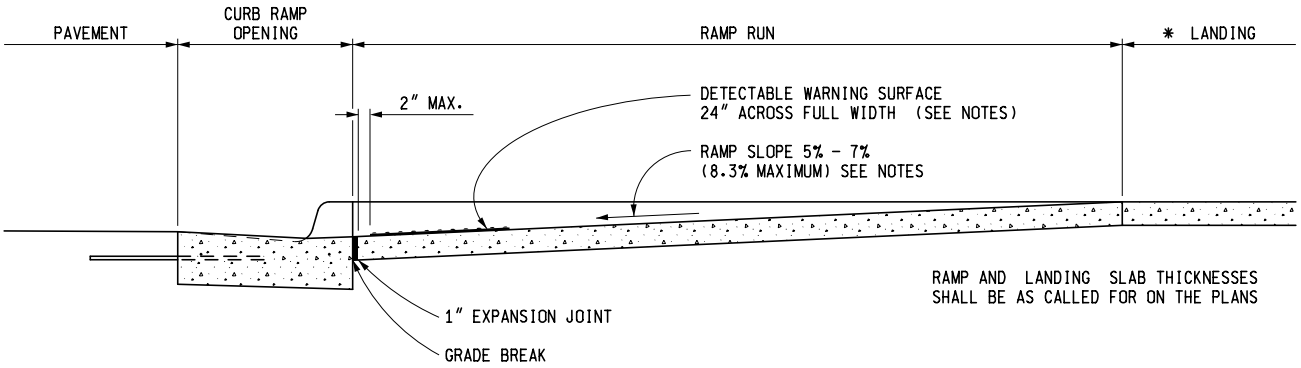
* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5′ x 5′. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% – 7% (8.3% MAXIMUM). SEE NOTES.



CURB RAMP TYPE RF

(ROLLED / FLARED SIDES)

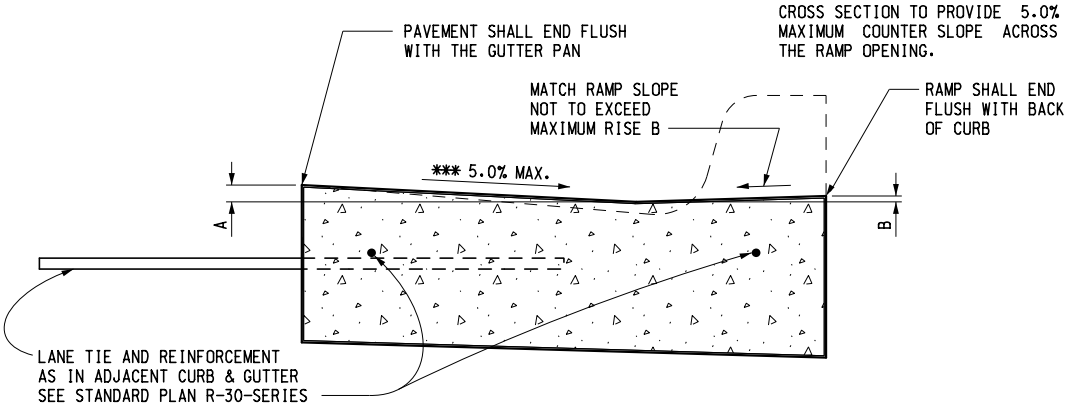


SECTION A-A

CURB TYPE	MAXIMUM RISE (INCHES)	
	A	B
B1	3/4	1
B2	3/4	1
B3	3/4	1
D1	3/4	1
D2	3/4	1
D3	3/4	1
C1	1/2	1/2
C2	1/2	1/2
C3	3/4	1/2
C4	3/4	1/2
C5	1	1/2
C6	1	1/2
F1	1/2	1/2
F2	1/2	1/2
F3	3/4	1/2
F4	3/4	1/2
F5	1	1/2
F6	1	1/2

FOR CURB TYPES SEE STANDARD PLAN R-30-SERIES

*** TRANSITION ADJACENT GUTTER PAN CROSS SECTION TO PROVIDE 5.0% MAXIMUM COUNTER SLOPE ACROSS THE RAMP OPENING.



SECTION THROUGH CURB RAMP OPENING

(TYPICAL ALL RAMP TYPES)

MICHIGAN DEPARTMENT OF TRANSPORTATION

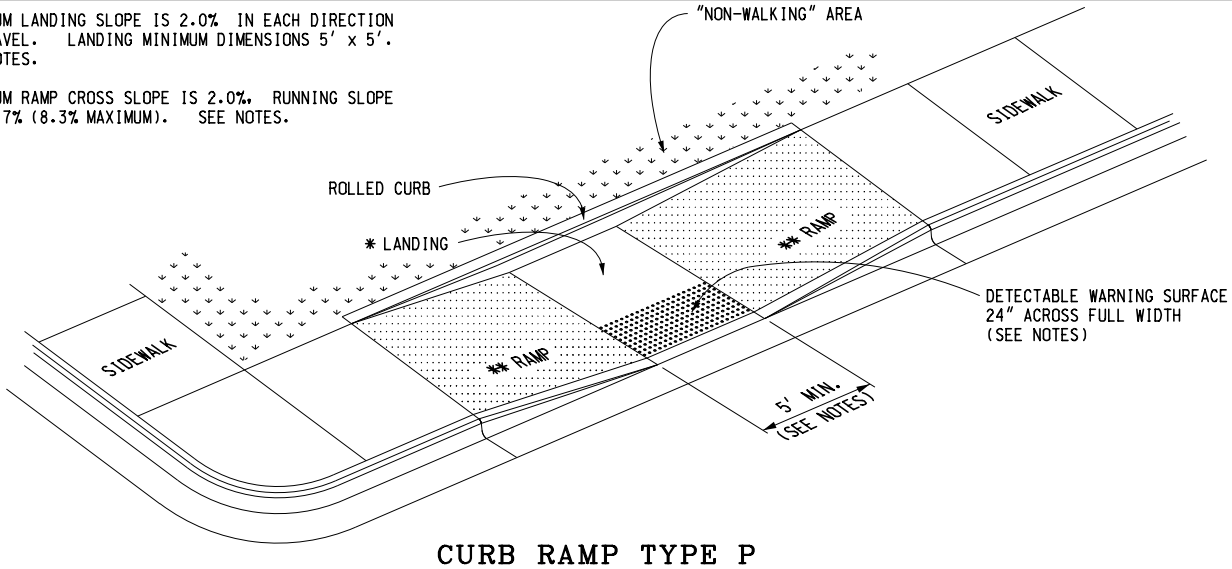
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CURB RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 2 OF 7

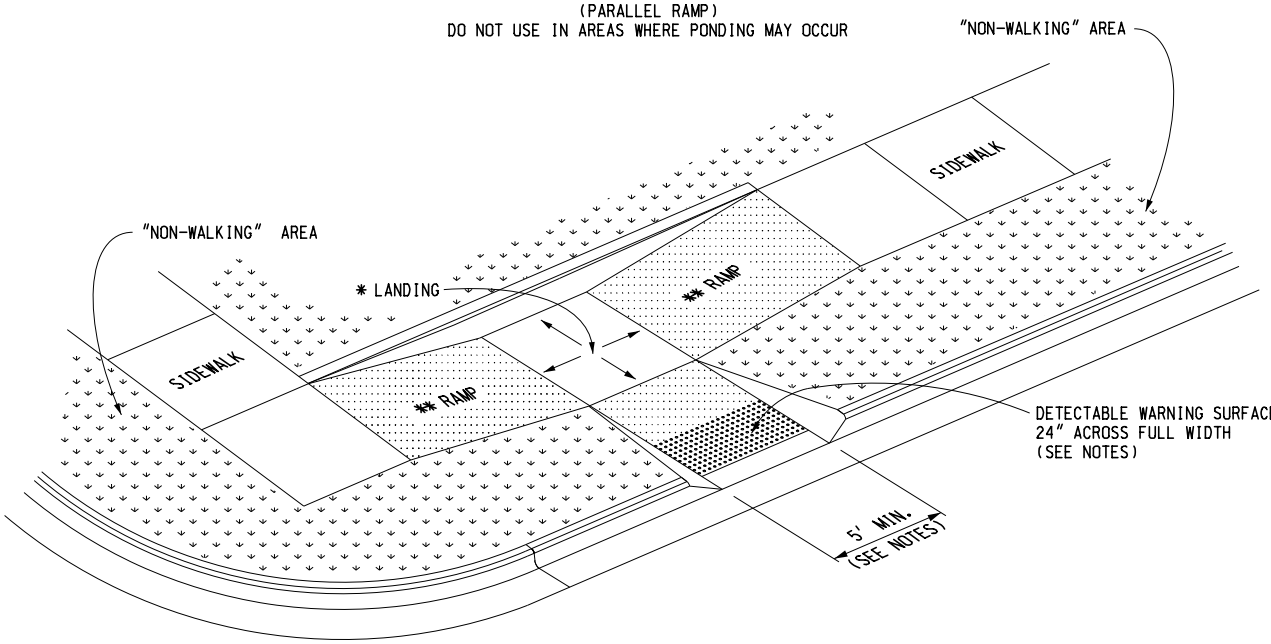
* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



CURB RAMP TYPE P

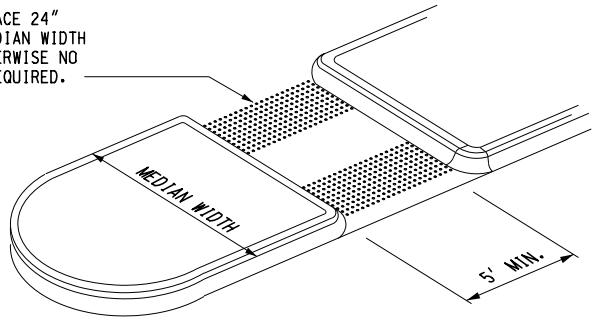
(PARALLEL RAMP)
DO NOT USE IN AREAS WHERE PONDING MAY OCCUR



CURB RAMP TYPE C

(COMBINATION RAMP)

DETECTABLE WARNING SURFACE 24" ACROSS FULL WIDTH IF MEDIAN WIDTH IS AT LEAST 6'-0". OTHERWISE NO DETECTABLE WARNING IS REQUIRED.



CURB RAMP TYPE M

(MEDIAN ISLAND)

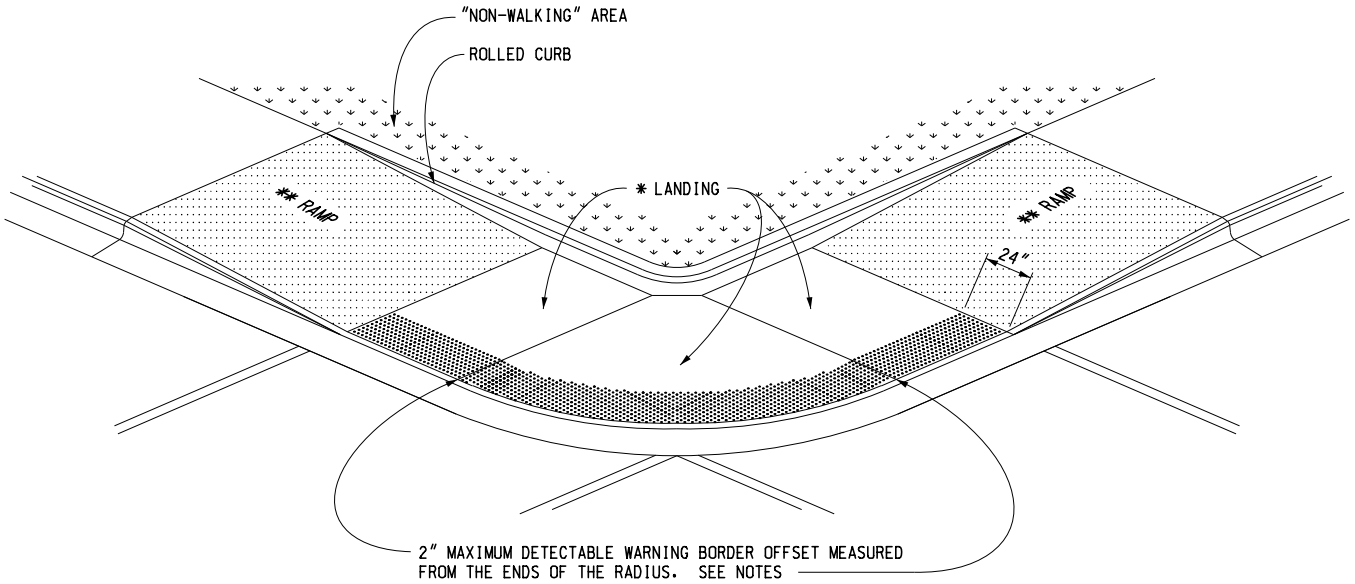
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CURB RAMP AND DETECTABLE WARNING DETAILS

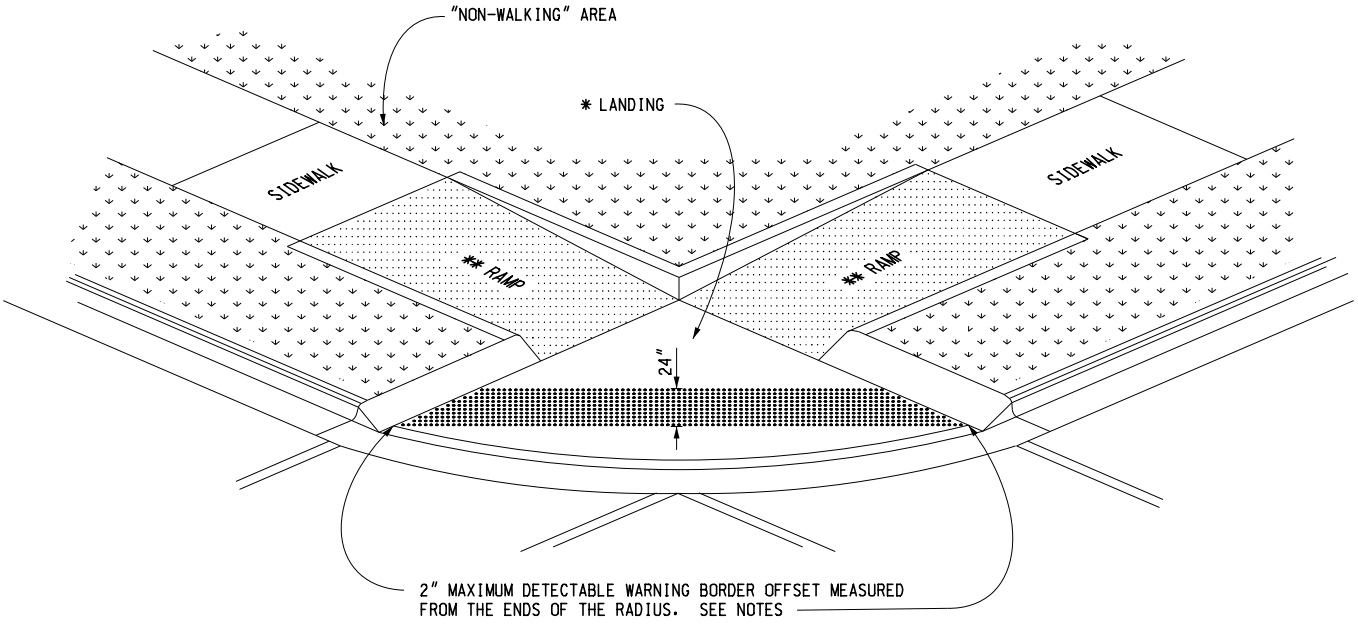
F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 3 OF 7

* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5′ x 5′. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% – 7% (8.3% MAXIMUM). SEE NOTES.



(RADIAL DETECTABLE WARNING SHOWN)



(TANGENT DETECTABLE WARNING SHOWN)

CURB RAMP TYPE D

(DEPRESSED CORNER)

USE ONLY WHEN INDEPENDENT DIRECTIONAL RAMPS CAN NOT BE CONSTRUCTED FOR EACH CROSSING DIRECTION

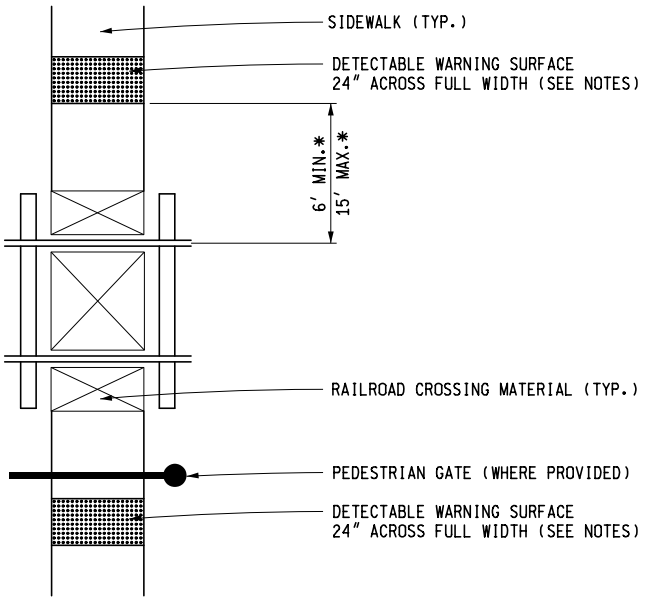
MICHIGAN DEPARTMENT OF TRANSPORTATION

BUREAU OF DEVELOPMENT STANDARD PLAN FOR

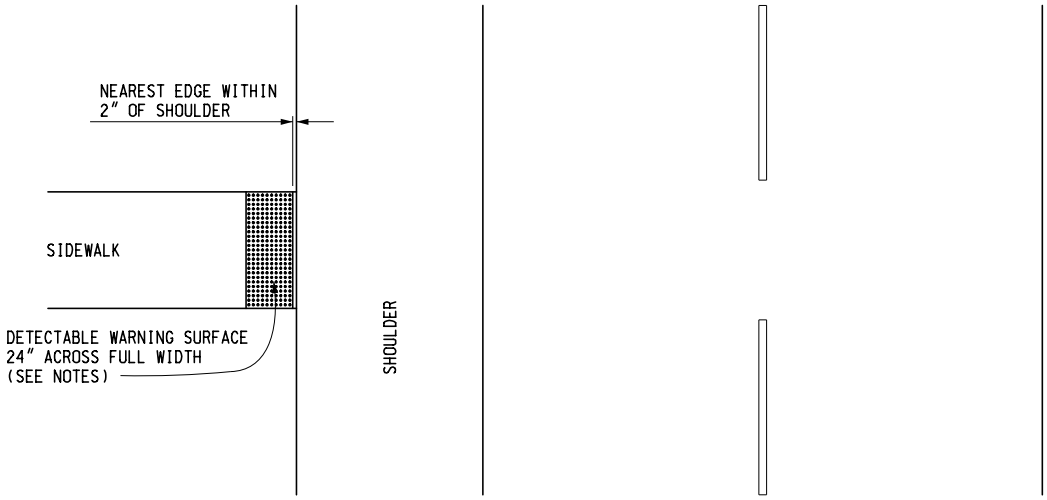
CURB RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 4 OF 7

* THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE RAIL CROSSING IS 6′ MINIMUM AND 15′ MAXIMUM FROM THE CENTERLINE OF THE NEAREST RAIL. DO NOT PLACE DETECTABLE WARNING ON RAILROAD CROSSING MATERIAL.



DETECTABLE WARNING AT RAILROAD CROSSING

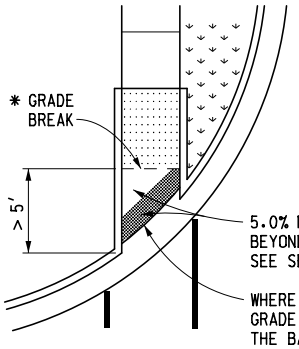


DETECTABLE WARNING AT FLUSH SHOULDER OR ROADWAY

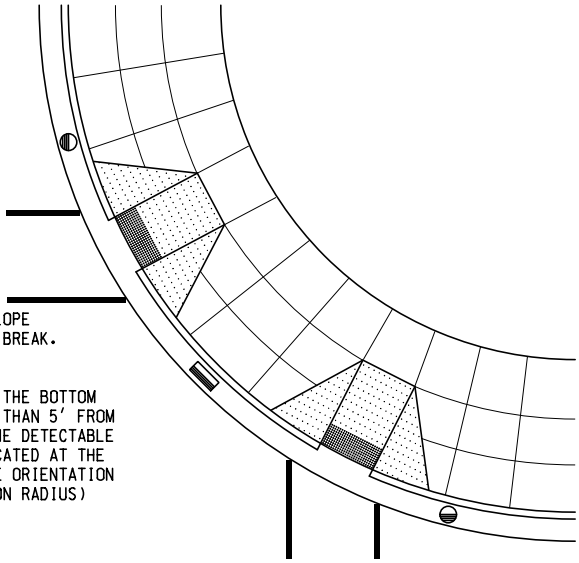
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CURB RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 5 OF 7



CURB RAMP LOCATED IN RADIUS (TYPE R SHOWN)
(GRADE BREAK OFFSET GREATER THAN 5')

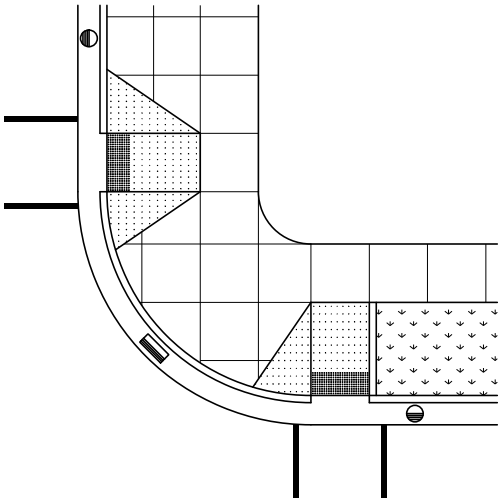


CURB RAMP PERPENDICULAR TO RADIAL CURB (TYPE F SHOWN)

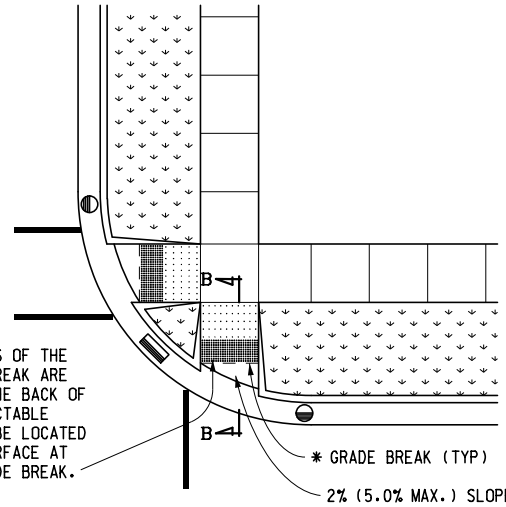
(USE WITH RADIAL CURB WHEN THE CROSSWALK AND CURB RAMP ARE NOT ALIGNED

LEGEND

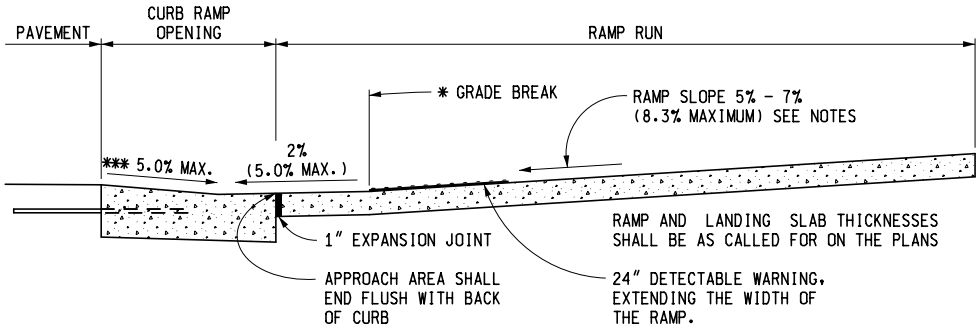
- SLOPED SURFACE
- DETECTABLE WARNING
- "NON-WALKING" AREA
- CROSSWALK MARKING
- PREFERRED LOCATION OF DRAINAGE INLET (TYP.)
- ALTERNATE LOCATION OF DRAINAGE INLET (TYP.)



CURB RAMP PERPENDICULAR TO TANGENT CURB
(TYPE F AND TYPE RF SHOWN)



CURB RAMP LOCATED IN RADIUS (TYPE R SHOWN)
(GRADE BREAK OFFSET LESS THAN 5')



* GRADE BREAKS AT THE TOP AND BOTTOM OF CURB RAMPS SHALL BE PERPENDICULAR TO THE DIRECTION OF TRAVEL.

*** TRANSITION ADJACENT GUTTER PAN CROSS SECTION TO PROVIDE 5.0% MAXIMUM COUNTER SLOPE ACROSS THE RAMP OPENING.

SEE SHEET 2 FOR CURB RAMP OPENING DETAILS.

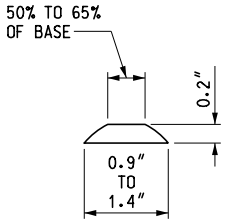
SECTION B-B

CURB RAMP ORIENTATION

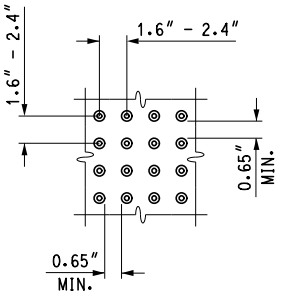
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CURB RAMP AND DETECTABLE WARNING DETAILS

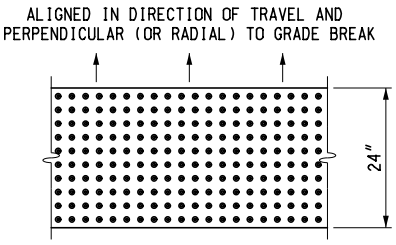
F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 6 OF 7



DOME SECTION



DOME SPACING



DOME ALIGNMENT

DETECTABLE WARNING DETAILS

NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

CURB RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP. WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

WHEN 5′ MINIMUM WIDTHS ARE NOT PRACTICABLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4′ AND LANDINGS TO NOT LESS THAN 4′ x 4′.

CURB RAMPS WITH A RUNNING SLOPE ≤5% DO NOT REQUIRE A TOP LANDING. HOWEVER, ANY CONTINUOUS SIDEWALK OR PEDESTRIAN ROUTE CROSSING THROUGH OR INTERSECTING THE CURB RAMP MUST INDEPENDENTLY MAINTAIN A CROSS SLOPE NOT GREATER THAN 2% PERPENDICULAR TO ITS OWN DIRECTION(S) OF TRAVEL.

DETECTABLE WARNING SURFACE COVERAGE IS 24" MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURBED OR FLARED CURB TRANSITION AREAS. A BORDER OFFSET NOT GREATER THAN 2" MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING IS ALLOWABLE. FOR RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADIUS.

FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OF RAMPS TO EXCEED 15 FEET IN LENGTH NOT INCLUDING LANDINGS OR TRANSITIONS.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. THE LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER THE LOCATION OF THE DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN ½". ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE CURB RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS. WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.

DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

CURB RAMP AND DETECTABLE WARNING DETAILS

F.H.W.A. APPROVAL	5-8-2020 PLAN DATE	R-28-J	SHEET 7 OF 7

TYPE OF CASTING	NEEHAH FOUNDRY	EAST JORDAN IRON WORKS
BARRIER CURB INLET	R-3013B, TYPES GRATE (500 POUNDS)	7045, TYPE M1 GRATE (490 POUNDS)
BARRIER CURB DOUBLE INLET	R- 3249F, TYPE S GRATE (410 POUNDS)	N/A
MOUNTABLE CURB INLET	R-3034B, TYPE S GRATE (500 POUNDS)	7065, TYPE M1 GRATE (470 POUNDS)
GUTTER INLET	R-3448C, TYPE S GRATE (285 POUNDS)	5080, TYPE M2 GRATE (490 POUNDS)
GUTTER DOUBLE INLET	R-3448B, TYPE S GRATE (265 POUNDS)	5000, TYPE M2 GRATE (490 POUNDS)
YARD DRAIN	R-2560-E1 (285 POUNDS)	1040, TYPE 02 GRATE (355 POUNDS)
YARD DRAIN IN CITY PARK	N/A	1040, TYPE M1 GRATE (400 POUNDS)
*MANHOLE FRAME & COVER (WATER & STORM)		1040, TYPE A COVER (400 POUNDS)
**WATERTIGHT MANHOLE FRAME & COVER (SANITARY)		1040, TYPE AGS COVER (400 POUNDS)
MONUMENT BOX	N/A	8360 (100 POUNDS)

NOTES:
*FRAMES AND COVERS MUST HAVE MACHINED BEARING SURFACES.
**MANHOLE COVERS SHALL BE LABELED WITH "CITY OF ANN ARBOR" AND "WATER", "STORM" OR "SANITARY", WHICHEVER IS APPLICABLE. ALL COVERS SHALL INCLUDE THE CITY'S CUSTOM LOGO IN USE AT THE TIME OF THE PROJECT.
***SANITARY MANHOLE COVERS SHALL BE 1040AGS WITH A 1/4" NEOPRENE GASKET TO SEAL AGAINST THE FRAME.

STANDARD CASTING SCHEDULE SD-GU-5

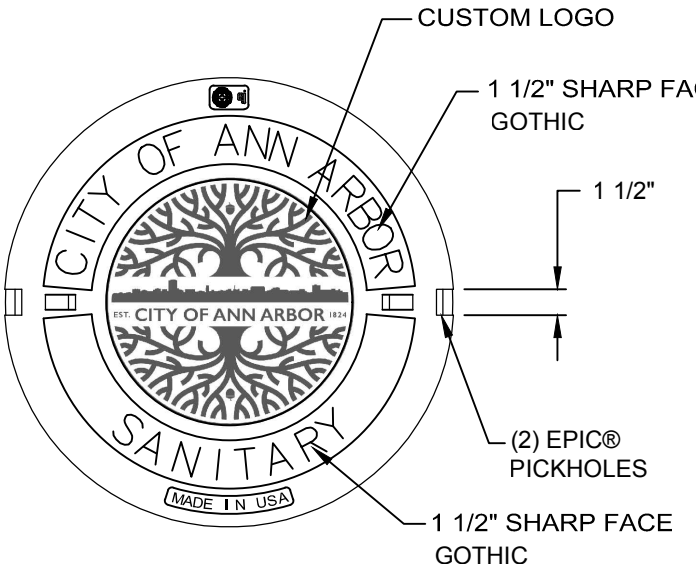
REVISED 1-24-19

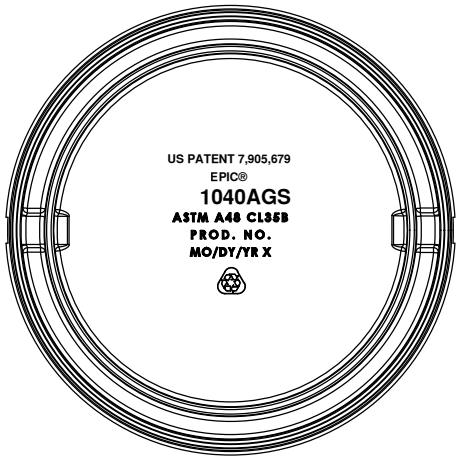
CITY OF ANN ARBOR
PUBLIC SERVICE
301 EAST HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
734-794-6410
www.a2gov.org

REV. NO.	DATE	DRAWN BY	CHECKED BY

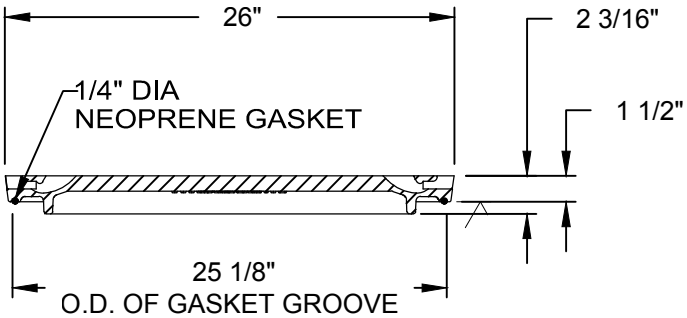
STANDARD CASTING SCHEDULE

DR. ARG	CH. CEC	DRAWING NO. SD-GU-5
SCALE N.T.S.	DATE 1/24/19	

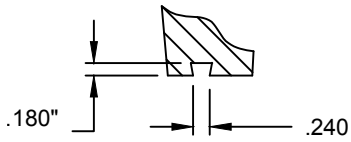


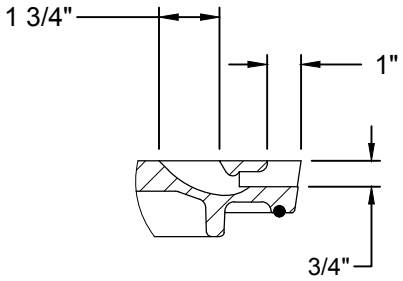


BOTTOM VIEW



SECTION





EPIC ® DETAIL

REVISED 1-24-19

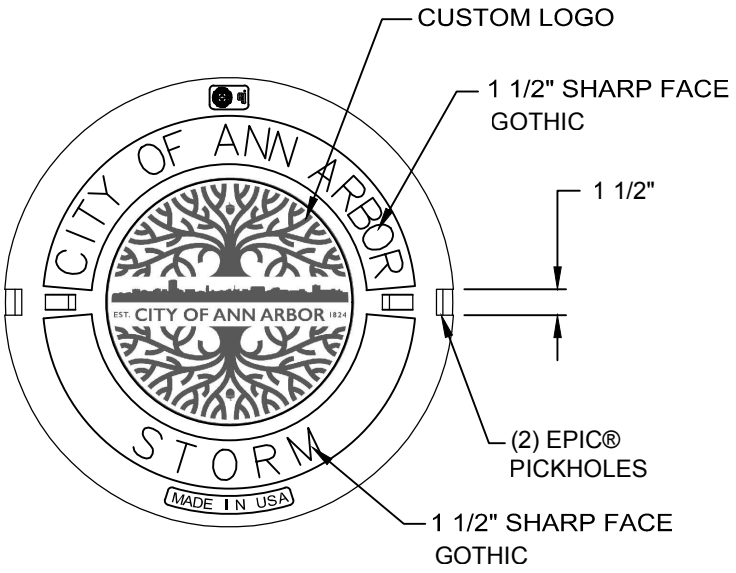
EJ PRODUCT #001040326

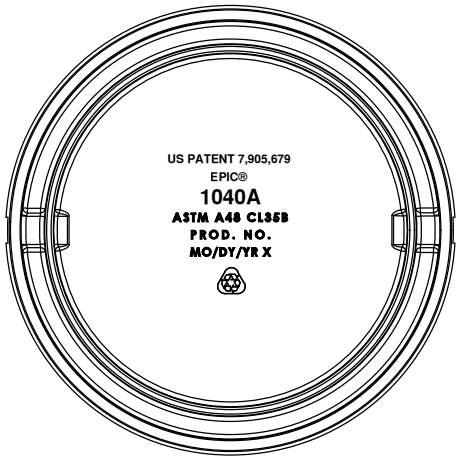
CITY OF ANN ARBOR
PUBLIC SERVICES
301 EAST HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
734-794-6410
www.a2gov.org

REV. NO.	DATE	DRAWN BY	CHECKED BY

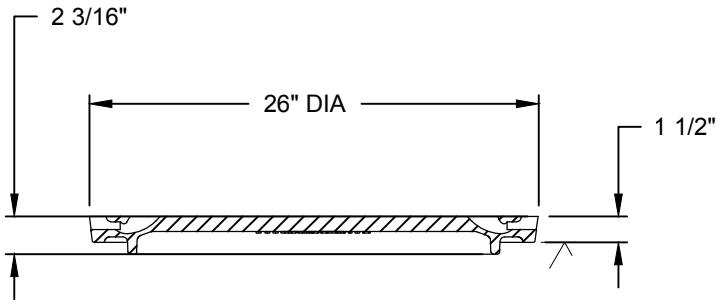
SANITARY MANHOLE COVER
1040A

DR. ARG	CH. CEC	DRAWING NO. **SAN-MH**
SCALE N.T.S.	DATE 1/24/19	

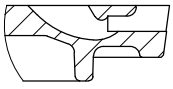




BOTTOM VIEW



SECTION



EPIC® DETAIL

REVISED 1-24-19

EJ PRODUCT #001040325

CITY OF ANN ARBOR
PUBLIC SERVICES
301 EAST HURON STREET
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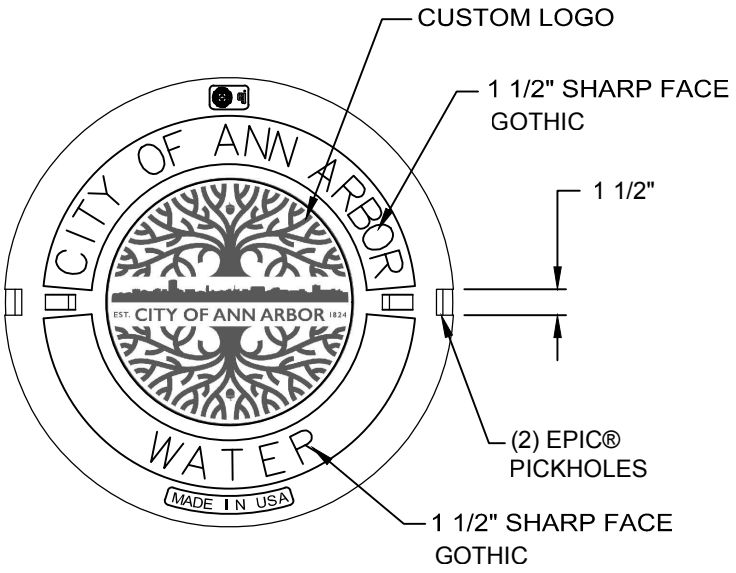
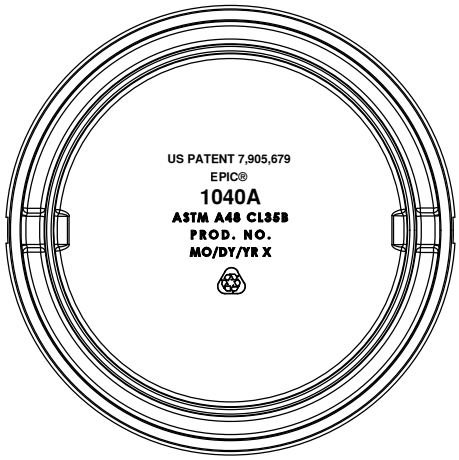
ANN ARBOR, MI 48107-8647
734-794-6410
www.a2gov.org

REV. NO.	DATE	DRAWN BY	CHECKED BY

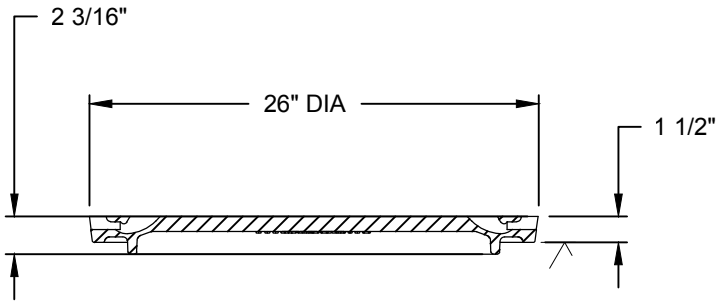
STORM MANHOLE COVER
1040A

DR. ARG	CH. CEC	DRAWING NO. **STM-MH**
SCALE N.T.S.	DATE 1/24/19	

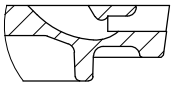




BOTTOM VIEW



SECTION



EPIC® DETAIL

REVISED 1-24-19

EJ PRODUCT #001040324

CITY OF ANN ARBOR
PUBLIC SERVICES
301 EAST HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
734-794-6410
www.a2gov.org

REV. NO.	DATE	DRAWN BY	CHECKED BY

WATER MANHOLE COVER
1040A

DR. ARG	CH. CEC	DRAWING NO. **W-MH**
SCALE N.T.S.	DATE 1/24/19	

ATTACHMENTS

CITY OF ANN ARBOR
PREVAILING WAGE DECLARATION OF COMPLIANCE

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

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

The Contractor agrees:

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

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

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

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

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

_____
Company Name

_____
Signature of Authorized Representative Date

_____
Print Name and Title

_____
Address, City, State, Zip

_____
Phone/Email address

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

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE DECLARATION OF COMPLIANCE

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

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

The Contractor or Grantee agrees:

(a) To pay each of its employees whose wage level is not required to comply with federal, state or local prevailing wage law, for work covered or funded by a contract with or grant from the City, no less than the Living Wage. The current Living Wage is defined as $14.05/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 $15.66/hour for those employers that do not provide health care. The Contractor or Grantor understands that the Living Wage is adjusted and established annually on April 30 in accordance with the Ordinance and covered employers shall be required to pay the adjusted amount thereafter to be in compliance with Section 1:815(3).

Check the applicable box below which applies to your workforce

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

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

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

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

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

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

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

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

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2021 - ENDING APRIL 29, 2022

$14.05 per hour
If the employer provides health care benefits*

$15.66 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 2/4/2021

Vendor Conflict of Interest Disclosure Form

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

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

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

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

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

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

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

CITY OF ANN ARBOR
DECLARATION OF COMPLIANCE

Non-Discrimination Ordinance

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

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

The Contractor agrees:

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

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

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

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

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

_____
Company Name

_____
Signature of Authorized Representative Date

_____
Print Name and Title

_____
Address, City, State, Zip

_____
Phone/Email Address

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

CITY OF ANN ARBOR NON-DISCRIMINATION ORDINANCE

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

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

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

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

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

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

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

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

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

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

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

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

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

Date _____

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

do hereby state:

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

_____ on the
(Contractor or Subcontractor)

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

_____ day of _____, _____, and ending the _____ day of _____, _____,

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

_____ from the full
(Contractor or Subcontractor)

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

_____

_____

_____

_____

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

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

(4) That:

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

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

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

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

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE	SIGNATURE

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