

CONSTRUCTION CONTRACT

RFP# 23-10

RESEARCH PARK DRIVE RESURFACING PROJECT

City of Ann Arbor
ENGINEERING UNIT / PUBLIC SERVICES AREA



May 2023

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CONTRACT

THIS CONTRACT is between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 East Huron Street, Ann Arbor, Michigan 48104 ("City") and Ajax Paving Industries, Inc. ("Contractor") a State of Michigan Corporation located at 1957 Crooks Road, Suite A, Troy, MI 48084.

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 **Research Park Drive Resurfacing Project; RFP No. 23-10** in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, all of which are incorporated as part of this Contract:

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

ARTICLE II - Definitions

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

Project means **Research Park Drive Resurfacing Project; RFP No. 23-10.**

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: **Jeremy Schrot, P.E.** 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 **Benjamin J. Kohler** whose job title is **Project Estimator.**

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 by August 19, 2023.
- (C) Failure to complete all the work within the time specified above, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the City, as liquidated damages and not as a penalty, an amount equal to \$1,500.00 for each calendar day of delay in the completion of all the work. If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

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

ARTICLE IV - The Contract Sum

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

Three Million Three Hundred Seventy-Two Thousand Four Hundred Fifty-Nine and 43/100 Dollars (\$3,372,459.43)
- (B) The amount paid shall be equitably adjusted to cover changes in the work ordered by the Supervising Professional but not required by the Contract Documents. Increases or decreases shall be determined only by written agreement between the City and Contractor.

ARTICLE V - Assignment

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

ARTICLE VI - Choice of Law

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

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

ARTICLE VII - Relationship of the Parties

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

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

ARTICLE VIII - Notice

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

ARTICLE IX - Indemnification

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

ARTICLE X - Entire Agreement

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

ARTICLE XI – Electronic Transactions

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

FOR CONTRACTOR

By _____

Its: _____

FOR THE CITY OF ANN ARBOR

By _____
Christopher Taylor, Mayor

By _____
Jacqueline Beaudry, City Clerk

Approved as to substance

By _____
Milton Dohoney, Jr., City
Administrator

By _____
Brian Steglitz, Public Services
Area Administrator

Approved as to form and content

Atleen Kaur, City Attorney

E. Schedule of Pricing/Cost – 20 Points

Company: AJAX PAVING

Unit Price Bid

<u>Item No.</u>	<u>Item Description</u>	<u>Unit</u>	<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>Total Price</u>
1047051	_Certified Payroll Compliance and Reporting	LSUM	1.00	\$ <u>2,500 -</u>	\$ <u>2,500 -</u>
1047051	_Digital Audio-Visual Coverage	LSUM	1.00	\$ <u>1,450 -</u>	\$ <u>1,450 -</u>
1047051	_General Conditions, Max \$250,000.00	LSUM	1.00	\$ <u>250,000 -</u>	\$ <u>250,000 -</u>
1047051	_Project Supervision, Max \$25,000.00	LSUM	1.00	\$ <u>25,000 -</u>	\$ <u>25,000 -</u>
2047001	_Curb, Gutter, and Curb and Gutter, Any Type, Rem	Ea	5,378.00	\$ <u>10 -</u>	\$ <u>53,780 -</u>
2047001	_Exploratory Excavation, Vertical	Ft	100.00	\$ <u>80 -</u>	\$ <u>8,000 -</u>
2047011	_Sidewalk, Sidewalk Ramp, and Driveway Approach, Any Thickness, Rem	Syd	959.00	\$ <u>14.50</u>	\$ <u>13,905.50</u>
2057011	_Grading, Driveway Approach	Syd	775.00	\$ <u>23 -</u>	\$ <u>17,825 -</u>
2057011	_Machine Grading, Modified	Sta	36.64	\$ <u>8,000 -</u>	\$ <u>293,120 -</u>
2057021	_Undercutting, Type IIA	Cyd	200.00	\$ <u>100 -</u>	\$ <u>20,000 -</u>
2057021	_Undercutting, Type IIB	Cyd	100.00	\$ <u>80 -</u>	\$ <u>8,000 -</u>
2057021	_Undercutting, Type IIC	Cyd	100.00	\$ <u>110 -</u>	\$ <u>11,000 -</u>
2080036	Erosion Control, Silt Fence	Ft	4,000.00	\$ <u>3.12</u>	\$ <u>12,480 -</u>
2087050	Erosion Control, Inlet Filter	Ea	57.00	\$ <u>122 -</u>	\$ <u>6,954 -</u>
2090001	Project Cleanup	LSUM	1.00	\$ <u>10,000 -</u>	\$ <u>10,000 -</u>
TOTAL THIS PAGE					\$ <u>734,014.50</u>

<u>Item No.</u>	<u>Item Description</u>	<u>Unit</u>	<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>Total Price</u>
3010002	Subbase, CIP	Cyd	3,987.00	\$ <u>46.19</u>	\$ <u>183,235.73</u>
3020050	Aggregate Base, Conditioning	Syd	17,220.00	\$ <u>2.56</u>	\$ <u>44,083.20</u>
3027011	_Aggregate Base, 8 inch, Modified	Syd	11,625.00	\$ <u>18-</u>	\$ <u>209,250-</u>
3027021	_Aggregate Base, CIP	Syd	250.00	\$ <u>89.26</u>	\$ <u>22,315-</u>
3080010	Geotextile, Stabilization	Syd	100.00	\$ <u>5.78</u>	\$ <u>578-</u>
3087011	_Structural Geogrid (Base)	Syd	250.00	\$ <u>3.80</u>	\$ <u>950-</u>
4030280	Dr Structure, Adj, Add Depth	Ft	5.00	\$ <u>249-</u>	\$ <u>1,245-</u>
4030290	Dr Structure, Cleaning	Ea	25.00	\$ <u>400-</u>	\$ <u>10,000-</u>
4030306	Dr Structure, Tap, 6 inch	Ea	26.00	\$ <u>246.04</u>	\$ <u>6,397.04</u>
4037050	_Dr Structure, Adj, Case 1, Modified	Ea	94.00	\$ <u>987-</u>	\$ <u>92,778-</u>
4037050	_Dr Structure Cover, Type D, Modified	Ea	5.00	\$ <u>1,038-</u>	\$ <u>5,190-</u>
4037050	_Dr Structure Cover, Type K, Modified	Ea	16.00	\$ <u>1,028-</u>	\$ <u>16,448-</u>
4037050	_Dr Structure Cover, Type Q, Modified	Ea	45.00	\$ <u>855-</u>	\$ <u>38,475-</u>
4037050	_Dr Structure Cover, Type Q, Special	Ea	29.00	\$ <u>889-</u>	\$ <u>25,781-</u>
4037050	_Dr Structure, Point	Ea	25.00	\$ <u>661-</u>	\$ <u>16,525-</u>
4037050	_Dr Structure, Temp Lowering, Modified	Ea	74.00	\$ <u>305-</u>	\$ <u>22,570-</u>
4047001	_Underdrain, Subgrade, 6 inch. Special	Ft	4,087.00	\$ <u>15.77</u>	\$ <u>64,451.99</u>
5010005	HMA Surface, Rem	Syd	30,111.00	\$ <u>4.85</u>	\$ <u>146,038.35</u>
TOTAL THIS PAGE					\$ <u>906,311.31</u>

<u>Item No.</u>	<u>Item Description</u>	<u>Unit</u>	<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>Total Price</u>
5010025	Hand Patching	Ton	10.00	\$ <u>400 -</u>	\$ <u>4,000 -</u>
5012024	HMA, 4EL	Ton	9,020.00	\$ <u>135.30</u>	\$ <u>1,220,406 -</u>
6030005	Cement	Ton	5.00	\$ <u>1 -</u>	\$ <u>5 -</u>
8017011	_Driveway, Nonreinf Conc, 8 inch, Modified	Syd	775.00	\$ <u>90.90</u>	\$ <u>70,447.50</u>
8027001	_Curb and Gutter, Conc, Barrier	Ft	4,898.00	\$ <u>32.75</u>	\$ <u>160,409.50</u>
8027001	_Driveway Opening, Conc, Det M, Modified	Ft	1,131.00	\$ <u>33.35</u>	\$ <u>37,718.95</u>
8087001	_Fence, Protective, Modified	Ft	250.00	\$ <u>10 -</u>	\$ <u>2,500 -</u>
8110058	Pavt Mrkg, Ovly Cold Plastic, Bike, Small Sym	Ea	23.00	\$ <u>140 -</u>	\$ <u>3,220 -</u>
8110091	Pavt Mrkg, Polyurea, 4 inch, White	Ft	201.00	\$ <u>0.95</u>	\$ <u>190.95</u>
8110092	Pavt Mrkg, Polyurea, 4 inch, Yellow	Ft	11,376.00	\$ <u>0.95</u>	\$ <u>10,807.20</u>
8110094	Pavt Mrkg, Polyurea, 6 inch, White	Ft	23,088.00	\$ <u>1.05</u>	\$ <u>24,242.40</u>
8110212	Pavt Mrkg, Thermopl, 12 inch, Cross Hatching, White	Ft	117.00	\$ <u>5.95</u>	\$ <u>696.15</u>
8110213	Pavt Mrkg, Thermopl, 12 inch, Cross Hatching, Yellow	Ft	31.00	\$ <u>5.95</u>	\$ <u>184.45</u>
8110218	Pavt Mrkg, Thermopl, 24 inch, Stop Bar	Ft	89.00	\$ <u>12.95</u>	\$ <u>1,152.55</u>
8110450	Recessing Pavt Mrkg, Longit	Ft	34,665.00	\$ <u>0.65</u>	\$ <u>22,532.25</u>
8112165	Pavt Mrkg, Ovly Cold Plastic, Bike Thru Arrow Sym	Ea	23.00	\$ <u>140 -</u>	\$ <u>3,220 -</u>
8117050	_Pavt Mrkg, Thermopl, Lt Turn Arrow Sym	Ea	4.00	\$ <u>195 -</u>	\$ <u>780 -</u>
8120012	Barricade, Type III, High Intensity, Double Sided, Lighted, Furn	Ea	11.00	\$ <u>95 -</u>	\$ <u>1,045 -</u>
TOTAL THIS PAGE					\$ <u>1,563,557.80</u>

<u>Item No.</u>	<u>Item Description</u>	<u>Unit</u>	<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>Total Price</u>
8120013	Barricade, Type III, High Intensity, Double Sided, Lighted, Oper	Ea	11.00	\$ 0.01	\$ 0.11
8120140	Lighted Arrow, Type C, Furn	Fa	1.00	\$ 800-	\$ 800-
8120141	Lighted Arrow, Type C, Oper	Ea	1.00	\$ 0.01	\$ 0.01
8120235	Pavt Mrkg, Wet Reflective, Type NR, Paint, 4 inch, White, Temp	Ea	11,570.00	\$ 0.62	\$ 7,173.40
8120239	Pavt Mrkg, Wet Reflective, Type NR, Paint, 4 inch, Yellow, Temp	Ea	1,943.00	\$ 0.62	\$ 1,204.66
8120252	Plastic Drum, Fluorescent, Furn	Ea	240.00	\$ 30-	\$ 7,200-
8120253	Plastic Drum, Fluorescent, Oper	Ea	240.00	\$ 0.01	\$ 2.40
8120265	Pavt Mrkg, Wet Reflective, Type R, Tape, 24 inch, Stop Bar	Ea	45.00	\$ 12.95	\$ 582.75
8120310	Sign Cover	Ea	10.00	\$ 65-	\$ 650-
8120350	Sign, Type B, Temp, Prismatic, Furn	Sft	443.00	\$ 6-	\$ 2,658-
8120351	Sign, Type B, Temp, Prismatic, Oper	Sft	443.00	\$ 0.01	\$ 4.43
8120352	Sign, Type B, Temp, Prismatic, Special, Furn	Sft	6.00	\$ 20-	\$ 120-
8120353	Sign, Type B, Temp, Prismatic, Special, Oper	Sft	6.00	\$ 0.01	\$ 0.06
8120370	Traf Regulator Control	LSUM	1.00	\$ 35,000-	\$ 35,000-
8127050	_Pedestrian Type II Barricade, Temp	Ea	10.00	\$ 150-	\$ 1,500-
8127051	_Minor Traffic Control, Max \$75,000.00	LSUM	1.00	\$ 75,000-	\$ 75,000-
8167011	_Turf Establishment, Performance	Syd	2,800.00	\$ 8.95	\$ 25,060-
8217050	_Monument Box, Adj	Ea	2.00	\$ 830-	\$ 1,660-
TOTAL THIS PAGE					\$ 158,615.82

<u>Item No.</u>	<u>Item Description</u>	<u>Unit</u>	<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>Total Price</u>
8237050	_Gate Box, Adj, Case 1, Modified	Ea	12.00	\$ <u>830 -</u>	\$ <u>9,960 -</u>
TOTAL THIS PAGE					\$ <u>9,960 -</u>
TOTAL FROM PAGE 15					\$ <u>734,014.50</u>
TOTAL FROM PAGE 16					\$ <u>906,311.31</u>
TOTAL FROM PAGE 17					\$ <u>1,563,557.00</u>
TOTAL FROM PAGE 18					\$ <u>158,615.82</u>
TOTAL BASE BID					\$ <u>3,372,459.43</u>

PERFORMANCE BOND

- (1) _____ (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for \$ _____, the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.
- (2) The Principal has entered a written Contract with the City entitled _____, for RFP No. _____ and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq.
- (3) Whenever the Principal is declared by the City to be in default under the Contract, the Surety may promptly remedy the default or shall promptly:
- (a) complete the Contract in accordance with its terms and conditions; or
 - (b) obtain a bid or bids for submission to the City for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a Contract between such bidder and the City, and make available, as work progresses, sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth in paragraph 1.
- (4) Surety shall have no obligation to the City if the Principal fully and promptly performs under the Contract.
- (5) Surety agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder, or the specifications accompanying it shall in any way affect its obligations on this bond, and waives notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work, or to the specifications.
- (6) Principal, Surety, and the City agree that signatures on this bond may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this bond. This bond may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

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

(Name of Surety Company)
By _____
(Signature)

Its _____
(Title of Office)

Approved as to form:

Atleen Kaur, City Attorney

(Name of Principal)
By _____
(Signature)

Its _____
(Title of Office)

Name and address of agent:

LABOR AND MATERIAL BOND

- (1) _____ of _____ (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan, (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for the use and benefit of claimants as defined in Act 213 of Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq., in the amount of \$ _____, for the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.
- (2) The Principal has entered a written Contract with the City entitled _____
_____, for RFP No. _____; and this bond is given for that Contract in compliance with Act No. 213 of the Michigan Public Acts of 1963 as amended;
- (3) If the Principal fails to promptly and fully repay claimants for labor and material reasonably required under the Contract, the Surety shall pay those claimants.
- (4) Surety's obligations shall not exceed the amount stated in paragraph 1, and Surety shall have no obligation if the Principal promptly and fully pays the claimants.
- (5) Principal, Surety, and the City agree that signatures on this bond may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this bond. This bond may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

SIGNED AND SEALED this _____ day of _____, 202_

(Name of Surety Company)
By _____
(Signature)

Its _____
(Title of Office)

Approved as to form:

Atleen Kaur, City Attorney

(Name of Principal)
By _____
(Signature)

Its _____
(Title of Office)

Name and address of agent:

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) Special Provisions; (4) Supplemental Specifications; (5) Standard Specifications; (6) Plans; (7) General Conditions; (8) Contract; (9) Bid Forms; (10) Bond Forms; (11) Bid.

Section 2 - Order of Completion

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

Section 3 - Familiarity with Work

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

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

Section 4 - Wage Requirements

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

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

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

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

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

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

Section 5 - Non-Discrimination

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

Section 6 - Materials, Appliances, Employees

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

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

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

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

Section 8 - Royalties and Patents

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

Section 9 - Permits and Regulations

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

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

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

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

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

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

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

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

Section 11 - Inspection of Work

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

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

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

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

Section 12 - Superintendence

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

Section 13 - Changes in the Work

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

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

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

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

Section 14 - Extension of Time

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

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

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

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

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section I3. No claim shall be valid unless so made.

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

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

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

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

Section 16 - Progress Payments

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

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

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

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

Section 17 - Deductions for Uncorrected Work

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

Section 18 - Correction of Work Before Final Payment

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

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

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

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

Section 19 - Acceptance and Final Payment

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

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

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

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

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

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

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

Section 20 - Suspension of Work

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

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

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

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

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

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

Section 22 - Contractor's Right to Terminate Contract

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

Section 23 - City's Right To Do Work

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

Section 24 - Removal of Equipment and Supplies

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

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

Section 25 - Responsibility for Work and Warranties

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

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

Section 26 - Partial Completion and Acceptance

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

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

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

Section 27 - Payments Withheld Prior to Final Acceptance of Work

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

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

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

Section 28 - Contractor's Insurance

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

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

Required insurance policies include:

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

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

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

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

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

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

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

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

- (3) Insurance companies and policy forms are subject to approval of the City Attorney, which approval shall not be unreasonably withheld. Documentation must provide and demonstrate an unconditional and un-qualified 30-day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number(s); name of insurance company(s); name and address of the agent(s) or authorized representative(s); name(s), email address(es), and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which may be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified Contractor shall furnish the City with satisfactory certificates of insurance and endorsements prior to commencement of any work. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) and all required endorsements to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies and endorsements to the Administering Service Area/Unit at least ten days prior to the expiration date.
- (4) Any Insurance provider of Contractor shall be authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-authorized insurance companies are not acceptable unless approved in writing by the City.
- (5) City reserves the right to require additional coverage and/or coverage amounts as may be included from time to time in the Detailed Specifications for the Project.
- (6) The provisions of General Condition 28 shall survive the expiration or earlier termination of this contract for any reason.

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

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

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

Section 30 - Damage Claims

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

Section 31 - Refusal to Obey Instructions

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

Section 32 - Assignment

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

Section 33 - Rights of Various Interests

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

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

Section 34 - Subcontracts

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

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

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

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

Section 35 - Supervising Professional's Status

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

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

Section 36 - Supervising Professional's Decisions

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

Section 37 - Storing Materials and Supplies

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

Section 38 - Lands for Work

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

Section 39 - Cleaning Up

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

Section 40 - Salvage

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

Section 41 - Night, Saturday or Sunday Work

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

Section 42 - Sales Taxes

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

Section 43

CONTRACTOR'S DECLARATION

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

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

Contractor

Date

By _____
(Signature)

Its _____
(Title of Office)

Past due invoices, if any, are listed below.

STANDARD SPECIFICATIONS

All work under this contract shall be performed in accordance with the Michigan Department of Transportation 2020 Standard Specifications for Construction 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:

<https://www.michigan.gov/mdot/-/media/Project/Websites/MDOT/Business/Construction/Standard-Specifications-Construction/2020-Standard-Spec-Construction-with-Errata-Incorporated-Info-Only.pdf>

DETAILED SPECIFICATIONS

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
GENERAL CONDITIONS

SDA:JAB/DAD

1 of 2

02/22/23

a. Description. This item comprises all work described and required by the plans and specifications at each project location for which the contract contains no item(s) of work, including but not limited to the following:

- Scheduling, coordination, and organization of all work, subcontractors, suppliers, testing, inspection, surveying, and staking.
- Coordination of, and cooperation with, other contractors, agencies, departments, and utilities.
- Protection and maintenance of utilities.
- Maintaining drainage.
- Furnishing, placement, and grading of maintenance gravel to construct any temporary driveways, sidewalks and/or sidewalk ramps necessary for construction of the proposed work.
- Maintaining driveways drive openings, sidewalks, bike paths, mail deliveries, and solid waste/recycle pick-ups. This includes the placement and maintenance of gravel in driveway openings as directed by the Engineer.
- Storing all materials and equipment off lawn areas.
- Temporary relocation and final replacement/re-setting of mailboxes.
- 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.
- Protecting all sewers, and drainage and utility structures including manholes, gate wells, valve boxes, inlet structures, roadside ditches, and culverts from damage and contamination by debris and construction materials. Keeping structures and culverts clean of construction debris and properly covered/protected at all times during the construction. Immediately cleaning any structures, sewers, culverts and/or roadside ditches contaminated with construction debris resulting from Contractor operations and/or work activities.
- Disposing of excavated materials and debris - The Contractor shall dispose of, at the Contractor's expense, all excavated material. The Engineer will not pay for any costs associated with this work separately.
- 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.
- All miscellaneous and incidental items such as overhead, insurance, and permit fees.
- Meeting all requirements relating to Debarment Certification, Davis Bacon Act, and Disadvantaged Business Enterprise, and providing the necessary documentation.

The Appendix of the contract documents provides data pertaining to existing soil borings to assist the Engineer and Contractor with determining the soil conditions within the construction area. The City in no way guarantees existing conditions to be the same as shown in the data. The Contractor is solely responsible for any/all conclusions it may draw from the data.

Quantities as given are approximate and are estimates for bidding purposes. The City does not guarantee their totals and they 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; however, the City will not allow the Contractor to adjust unit price(s) due to such change.**

b. Materials. Maintenance gravel in driveway openings can be substituted with HMA millings compacted and free of any items that could cause damage to vehicles.

c. Construction. Not specified.

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

Pay Item	Pay Unit
General Conditions, Max \$____	Lump Sum

Measure **General Conditions, Max \$____** by the unit lump sum and pay for it at the contract unit price, which price includes costs for all labor, equipment, and materials necessary to complete the work.

The Contractor is fully responsible for all direct and/or indirect damages to property caused by unclean or damaged sewers or structures resulting from its operations and/or work activities including any/all cost associated with such damages.

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
PROJECT SUPERVISION

SDA:DAD

1 of 4

02/22/23

a. Description. The Contractor shall provide supervision in accordance with the City of Ann Arbor Standard Specifications, subsections 104.07 and 107.15 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, and as described herein.

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

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

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

One week prior to the pre-construction meeting, the Contractor shall designate a proposed Project Supervisor by name, and shall furnish the Engineer 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 Engineer, the City, the public, subcontractors, and all other parties typically involved with work of this nature. The Engineer will have the authority to reject a proposed Project Supervisor whom he/she considers unqualified.

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

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

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

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

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

The Project Supervisor shall be responsible for all of the work of all of the Contractor, subcontractor and/or supplier work forces.

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

The Project Supervisor shall be responsible for the legal, proper and safe parking/storage of all of the Contractor, subcontractor and/or supplier 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 retained by the Engineer or City to witness and reset existing and new geographic/benchmark monuments. Failure to have existing monuments witnessed and reset may result in delays to the Contractor's work. Costs for such delays will be the Contractor's sole responsibility. The Project Supervisor shall also schedule and complete all needed survey request forms required to schedule the services of survey personnel to properly layout all elements of the project work in accordance with the City of Ann Arbor Public Services Area Standard Specifications and the MDOT 2020 Standard Specifications for Construction.

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

The Project Supervisor shall 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.

The Project Supervisor and all subcontractors shall attend a weekly progress meeting chaired by the Engineer to discuss the work. Upon the completion of each meeting, the Engineer 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.

2. **Additional Performance Requirements.** If, in the sole opinion of the Engineer, 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 – The Engineer will issue a warning in writing to the Contractor detailing the deficiencies in the Project Supervision. The Contractor must respond within seven (7) calendar days in writing with a plan to correct the stated deficiencies. Failure to respond within seven (7) calendar days will result in the issuing of a second notice.

Second Notice – The Engineer will issue a second warning in writing to the Contractor further detailing the deficiencies in the Project Supervision. The Engineer will deduct 10%, or \$10,000, whichever is greater, from the original contract amount bid for the Project Supervision contract item of work. The Contractor must respond within seven (7) calendar days in writing with a plan to correct the stated deficiencies. Failure to respond within seven (7) calendar days will result in the issuing of a third notice. At this time, the Engineer reserves the right to meet with personnel with the necessary authority within the Contractor's organization to discuss the deficiencies in the Project Supervision.

Third Notice – The Engineer will issue a third notice in writing to the Contractor further detailing the deficiencies in the Project Supervision. The Engineer will deduct 25%, or \$25,000, whichever is greater, from the original contract amount bid for the Project Supervision contract item of work, and the Contractor will remove and replace the Project Supervisor immediately with another individual approved by the Engineer.

Should, in the sole opinion of the Engineer, 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. The Engineer, in its determination, will consider failure by the Contractor to provide adequate project supervision as a basis to suspend work without the extension of contract time or additional compensation.

If the original Project Supervision contract amount is insufficient to cover said deductions, the Engineer will reduce Project Supervision contract amount to zero and will generate a contract modification to assess a penalty to cover the difference between the Project Supervision contract amount and the total amount of the deduction(s). The expectation is that the Project Supervision contract amount will be sufficient to cover any deductions.

b. Materials. None Specified.

c. Construction. Not specified.

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

Pay Item

Pay Unit

Project Supervision, Max \$____Lump Sum

Measure **Project Supervision, Max \$____** by the unit lump sum and pay for it at the contract unit price, which price includes costs for all labor, equipment, and materials necessary to complete the work.

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

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

SDA:DAD

1 of 2

02/22/23

a. 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.

The intent of this specification is **not** to include the actual labor costs associated with the payment of prevailing wages as required. Properly incorporate those costs in all other contract items of work bid for the project.

b. General. The Contractor will 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 found to contain errors, omissions, inconsistencies, or other defects that render the report invalid. Provide the corrected copies when requested by the Supervising Professional.

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

Submit certified payrolls on City-provided forms or forms used by the Contractor, as long as the Contractor forms contain all required payroll information. If the Contractor elects to provide its own forms, the Supervising Professional shall approve of their use prior to the beginning of on-site work.

c. 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 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 City will not extend the contract completion date as a result of its investigation of the as-bid amount for this item of work, even if the anticipated contract award date must be adjusted. The only exception will be if the Contractor adequately demonstrates that their costs were appropriate and justifiable. In such case, the City will adjust the contract completion date by the number of

calendar days commensurate with the length of its investigation if it cannot meet the published Notice to Proceed date of the work. The City will not allow adjustments to contract unit prices for all other items of work due to the adjustment of contract completion date.

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

Pay Item	Pay Unit
Certified Payroll Compliance and Reporting	Lump Sum

Measure **Certified Payroll Compliance and Reporting** by the unit lump sum and pay for it at the contract unit price, which price includes costs for all supervisory, accounting, and administrative labor, and equipment and materials necessary to complete the work of monitoring, performing and maintaining compliance with the tasks required of this Detailed Specification.

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

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
WORKING IN THE RAIN OR IN THE DARK

SDA:DAD

1 of 1

02/22/23

a. Description.

Working in the Rain

The Engineer may delay or stop the work due to threatening weather conditions. The Contractor will not work in the rain unless authorized in writing by the Engineer.

The Contractor is solely responsible for repairing all damages to the work and to the site, including any City infrastructure, and any adjacent properties resulting from its decision to work in the rain.

Working in the Dark

The Contractor will not work in the dark except as approved by the Engineer and will provide lighting for night work 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 Contractor cannot be complete the work within the remaining daylight hours, or if inadequate daylight is present to properly perform or inspect the work.

The Contractor is solely responsible for repairing all damages to the work and to the site, including any City infrastructure, and any adjacent properties, which result from working in the dark.

b. Measurement and Payment.

No compensation shall be due the Contractor for unused materials or downtime due to rain, or the threat of rain.

No compensation shall be due to the Contractor for unused materials or downtime when the Engineer directs work stoppage for reasons due to darkness and/or inadequate remaining daylight.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
MATERIAL AND SUPPLY SUBMITTALS AND CERTIFICATIONS

SDA:DAD

1 of 1

02/22/23

a. Description. This work includes submittal to the Engineer by the Contractor and its Subcontractors and prior to commencement of work; Michigan Department of Transportation (MDOT) Form 0501 showing all materials and supplies proposed for use on the project, and any product data information requested by the Engineer. MDOT Form 0501 can be found at <https://mdotjboss.state.mi.us/webforms/GetDocument.htm?fileName=0501.pdf>. This work also includes furnishing certifications to the Engineer for review and approval a minimum of three (3) business days prior to any scheduled delivery, installation, and/or construction of the same. The manufacturer or supplier shall certify the following materials and supplies are compliant with the contract specifications unless otherwise directed by the Engineer:

Cement and Lime	Bridge Coating Systems
Aggregates	Erosion and Sedimentation Control Materials
Admixtures and Curing Materials for Concrete	Turf and Landscaping Materials
Asphaltic Materials	Electrical and Lighting Materials
Steel Reinforcement	Permanent Traffic Sign and Support Materials
Structural Steel	Permanent Paving Marking Materials
Fencing Materials	Permanent Traffic Signal Materials
Miscellaneous Metal Products	Temporary Traffic Control Materials
Drainage Products	Sanitary Sewer Materials
Geosynthetics	Water Main Materials
Water	Concrete Mixtures
Timber and Lumber	
Masonry Units	
Joint and Waterproofing Materials	

b. Materials. None specified.

c. Construction. None specified.

d. Measurement and Payment. The Engineer will not pay for the work required of this detailed specification separately. The Contractor will include it in the contract unit price bid for the pay Item **General Conditions, Maximum, \$_____**.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
AUDIO-VISUAL RECORDING

SDA:DAD

1 of 2

02/22/23

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

The audio-visual recording shall be:

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

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

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

b. Production

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

1. Format/No Editing – The audio-visual recording shall be performed using equipment that allows audio and visual information to be recorded simultaneously and in color. The recording shall be provided on USB Drive. The quality of the recording shall be equal to or better than the standard in the industry. The recording shall not be edited.
2. Perspective/Speed/Pan/Zoom – To ensure proper perspective, the distance from the ground to the camera lens shall not be less than 5-feet and the recording must proceed in the general direction of travel at a speed not to exceed 30-feet per minute (0.34 miles per hour). Pan and zoom rates shall be controlled sufficiently so that playback will ensure quality of the object viewed.
3. Display – The recording equipment shall have transparent time and date stamp and digital annotation capabilities. The final copies of the recording shall continuously and simultaneously display the time (hours/minutes/seconds) and the date (month/date/year) in the upper left-hand corner of the frame. Accurate project stationing shall be included in the lower half of the frame in standard station format (i.e. 1+00). Below the stationing, periodic information is to be shown, including project name, name of area shown, direction of travel, viewing direction, etc.

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

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

c. 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, public 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: 3 of 3 1/19/23 a. Extend to 50 feet outside of the right-of-way and easements area as shown on the plans. b. Extend 50 feet outside the construction limits on all streets, including side streets. c. Include both sides of each street, with each side being recorded separately.

4. Other Areas The Contractor shall record, at their sole expense, other areas where, in their opinion, the establishment of a record of existing conditions is warranted. The Contractor shall notify the Engineer in writing of such areas. The Engineer may direct the recording of other minor areas not specified herein at the Contractor’s sole expense.

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

Pay Item	Pay Unit
Digital Audio-Visual Coverage	Lump Sum

Measure **Digital Audio-Visual Coverage** by the unit lump sum and pay for it at the contract unit price, which price includes costs for all labor, equipment, and materials necessary to complete the work.

The Engineer will pay for **Digital Audio-Visual Coverage** following review and acceptance of the recording. Within 21 days following the receipt of the recording, the Engineer will either accept it and authorize payment, or require the Contractor address any discrepancies in the recording prior to making payment.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
VACUUM TYPE CLEANING EQUIPMENT

SDA:DAD

1 of 1

02/22/23

a. Description. This work includes furnishing and operating 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 paving, and for street and utility structure cleaning after all paving.

b. Materials. None specified.

c. Construction. 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. When directed by the Engineer, the Contractor shall use this equipment to control dust, dirt, and other debris within the project limits and beyond as required, to clean streets surfaces immediately prior to placing HMA pavement mixtures, and for street and utility structure cleaning after 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.

d. Measurement and Payment. The Engineer will not pay for the work required of this detailed specification separately. The Contractor will include it in the contract unit price bid for the pay Item **General Conditions, Maximum, \$_____**.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
PROJECT SCHEDULE AND PAYMENT

SDA:DAD

1 of 2

02/22/23

a. Description.

Examination of Plans, Specifications, and Work Site: Proposer shall carefully examine the Bid Form, plans, specifications, and the work site until it 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.

Complete the entirety of work under this Contract in accordance with, and subject to, the scheduling requirements as outlined below, and all other requirements of the Contract Documents.

1. The City expects to furnish the Contractor with two (2) copies of the Contract, for its execution, on or before **April 7, 2023**. The Contractor shall properly execute both copies of the Contract and return them, with the required Bonds and Insurance documentation, to the City within **ten (10) working days**. City Council approval to award this contract is expected on **May 1, 2023**.

2. 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. Work shall not start until a schedule is approved in writing by the Engineer. The Contractor shall update the approved work schedule at the request of the Engineer and present it to the Engineer within seven (7) calendar days of said request. It shall also be prepared to present an up-to-date approved work schedule at all progress meetings scheduled for the project.

3. The Contractor shall begin the work of this project on or before **May 30, 2023**, and only upon approval from the Project Engineer, and in no case without an approved detailed schedule of work, receipt of the fully executed Contract, and Notice to Proceed. Appropriate time extensions shall be granted if the Notice to Proceed is delayed beyond this date.

4. Complete and open to traffic the entire project on or before the final completion date of **August 19, 2023**. Project completion includes but is not limited to the following: existing pavement, concrete curb and gutter and sidewalk removals; undercuts and machine grading; storm drainage work; placing subbase and aggregate base courses and aggregate base conditioning; concrete curb and gutter and driveway approach work; hot mix asphalt paving; restoration of all disturbed areas; placement of permanent pavement markings; and removal of all temporary traffic control devices.

5. The City of Ann Arbor will impose the following workday, hour and other work restrictions.

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

- Monday through Friday: 7:00 a.m. – 8:00 p.m.
- Saturday: 7:00 a.m. – 8:00 p.m. with notice given to City of Ann Arbor no less than 48 hours and no more than five (5) days.
- Sunday: only with written approval from the City of Ann Arbor.

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

- Memorial Day: from 3:00 p.m., Friday, May 26 through 7:00 a.m., Tuesday, May 30
- Independence Day: from 3:00 p.m., Monday, July 3 through 7:00 a.m., Wednesday, July 5

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 intermediate (location specific) and final completion dates. 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.

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

Assessment of Liquidated Damages will occur until the required work is complete in the current construction season. If, with the Engineer's approval, work extends beyond seasonal limitations, the assessment of Liquidated Damages will discontinue until the work resumes in the following construction season.

b. Measurement and Payment.

If the construction contract is not complete by the specified completion date including any extensions of time granted thereto, at the sole discretion of the City of Ann Arbor it may terminate the Contract. Should this occur, no additional compensation will be due to the Contractor, and the Contractor may be forbidden to bid on future City of Ann Arbor projects for a period of at least three (3) years. If the Engineer elects to terminate the Contract, payment for contract items with a Lump Sum unit price will be up to a maximum amount equal to the percentage of the contract work that is complete at the time of termination.

Include any/all Contractor costs associated with efforts to organize, coordinate, and schedule the project work in the contract unit price bid for the pay item **General Conditions, Max \$___**.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
MAXIMUM UNIT WEIGHT

SDA:DAD

1 of 1

02/22/23

Determination of the maximum dry density in pounds per cubic foot (lbs/ft^3) will be using test method AASHTO T-180 unless otherwise directed by the Engineer. Use the determined value(s) as the maximum unit weight when measuring the in place compaction or density of soils unless such value(s) are determined by an alternate test method as directed by the Engineer.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
CURB, SIDEWALK AND DRIVEWAY REMOVALS

SDA:DAD

1 of 3

02/22/23

a. Description. This work consists of removing concrete items including curb, gutter, curb and gutter, integral curb, sidewalk, sidewalk ramps, driveway openings, and driveway pavements as shown on the plans in accordance with section 204 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, except as specified herein or as directed by the Engineer.

b. Materials. Provide materials in accordance with those specified in subsection 204.02 of the MDOT Standard Specifications for Construction.

c. Construction. Complete this work, as applicable, according to in subsection 204.03 of the MDOT Standard Specifications for Construction, as described below, and as directed by the Engineer.

Curb, Gutter, and Curb and Gutter, Any Type, Rem includes removing curb, gutter, curb & gutter, drive openings, and integral curb, all regardless of type, and all as shown on the plans as Curb and Gutter, Rem.

Sidewalk and Driveway Pavement, Any Thickness, Rem includes removing sidewalk, sidewalk ramps, and driveways, all regardless of type and thickness, and all as shown on the plans as either Sidewalk, Rem or Driveway, Rem. This work also includes removing curb placed integrally with sidewalk, sidewalk ramps, and driveway pavements, and hot mix asphalt pavement, regardless of thickness, overlaid on curb and gutter that is to remain in place without disturbing or damaging the curb and gutter.

Replace concrete curb, gutter, curb and gutter, sidewalk, sidewalk ramps, drive openings, and driveway approaches within 24 hours of their removal unless otherwise directed by the Engineer.

Prior to the start of work, the Engineer and Contractor together will identify, and field measure all concrete removal items. The Engineer will approve of all removal limits prior to the Contractor performing any concrete removal work.

Perform full-depth horizontal and transverse saw cutting at removal limits, including those necessary to construct 2-foot wide "Det M" driveway 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 will cut steel reinforcement bars as directed by the Engineer at all areas of removal. Perform any/all saw cutting under wet conditions to prevent excessive airborne dust. Clean up any/all resulting slurry and debris to the satisfaction of the Engineer immediately after performing saw cutting work.

Excavate, cut, remove stumps, remove brush, grade, and trim as needed and as directed, and fill, place, grade, and compact 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.

The Contractor will coordinate with the City Forester prior to the removal of any tree roots two (2) inches in diameter 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, to protect the grade and/or adjacent areas. The Contractor will not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

Shape, grade, and 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.

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 subbase and aggregate base materials to be either removed from or added to the jobsite, to properly complete the work.

Where replacing existing concrete curb or curb and gutter on a street with a concrete (or brick) base, the Engineer may direct the Contractor to remove a one (1) foot wide, full-depth section of pavement and pavement base immediately in front of the curb and gutter. As part of this pavement/base removal, the Contractor will perform additional (double) full-depth saw-cutting along the entire removal limits and 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 will be to a sufficient width and depth to allow for the placement and removal of the curb and gutter formwork. After the removal of the formwork, the Contractor will replace the concrete base to its original thickness and elevation(s).

At all times, protect all excavated/removal areas with barricades and/or fencing.

Removed or excavated materials not incorporated into the work will become the property of the Contractor and be immediately removed and properly disposed of off-site. DO NOT stockpile overnight on site, or adjacent to it, any removed or excavated materials.

Replace and compact any/all base, subbase, or subgrade materials removed without authorization with materials specified by the Engineer.

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

Pay Item	Pay Unit
Curb, Gutter, and Curb and Gutter, Any Type, Rem	Foot
Sidewalk and Driveway Pavement, Any Thickness, Rem.....	Square Yard

Measure **Curb, Gutter, and Curb and Gutter, Any Type, Rem** length in place in their original position by the unit foot and pay for it at the contract unit price, which price includes the costs for all labor, equipment, and materials necessary to complete the work.

Measure **Concrete Sidewalk and Driveway Pavement, Any Thickness, Rem** area in place in their original position by the square yard and pay for it at the contract unit price, which price includes the costs for all labor, equipment, and materials to complete the work.

The cost of breaking down and removing, sawing, disposing of materials, and providing, placing, and compacting backfill is included in the unit price for the related pay items. The cost of providing, placing and compacting replacement subgrade soils or subbase/base materials is included in the related pay items.

Measure and pay for additional subbase material required at the direction of the Engineer as **Subbase, CIP**.

Measure and pay for additional aggregate base material required at the direction of the Engineer as **Aggregate Base, CIP**.

Removal of excess or unsuitable material required to complete this work at the direction of the Engineer will not be paid for separately. The Contractor will include any/all cost for this work in related pay items.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
VERTICAL EXPLORATORY EXCAVATION

SDA:DAD

1 of 2

02/22/23

a. Description. The use of this detailed specification is to compensate the Contractor to locate underground infrastructure, such as culverts, sewers, utilities, and/or to expose the existing pavement section. Use will only be as directed and approved by the Engineer. This detailed specification is not to compensate the Contractor for the responsibilities in subsection 107.12 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction.

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

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

b. Materials. Use Granular Material Class III in accordance with section 902 of the MDOT 2020 Standard Specifications for Construction for backfill. Use material removed during exploratory investigation for backfill only if approved by the Engineer.

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

Establish necessary lane, shoulder and/or sidewalk closures required to perform work.

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

Take care to protect the exposed culvert, sewer or utility from damage during construction. Repair or replace culvert, sewer or utility, damaged during exploratory excavation, with like materials or alternative and as approved by the Engineer.

Obtain the Engineer's approval before backfilling the excavation. Complete backfilling no later than 24 hours after approval. Backfill in accordance with subsection 204.03.C of the MDOT 2020 Standard Specifications for Construction. Dispose of excess material in accordance with subsection 205.03.P of the MDOT 2020 Standard Specifications for Construction.

The Contractor is responsible for all costs associated with the repair work and out of service time of all broken or damaged existing culverts, sewers or utilities resulting from any action by the

Contractor. If the exploratory investigation results in damage to utilities, contact the owner of such utility to coordinate the repair.

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

Pay Item	Pay Unit
Exploratory Excavation, Vertical.....	Foot

Measure **Exploratory Investigation, Vertical** by the foot from top of existing grade vertically to the bottom of the excavation for a 4-foot maximum diameter hole, or as approved by the Engineer. Measure and pay for the excavated depth of each 4-foot maximum diameter hole separately. One paid excavation may include multiple utility verifications if the utilities are close in proximity.

Exploratory Investigation, Vertical includes all cost for labor, equipment and materials necessary to complete the work, including all costs associated with repair or replacement resulting from the Contractor's activities.

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

SDA:DAD

1 of 2

02/22/23

a. Description. This work includes that described below necessary to construct the subgrade for new and replacement sidewalks, sidewalk ramps and driveway approaches to the lines and grades shown on the plans. Complete this work according to section 205 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, this detailed specification, and as directed by the Engineer.

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

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

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

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

Pay Item	Pay Unit
Grading, Driveway Approach.....	Square Yard
Grading, Sidewalk.....	Square Yard
Grading, Sidewalk Ramp.....	Square Yard

Measure **Grading, Driveway Approach; Grading, Sidewalk;** and **Grading, Sidewalk Ramp** areas respectively in place by the unit square yard and pay for them at their respective contract unit prices, which prices include the costs for all labor, equipment and materials necessary to complete the work.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
MACHINE GRADING, MODIFIED

SDA:JAB/DAD

1 of 6

03/13/23

a. Description. This work consists of constructing earth grades by excavating, cutting, filling, trimming, and grading, and maintaining the work in a finished condition until such time of acceptance by the Engineer. Complete machine grading in accordance with section 205 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, the Plans, and as specified herein with the exception that subgrade undercutting, which if included in the Contract the Engineer will pay for separately. Machine grading includes all the work described herein, and as directed by the Engineer.

b. Materials. Use materials meeting the requirements specified in subsection 205.02 of the MDOT Standard Specifications for Construction.

c. Construction. Use construction methods meeting the requirements specified in subsection 205.03 of the MDOT Standard Specifications for Construction, except as specified herein.

1. Soils Information - Soil information provided as part of the contract documents is for informational purposes only and does not relieve the Contractor of the responsibility of investigating all local conditions before bidding.
2. General Provisions:
 - A. Grade around mailboxes, trees, light poles, power poles, and the like, which are to remain in place. The Contractor is responsible for any damage caused to such structures.
 - B. Maintain the work in a finished condition until acceptance by the Engineer.
3. Clearing, and Removal of Trees and Vegetation - Remove and properly dispose of off-site all vegetation; brush; roots; and trees and stumps, as shown on the Plans, as directed by the Engineer, and as required to complete the project.
4. Removal and Salvaging of Topsoil – Perform the removal, salvaging and stockpiling of topsoil, and all related work in accordance with subsection 205.03.A.1 of the MDOT Standard Specifications for Construction.
5. Miscellaneous Removals – Remove any surface feature located within the grading limits requiring removal and for which there is no specific pay item established in the Contract. This includes removing surface materials (i.e., aggregate base, subbase, subgrade) and miscellaneous asphalt, concrete or brick materials from around manholes, structures, and utility covers.
6. Protection of the Grade – Keep work well drained at all times. Undercut and backfill any foundation, pathway or roadway embankment or subgrade damaged by rain, as directed by the Engineer.

The Contractor is responsible for maintaining the foundation, pathway or roadway embankment, and subgrade.

Conduct operations and provide the necessary equipment to ensure the satisfactory completion of the work without damaging the foundation, pathway or roadway embankment or subgrade. This may require the transporting and movement of materials over additional distances.

7. Protection of Utilities and Vaults/Structures - Protect and excavate around utility lines, vaults, and structures exposed at, above, or below, the foundation or subgrade elevation during machine grading or subgrade undercutting operations.

8. Removal of Cable, Conduits and Pipe - Remove, and properly dispose of off-site, all abandoned cables, conduit, and pipe encountered at, or above the bottom of any earthwork excavation or undercut. Where the inverts of existing conduits or pipe are less than 16 inches below the bottom of any earth excavation or undercutting, remove the conduits and/or pipe and fill void with an Engineer approved material. Compact fill material to 95% of its maximum unit weight in lifts not exceeding 12 inches.

9. Foundation Preparation – The pathway or roadway “foundation” definition is the original or established earth subgrade of the pathway or roadway upon which the Contractor will place embankment material. Complete foundation work in accordance with subsection 205.03.A of the MDOT 2020 Standard Specifications for Construction, as shown on the Plans, and as specified herein.

Compact foundation to 95% of its maximum unit weight, as measured by the AASHTO T-180 method, to a depth of at least 10 inches. If in the opinion of the Engineer the Contractor cannot achieve this, it will direct the Contractor to perform “Subgrade Undercutting” as described herein, on the foundation.

10. Pathway or Roadway Embankment Construction – The pathway or roadway “embankment” definition is the construction of earth on the prepared foundation to form the subgrade. Complete pathway or roadway embankment in accordance with subsection 205.03.H of the MDOT Standard Specifications for Construction, as shown on the Plans, and as specified herein. Compact pathway or roadway embankment to a minimum of 95% of its maximum unit weight, as measured by the AASHTO T-180 method.

11. Subgrade Construction - The pathway or roadway “subgrade” definition is the final earth grade that extends from grading limit to grading limit. Construct the subgrade by performing earth excavation and embankment work in accordance with subsections 205.03.G and 205.03.H, respectively, of the MDOT 2020 Standard Specifications for Construction, as shown on the Plans, and as specified herein.

Construct the subgrade to the contours and cross-sections shown on the plans, as specified herein, and as directed by the Engineer. To achieve this, the work will include, but not be limited to:

- A. Removal and disposal off-site of any surplus or unsuitable materials.
- B. Furnishing from off-site any additional Engineer approved fill materials necessary.
- C. Moving existing and/or furnished materials longitudinally and transversely as necessary.

D. Cutting, placing, compacting, and trimming existing and/or furnished materials to construct the pathway or roadway embankment and subgrade to the specified tolerances.

E. Stockpiling, and moving again, any excavated materials requiring delayed placement due to construction staging.

Grade the earth subgrade to accommodate all pathway or roadway subbases and aggregate bases; all infiltration trench, bioswale and adjacent planting bed materials; curb and gutter, driveways, sidewalks, and other structures; infiltration trench and bioswale planting mixes, and topsoil; and any other features that the subgrade supports.

Prepare the subgrade to ensure uniform support for the pavement structure. Place the finished subgrade to within 1 inch below and 3/4 inch above plan grade. Variations within this tolerance will be gradual.

Compact subgrade to a minimum of 95% of its maximum unit weight, as measured by the AASHTO T-180 method, to a depth of 10 inches. If in the opinion of the Engineer the Contractor cannot achieve this, it will direct the Contractor to perform "Subgrade Undercutting" as described herein.

13. Test/Proof Rolling – Test/proof-roll the foundation and/or subgrade with a pneumatic tired roller with a suitable body for ballast loading and a variable gross load capacity between 25 and 40 tons. Instead of this test roller, with the approval of the Engineer, the Contractor may use a fully loaded single axle or tandem axle dump truck.

14. Subgrade Undercutting - Perform subgrade undercutting on the foundation or subgrade in accordance with subsection 205.03.E of the MDOT 2020 Standard Specifications for Construction, as shown on the plans, as specified herein, and as directed by the Engineer.

15. Rock Excavation – Remove rocks and boulders, concrete, and masonry. Perform rock excavation in accordance with subsection 205.03.B of the MDOT 2020 Standard Specifications for Construction, as shown on the Plans, and as directed by the Engineer.

16. Lowering Structures and Structure Covers – Temporarily lower all structures prior to Machine Grading. At the direction of the Engineer stockpile separately on site at a location mutually agreed upon by the Contractor and Engineer any/all existing structure covers respectively designated for salvage or reinstallation. Deliver salvaged structure covers to the City's W.R. Wheeler Service Center (4251 Stone School Rd, Ann Arbor, MI) within two days of their removal. Any structure covers not designated for salvage or reinstallation are the property of the Contractor, and must be disposed of, as required, by the Contractor.

17. Structure and Sewer Cleanliness – Protect all sewers, and structures, including manholes, gate wells, valve boxes, inlet structures and curbs from damage, and contamination by debris and construction materials. Maintain structures clean of construction debris and properly cover them during the construction. The Contractor will immediately clean any structures and/or sewers contaminated with construction debris.

18. Tree Trimming/Pruning – Conduct tree trimming/pruning as directed by the Engineer and obtain a permit and coordinate this work with the City's Urban Forester.

The Plans include existing and proposed cross sections. The Contractor must perform its own computations and is responsible to inspect the site to determine its own estimate of the quantities involving this work.

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 includes, but not be limited to, the excavation of miscellaneous concrete and miscellaneous HMA pavement, soil, rocks of any size, trees less than 6-inches in breast height diameter, stumps, 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 side slopes; general restoration in accordance with the Detailed Specifications and the general items of the work as specified herein.

Remove, add to, re-shape, re-grade, and re-compact the existing roadbed materials, and construct the roadway to the cross-section(s) as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. 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.

At the direction of the Engineer, either remove and dispose of, or remove and salvage by delivering to and neatly stacking/stockpiling at a location within the city limits, all bricks, if present within the grading limits.

Salvage and provide to the City any/all signs in the grading limits as directed by the Engineer.

Move excavated and/or imported materials longitudinally and/or transversely where necessary, and as directed by Engineer.

Keep the work well graded and drained at all times.

Do not use rubber-tired equipment on the subgrade when it causes or may cause, in the opinion of the Engineer, damage to the subgrade. Conduct operations and provide all necessary equipment to ensure the satisfactory completion of the work without damaging the subgrade. This includes the transporting, stockpiling, re-handling, and movement of materials over additional distances, in-lieu-of driving on an unprotected, or partially unprotected, subgrade.

The Contractor is solely responsible for the maintenance and protection of the subgrade, and for repairing any/all damages to it resulting from, in the opinion of the Engineer, the its operation(s), or the operation(s) of its subcontractors or suppliers. This includes any additional earthwork and/or maintenance materials as directed by the Engineer.

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.

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

At various times throughout the work, the Engineer may direct the Contractor to use smaller and/or lighter equipment, and to defer certain work tasks, to protect the grade and/or adjacent areas.

Coordinate with the City’s Urban Forester prior to the removal of any tree roots 2 inches or larger in diameter.

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

Pay Item	Pay Unit
Machine Grading, Modified.....	Station

Measure **Machine Grading, Modified** length by the station and pay for it at the contract unit price, which price includes costs for all labor, equipment and materials necessary to complete the work. The Engineer will measure **Machine Grading, Modified** along the centerline. The Engineer will measure each side of the road where work is performed, separately.

The described work for **Machine Grading, Modified** includes all the work specified herein, including, but not limited to, the removal and offsite disposal of any surplus or unsuitable materials and the furnishing from off-site any additional Engineer approved fill materials necessary to construct the embankment and subgrade to the contours and cross-sections shown on the Plans.

Due to the nature of the project, there is a likely probability that some or all of the excavated material may not be suitable for use as fill material. Consequently, there may be imbalances between the amount of earth excavation available for re-use as embankment, and the amount of embankment needed for the construction activities shown on the Plans or as directed by the Engineer. The unit price bid for this work includes the costs to address this probable imbalance and to furnish, stockpile and re-handle, place, and compact any Engineer approved material necessary to complete the work of constructing the embankment and subgrade to the cross sections shown on the Plans.

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

The Engineer will not pay separately for the removal of conduit or pipe, or any of the work described in this Specification.

The Engineer will not pay additional compensation or allow extensions of contract time for additional measures required to protect the grade as specified this includes the use of smaller equipment, lighter equipment, or work task deferral.

Rock excavation performed as a part of **Machine Grading, Modified** will apply only to removal of rocks and boulders, concrete, and masonry less than a 1/2 cubic yard in volume. Payment for removal of these measuring greater than 1/2 cubic yard using the pay item **Rock Excavation**. The Engineer will pay the Contractor for rock excavation measuring greater than 1/2 cubic yard as extra work if the **Rock Excavation** pay item is not in the contract. Measure boulders individually and compute the volume from the average dimension measured in three directions.

The Engineer will pay the Contractor for the temporary lowering of structures as **Dr Structure, Temp Lowering, Modified**.

The Contractor, at its sole expense, will remedy, as directed by the Engineer, any damage to the foundation, pathway, or roadway embankment or subgrade caused by traffic or its operations.

The Contractor is responsible for all direct and indirect damages caused by unclean or damaged sewers or structures resulting from its work or operations.

The Engineer will not pay additional compensation or allow extensions of contract time for tree trimming measures and coordination of this work with the City.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
UNDERCUTTING

SDA:JAB/DAD

1 of 2

02/22/23

a. Description. This work includes the removal of existing unstable and/or unsuitable base, subbase and/or subgrade soil material(s) that may be susceptible to frost heaving or differential frost action in the areas and limits identified by the Engineer. It also includes installing stabilization geotextile and/or structural geogrid as necessary and backfilling to replace these material(s) and remedy the unstable soil conditions. Perform this work in accordance with section 205 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, as directed by the Engineer, and as modified herein.

b. Materials. Provide Granular Material Class II and 21AA dense-graded aggregate materials in accordance with those specified in section 902 of the MDOT Standard Specifications for Construction. Only crushed limestone material is permissible for 21AA dense-graded aggregate unless otherwise approved by the Engineer.

Provide Coarse Aggregate 3x1 in accordance with sections 902 and 916 the MDOT Standard Specifications for Construction, except as modified herein. Coarse crushed aggregate must consist of a well graded crushed natural aggregate ranging from one (1) inch to three (3) inch inches in size with no more than 7 percent by weight passing the No. 200 sieve. Coarse aggregate crushed content must be at least 95%.

Provide stabilization geotextile materials in accordance with section 910 of the MDOT Standard Specifications for Construction.

Provide structural geogrid materials in accordance with the Detailed Specification for Structural Geogrid.

c. Construction. Use construction methods as described in subsection 205.03.E of the MDOT Standard Specifications for Construction, and as directed by the Engineer.

After either removing the pavement, performing rough/finish grading, and/or at the time of proof rolling, the Engineer will inspect the grade to determine the need for, and the limits of, undercuts. Excavate to the required depth, trim, shape, and re-compact the undercut areas as directed by the Engineer. Properly dispose of all excess materials.

Backfill areas of Undercutting, Type IIA with class 21AA dense-graded aggregate, areas of Undercutting, Type IIB with Granular Material Class II, and areas Undercutting, Type IIC with Coarse Aggregate 3x1 unless directed otherwise by the Engineer.

Place stabilization geotextile and structural geogrid as directed by the Engineer in areas where subgrade soils require added stability. Place stabilization geotextile as directed by the Engineer in areas where is the potential of intermixing of dissimilar materials.

Place and compact the aggregate fill in maximum lifts of not more than 12 inches thick. At the discretion of the Engineer, aggregate fill lifts of up to 24 inches may be allowed based on the assessment of subgrade soil conditions.

Compact undercutting backfill material (>12 inches below the finish base grade) to not less than 95% of its maximum unit weight. Compact undercutting backfill material (\leq 12 inches below the finish base grade) to not less than 98% of its maximum unit weight. Determine the maximum unit weight of backfill materials using the AASHTO T-180 test.

The Engineer may elect to use one or more types of undercutting to address poor soil conditions identified in a specific area of the project.

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, to protect the grade and/or adjacent areas. The Contractor will not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

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

Pay Item	Pay Unit
Undercutting, Type IIA.....	Cubic Yard
Undercutting, Type IIB.....	Cubic Yard
Undercutting, Type IIC.....	Cubic Yard

Measure **Subgrade Undercutting, Type IIA**, **Subgrade Undercutting, Type IIB**, and **Subgrade Undercutting, Type IIC** volumes respectively in place by the unit cubic yard and pay for them at their respective contract unit prices, which prices include the costs for all labor, equipment, and materials necessary to complete the work.

When one or more types of undercutting are used to address poor soil conditions identified in a specific area of the project, each type will be measured and paid for separately.

Stabilization geotextile and structural geogrid will each be measured and paid for separately.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
EROSION CONTROL, INLET FILTER

SDA:JAB/DAD

1 of 1

02/22/23

a. Description. This work consists of installing and maintaining inlet filters in accordance with section 208 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction and as shown on the Plans. Install filters in existing and proposed inlets to restrict and minimize the amount of sediment entering the storm sewer system and water courses.

b. Materials. The following devices are approved for use as acceptable alternatives:

1. Siltsack® Type B, Regular Flow, by ACF Environmental, Inc.
2. Inlet Pro® Sediment Bag, Standard Flow, with optional foam deflector by Hanes GeoComponents.
3. Dandy Curb Bag®, Dandy Bag®, Dandy Curb Sack®, Dandy Sack®, or Dandy Pop® by Dandy Products, Inc.
4. Geoturf™ Basin Bag™, Regular Flow by CSI Geoturf.

The Contractor shall submit product data sheets and a sample of the filter material used for inlet filters to the Engineer for approval prior to ordering materials.

c. Construction. The Contractor shall install, maintain, clean, and re-install and/or replace inlet filters in accordance with the manufacturer's specifications and as directed by the Engineer. The Contractor shall dispose of debris off-site, in accordance with subsection 205.03.P of the MDOT Standard Specifications for Construction.

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

Pay Item	Pay Unit
Erosion Control, Inlet Filter.....	Each

Measure **Erosion Control, Inlet Filter** individually in place by unit each and pay for it at the contract unit price, which price includes all costs for labor, equipment, and materials necessary to furnish, install, maintain, clean and remove the inlet filter, and to re-install and/or replace the inlet filter as needed.

CITY OF ANN ARBOR

DETAILED SPECIFICATION
FOR
AGGREGATE BASE

SDA:JAB/DAD

1 of 1

02/22/23

a. Description. This work consists of constructing an aggregate base course on a surface approved by the Engineer using only crushed limestone. The aggregate base shall be in accordance with section 302 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, as shown on the Plans, as directed by the Engineer, and as stated herein.

b. Material. Provide aggregate material meeting the requirements for Class 21AA dense-graded aggregate as specified in section 902 of the MDOT Standard Specifications for Construction. Only crushed limestone material is permissible for 21AA dense-graded aggregate unless otherwise approved by the Engineer. Provide load weight tickets from a certified scale for acceptance at the job site by the City of Ann Arbor.

c. Construction. Construct aggregate base course in accordance with subsection 302.03 of the MDOT Standard Specifications for Construction. Deliver aggregate material to the job site in a thoroughly blended condition and handle in such a manner that there will be no mixing of it with the underlying subbase or subgrade material unless directed by the Engineer.

In non-uniform areas requiring aggregate base beneath sidewalk, sidewalk ramps, driveways, and curb and gutter at the direction of the Engineer, place, shape, grade and compact 21AA dense-graded aggregate to length, width and depth required. If placing aggregate base in a layer less than 3 inches, blend the new material with the layer below to ensure a total of 6 inches. Blending must be performed to ensure that the new material is uniformly mixed with the layer below and compacted as specified in subsection 302.03.A of the MDOT Standard Specifications for Construction.

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

Pay Item	Pay Unit
Aggregate Base, CIP	Cubic Yard
Aggregate Base, 8 inch, Modified	Square Yard

Measure **Aggregate Base, CIP** volume by the cubic yard compacted in place and pay for it at contract unit price, which price includes costs for all labor, equipment, and materials necessary to complete the work.

Measure **Aggregate Base, 8 inch, Modified** area by the square yard compacted in place and pay for it at contract unit price, which price includes costs for all labor, equipment, and materials necessary to complete the work.

CITY OF ANN ARBOR
 DETAILED SPECIFICATION
 FOR
STRUCTURAL GEOGRID

SDA:DAD

1 of 3

02/22/23

a. Description. This work consists of placing structural geogrid as shown in the plans, and as directed by the Engineer. Perform work in accordance with section 308 of the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction, except as herein provided.

b. Material. Furnish geogrid manufactured with high profile rectangular shaped ribs oriented radially in three or more directions to form uniform triangular shaped apertures having significant dimensional stability through all ribs and junctions of the geogrid structure to maintain reinforcement and aggregate confinement capabilities under repeated dynamic loads throughout the pavement life cycle. Furnish geogrid material resistant to ultraviolet degradation, all forms of biological and chemical degradation, and physical damage normally encountered in earth and road construction activities. Furnish geogrid having three-dimensional ribs with a depth to width ratio of at least 1.0 to optimize aggregate interlock, and the physical and geometric properties specified in Table 1 below for the designated 'Type' of geogrid material shown on the plans.

Table 1. Geogrid Properties

Property	Test Method	TYPE			
		Subbase	Subgrade	Base	High Performance (HP) Base
Aperture (Aggregate) Size		Small (Fine)	Large (V. Coarse)	Standard	Standard
Nominal Pitch ⁽²⁾ , mm		33	60	40	40
Junction Efficiency ⁽³⁾ , %	ASTM D6637-10 D7737-11	93	93	93	93
Aperture Stability ⁽⁴⁾ , kg-cm/deg @ 5.0 kg-cm	GRI-GG9 (Modified)	-	3.0	3.0	3.6
Radial Stiffness at Low Strain ⁽⁵⁾ , kN/m @ 0.5% Strain	ASTM D6637-10	200	350	225	300
Isotropic Stiffness Ratio ⁽⁶⁾		-	0.6		
Overall Flexural Rigidity, mg-cm	ASTM D7748-12	0.5x10 ⁶	2.0x10 ⁶		
Chemical Resistance ⁽⁷⁾	EPA 9090	100%	100%	100%	100%
Resistance to Ultra-Violet Light and Weathering ⁽⁸⁾	ASTM D4355-05	70%	70%	70%	70%

1. Unless indicated otherwise, values shown are minimum average roll values (MARVs) determined in accordance with ASTM D4759-02. Brief descriptions of test procedures are given in the following notes.
2. Height of (triangular) aperture, measured node axis to rib.
3. Load transfer capability expressed as a percentage of ultimate tensile strength.
4. In-plane torsional rigidity measured by applying a moment to the central junction of a 225mm x 225mm specimen restrained at its perimeter.
5. Radial stiffness is determined from tensile stiffness measured in any in-plane axis from testing.

6. The ratio between the minimum and maximum observed values of radial stiffness at 0.5% strain, measured on rib and midway between rib directions.
7. Resistance to loss of load capacity or structural integrity when subjected to immersion testing in chemically aggressive environments.
8. Resistance to loss of load capacity or structural integrity when subjected to 500 hours of ultraviolet light and aggressive weathering.

Submit representative geogrid product sample, product data sheet, and the manufacturer’s published installation guidelines. Basis for acceptance will be on a general certification, along with a certificate of analysis that confirms the geogrid material supplied meets the requirements of Table 1. The Engineer may sample and test material shipped to the project to verify certification documents.

The Engineer may consider alternate geogrid materials if they meet or exceed the project design intent. The Engineer must pre-approve alternate materials in writing by the Engineer prior to installation. Submit performance test data for evaluation at least two weeks prior to the anticipated shipment to the project. The Engineer will accept in-air laboratory testing alone for performance testing. Where applicable, calibrate the alternate geogrid material to the selected pavement design methodology furnish verification. The Engineer retains the sole discretion to approve alternate materials based on the submittal. Rejection of alternate material submittals shall not be the basis for any claim for additional compensation nor extension of time.

c. Construction. Protect stored materials from exposure to mud, wet concrete, epoxy or other deleterious materials. Store at temperatures above -20°F (-29°C). Lay flat or stand on end rolled materials. Do not store geogrid materials exposed to direct sunlight for extended periods as recommended by the manufacturer. The Engineer will reject geogrid materials with damage or manufacturing defects.

Prepare all areas immediately beneath the geogrid installation area per the plans and pertinent specifications. Install geogrid according to the manufacturer's recommendations. Place geogrid required only for immediately pending work to prevent undue exposure or damage to the geogrid, not to exceed 3 calendar days. After placing a layer of geogrid, use approved suitable means to anchor the geogrid in position until the subsequent backfill layer can be placed. Overlap adjacent rolls of geogrid as directed to maintain at least 1 ft overlap after backfill placement (larger overlaps may be necessary on softer subgrade soils).

Do not operate equipment directly on the geogrid. Place backfill outward from road embankment centerline, pushing a sufficient aggregate surcharge to assist in tensioning the geogrid without creating excessive wrinkles or damage. Do not operate tracked equipment on less than 6 inches of loose aggregate. Avoid sudden braking and sharp turning movements to prevent damage to the geogrid. Grade and compact cover aggregate according to the plans and relevant contract item specifications.

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

Pay Item	Pay Unit
Structural Geogrid (Type)	Square Yard

Measure **Structural Geogrid (Type)** area in place by the unit square yard and pay for it at contract unit price, which price includes costs for all labor, equipment and materials necessary to complete

the work including placement and anchoring, hand work necessary to establish grades, splicing, and repairing protective coatings. The Engineer will make no allowance for overlap, splices, or material cut off or wasted.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
ADJUSTING STRUCTURE COVERS

SDA:JAB/DAD

1 of 4

03/13/23

a. Description. This work includes the final adjustment of all drainage and utility structure covers whether shown or not on the plans in accordance with sections 403 and 823 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, applicable standard/special details, and as specified herein. Utility structures comprise gate wells/manholes and boxes, sanitary sewer manholes, storm manholes, catch basins/inlets, monument boxes, and private utility manholes/boxes.

The Contractor must also coordinate with private utility(s) to have them perform any required adjustment(s) of structure covers and to ensure performance of proper adjustments prior to placing any final paving materials.

b. Materials. Provide materials in accordance with those specified in subsection 403.02 of the MDOT Standard Specifications for Construction.

Furnish Concrete, Grade 3500 or Concrete, Grade P-NC as directed by the Engineer in accordance with Sections 1004 and 1006 of the MDOT 2020 Standard Specifications for Construction, respectively.

Furnish hot-poured joint sealant in accordance with Section 914 of the Standard Specifications for Construction.

For gate well/manhole, sanitary sewer manhole, storm manhole and catch basin/inlet use precast concrete adjusting rings or an Engineer approved equivalent.

For concrete curb and concrete curb and gutter, furnish materials in accordance with subsection 802.02 of the MDOT 2020 Standard Specifications for Construction.

c. Construction. Complete this work, as applicable, according to subsection 403.03 of the MDOT Standard Specifications for Construction, as described below, and as directed by the Engineer.

In hot mix asphalt (HMA) pavement areas, make adjustments using Concrete, Grade 3500 or Concrete, Grade P-NC. In areas of concrete (PCC) pavement, adjust structures at the time of paving and encase them with the grade of concrete used for the roadway.

Adjust any/all structure covers, monument boxes, water valve boxes and other public utility underground access or control point covers to conform to the finished surface section and elevation. Perform the structure cover adjustments in lawn areas and those using a one-step process. Perform structure cover adjustments in HMA pavement areas in two steps: step one is the lowering of the structure cover to below the subgrade elevation and plating of the structure; step two is the final adjustment to finish grade made prior to placing the HMA top course. In areas of concrete pavement, make the final adjustment of structure covers to finish grade at the time of concrete pavement forming. The Engineer shall approve of all structure cover adjustments prior to the placement of any HMA and/or concrete pavement.

For structures within the pavement area, remove pavement adjacent to the drainage structure cover using a rotary or sawing method. When using a rotary coring method, remove a minimum 4-foot diameter section of pavement around the drainage structure frame and cover. If the frame outside diameter measurement is greater than 36 inches, use a rotary coring head to remove a minimum 4.5-foot diameter section of pavement. When using a sawing method, sawcut clean and remove a 6-foot by 6-foot pavement square.

For structures within the curb line, saw cut and remove a 4-foot by 6-foot section of pavement around the frame with the 6-foot dimension measured along the curb line. Remove curb and/or curb and gutter associated with the adjustment of structures, as directed by the Engineer.

For structures located adjacent to concrete traffic control islands, remove concrete island full-width or up to 6-feet wide to facilitate adjustment of the drainage structure cover frame, as directed by the Engineer.

Prior to setting the frame, compact exposed soil using a method approved by the Engineer.

Support the cover frame over the structure matching the adjacent roadway cross slope. Secure the frame in-place to allow for placement of concrete using brick or block as required on a full bed of mortar without altering frame position. Replace pavement around the frame with Concrete, Grade 3500 or Concrete, Grade P-NC, as directed by the Engineer, matching the finished elevation and cross-slope of the roadway. Construct plane of weakness joint as directed by the Engineer.

For structures within the curb line, replace pavement around the frame with Concrete, Grade 3500 or Concrete, Grade P-NC as directed by the Engineer and HMA top course as shown on the detail herein. Replace concrete curb and concrete curb and gutter, in-kind in accordance with the MDOT Standard Plan R-30 Series and section 802 of the MDOT 2020 Standard Specifications for Construction.

Immediately remove any debris that falls into drainage structures or other utility manholes due to Contractor operations.

Ensure saw overcuts are cleaned and sealed with hot-poured joint sealant.

Any/all final structures cover adjustments are to be to the elevation that results in their top surface being flush with the finished grade. Accomplish and check this work using a 10-foot straight edge placed parallel, and then perpendicular to, the pavement centerline. Failure to meet these conditions will result in the readjustment of the structure and finish patching of the area, as directed by the Engineer, at the Contractor's expense.

All private utility (Electric, Gas, Telecommunications, etc.) structure and valve covers will be adjusted during this project by the utility owner unless otherwise approved. It is the responsibility of the Contractor to coordinate with these private utilities by giving adequate notice and arranging for any adjustment of structures or valves by these utilities. The Contractor is solely responsible for ensuring completion of this work in a timely manner.

The Contractor shall replace existing structures covers, top portions of valve boxes and monument boxes as shown on the plans and as directed by the Engineer.

Any/all adjustments in areas HMA pavement include backfilling with Grade P-NC concrete from the depth of excavation necessary for adjustment to an elevation flush with the HMA leveling course.

Adjust structure covers to be flush with or 1/4 inch below final pavement surface.

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

Pay Item	Pay Unit
Dr Structure Cover, Adj, Case __, Modified	Each
Monument Box, Adj	Each
Gate Box, Adj, Case __, Modified	Each

Measure **Dr Structure Cover, Adj, Case __, Modified, Monument Box, Adj** and **Gate Box, Adj, Case __, Modified** respectively and individually in place by the unit each and pay for them at their respective contract unit prices, which prices include costs for all labor, equipment, and materials necessary to complete the work.

Backfilling with Grade P-NC concrete is not a separate contract item, and payment for **Dr Structure Cover, Adj, Case 1, Modified, Monument Box, Adj** and **Gate Box, Adj, Case 1, Modified** includes furnishing and placing this material.

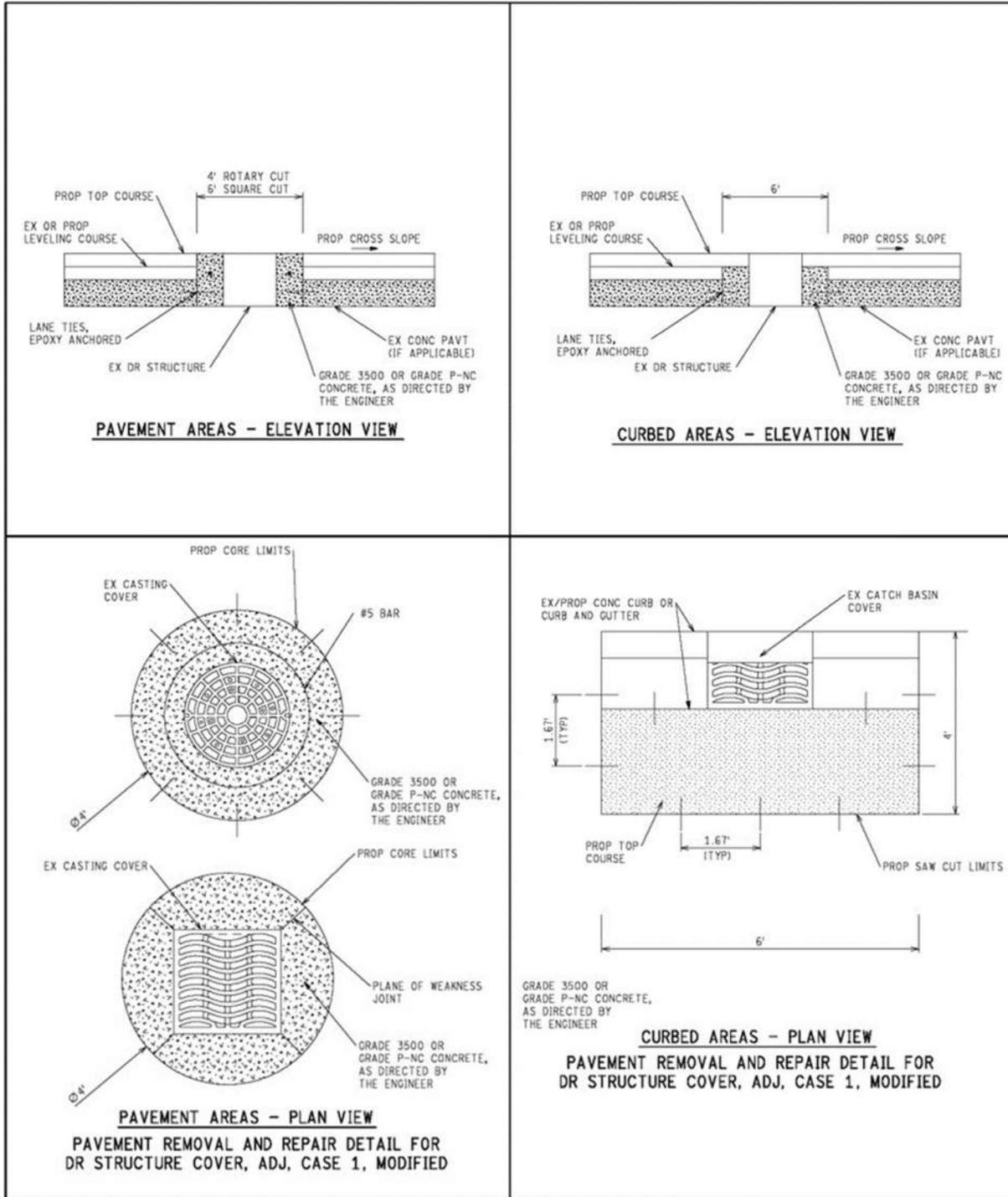
Payment for these items of work also includes saw cutting, removal and disposal of existing pavement and curb or curb and gutter, adjustment of cover to required elevation and cross-slope, placement and finishing of new curb or curb and gutter, placement and finishing of new HMA, placement and removal of temporary HMA wedging for maintaining traffic, if required, sealing saw overcuts, and placement of cover on open structures to prevent accumulation of debris and cleaning existing drainage structures due to Contractor operations.

Where the required adjustment of a structure is more than 6 inches above/below the proposed finished grade of the structure, measure and pay for it as **Dr Structure Cover, Adj, Add Depth**. This also includes the repair of manholes and structures requiring less than the substantial rebuilding of the structure, as determined by the Engineer.

There is a possibility that the Contractor may find hidden utility structures during the work. It is the Contractor's responsibility to inform the respective utility owner(s) of the findings. In such instances, the City may direct the Contractor to adjust the structure(s) to grade. The Engineer will pay this work as either **Dr Structure Cover, Adj, Case __, Modified, Monument Box, Adj** or **Gate Box, Adj, Case __, Modified** depending on the type and location of the hidden structure(s).

The Engineer will pay for adjusting covers on new drainage or utility structures, monuments boxes, gate boxes, etc. in their respective items of work and not pay for them under these items of work. Perform this work in accordance with this detailed specification.

The Engineer will pay for the adjustment of electrical/traffic signal handholes as **Dr Structure Cover, Adj, Case __, Modified** unless there are separate pay items in the contract to address this work.



CITY OF ANN ARBOR
 DETAILED SPECIFICATION
 FOR
DRAINAGE AND UTILITY STRUCTURES

SDA:DAD

1 of 1

03/13/23

a. Description. This work consists of pointing and/or temporary lowering drainage and utility (storm, sanitary, water, private) structures whether shown or not on the plans in accordance with section 403 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, as directed by the Engineer, and as herein provided.

b. Materials. Provide materials in accordance with subsection 403.02 of the MDOT Standard Specifications for Construction, unless otherwise directed by the Engineer.

c. Construction. Point and/or temporary lower drainage and utility structures in accordance with subsection 403.03 of the MDOT Standard Specifications for Construction, and as directed by the Engineer.

Temporarily lower drainage and utility structures per the details shown on the plans. Temporarily lower all structures prior to performing any Machine Grading work. At the direction of the Engineer stockpile separately on site at a location mutually agreed upon by the Contractor and Engineer any/all existing structure covers respectively designated for salvage or reinstallation. Deliver salvaged structure covers to the City’s W.R. Wheeler Service Center (4251 Stone School Rd, Ann Arbor, MI) within two days of their removal. Any structure covers not designated for salvage or reinstallation are the property of the Contractor, and must be disposed of, as required, by the Contractor.

Point structures by removing loose and damaged mortar, filling joints between concrete and masonry units with new mortar, and striking joints so the exposed surface is smooth and free of voids.

Protect and clean any/all structures as a result of this work.

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

Pay Item	Pay Unit
Dr Structure, Point.....	Each
Dr Structure, Temp Lowering, Modified	Each

Measure **Dr Structure, Point** and **Dr Structure, Temp Lowering, Modified** respectively and individually in place by their respective units each and pay for them at their respective contract unit prices, which prices include the costs for all labor, equipment and materials necessary to complete the work.

Include any/all costs to stockpile and deliver salvaged structure covers to the City’s W.R. Wheeler Service Center in the contract unit price bid for **Dr Structure, Temp Lowering, Modified**.

CITY OF ANN ARBOR
 DETAILED SPECIFICATION
 FOR
STRUCTURE COVERS

SDA:JAB/DAD

1 of 6

03/13/23

a. Description. This work shall consist of replacing and furnishing frames and covers for utility (storm, sanitary, and water) structures as shown on the plans and as directed by the Engineer, in accordance with section 403 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, except as specified herein.

b. Materials. Provide materials meeting the requirements of subsection 403.02 and section 908 of the Standard Specifications for Construction. Provide frames and covers conforming to the model(s) shown in the table below, or equivalent approved by the Engineer.

Type of Casting	Associated Pay Item (MDOT Designation)	EJ No.	NEENAH No.
Manhole Frame and Cover (storm)	Dr Structure Cover, Type Q, Modified	1040Z Frame w/1040A Logo Cover	R-1642 Frame w/Type C Cover
Manhole/Gate Well Frame and Cover (water)	Dr Structure Cover, Type Q, Modified	1040Z Frame w/1040A Logo Cover	R-1642 Frame w/Type C Cover
Manhole Frame and Cover (sanitary)	Dr Structure Cover, Type Q, Special	1040Z Frame w/1040AGS Logo Cover	
Curb Inlet/Catch Basin Frame and Cover (barrier curb & gutter)	Dr Structure Cover, Type K, Modified (MDOT Cover K)	7045Z Frame w/7050T2 Back & 7045M1 Grate	R-3031-B
Double Curb Inlet/Catch Basin Frame and Cover (barrier curb & gutter)	Dr Structure Cover, Type K, Modified (MDOT Cover K)	7045Z Frame w/7050T2 Back & 7045M1 Grate	R-3031-B
Curb Inlet/Catch Basin Frame and Cover (mountable curb & gutter)	Dr Structure Cover, Type C, Modified (MDOT Cover C)	7045Z Frame w/7060T1 Back & 7045M1 Grate	
Flat Inlet Frame and Cover (straight curb and curb & gutter)	Dr Structure Cover, Type D, Modified (MDOT Cover D)	5100Z Frame w/5105M1 Grate	
Inlet/Catch Basin Grate (yard drain)	Dr Structure Cover, Type E, Modified (MDOT Cover E)	6508-O Grate	

Type of Casting	Associated Pay Item (MDOT Designation)	EJ No.	NEENAH No.
Inlet/Catch Basin Grate (yard drain)	Dr Structure Cover, Type G, Modified (MDOT Cover G)	6517N1 Grate	R-2560-E1
Manhole Frame and Cover (storm/flood prone areas)	Dr Structure Cover, Special	1040ZPT Frame w/1040APT Cover	
Inlet/Catch Basin Frame and Cover (gutter)	Dr Structure Cover, Type R, Modified (MDOT Cover R)	7076Z Frame w/7075M1 Grate	
Double Inlet/Catch Basin Frame and Cover (gutter)	Dr Structure Cover, Type R, Modified (MDOT Cover R)	7076Z Frame w/7075M1 Grate	
Water Valve (Gate) Box Assembly	Gate Valve and Box, ___ inch, Modified	8560	
Monument Box Assembly	Monument Box, Modified	8360Z Frame w/8360A Cover	

Provide frames and covers with machined bearing surfaces. Sanitary sewer covers shall be gasketed in flood prone areas as shown on the plans or as directed by the PSAA.

Provide manhole covers labeled with "CITY OF ANN ARBOR" and "WATER" or "STORM" or "SANITARY" whichever is applicable. Use the City's custom logo in use at the time of the project (see drawings attached).

Use Dr Structure Cover, Type Q, Special for all sanitary sewer manhole covers unless otherwise directed by the Engineer.

Frames and covers for monument boxes may be provided by the City of Ann Arbor should they be available and, if so, the Contractor must make arrangements with the City to receive from the its W.R. Wheeler Service Center located at 4251 Stone School Road and transport them to the project site. Should monument boxes not be available from the City the Contractor must make arrangements to furnish.

c. Construction. The Contractor shall store materials on site and/or at locations arranged by the Contractor, subject to the approval of the Engineer. The Contractor shall not store materials or equipment, including metal castings and steel plates, on any lawn areas.

Perform work related to **Gate Valve and Box, ___ inch, Modified** and **Monument Box, Modified** in accordance with respective Detailed Specifications for each of these pay items.

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

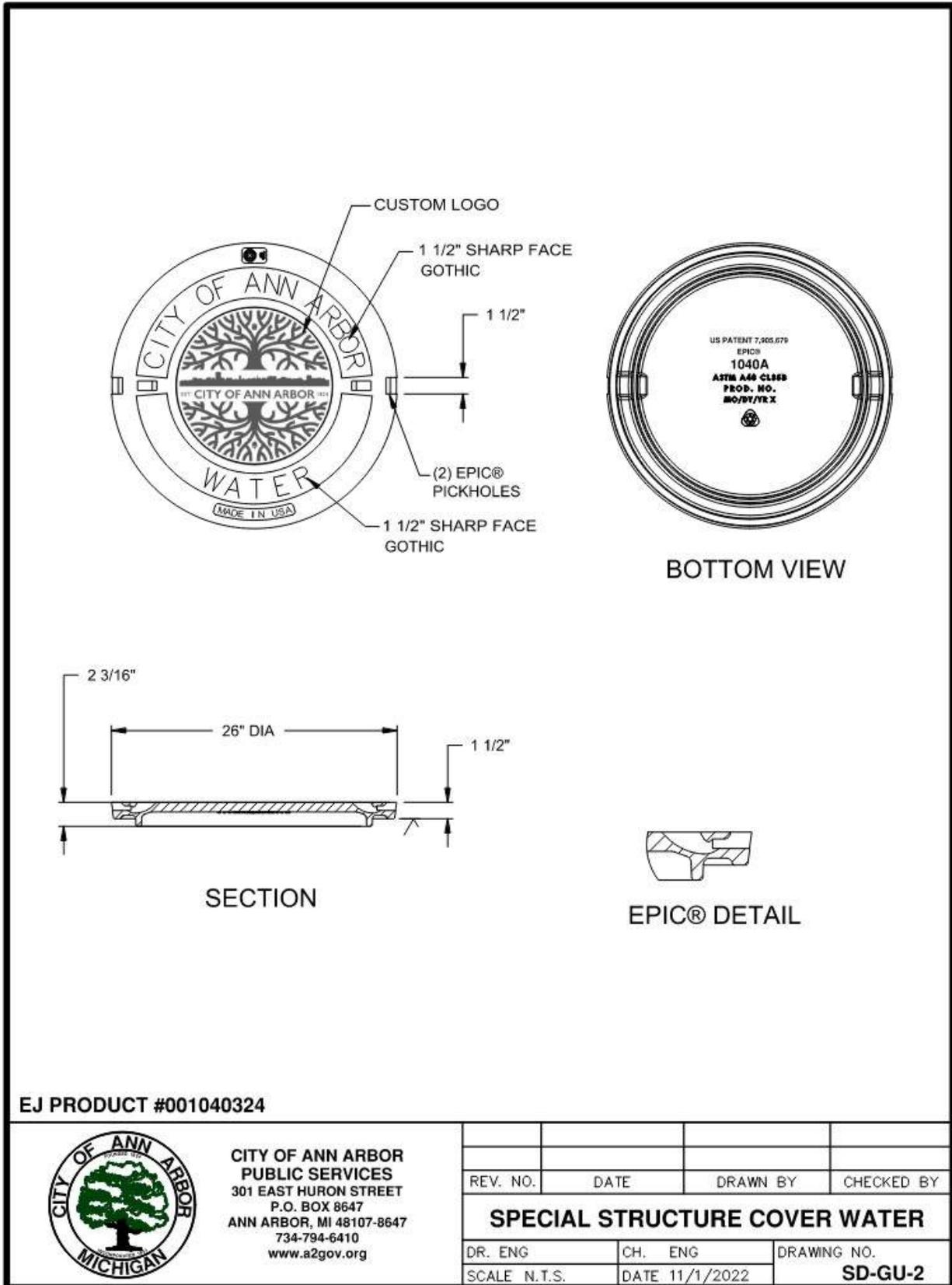
Pay Item	Pay Unit
Dr Structure Cover, Special	Each
Dr Structure Cover, Type C, Modified	Each
Dr Structure Cover, Type G, Modified	Each
Dr Structure Cover, Type E, Modified	Each
Dr Structure Cover, Type K, Modified	Each
Dr Structure Cover, Type Q, Modified	Each
Dr Structure Cover, Type Q, Special	Each
Dr Structure Cover, Type R, Modified	Each
Gate Valve and Box, __ inch, Modified	Each
Monument Box, Modified	Each

Measure **Dr Structure Cover, Special** and **Dr Structure Cover, Type __, Modified** or **Special** respectively and individually in place by their respective units each and pay for them at their respective contract unit prices, which prices include all cost for labor, equipment, and materials necessary to complete the work.

Measure and pay **Gate Valve and Box, __ inch, Modified** and **Monument Box, Modified** in accordance with respective Detailed Specifications for each of these pay items.

Payment for receiving new monument box frames from the W.R. Wheeler Center and transporting them to the project site is included in the unit prices bid for the other structure cover items of work.

The Engineer will pay the Contractor for furnishing monument box frames and covers as extra work if they are not available from the City and there is not a pay item in the contract for this work.

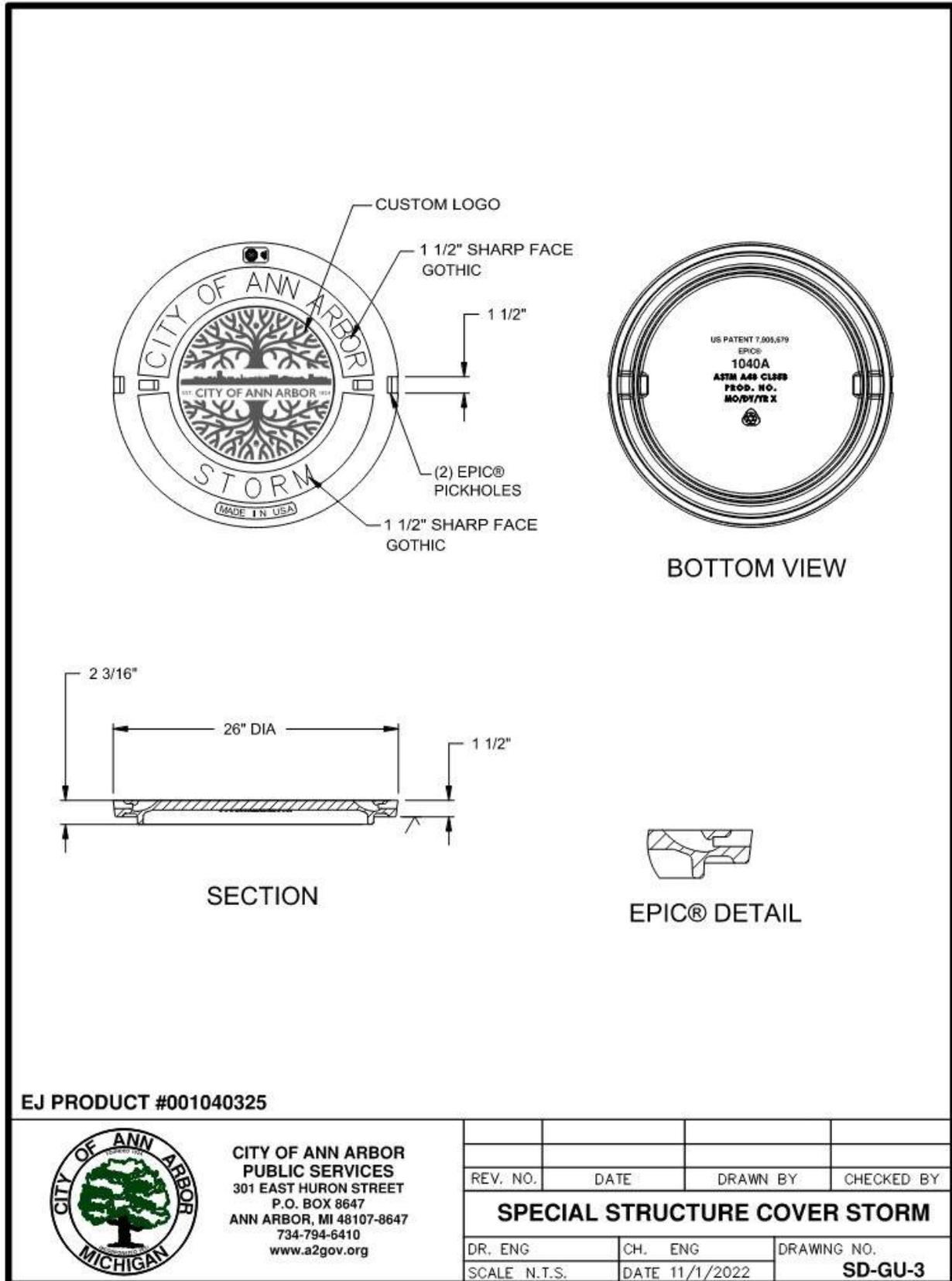


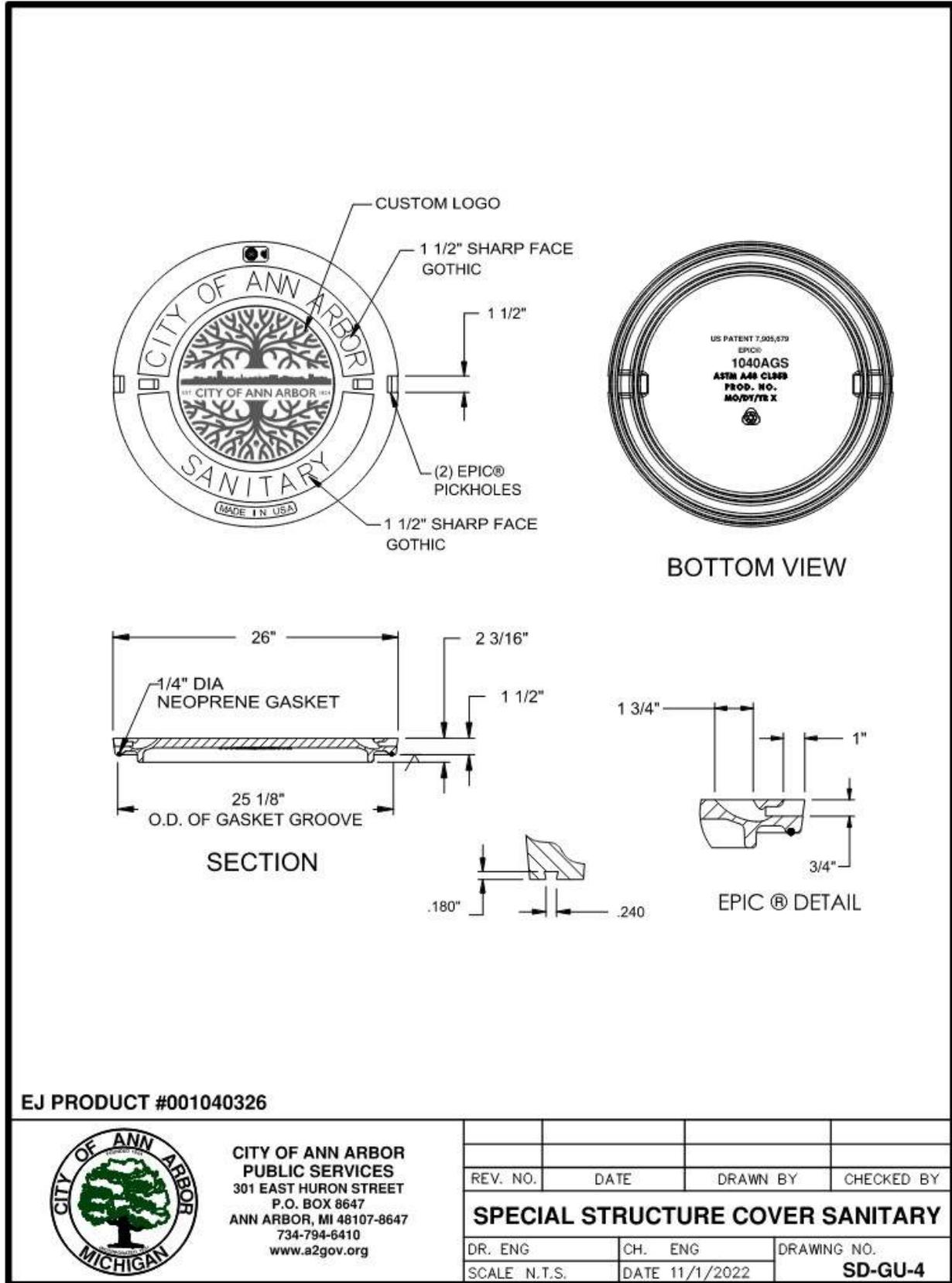
EJ PRODUCT #001040324



**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
SPECIAL STRUCTURE COVER WATER			
DR. ENG	CH. ENG	DRAWING NO.	
SCALE N.T.S.	DATE 11/1/2022	SD-GU-2	





CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
SUBGRADE UNDERDRAIN

SDA:DAD

1 of 2

02/22/23

a. Description. The work consists of installing 6-inch geotextile-wrapped perforated or slotted underdrain whether or not shown on the plans in accordance with section 404 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, applicable standard or special details, as described herein, and as directed by the Engineer.

b. Material. Provide materials meeting the requirements specified in subsection 404.02 of the MDOT Standard Specifications for Construction, and as specified herein:

Fine Aggregate, 2NS	902
Underdrain Pipe, Perforated or Slotted	909.07.B

Geotextile (Filter Fabric) – Use approved geotextile fabric for encasing the pipe such as nylon, polypropylene, fiberglass, or polyester and that is either woven, heat bonded, knitted or of continuous fibers. In a loose unstrained condition, knitted polyester fabrics will weigh at least 3.0 ounces per square yard and all other geotextiles will weigh at least 3.5 ounces per square yard. The fabric will be strong and tough and have porosity such that the fabric will retain soil particles larger than 0.106 mm (No. 140 sieve) and will pass aggregate particles finer than 0.025mm. Store and handle geotextiles carefully and in accordance with the manufacturer's recommendations and do not expose them to heat or direct sunlight to such extent as to significantly affect its strength or toughness. Do not use torn or punctured geotextiles.

c. Construction Methods. Install geotextile-wrapped underdrain for subgrade drainage as shown on the plans and as specified in subsection 404.03 of the MDOT Standard Specifications for Construction, with the following exceptions and additions:

1. Construct the trench to a minimum width of 18 inches and the install the underdrain at the line grade and depth as indicated on the plans. Maintain line and grade by means of a laser. The Engineer will not set line, grade or provide staking.
2. Backfill trench with 2NS Fine Aggregate compacted to 95% of its maximum unit weight. Place the first lift of backfill material at a maximum thickness of 6 inches. Place second and subsequent lifts, or portions thereof, at a maximum thickness of 12 inches up to an elevation level with the bottom of the existing aggregate base course, or as directed by the Engineer.
3. Close off upgrade ends of the pipe with suitable plugs to prevent entrance of any material. Manufacture and install all couplings, tees and other fittings to prevent infiltration of any material. If during the course of construction, the Contractor encounters existing underdrains or other drains, plug their ends to the satisfaction of the Engineer such that material cannot enter the pipe(s).
4. Tap downgrade ends of the pipe into existing or new drainage structures. However, it may be necessary to tap underdrain into either existing or new storm sewer, or into existing or new inlet leads as directed by the Engineer.

5. Construct trench bottom and edge drain to the percent of grade indicated on the plans or as determined by the Engineer, with the minimum percent of grade being 0.5%. In addition, construct the underdrain to have a minimum cover, from top of pipe to finished pavement grade, of 36 inches.

6. During the construction of underdrain runs, it may be necessary to terminate construction due to conflicts with buried obstructions or at such time when restricted by the minimum cover requirements. The Engineer will review conflicts on a case-by-case basis and make a decision on whether to continue installing pipe or terminate runs prematurely. The Engineer will not allow adjustment to the contract unit price or additional payments for changes in the contract quantity due to Engineer directed field changes associated with buried obstructions encountered during construction or other reasons.

7. Completely cover and secure the geotextile material to the pipe.

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

Pay Item	Pay Unit
Underdrain, Subgrade, 6 inch, Special	Foot

Measure **Underdrain, Subgrade, 6 inch, Special** length in place by the unit foot and pay for it at the contract unit price, which price includes all cost for labor, equipment and materials necessary to complete the work.

The unit price includes the cost to furnish and install the 6-inch perforated or slotted pipe with geotextile wrap in addition to required pipe fittings and/or plugs. It also includes furnishing and placing and compacting 2NS granular bedding and trench backfill material, taps to new and existing drainage structures and storm sewers or inlet leads, all excavation, final trimming required to meet the dimensions of the typical and specific cross-sections, and the disposal of all surplus excavated materials.

CITY OF ANN ARBOR

DETAILED SPECIFICATION
FOR
HOT MIX ASPHALT (HMA) MIXTURES AND APPLICATION ESTIMATE

SDA:DAD

1 of 1

03/13/23

a. Description. Perform this work in accordance with the requirements of section 501 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, and as herein specified.

b. Materials.

PAY ITEM	HMA MIX	APPLICATION RATE	ESTIMATED THICKNESS	BINDER PERFORMANCE GRADE	AWI (min)
HMA, 4EL	4EL (leveling)	275 lb/syd	2.5 inches	PG 58-28	N/A
HMA, 4EL	4EL (top)	275 lb/syd	2.5 inches	PG 58-28	260
⁽¹⁾ Hand Patching	4EL or 5EL	Varies maximum = 330 lb/syd	Varies maximum = 3.0 inches	PG 58-28	N/A

(1) The Contractor may use alternative top course mixes for Hand Patching with approval by the Engineer.

Submit mix designs and obtain approval from the Engineer for all HMA mixtures proposed for use. For approach and hand patching work on Major Streets, use the same HMA mixture respectively as specified for the top course unless otherwise approved by the Engineer.

Recycled asphalt materials (RAP) may be used as a substitute for a portion of the new materials required to produce the HMA mixtures specified for use. The leveling and top course mixtures must be limited to a maximum of 17 percent RAP binder by weight of the total binder in the mixture (Tier 1 category).

Use 3.5% as target air void content of for leveling and top courses and shoulders paved in the same operation as the leveling and top courses. Use 3% as a target air void content of for base courses and shoulders not paved in the same operation as the leveling and top courses.

The Performance Grade asphalt binder range for the HMA mixture shall be as noted above. Apply Bond Coat material accordance with the requirements of the Detailed Specification for HMA Paving.

Apply bond coat at a uniform rate between 0.05 and 0.15 gallons per square yard as directed and approved by the Engineer. Bond Coat is not a separate pay item; the HMA items of work for which it applies include payment for furnishing and placing bond coat.

c. Measurement and Payment. Measure and pay for this work as provided elsewhere in the contract documents.

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

SDA:DAD

1 of 4

03/13/23

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

b. Materials. Provide materials as specified in subsection 501.02 of the MDOT 2020 Standard Specifications for Construction, the Detailed Specification for Hot Mix Asphalt (HMA) Mixtures and Application Estimate contained in the Contract, and as included herein.

Use a hot applied pavement joint adhesive meeting or exceeding the following properties. Obtain approval from the Engineer for the hot applied pavement joint adhesive prior to performing HMA placement.

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

c. Construction.

1. Equipment: All equipment must conform to subsection 501.03.A of the MDOT 2020 Standard Specifications for Construction, except as modified herein.

The Contractor must have a 10-foot long straight edge, rubber-tired backhoe (Case 580 type, or equivalent), air-compressor with the ability to develop a minimum pressure of 100 pounds per square inch and continuous rated capacity of 150 cubic feet per minute of airflow, and jackhammer available during all paving operations. The Contractor must 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 must 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 is not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

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

The Contractor must 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/all paving. The cleaning equipment must be of sufficient power to remove dust, dirt, and debris from the pavement and from utility structures in and adjacent to the construction area. The Engineer will approve the vac-all or similar equipment prior to beginning the work. The equipment used must have an effective means for preventing any dust resulting from the operation from escaping into the air.

Apply bond coat at a rate of 0.05 to 0.15 gallons per square yard as directed by the Engineer. Before placing the bond coat, the thoroughly clean the existing pavement surface. The Contractor must also thoroughly clean all joints, cracks, and edges to a minimum depth of one inch with compressed air, vac-all type equipment, or other approved mechanical or hand methods, to remove all dirt, debris, and all foreign material.

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

HMA placement must not commence until a "Permit to Place" has been issued in writing by the Engineer. The Engineer will issue a "Permit to Place" after approving the aggregate base course or the adjacent, underlying layer of pavement section.

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

Place the top course with a 1/4 inch lip along the edge of the curb and gutter/edge of metal.

All HMA thickness dimensions are compacted-in-place.

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

In all cases, the Contractor must 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 must be paved following completion of main line paving, unless authorized by the Engineer prior to the placement of any pavement.

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

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

6. Longitudinal and Transverse Joints: These joints must conform to subsection 502.03.F of the MDOT 2020 Standard Specifications for Construction, and as specified herein.

For mainline HMA paving, the width of the mat for each pass of the paver must be not less than 10.5 feet, or greater than 17 feet, except as noted in the plans and as directed by the Engineer. The Engineer will direct the layout of all HMA longitudinal joints during construction.

Prior to placing the adjacent paving pass on the leveling and/or top courses of HMA, the Contractor must cut and remove 6 to 8 inches of the previously placed pavement at the free edge of the pavement by means of a coultter wheel or other Engineer approved methods. 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 must be completely effective. The cut edge must 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. Base courses of HMA and its vertical edge will have bond coat applied in accordance with subsection 501.03.D.

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

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

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

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

10. Faulty Mixtures: The Contractor and Engineer will carefully observe the paving operation for signs of faulty mixtures. The Contractor, at its sole expense, must remove or correct points of weakness in the surface prior to paving subsequent lifts of HMA material. Such corrective action may include the removal and replacement of thin or contaminated sections of pavement, segregated HMA, and any sections that are weak or unstable. Once the Contractor or his representative is notified by the Engineer that the material being placed is out of allowable tolerances, or that there is a problem with the paving operation, the Contractor must stop the paving operation at once, and will not be permitted to continue placing HMA material until again authorized by the Engineer.

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

The Contractor must return any/all trucks to the plant with unused HMA remaining after the work is complete, and these trucks must be re-weighed and the corrected weight slip provided to the Engineer. There will no payment any unused HMA material. All weight slips must include the type of mixture (codes are not acceptable), as well as vehicle number, gross weight, tare weight and net weight.

The Engineer will not pay for any costs associated with corrections to address the placement of faulty mixtures. These costs will be the sole responsibility of the Contractor.

There is no cost to obtain a "Permit to Place".

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
CONCRETE PLACEMENT AND PROTECTION

SDA:DAD

1 of 2

02/22/23

a. Description. This work consists of furnishing all labor, material, and equipment necessary to furnish, place, and protect all concrete material in accordance with the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction and the requirements of this detailed specification. These requirements do not apply to concrete bridge decks, unless otherwise noted.

b. Materials. Use concrete meeting the requirements of sections 1004 and 1006 of the Michigan Department of Transportation (MDOT) Standard Specifications for Construction.

Propose specific concrete mix designs for the intended project purpose in accordance with the requirements of this detailed specification and other applicable detailed specifications and/or project requirements. The Engineer's acceptance of a mix design does not relieve the Contractor of its responsibility for the manufacture of the concrete mixture(s), the placement, or performance.

c. Construction. Perform all concrete placement operations in weather that is suitable for the successful placement and curing of the concrete materials. Do not place concrete during periods of active precipitation.

Complete all necessary formwork, base and/or sub-base preparation, and any other related items deemed necessary for the proper completion of the work. Do not commence with placement of concrete until the Engineer provides all needed approvals for placement. The Engineer's approval of the Contractor to place concrete shall not relieve the Contractor of its responsibility for the proper placement and protection of the concrete materials or its long-term performance.

During periods when precipitation is threatening, provide durable, plastic sheeting, approved by the Engineer, in sufficient quantity to cover and protect all freshly placed concrete and keep it from exposed to any precipitation. Arrange the placement of the plastic sheeting such that it does not mar the surface of any freshly placed concrete, and any/all seams in the plastic sheeting are watertight. Install adequate supports along and over the freshly placed concrete to prevent any contact between it and the plastic sheeting. Ensure placement of sufficient dams or barriers along the edges of freshly placed concrete to prevent erosion of the underlying materials or damage to the edges. All measures shall be effective.

Remove and replace any concrete damaged by precipitation. The Engineer will determine the extent of any damage and the limits of removal and replacement.

Place concrete only when the rate of surface evaporation at the site is less than 0.20 pounds per square foot per hour, according to figure 706-1 of the MDOT Standard Specifications for Construction. Provide approved equipment for determining the relative humidity and wind velocity at the site.

Perform the addition of water at the placement site in accordance with subsection 1001.03.E.4 of the MDOT Standard Specifications for Construction. Do not add water to placed concrete to aid in finishing.

Perform concrete curing in accordance with subsection 602.03.M of the MDOT Standard Specifications for Construction. Curing operations will take precedence over texturing operations and continued concrete placement. Apply curing compound to achieve uniform coverage over the entire surface. Place curing compound so that it is free of spots, blotches, and/or uncovered or non-uniformly covered areas. Should the Engineer determine that any such areas exist, it will direct the Contractor to re-apply curing compound immediately at no additional cost to the project.

Take all precautions when placing concrete to protect it from damage due to the elements. Do not place concrete during precipitation events.

Protect concrete from weather and temperature according to the requirements of subsection 602.03.T of the MDOT Standard Specifications for Construction. Do not place concrete when the temperature of the plastic concrete mixture is greater than 90° F. Cover concrete with insulated blankets, or using other means approved by the Engineer, to protect it from damage during low temperature conditions. Protect concrete until it has reached a compressive strength of at least 1000 psi, or as directed by the Engineer.

d. Measurement and Payment. The contract includes no separate pay items for measurement and payment of the costs associated with meeting the requirements of this detailed specification. Include these costs in the unit price bids for the concrete items in the contract.

Removal and replacement, as determined and directed by the Engineer, of any concrete damaged by precipitation or cold weather is at the expense of the Contractor.

CITY OF ANN ARBOR

DETAILED SPECIFICATION
FOR
CONCRETE CURB AND GUTTER, AND DRIVEWAY OPENINGS

SDA:JAB/DAD

1 of 2

02/22/23

a. Description. This work consists of constructing concrete curb and gutter, and concrete driveway openings at the locations shown on the plans in accordance with section 802 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, applicable standard/special details, as directed by the Engineer, and as specified herein.

b. Materials. Provide materials meeting the requirements specified in subsection 802.02 of the MDOT Standard Specifications for Construction and as specified herein.

Use Concrete, Grade P-NC for Detail M driveway openings as specified in subsection 1006 of the MDOT 2020 Standard Specifications. Use Concrete, Grade 3500 for all types of concrete curb and gutter and curb ramp openings as specified in subsection 1004 of the MDOT 2020 Standard Specifications.

Provide concrete mixtures containing 6AA coarse aggregates that are either natural or limestone and meet the requirements of section 902 the MDOT 2020 Standard Specifications for Construction.

The Contractor is solely responsibility for providing specific concrete mix designs that meet the requirements of this detailed specification.

c. Construction. Use construction methods in accordance with subsection 802.03 of the MDOT Standard Specifications for Construction.

Construct concrete driveway openings and curb and gutter and place expansion joint material as shown on the plan details or as directed by the Engineer.

Place concrete curb and gutter, and concrete curb ramp and driveway openings on a minimum of 8 inches of 21AA dense-graded aggregate material compacted to 98% of its maximum dry density unless otherwise directed by the Engineer.

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

Pay Item	Pay Unit
Curb and Gutter, Conc, Barrier	Foot
Curb and Gutter, Conc, Mountable	Foot
Curb Ramp Opening, Conc, Modified	Foot
Driveway Opening, Conc, Det M, Modified	Foot

Measure **Curb and Gutter, Conc, Barrier, Curb and Gutter, Conc, Mountable, Curb Ramp Opening, Modified** and **Driveway Opening, Conc, Det M, Modified** respective lengths by the

unit foot in place along the joint of the curbing with the pavement and pay for them at their respective contract unit prices, which prices include the costs for all labor, equipment and materials to complete the work.

Use the pay item **Aggregate Base, CIP** to furnish, place, grade and compact bedding material beneath new and replacement concrete curb and gutter, and concrete curb ramp and driveway openings.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
CONCRETE SIDEWALK, CURB RAMP AND DRIVEWAY APPROACH

SDA:DAD

1 of 2

03/13/23

a. Description. This work consists of constructing concrete sidewalks, curb ramps, and driveway approaches of the types and locations shown on the plans in accordance with applicable sections 801 and 803 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, applicable standard/special details, as directed by the Engineer, and as specified herein.

b. Materials. Provided materials meeting the requirements specified in applicable subsections 801.02 and/or 803.02 of the MDOT 2020 Standard Specifications for Construction and as specified herein.

Use Concrete, Grade P-NC for driveways as specified in subsection 1006 of the MDOT 2020 Standard Specifications. Use Concrete, Grade 3500 for all types of sidewalk and curb ramps as specified in subsection 1004 of the MDOT 2020 Standard Specifications.

Provide concrete mixtures containing 6AA coarse aggregates that are either natural or limestone and meet the requirements of section 902 the MDOT 2020 Standard Specifications for Construction.

The Contractor is solely responsibility for providing specific concrete mix designs that meet the requirements of this detailed specification.

c. Construction. Perform this work in accordance with subsections 801.03 and/or 803.03 of the MDOT 2020 Standard Specifications for Construction and as required herein. The Contractor is responsible to construct all sidewalks, curb ramps, curbs, and all other concrete items within ADAAG and PROWAG compliance. Construct all curb ramps in accordance with MDOT Standard Plan Series R-28.

Place concrete sidewalks and curb ramps on a minimum of 4 inches of Granular Material Class II compacted to 95% of its maximum dry density unless otherwise directed by the Engineer.

Place driveway concrete on a minimum of 6 inches of Granular Material Class II compacted to 95% of its maximum dry density unless otherwise directed by the Engineer.

Prior to placing any concrete, the compact and trim the subgrade to the final elevation. If a cold joint is required, clean existing concrete with compressed air to expose the aggregate in the concrete.

Where indicated on the plans, horizontally saw cut curbs to provide openings for curb ramps. The Engineer will define the extent of the saw cuts both horizontally and vertically.

Install all curb ramps with detectable warning tiles. Reference the Detailed Specification for Detectable Warning Surface for additional requirements.

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

Pay Item	Pay Unit
Driveway, Nonreinf Conc, 6 inch, Modified	Square Yard
Driveway, Nonreinf Conc, 8 inch, Modified	Square Yard
Sidewalk, Conc, 4 inch, Modified.....	Square Foot
Sidewalk, Conc, 6 inch, Modified	Square Foot
Sidewalk, Conc, 8 inch, Modified	Square Foot
Curb Ramp, Conc, 6 inch, Modified	Square Foot
Curb Ramp, Conc, 8 inch, Modified	Square Foot

Measure **Driveway, Nonreinf Conc, _ inch, Modified** area respectively in place by the unit square yard and pay for them at their respective contract unit prices, which prices include the costs for all labor, equipment and materials to complete the work.

Measure **Sidewalk, Conc, _ inch, Modified** and **Curb Ramp, Conc, _ inch, Modified** area respectively in place by the unit square foot and pay for them at their respective contract unit prices, which prices include the costs for all labor, equipment and materials to complete the work.

Saw cutting is not a separate contract pay item, and payment for this work will be included in the appropriate item of work for which it applies. The Contractor shall include any/all costs for saw cutting to place concrete driveways, sidewalk and curb ramps in the respective contract unit prices bid for **Driveway, Nonreinf Conc, _ inch, Modified; Sidewalk, Conc, _ inch, Modified; and Curb Ramp, Conc, _ inch, Modified.**

Where the Engineer directs the use of high early strength concrete for pay items not specifically designated to use Grade P-NC concrete, it will separately for the additional cement. The Engineer will not pay for cement separately for pay items that designated to use Grade P-NC concrete.

Use the pay item **Subbase, CIP** to furnish, place, grade and compact bedding material beneath new and replacement sidewalks, curb ramps, and driveways.

The pay items for **Grading, Driveway Approach; Grading, Sidewalk;** and **Grading, Curb Ramp** respectively include earth excavation, furnishing and placement of embankment material, and preparing the grade for placement of Aggregate Base, CIP or Subbase, CIP bedding material beneath replacement and new sidewalks and curb ramps and driveway approaches as directed by the Engineer.

Measurement in place by the unit foot and payment for detectable warning tiles in curb ramps will be at the contact unit price for **Detectable Warning Surface, Modified** in accordance with the Detailed Specification for Detectable Warning Surface.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
FENCE, PROTECTIVE, MODIFIED

SDA:DAD

1 of 2

02/22/23

a. Description. This work consists of taking all reasonable measures to protect all existing trees and vegetation designated for protection within the project limits and the construction influence area, in accordance with subsection 201.03.A.2 and section 808 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, as directed by the Engineer, and as specified herein. The work also consists of installing protective fencing at the limits of the construction area as shown on the plans or in areas directed by the Engineer.

b. Materials. Use orange, vinyl, snow fence fabric material, 4 feet tall. Use 6 foot long, T-shaped, metal posts or 2 inch square hardwood stakes.

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

Do not operate equipment within or beyond in any area(s) bounded by protection fence without the approval of the Engineer.

Do not stockpile or store construction material, supplies, and/or equipment within or beyond in any area(s) bounded by protection fence.

The Engineer will not permit any vehicles and/or personnel within or beyond in any area(s) bounded by protection fence.

Attach no chains, cables, ropes, nails, or other articles to any tree at any time.

Prune tree roots 1-1/2 inch or greater in diameter exposed during construction. The Engineer shall review and approve all pruning operations. Perform all root pruning with sharp tools and provide clean cuts so not damage the remaining bark or root. The Contractor shall not perform any backfilling operations until all root maintenance work is complete.

The City Forester or an approved forestry specialist will direct the repair(s) to any damaged to trees owned by the City of Ann Arbor or other trees designated for protection.

Damage to plant roots caused by Contractor operations to the extent the plant requires removal will result in one of the following actions:

1. The Contractor will replace the plant with a commensurate number of plants, 2-1/2 inches caliper trees of the species as determined by the City.
2. Compensate the City of Ann Arbor for the cash value of the plant or tree as determined by the City of Ann Arbor's Forester.

The City of Ann Arbor is solely responsible for determining the corrective action and directing the Contractor as to which of above will be acceptable.

The City Forester will supervise the replacement of any trees.

Remove protection fence when directed by the Engineer.

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

Pay Item	Pay Unit
Fence, Protective, Modified	Foot

Measure **Fence, Protective, Modified** length in place by the unit foot and pay for it at the contract unit price, which price includes all cost for labor, equipment and materials necessary to complete the work. The contract unit price also includes payment for any/all cost related to fence maintenance, and reinstallation as required, during the construction period.

The Contractor is solely responsible for any/all repair or replacement costs associated with damage to existing trees and vegetation caused by its construction activities and/or operations.

CITY OF ANN ARBOR
 DETAILED SPECIFICATION
 FOR
PERMANENT PAVEMENT MARKINGS

SDA:DAD

1 of 2

02/22/23

a. Description. This work consists of providing and placing permanent pavement markings in accordance with the current edition of Michigan Manual on Uniform Traffic Control Devices (MMUTCD). Provide pavement markings that conform to the plans, section 811 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, MDOT Pavement Marking Standard Plans, City of Ann Arbor Special Details, as directed by the Engineer, and as specified herein.

b. Materials. Provide materials in accordance with sections 811 and 920 of the MDOT 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 pavement marking materials upon request.

c. Construction Methods. The preparation and placement of permanent pavement markings shall conform to section 811 of the MDOT Standard Specifications for Construction, the plans, and as specified herein.

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

Pay Item	Pay Unit
Pavt Mrkg, Thermopl, 4 inch, Parking Sym, White	Foot
Pavt Mrkg, Thermopl, Lt Turn Arrow Sym	Each
Pavt Mrkg, Thermopl, Rt Turn Arrow Sym	Each
Pavt Mrkg, Thermopl, Thru Arrow Sym	Each
Pavt Mrkg, Thermopl, Thru and Lt Turn Arrow Sym	Each
Pavt Mrkg, Thermopl, Thru and Rt Turn Arrow Sym.....	Each
Pavt Mrkg, Thermopl, Only	Each
Pavt Mrkg, Thermopl, Railroad Sym	Each
Pavt Mrkg, Thermopl, School	Each
Pavt Mrkg, Ovly Cold Plastic, Speed Hump Chevron, White.....	Each
Pavt Mrkg, Polyurea, Speed Hump Chevron, White.....	Each

Pavt Mrkg, Thermopl, Speed Hump Chevron, White..... Each

Measure **Pavt Mrkg, Thermopl, 4 inch, White Parking Sym** length in place by the unit foot and pay for them at the contract unit price, which prices include the costs for all labor, equipment and materials to complete the work.

Measure **Pavt Mrkg, Thermopl, ___ Turn Arrow Sym; Pavt Mrkg, Thermopl, Thru Arrow Sym; Pavt Mrkg, Thermopl, Only; Pavt Mrkg, Thermopl, Railroad Sym; Pavt Mrkg, Thermopl, School; Pavt Mrkg, Ovly Cold Plastic, Speed Hump Chevron, White, Pavt Mrkg, Polyurea, Speed Hump Chevron, White; and Pavt Mrkg, Thermopl, Speed Hump Chevron, White** respectively and individually in place by the unit each and pay for them at their respective contract unit prices, which prices include the costs for all labor, equipment and materials to complete the work.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
MAINTENANCE OF TRAFFIC

SDA:DAD

1 of 5

03/14/23

a. Description. The Contractor must maintain traffic for the duration of project in accordance with subsection 104.11 and section 812 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction, the 2011 Michigan Manual of Uniform Traffic Control Devices (MMUTCD), as shown on the plans and applicable MDOT special provisions or supplemental specifications, as directed by the Engineer, and as herein specified.

All streets included in this project will, at a minimum, remain open to traffic in one direction during construction unless otherwise approved by the Engineer.

The Contractor must maintain traffic in accordance with the following Michigan Department of Transportation (MDOT) Maintaining Traffic Typical and Work Zone Device Details apply to the project: 101-GEN-SPACING-CHARTS, 102-GEN-NOTES, 103-GEN-SIGN, WZD-100-A, and WZD-125-E. The Engineer will direct any changes or adjustments to these signing typicals and details as may be necessary to facilitate the maintenance of traffic required for the project.

The Contractor must submit a work zone traffic control plan to the Engineer in accordance with section 104 of the MDOT 2020 Standard Specifications for Construction and this detailed specification. The Engineer will have seven (7) calendar days to review the plan for acceptance or provide comments for plan revisions required to obtain acceptance. At a minimum, the plan must include the proposed ingress/egress locations for construction equipment and vehicles, traffic control devices that will be utilized to warn the motoring public of ingress/egress locations, and measures that will be taken to ensure compliance with the plan. No work will begin prior to acceptance of the work zone traffic control plan. Additional time required to obtain an accepted work zone traffic control plan will not be cause for delay or impact claims. All costs associated with obtaining an acceptable plan, providing and executing all parts of the accepted plan including required traffic control devices, or resolving an incomplete or unacceptable plan will be borne by the Contractor.

Permanent pavement marking items are included in the contract and must be placed per the MDOT 2020 Standard Specifications for Construction prior to the removal of any devices required to temporarily maintain traffic during construction, and prior to opening the project to traffic unless otherwise approved by the Engineer.

The Contractor must notify the Project Engineer a minimum of 10 business days prior to the implementation of any lane closures.

These maintaining traffic provisions are subject to change in the event of special community activities.

b. Materials. Materials for all devices used to temporarily control and maintain traffic must meet the requirements of section 812 of the MDOT 2020 Standard Specifications for Construction, the MMUTCD, and the applicable MDOT typicals and details included herein.

All signs must be of sizes shown on the plans unless otherwise directed by the Engineer. Install temporary signs that are to remain in the same place for 14 days or more on driven posts. Install all other temporary signs on portable supports. All signs must have a minimum bottom height of 7.0 feet.

Channelizing devices required for all lane closures must be plastic drums. 42 inch channelizing devices are permissible at certain locations with approval from the Engineer.

c. Construction. Construction methods must meet the requirements of section 812 of the MDOT 2020 Standard Specifications for Construction.

The Contractor must furnish and place all necessary temporary traffic control devices to maintain traffic during construction. Keep all work, construction equipment, and material storage behind the curb, or behind barricades or channelizing devices, in combination with protective fencing if required to protect open excavations. Construction activities, equipment, or material storage must not in any way hinder vehicle movement or impair traffic vision. The contractor must protect all uncured surface treatment applications as required until all traffic (pedestrian, bicycle, vehicular, etc.) can access it without damage. The Contractor must install additional barricades and protective fencing at the end of each day to insure no disturbance to the work area.

Distances between warning, regulatory, and guide signs as shown on the typical and details are approximate, and may require field adjustment, as directed by the Engineer.

The Contractor must maintain two-way traffic as shown on the typical and details, access for local traffic on local streets, and keep all intersections open to traffic at all times, unless specifically authorized in writing by the Engineer.

The Contractor must maintain traffic such that no vehicle will be required to drive into active work areas. Remove and replace patch areas that extend more than halfway across the roadway in a manner to provide a minimum of half the pavement width at all times for maintaining traffic.

The Contractor must remove existing pavement markings and place temporary pavement markings as directed by the Engineer.

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

1. Construction Influence Area (CIA). The CIA will consist of the width of the right-of-way and easements, and the limits of any advance temporary construction signing shown on the plans or applicable maintaining traffic typical and details along the street under construction and any/all cross streets. Posted detour routes are not included as part of the CIA.

The Contractor must furnish, erect, maintain, and upon completion of the work, remove all traffic control devices within and around the CIA, and along posted detour routes, for the safety and protection of traffic. This includes, but is not limited to, regulatory and

warning signs, barricades, channeling devices and other minor devices where required by the Engineer.

The Contractor must coordinate its operations with all subcontractors, utilities, and/or other contractors performing work on this and other projects within, or adjacent to, the Construction Influence Area (CIA). The Contractor must avoid conflicts in maintaining traffic operations, signing, and orderly progress of other contract work.

2. Permits. Prior to the start of construction, the Contractor must obtain a "Right-of-Way" Permit from City of Ann Arbor Customer Services Unit. The Contractor must notify the Engineer and obtain a "Traffic Detour or Lane Closure" Permit from City of Ann Arbor Project Management Services Unit a minimum of 72 business hours prior to the implementation of any traffic shifts, lane closures and street closures. The City will waive the fees associated with these permits.

3. Work Times and Restrictions. Conduct all work Monday through Saturday between 7:00 a.m. and 8:00 p.m. unless there is plan authorized by the City prior to commencement of construction that identifies the alternate days and hours of work. Notify the Engineer a minimum of three (3) working days in advance of any required night work. Night work must have the approval of the City prior to commencement.

Only perform work on Sunday if it is of an emergency nature or if it is necessary to ensure vehicular and pedestrian traffic safety, and only perform it with prior approval by the City.

Perform no construction activities or interruptions to traffic, including lane closures, on Sundays and during the Memorial Day, Independence Day, and Labor Day holiday periods unless otherwise authorized by the Engineer. All streets and sidewalks that can be open must be open to motorized and non-motorized traffic. The Engineer will also not permit any trucking on or off site during these times.

During non-working periods, any area with uncompleted work must have plastic drums at specific locations and protective fencing, as directed by the Engineer, and at no additional cost to the project.

4. Traffic Restrictions. The Contractor must, at all times, conduct its work to insure the least possible obstruction to traffic and inconvenience to the general public, businesses, and residents in the vicinity of the work.

Do not impact traffic on major streets between the hours of 7:00 a.m. to 9:00 a.m. and from 3:30 p.m. to 6:00 p.m. unless otherwise approved by the Engineer or as specified on the Lane Closure Permit. Make all major changes in traffic control either between 9:00 a.m. and 3:30 p.m. or between 6:00 p.m. and 7:00 a.m. in order to minimize interference with rush hour traffic. All traffic controls must be in place and ready for traffic each day by 7:00 a.m. and 3:30 p.m. The Engineer will permit temporary obstruction of traffic for loading and unloading of trucks if the Contractor provides traffic regulators (flag persons) in conformance with Part VI of the MMUTCD. During temporary obstructions, a minimum of two traffic regulators are required.

Maintain access to businesses, residences, and side street(s) within the CIA for the duration of the project. The Contractor must make every effort to coordinate its

operations to minimize interruptions that may impact this access. The Contractor must notify the Engineer forty-eight (48) hours in advance of any work planned on or near business or residential driveways, and stage work so that it is part-width when it is necessary to work in these areas. The Engineer will not allow the Contractor to prohibit access to businesses and residences during any phase/stage of construction, unless agreed upon with the property owner(s). The Engineer may require traffic regulator (flag) control at its discretion and will direct the Contractor to provide it when necessary to maintain safe access to businesses, residences, and side street(s).

Lane widths will be a minimum of 9 feet wide. Contractor must schedule work in order to maintain traffic flow and under no circumstances stop traffic for prolonged periods as determined by the Engineer. The Contractor must suspend work within the CIA during peak traffic hours and/or when construction activities are unduly hampering or delaying traffic flow as determined by the Engineer.

5. Emergency Services. The Contractor must notify local police, fire departments and emergency response units a minimum of three business days (72 hours) prior to the closure of any lanes, or traffic shifts causing restricted movements of traffic or restricted access. Fire hydrants in or adjacent to the work must be kept "live" and fire fighting forces made aware of their availability at all times during construction.

d. Measurement and Payment. Measure and pay for the completed work, as described, for the maintenance of traffic using the following pay items in accordance with subsection 812.04 of the MDOT 2020 Standard Specifications for Construction and any detailed specifications or special provisions included in the Contract.

Pay Item	Pay Unit
Barricade, Type III, High Intensity, Double Sided, Lighted, Furn.....	Each
Barricade, Type III, High Intensity, Double Sided, Lighted, Oper	Each
Lighted Arrow, Type C, Furn.....	Each
Lighted Arrow, Type C, Oper	Each
Pavt Mrkg, Wet Retrflec, Type NR, Paint, 4 inch, White, Temp	Foot
Pavt Mrkg, Wet Retrflec, Type NR, Paint, 4 inch, Yellow, Temp	Foot
Plastic Drum, High Intensity, Furn	Each
Plastic Drum, High Intensity, Oper	Each
Sign Cover	Each
Sign, Type B, Temp, Prismatic, Furn	Square Foot
Sign, Type B, Temp, Prismatic, Oper	Square Foot
Sign, Type B, Temp, Prismatic, Spec, Furn	Square Foot

Sign, Type B, Temp, Prismatic, Spec, Oper	Square Foot
Traf Regulator Control	Lump Sum
Pedestrian Type II Barricade, Temp	Each
_Minor Traffic Control, Max \$____	Lump Sum

All signing and related traffic control devices deemed necessary for the maintenance of traffic on the project as shown on the applicable MDOT Maintaining Traffic Typical and Work Zone Device Details are the basis for the estimated quantities contained in the Contract, including traffic regulators, lighted arrows and minor traffic control devices.

Payment for furnishing and operating temporary traffic control devices will be for the maximum quantity in use at any one time during the entire project.

Any additional signing or maintaining traffic devices required to expedite the construction will be at the Contractor's expense unless approved by the Engineer.

Include any/all costs for transporting temporary traffic control devices in their respective contract unit prices bid for the individual traffic control items of work set up in the contract.

The Engineer will pay for temporary traffic control devices only once irrespective of the number of times moved or placed in and out of operation.

Include any/all costs for temporary traffic control devices where there is no separate pay item in the contract unit price bid for the pay item **_Minor Traffic Control, Max \$____**.

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
MINOR TRAFFIC CONTROL

SDA:DAD

1 of 4

02/23/23

a. Description. This work consists of protecting and maintaining vehicular and pedestrian traffic, in accordance with the sections 104.11 and 812 of the of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction; Part 6 of the 2011 Edition of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD); as directed by the Engineer, and as described herein.

The work includes, but is not limited to the following:

- The furnishing and operating of miscellaneous signs, warning devices, flags, and cones;
- The operation of additional signs furnished by the City;
- Furnishing and installing meter bags;
- Coordinating with Republic Parking System to have meter bags installed and removed;
- Maintaining pedestrian traffic;
- Temporarily covering/uncovering traffic controls as directed;
- Temporarily covering/uncovering existing signs as directed;
- Any/all other miscellaneous and/or incidental items that are necessary to perform the work properly.

b. Materials. Provide materials and equipment meeting the requirements specified in section 812 of the MDOT Standard Specifications for Construction.

c. Construction. Perform the work required by this detailed specification throughout the life of the Contract.

Maintain pedestrian traffic at all times. For maintaining normal pedestrian traffic while performing sidewalk and driveway repair place, Pedestrian Type II Barricade, Temp, Pedestrian Type II Channelizer, Temp, "Sidewalk Closed" and/or "Cross Here" signs at locations directed by the Engineer.

All temporary traffic/pedestrian control devices furnished by the Contractor will remain the property of the Contractor. The City is not responsible for stolen or damaged signs, barricades, barricade lights or other traffic maintenance items. Replace missing or damaged traffic control devices immediately. Preserve, protect, and maintain all existing signs, and signs erected by the City of Ann Arbor on this project. At the direction of the Engineer, City forces will repair or replace any existing City owned signs damaged by the Contractor during the work. Repair/replacement of other signs damaged by the Contractor will be its responsibility to perform in a timely manner.

Temporarily cover conflicting traffic and/or parking signs when directed by the Engineer.

The City will enforce parking violation citations issued to the Contractor, subcontractor, and material suppliers including each of their respective employees under appropriate City Code.

Where there is metered parking within the influence of project work, the Contractor will coordinate with Republic Parking System to have meter bags temporarily installed prior to commencing with any work, and removed when the work is complete.

Maintain vehicular and pedestrian traffic during the work by the use of traffic regulators, channelizing devices and signs as necessary, and as directed by the Engineer, and in accordance with 2011 Edition of the MMUTCD. This detailed specification includes typical applications for maintaining pedestrian traffic in accordance with the 2011 Edition of the MMUTCD.

In order to maintain areas of on street parking available for residents, the Engineer may direct the contractor to cover and uncover temporary "No Parking" signs within the project limits multiple times throughout the course of the project.

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

Pay Item	Pay Unit
Minor Traffic Control, Max \$ _____	Lump Sum

Measure **Minor Traffic Control, Max \$ _____** by the unit lump sum and pay for it at the contract unit price, which price includes costs for all labor, equipment and materials necessary to complete the work. The contract unit price also includes payment for any/all costs related to any temporary traffic control devices directed for use by the Engineer where there is no specific pay item in the Contract, for repeated covering and uncovering of signs, and maintaining pedestrian traffic.

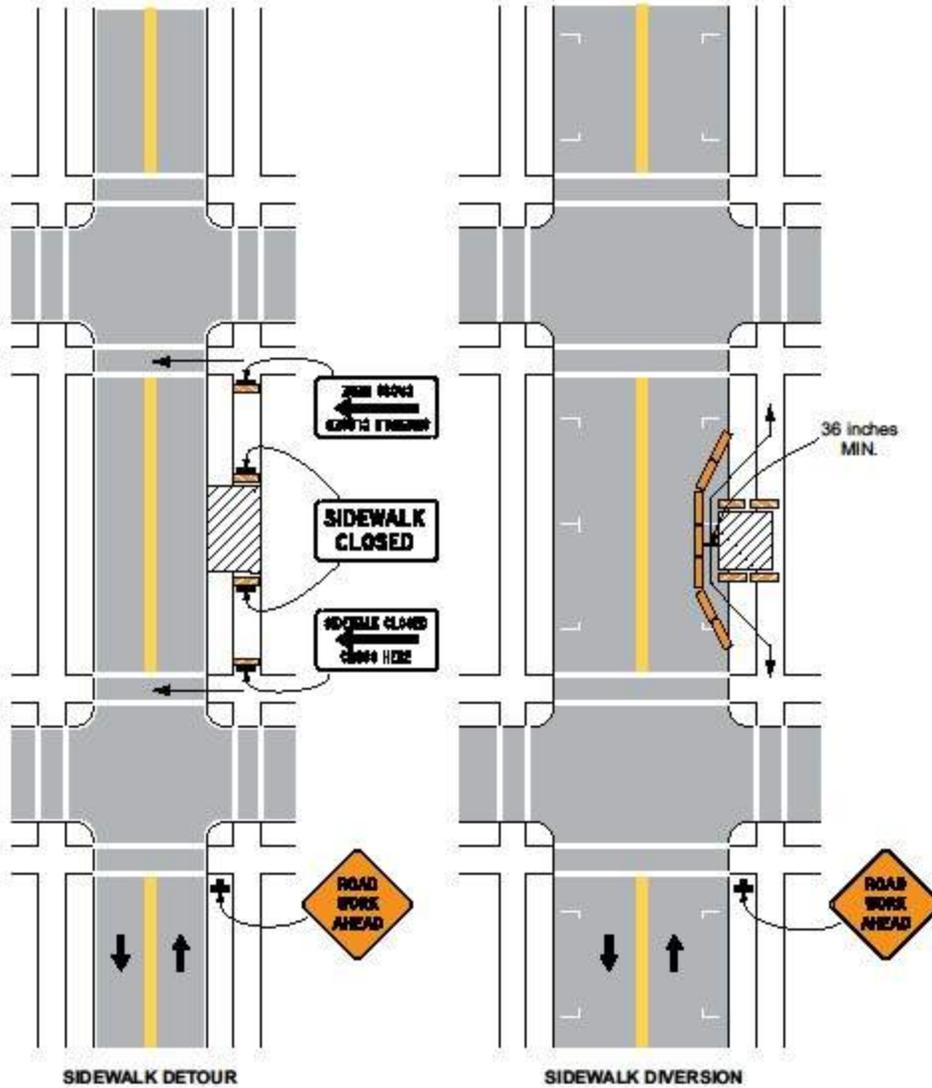
Include any/all costs for transporting temporary traffic control devices required by this detailed specification, or where there is no separate pay item in the contract, in the unit price for **Minor Traffic Control, Max \$ _____**.

The Contractor is solely responsible for any/all repair and/or replacement costs associated with damage to existing signs caused by its construction activities and/or operations.

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



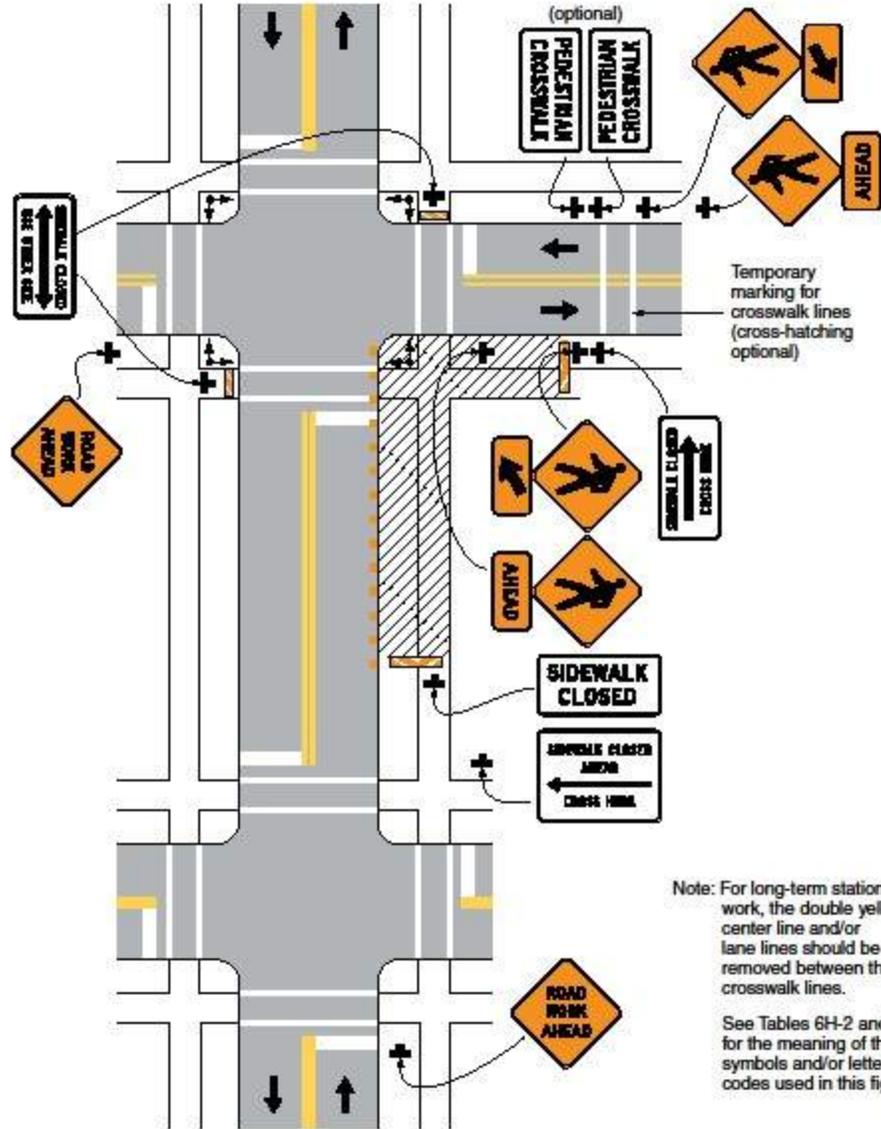
Figure 6H-28. Sidewalk Detour or Diversion (TA-28)



Typical Application 28

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)



Typical Application 29

CITY OF ANN ARBOR
DETAILED SPECIFICATION
FOR
TURF ESTABLISHMENT, PERFORMANCE

SDA:DAD

1 of 5

03/14/23

a. Description. For the work identified in this special provision paid for by the pay item Turf Establishment, Performance only, delete section 816 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction and replace it with this special provision. The Contractor is responsible for the performance and quality of turf growth in the areas shown on the plans and as identified by the Engineer. Comply with all local, state and federal laws when completing this work.

Establish a durable, permanent, mature, perennial turf. The work consists of fundamental turf work, including but not limited to topsoiling, seeding, mulching, erosion control, maintenance, watering and repair of turf as described herein during the life of the contract and during the life of any supplemental performance bond which may ensue.

Choose and implement proven turf establishment industry practices; provide all necessary labor and equipment; select and provide all turf establishment materials; and control erosion and any subsequent sedimentation at all times.

Perform a site analysis, interpret the results and implement a turf establishment program to ensure compliance with this specification. The site analysis must take into consideration topsoil needs, fertilizer and pH requirements, seed mix, existing and future soil moisture levels, slopes and grades, required erosion control items and devices, maintenance requirements, local highway snow removal and deicing practices, and any other characteristics that influence and affect turf establishment.

Subsection 107.11 of the MDOT 2020 Standard Specifications for Construction is revised relative to the Contractor's responsibility for the repair of turf establishment work as follows. The Contractor is responsible, at no additional cost to the contract, for the repair of turf establishment work occasioned by storm events of up to 3 inches of rain in a 24 hour period as documented by local meteorological data submitted to the Engineer for review and approval. All other portions of subsection 107.11 remain unchanged.

1. Contractor Turf Establishment Experience Requirements. Ensure weed control is done by a commercial herbicide applicator, licensed by the State of Michigan and certified by the Michigan Department of Agriculture & Rural Development (MDARD) in the appropriate category to apply herbicides. Use application procedures and materials in accordance with federal, state and local regulations. Use of restricted use chemicals is prohibited. Provide appropriate documentation and secure approval from the Engineer before application of herbicides.

At least 10 working days prior to start of turf establishment, provide documentation to the Engineer, from the Contractor performing the turf establishment work, that they meet one or both of the following requirements.

2. At least one person employed by the Contractor performing the turf establishment work and assigned to the job site has a degree or certificate in Turf Management, Horticulture, or related field.

3. At least one person employed by the Contractor performing the turf establishment work and assigned to the job site has at least 5 years of experience in roadside turf establishment.

b. Materials. Provide topsoil, seed, mulch, pesticide, herbicide, mulch blankets and any other unique erosion control materials as necessary to fulfill this specification, as shown on the plans. Use additional materials, as necessary, to meet the standards set forth for turf establishment in this special provision. The use of sod on the project requires the prior approval of the Engineer and if approved, may be used at limited site locations only.

Selection of all materials is the responsibility of the Contractor with the following minimum conditions.

1. Soil. Provide furnished or salvaged topsoil, which may be blended compost, that will support vigorous growth. Ensure topsoil is humus bearing and placed at least 4 inches deep. Ensure it is free of stones larger than 1/2 inch (2 inches on freeway projects) in diameter and other debris. Trim and grade the finished slope in accordance with subsection 205.03.N of the MDOT 2020 Standard Specifications for Construction.

2. Seed. Use a seeding mixture that is composed of four or more species of perennial grass. Use only species and their cultivars or varieties which are guaranteed hardy for Michigan.

Recommended species of perennial grasses include Kentucky Bluegrass, Perennial Ryegrass, Hard Fescue, Creeping Red Fescue, Chewings Fescue, Turf-type Tall Fescue, Buffalo grass, and Alkaligrass-Fults Puccinellia distans. Select cultivars or varieties of grasses that are disease and insect resistant and of good color. Ensure that no one species in the mix is less than 5 percent, or more than 25 percent, of the mixture by weight. Do not select grass species considered noxious or objectionable, such as Quack Grass, Smooth Brome, Orchard Grass, Reed Canary Grass and others.

3. Ensure the seed is legally saleable in Michigan. Ensure the seed product does not contain more than 10 percent inert materials. Ensure the seed source is an MDOT approved certified vender.

4. Adapt the species and varieties of seed to the site conditions, to the site use, and to the soils, moisture and local climate. Site use may include, but is not limited to, detention pond, wildlife habitat, playground, wetlands, forested wetland, rural roadside, urban roadside and highly maintained front yard.

5. Ensure at least two of the species in the mixture proposed to be planted within 15 feet behind the curb or the shoulder are salt tolerant.

6. Mulch. Mulch seeded areas with the appropriate materials for the site conditions to promote germination and growth of seed and to mitigate soil erosion and sedimentation.

7. Herbicides. Comply with all federal, state and local laws. As part of the MDARD weed control application, the Contractor is required to make proper notifications and/or postings in accordance with the label and MDARD requirements for all locations that will be sprayed. Notify the Engineer at least 48 hours prior to any applications being made. Furnish

and apply herbicide(s) as needed. It is the Contractor's responsibility to select the herbicide(s) and the rate at which it is used. Obtain the Engineer's approval of work methods and herbicide(s) selected prior to the application of the herbicide(s). Complete a spray log and submit to the Engineer each day an application is made.

Do not draw water from any waterway (i.e. river, ditch, creek, lake etc.) located on state, county or municipal right-of-way, for mixing with herbicides.

8. Fertilizers. Furnish and apply fertilizer(s) as needed. It is the Contractor's responsibility to select the fertilizer(s) and the rate at which it is used. Phosphorus is allowed for use only at the time of planting and when required by soil conditions. Obtain the Engineer's approval of work methods and fertilizer(s) prior to the application of the fertilizer(s).

9. Water. Furnish and apply water from an approved source at a rate to promote healthy growth.

c. Construction. The Contractor is responsible for all work and all construction methods used in completing this work. Implementation of any part of the MDOT 2020 Standard Specifications for Construction, Standard Plans or Special Details by the Contractor does not relieve the Contractor of responsibility for acceptability of the construction methods or for the quality of the work.

1. Inspection of the Work. The Contractor is responsible for all inspection of turf establishment work.

Use a Contractor's Daily Report, approved by the Engineer, to report inspections made and to document turf establishment work performed on this project. Complete and submit a Contractor's Daily Report to the Engineer when any work performed under this special provision is in progress.

Include all necessary materials documentation including tests slips, certifications, etc. with the associated Contractor's Daily Report.

The Engineer will determine the acceptability of the Contractor's Daily Report in terms of their completeness and accuracy. The Engineer reserves the right to verify all submitted measurements and computations. Failure by the Contractor to submit acceptable and timely reports to the Engineer may result in withholding of progress pay estimates on turf-related items until such time as reports are submitted and deemed acceptable.

The Engineer reserves the right to inspect the project for any reason in accordance with subsection 104.01 of the MDOT 2020 Standard Specifications for Construction, including the fulfillment of other inspection requirements such as Soil Erosion and Sedimentation Control, NPDES, etc. Inspections made by the Engineer do not relieve the Contractor of the responsibility for inspections required by this special provision or the Contractor's responsibilities for erosion control and turf establishment.

2. Erosion Control. Control erosion at all times in accordance with section 208 of the MDOT 2020 Standard Specifications for Construction. Control of soil erosion is the responsibility of the Contractor. However, ensure sedimentation controls are placed as shown on the plans or as directed by the Engineer. Continuously monitor the site for needed erosion repair from any cause as addressed in the contract. Return all eroded areas to

original grade as detailed in the contract.

Take immediate corrective action if sedimentation occurs in drainage structures or any watercourse or water containment area and stabilize all disturbed areas contributing to this sedimentation within 24 hours after the erosion occurrence. Remove sediment deposited as a result of the Contractor's inability to control the soil erosion at the Contractor's expense.

Reimburse the Department for any costs levied against the Department, such as fines, environmental costs, costs for remedies required, or any other costs as a result of the Contractor's failure to comply with this special provision and with federal, state and local laws.

3. Erosion Repair. The Contractor is responsible for all repairs and liable for all consequences (legal, monetary or other) associated with erosion or sedimentation damage to finished or unfinished work.

Report all erosion occurrences and the repairs made by the Contractor to the Engineer in the format and at the frequency required by the Engineer. Repair any erosion, displacement or disturbance to ongoing or completed work by any cause at no additional cost to the contract unless otherwise noted herein.

The Contractor is responsible and liable for all traffic control and safety measures required to repair and protect damaged turf areas. Repair any eroded area that may affect the support of the roadbed or safety of the public within 24 hours of the erosion occurrence.

Place protective devices such as barriers, directional signs/signals, temporary fence, or any other safety measures immediately after any erosion damage occurs that has the potential of endangering the public. In these instances, provide the Engineer with a written summary of the immediate action taken describing the repairs made and the safety measures taken, within 24 hours of the occurrence of the damage.

4. Mowing and Weeding. Maintain turf to a visually appealing level, and not more than 8 inches in height at any time, prior to acceptance. Weeds must be controlled to less than 10 percent of the turf establishment area at all times during construction.

5. Final Acceptance and Supplemental Performance Bond.

6. Final Acceptance Parameters. Ensure before final acceptance of the turf establishment work, all of the following minimum parameters are met throughout all exposed areas of the project designated on the plans or identified by the Engineer as turf establishment areas: there must be no exposed bare soil and the turf must be fully germinated, erosion free, weeds less than 10 percent, disease free, dark green in color and in a vigorous growing condition.

The Engineer will notify the Contractor of the dates and times of all acceptance inspections. The Contractor may accompany the Engineer during these inspections. If the Contractor does not agree with the decision made by the Engineer, the Contractor may request an inspection by a mutually agreed upon third party (Michigan State University Extension service or other). A joint inspection, to include the Engineer, the Contractor, and the third party, will be scheduled by the Engineer. Pay all expert fees and expenses charged by the third party.

7. Supplemental Performance Bond. In the event that all contract items of work are completed, including the placement of all turf establishment items of work, and the final acceptance of the project is delayed because the final acceptance parameters for the turf establishment work have not been fully met; the Contractor may propose to the Engineer the use of a supplemental performance bond.

The bond serves to secure the successful completion of turf establishment work and fulfillment of all final acceptance parameters for the turf establishment work. Ensure the supplemental performance bond, in all respects, is satisfactory and acceptable to the Department and executed by a surety company authorized to do business with the State of Michigan.

Ensure the bond is in an amount equal to 50 percent of the turf establishment work items covered by this special provision. Ensure the bond remains in place for two growing seasons. At the discretion of the Engineer, the bond may be reduced on a prorated basis as portions of the areas designated for turf establishment on the project meet the final acceptance parameters.

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

Pay Item	Pay Unit
Turf Establishment, Performance	Square Yard

Measure **Turf Establishment, Performance** area in place by the unit square yard and pay for them at the contract unit price, which prices include the costs for all labor, equipment and materials to complete the work. It also includes installing, maintaining, inspecting, repairing and meeting the acceptance parameters for turf establishment specified in this detailed specification together with preparation, updating and submittal of the Contractor’s Daily Reports.

Repairs made to damaged turf establishment areas as a result of a documented storm by local meteorological data resulting in rainfall amounts of more than 3 inches in a 24-hour period will be paid for as an increase to original quantities in accordance with subsection 109.05 of the MDOT 2020 Standard Specifications for Construction.

The following schedule of payment applies to work performed in accordance with this special provision. Upon completion of topsoil surfacing stage, 50 percent of the authorized amount for **Turf Establishment, Performance** will be paid to the Contractor. The remaining 50 percent of the authorized amount will be paid upon completion of all other work necessary to comply with this special provision and to meet all final acceptance parameters for **Turf Establishment, Performance** or at such time as the supplemental performance bond is accepted by the Department.

The supplemental performance bond and all costs associated with turf establishment work performed during the duration of the performance bond will not be paid for separately. These costs which may include, but are not limited to, mobilization, traffic control devices, and the required permit insurance are included in the unit price bid for **Turf Establishment, Performance**.

APPENDIX

- Notice(s) to Bidders
- Michigan Department of Transportation (MDOT) Special Provisions
 - MDOT Supplemental Specifications
 - MDOT Standard Plans/Special Details
- City of Ann Arbor Standard Plans/Special Details
 - Geotechnical Information

CITY OF ANN ARBOR

NOTICE TO PROPOSERS

PROJECT COOPERATION AND COORDINATION

SDA:JAB/DAD

1 of 1

02/23/23

The Contractor is reminded of the requirements of Article 104.08 of the Michigan Department of Transportation (MDOT) Standard Specifications for Construction. Accordingly, the Contractor shall directly coordinate its work with individual City of Ann Arbor Departments/Divisions/Units and other contractors, utilities, or public authorities on or near the project or as directed by the Engineer.

The City of Ann Arbor hereby notifies the Contractor of the independent construction projects listed below that are within, or directly adjacent to, the Construction Influence Area (CIA) of this project. They may affect various work activities, maintenance of traffic (MOT), and/or trucking operations involved with this project. The City anticipates construction of these independent projects during the same timeframe, or before, this project.

- 3874 Research Park Drive site and water main construction for Sartorius Bioanalytical Instruments.
- Ellsworth Road (S State St to Platt Rd) Resurfacing Project

The above is not necessarily a complete listing of all area projects that could potentially impact this one. Prior to commencing with any construction, the Contractor shall verify with the City the presence of any other concurrent public or permitted projects within the vicinity.

The Contractor shall coordinate its work on this project with that by Contractor(s) on all other projects within the local vicinity, as directed by the Engineer. The Engineer will make no additional compensation or adjustments to contract unit prices for costs incurred by the Contractor due to coordinating with or delays caused by other projects.

CITY OF ANN ARBOR
NOTICE TO PROPOSERS
UTILITY COORDINATION

SDA:JAB/DAD

1 of 1

02/23/23

The contractor will cooperate and coordinate construction activities with the owners of utilities as stated in section 104.08 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction. In addition, for the protection of underground utilities, the contractor shall follow the requirements in section 107.12 of the MDOT Standard Specifications for Construction. Contractor delay claims, resulting from a utility, will be determined based upon section 109.05.E of the MDOT Standard Specifications for Construction except that no additional compensation will be paid to the Contractor, and no adjustments to Contract unit prices will be made for delays due to the encountering of existing utilities that are, or are not, shown on the Plans.

For protection of underground utilities and in conformance with Public Act 174 of 2013, the contractor shall dial 800-482-7171 or 811 a minimum of three (3) full working days, excluding Saturdays, Sundays, and holidays prior to beginning construction in areas where utilities have not been previously located. The "Miss Dig" alert system will then routinely notify members to locate and mark their facilities. This, however, does not relieve the Contractor of the responsibility of notifying utility owners that may not be a part of the system.

There is no requirement for utility owners to move their facilities on or from within the street right-of-way if those facilities do not interfere with the proposed project work and they do not present a hazard to the public or an extraordinary hazard to the Contractor's operations.

The City will not require utility owners to move additional poles or structures in order to facilitate the operation of construction equipment unless the Engineer determines that such poles or structures constitute a hazard to the public or are dangerous to the Contractor's operations.

Utility owners will complete any/all necessary relocations prior to construction.

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.

The following utility Owners, and others not listed specifically, may have overhead and/or underground facilities located within the Right-of-Way/Public Easements:

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

CITY OF ANN ARBOR

NOTICE TO PROPOSERS

QUANTITIES AND UNIT PRICES

SDA:DAD

1 of 1

02/22/23

Contract Drawings / Plans

Proposers will carefully check and review all drawings, plans, and specifications, and advise the Engineer of any errors or omissions they discover. 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 will perform all work shown on any additional or supplemental drawings/plans issued by the Engineer.

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

Quantities and Unit Prices

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

CITY OF ANN ARBOR
NOTICE TO PROPOSERS
GEOTECHNICAL DATA

SDA:DAD

1 of 1

02/22/23

The contract documents include data pertaining to existing soil borings, pavement sections and other geotechnical information 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 it may draw from the data.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
MIXING PORTLAND CEMENT CONCRETE

CFS:JFS

1 of 1

APPR:CPM:TEB:12-17-21
FHWA:APPR:12-20-21

Add the following paragraph to subsection 1001.03.E.1 of the Standard Specifications for Construction:

Weigh and batch each material into its respective weighing device within the tolerance from the individual batch weights or quantities documented in the approved JMF as follows:

- a. Cementitious Materials. Provide cementitious materials within -2.0 percent to +5.0 percent of the required weight.
- b. Aggregates. Provide aggregate within ± 3.0 percent of the required weight.
- c. Water. Provide net water to not exceed the required water quantity and the required maximum water/cementitious ratio (w/cm).
- d. Air Entraining Admixtures. Provide the necessary quantity or dosage rate per 100 pounds of cementitious material to achieve the required air content of fresh concrete.
- e. Other Admixtures. Provide water-reducing and other admixtures within ± 3.0 percent of the required quantity.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
**ALKALI SILICA REACTIVITY OF FINE AGGREGATE USED IN PORTLAND
CEMENT CONCRETE**

CFS:CPM

1 of 2

APPR:TES:JFS:05-19-20
FHWA:APPR:05-27-20

a. Description. This special provision sets out the requirements for all fine aggregate used in Portland cement concrete (PCC) mixtures to be tested by an independent testing laboratory and determined to be resistant to the potential for deleterious expansion caused by alkali-silica reactivity (ASR). ASR testing is not required for concrete pavement repairs, temporary concrete pavements, and other items covered by the contract.

Except as explicitly modified by this special provision, all materials, test methods, and PCC mixture requirements of the standard specifications and the contract apply.

b. Definition. ASR is a chemical reaction which occurs over time within concrete between highly alkaline cement paste and reactive forms of silica found in some aggregates. In the presence of moisture, an expansive ASR gel is formed which can exert pressure within the concrete, causing random cracking and premature deterioration of the concrete.

c. Laboratory Requirements. The independent laboratory, including all associated testing equipment and staff performing ASR testing of aggregates, must be proficient in ASR testing in accordance with the applicable test methods and procedures. The laboratory must provide documentation to the Regions that they are qualified and proficient to conduct ASR testing in accordance with the required test procedures.

d. Laboratory Testing Requirements. Perform testing on fine aggregate proposed to be used in any PCC Job Mix Formula (JMF). The Contractor must ensure the testing is conducted in accordance with a designated standard test procedure described herein. Test results must conform to the specified criterion for one of the following standard test methods. The Rounding Method described in *ASTM E29* must be used when reporting expansion test results.

(1) Method 1. *ASTM C1293*. Concrete Prism Test. If the expansion of concrete prisms is not greater than 0.040 percent (rounded to the nearest 0.001 percent) after 1 year, the fine aggregate is considered non-deleterious to ASR and may be used in the JMF.

(2) Method 2. *ASTM C1567*. Mortar Bar Test. If no previous test data are available for the fine aggregate that shows it is resistant to ASR using Method 1, above, replace 25 to 40 percent of the Portland cement in the concrete mixture with a supplementary cementitious material (slag cement or fly ash). A blended cement meeting the requirements of *ASTM C595/C595M* containing the above Portland cement and supplementary cementitious material proportions may also be used.

Demonstrate the ability of the supplementary cementitious material to control the deleterious expansion caused by ASR by molding and testing mortar bars in accordance with the standard

test method described in *ASTM C1567* using the mix proportions and constituent sources for both the aggregates and the cementitious materials that will be used for the project. Make at least three test specimens for each cementitious materials-aggregate combination. If the average of three mortar bars for a given cementitious materials-aggregate combination produces an expansion less than 0.10 percent (rounded to the nearest 0.01 percent) at 14 days of immersion, the JMF associated with that combination will be considered non-deleterious to ASR. If the average expansion is 0.10 percent (rounded to the nearest 0.01 percent) or greater, the JMF associated with that combination will be considered not sufficient to control the deleterious expansion caused by ASR and the JMF will be rejected.

(3) Method 3. *ASTM C1260*. Mortar Bar Test. If the expansion of the mortar bars is less than 0.10 percent (rounded to the nearest 0.01 percent) at 14 days of immersion, the fine aggregate is considered non-deleterious to ASR and may be used in the concrete without the need for ASR mitigation.

The Engineer will not approve the use of the JMF if the expansion exceeds the threshold limits for the respective *ASTM* test method used. The test results and report are valid for 2 years from the completion of testing.

e. Submittals. A current ASR test report for the fine aggregate proposed to be used in the Job Mix Formula (JMF) must accompany each JMF. Ensure the ASR test report is accompanied by a certification stating which test procedure was followed and that all testing was conducted in accordance with the designated standard test procedure.

f. Measurement and Payment. All materials, labor, equipment, and laboratory facilities necessary to complete the work in accordance with this special provision is included in other contract pay items and no additional compensation will be permitted.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
**QUALITY INDEX FOR PORTLAND CEMENT CONCRETE (FOR LOCAL AGENCY
PROJECTS ONLY)**

CFS:CPM

1 of 4

APPR:TES:JFS:05-28-20
FHWA:APPR:06-04-20

a. Description. This special provision establishes pay factor and price adjustments for Portland cement concrete (PCC) based on Quality Assurance (QA) testing of 28-day compressive strength and fresh concrete air content of PCC. Perform all work in accordance with the standard specifications and this special provision.

b. Materials. Mixture requirements will be in accordance with section 1004 of the Standard Specifications for Construction, unless otherwise specified in the contract.

c. Sampling. Sampling will be in accordance with subsections 1003.03.H and 1003.03.L of the Standard Specifications for Construction, except as modified herein. A sample is defined as a representative quantity of concrete taken during production which is used to measure the quality characteristics for the concrete. Compressive strength specimens for each sample consist of two cylinders, either 4-inch by 8-inch or 6-inch by 12-inch. A random number will be generated for each respective subplot. The sampling frequency for a production lot is one QA sample per subplot.

See subsection 1003.03.J in the Standard Specifications for Construction for reduced sampling and testing for small incidental quantities.

d. Quality Index Analysis. The Engineer's QA test results will be used to determine the pay factor (PF) and price adjustment (ADJ). The Contractor QC test results will be not used for PF and ADJ analysis. The Engineer will complete PF and ADJ analysis within 7 working days after completion of all 28-day compressive strength testing for the represented production lot or quantity of concrete. All values of PF and OLPF in these formulas are decimal, not percent. All values of PF and OLPF are rounded to two decimal places.

Table 1: Quality Index Parameter Specification Limits

Quality Characteristic	Specification Limits
Air Content of Fresh Concrete (percent)	5.5 – 8.5
Rejection Limit (percent)	<5.0 or >9.0
Conc. Temp. (deg. F)	45 - 90 at time of placement
Slump (max.) (inch)	See footnotes a through l in Table 1004-1 of the Standard Specifications for Construction
28-day Compressive Strength (psi)	For LSL see Table 2
Rejection Limit - 28-day Compressive Strength	See Table 2

Table 2: Quality Index Parameter Specification Limits for 28-Day Compressive Strength

Parameter	Grade of Concrete						
	3000	3500	3500HP	4000	4000HP	4500	4500HP
Lower Specification Limit (psi)	3000	3500	3500	4000	4000	4500	4500
Rejection Limit for an Individual Strength Sample Test Result (psi)	2500	3000	3000	3500	3500	4000	4000

1. Pay Factor for 28-Day Compressive Strength (PF_s). (not to exceed 1.00)

$$PF_s = (\text{QA Test Strength})/\text{LSL}$$

Where:

QA Test Strength = QA 28-day compressive strength sample test result.

LSL = Lower specification limit (see Table 2).

If the tested strength does not meet the rejection limit specified in Table 2, the Engineer will require additional evaluation as described in section e of this special provision.

2. Pay Factor for Air Content of Fresh Concrete (PF_{ac}). The pay factor for air content of fresh concrete (PF_{ac}) will be in accordance with Table 3.

Table 3: Air Content of Fresh Concrete Pay Factor (PF_{ac})

Air Content of Fresh Concrete (percent)	Pay Factor (PF_{ac})
5.5 – 8.5	1.00
5.0 – 5.4	0.50
Below 5.0	Rejection
8.6 – 9.0	0.75
Above 9.0	Rejection

If the air content of fresh concrete is below 5.0 or above 9.0 percent, the Engineer will elect to do one of the following:

A. Require removal and replacement of the entire quantity of concrete represented by the test with new testing conducted on the replacement concrete and repeat the evaluation procedure.

B. Allow submittal of a corrective action plan for the Engineer's approval. If the Engineer does not approve the plan for corrective action, subsection d.2.A. will be applied. All costs associated with plan submittal and corrective action under this subsection will be borne by the Contractor.

3. Overall Lot Pay Factor (OLPF). Use the following formula to determine the OLPF and ADJ. The OLPF will not exceed 1.00:

$$\text{OLPF} = (0.60 \times \text{PF}_s) + (0.40 \times \text{PF}_{ac})$$

Where:

PF_{ac} = Pay factor for Air Content (see Table 3)

4. Price Adjustment (ADJ). Use the following formula to determine the ADJ.

$$\text{ADJ} = (\text{OLPF} - 1)(\text{Price})$$

5. Price Adjustment for Small Incidental Quantities. Price adjustment for 28-day compressive strength deficiencies will be based on test results for the corresponding weekly QA test specimens and the pay factor (PF_s) calculated in accordance with the formula defined in subsection d.1. The price adjustment is calculated by the following equation:

$$(\text{ADJ}) = (\text{PF}_s - 1)(\text{Price})$$

Where:

ADJ = Price adjustment per pay unit to be applied to the quantity represented by the QA test.

PF_s = Pay Factor for 28-day compressive strength (not to exceed 1.00).

Price = Base price when established for the pay item or the Contractors unit price bid when concrete is included in another pay item without a base price.

e. Evaluation of Rejectable Concrete. The Engineer will require additional evaluation to decide what further action may be warranted. Acceptance for air content of fresh concrete will be based on QA test results reported at the time of concrete placement.

If the Engineer determines that non-destructive testing (NDT) is appropriate, this work will be done by the Contractor in the presence of the Engineer within 45 calendar days of concrete placement. All costs associated with this work will be borne by the Contractor. Ensure complete set of non-destructive tests is conducted (in accordance with the respective standard test method) at a minimum three randomly selected locations. If NDT is used to estimate the in-situ strength, a calibrated relationship between the project job mix formula (JMF) under evaluation and the NDT apparatus must have been established prior to NDT testing in accordance with its respective standard test method.

If the 28-day compressive strength QA test results show that the rejection limit (as specified in Table 2) has not been achieved, the quantity of concrete under evaluation will be rejected and the Engineer will require additional evaluation to decide what further action may be warranted.

Propose an evaluation plan and submit it to the Engineer for approval before proceeding. The results from NDT will be used only to decide what further action is required. This determination will be made by the Engineer, as follows:

1. For Non-structural Concrete. If no test result from non-destructive testing falls below the lower specification limit (LSL) 28-day compressive strength, the represented quantity of

concrete under evaluation will remain in place and a pay factor for 28-day compressive strength (PF_s) of 1.00 will be applied for overall lot pay factor (OLPF) and price adjustment (ADJ) determinations in accordance with section d of this special provision.

2. For Structural Concrete (including overhead sign foundations). If no test result from non-destructive testing falls below the lower specification limit (LSL), the represented quantity of concrete under evaluation will remain in place and a pay factor for 28-day compressive strength (PF_s) of 0.85 will be applied for overall lot pay factor (OLPF) and price adjustment (ADJ) determinations will be in accordance with section d of this special provision.

3. If one or more of the non-destructive test results fall below the lower specification limit (LSL) 28-day compressive strength, the Engineer may elect to do one of the following:

A. Require removal and replacement of the entire rejected quantity of concrete, including new initial tests for quality index analysis conducted in accordance with section d of this special provision.

B. Allow the Contractor to submit a plan for corrective action, for the Engineer's approval, to address the disposition of the rejected concrete. If the Engineer does not approve the plan for corrective action, subsection e.3.A of this special provision will be applied. All costs associated with plan submittal and corrective action under this subsection will be borne by the Contractor.

C. Allow the in-situ quantity of concrete under evaluation to remain in place and a pay factor (PF_s) of 0.50 will be applied for overall lot pay factor (OLPF) and price adjustment (ADJ) determinations will be in accordance with section d of this special provision.

f. Measurement and Payment. If a price adjustment is made for reasons included in this special provision, that adjustment will be made using the base price established for the specific item. If a contract unit price requires adjustment for other reasons not described in this special provision, the adjustments will be made using the original unit price and the adjustments will be cumulative.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
**NON-COMPLIANCE WITH SOIL EROSION AND SEDIMENTATION CONTROL
REQUIREMENTS**

COS:DMG

1 of 2

APPR:TWK:HLZ:02-26-20
FHWA:APPR:03-02-20

a. Description. This special provision establishes negative adjustments related to the failure to properly install and maintain soil erosion and sedimentation control (SESC) measures and the conditions under which these adjustments will be determined and applied. Nothing in this special provision modifies section 107 of the Standard Specifications for Construction.

Delays to the project as a result of the Contractor conducting corrective actions for SESC measures do not constitute a valid reason for an extension of time.

Ensure deficiencies with SESC measures are corrected in the time frame stated herein. For those deficiencies not corrected within the stated time frame, the Engineer will make a negative adjustment to the contract as stated herein.

b. Materials. None specified.

c. Construction. Install all temporary erosion control measures identified on the plans and as directed by the Engineer for an impacted area of the project prior to the start of any earth disturbance including, but not limited to, clearing, grading and excavation in that area. The Engineer will inspect these measures every 7 days and within 24 hours after a precipitation event that results in a discharge from the site. Deficiencies will be documented on the National Pollutant Discharge Elimination System and SESC Inspection Report (MDOT Form 1126).

If at any time during the project, including the time during the seasonal suspension, the Engineer documents deficient SESC measures, the Engineer will provide written notification with instructions for corrective action to the Contractor. The time frame for completion of these corrective actions will be specified in the notification and will be discussed with the Contractor as necessary.

Deficiencies are defined as one or more of the following:

1. Failure to install or construct SESC measures shown on the plans or as directed by the Engineer;
2. Failure to maintain the measures;
3. Failure to conduct earth change activities in a manner consistent with all applicable environmental permit requirements;
4. Failure to comply with the area limitations or the time limitations stated in subsections 208.03.A and 208.03.B, respectively, of the Standard Specifications for Construction.

SESC deficiencies are either emergency or non-emergency and the time frame for corrective action is determined accordingly. Sediment leaving the right-of-way or entering a drainage structure, waters of the state, or loss of support of the roadbed impacting public safety constitutes an emergency and corrective actions must be completed within 24 hours of notification, including weekends or holidays regardless of whether the Contractor is working or not. Non-emergency deficiencies must be corrected within 5 calendar days of notification.

For those emergency corrective actions not completed within 24 hours of notification, the Contractor will be assessed \$100.00 per hour for every hour the deficiency remains uncorrected after the initial 24 hours of notification. For those non-emergency corrective actions not completed within 5 calendar days, the Contractor will be assessed \$500.00 per day for every day, or part thereof, the deficiency remains uncorrected after the initial 5 days of notification.

If it is not practicable to complete the non-emergency corrective actions within 5 calendar days, the Contractor must document the reasons and propose a corrective action plan to the Engineer within 5 days of notification. The corrective action plan must contain the Contractor's course of action and a time frame for completion. If the reasons and the corrective action plan are acceptable to the Engineer, the Contractor will be allowed to proceed with the plan as proposed without incurring a negative adjustment. If the approved corrective action plan is not completed as proposed, the Contractor will be assessed \$1000.00 per calendar day for every day, or part thereof, the deficiency remains uncorrected after the time frame is exceeded in the approved corrective action plan.

Correct, in the timeframe stated herein, all other emergency or non-emergency SESC deficiencies documented anywhere else on the project during completion of the approved corrective action plan.

d. Measurement and Payment. The Engineer will make the necessary monetary adjustment to the contract amount based on the length of time the Contractor allows the deficiencies to remain uncorrected after the time allowance stated herein and as described to cover any costs incurred by the Department as a result of SESC violations.

All costs associated with corrective actions required due to the Contractor's failure to properly install or maintain SESC measures on this project will be borne by the Contractor.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
RECYCLED HOT MIX ASPHALT MIXTURE ON LOCAL AGENCY PROJECTS

CFS:KPK

1 of 2

APPR:JWB:CJB:02-26-20
FHWA:APPR:03-02-20

Add the following subsection to subsection 501.02.A.2 of the Standard Specifications for Construction.

- c. **Reclaimed Asphalt Pavement (RAP) and Binder Grade Selection.** The method for determining the binder grade in HMA mixtures incorporating RAP is divided into three categories designated Tier 1, Tier 2 and Tier 3. Each tier has a range of percentages that represent the contribution of the RAP binder toward the total binder, by weight. The tiers identified below apply to HMA mixtures with the following exception: Superpave mixture types EML, EML High Stress, EMH, EMH High Stress, and EH, EH High Stress used as leveling or top course must be limited to a maximum of 27 percent RAP binder by weight of the total binder in the mixture.

Recycled materials may be used as a substitute for a portion of the new materials required to produce HMA mixtures in accordance with contract.

- **Tier 1 (0% to 17% RAP binder by weight of the total binder in the mixture).** No binder grade adjustment is made to compensate for the stiffness of the asphalt binder in RAP.
- **Tier 2 (18% to 27% RAP binder by weight of the total binder in the mixture).** For all mixtures no binder grade change will occur in Tier 2 for all shoulder and temporary road mixtures.

Ensure the required asphalt binder grade is at least one grade lower for the low temperature than the design binder grade required for the specified project mixture type. Lowering the high temperature of the binder one grade is optional. For example, if the design binder grade for the mixture type is PG 58-22, the required grade for the binder in the HMA mixture containing RAP would be a PG 52-28 or a PG 58-28.

For Marshall Mixes, no binder grade change will be required when Average Daily Traffic (ADT) is above 7000 or Commercial Average Daily Traffic (CADT) is above 700. No binder grade change will occur for EL mixtures used as leveling or top course.

The asphalt binder grade can also be selected using a blending chart for high and low temperatures. Supply the blending chart and the RAP test data used in determining the binder selection according to *AASHTO M323*.

- **Tier 3 ($\geq 28\%$ RAP binder by weight of the total binder in the mixture).** The binder grade for the asphalt binder is selected using a blending chart for high and low temperatures per *AASHTO M323*. Supply the blending chart and the RAP test data

used in determining the binder selection.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
ACCEPTANCE OF HOT MIX ASPHALT MIXTURE ON LOCAL AGENCY PROJECTS

CFS:KPK

1 of 7

APPR:CJB:JWB:02-26-20
FHWA:APPR:03-13-20

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

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

Table 1: Uniformity Tolerance Limits for HMA Mixtures

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

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

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

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

otherwise on HMA application estimate.

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

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

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

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

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

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

Ensure all labs performing local agency acceptance testing are qualified labs per the *HMA Production Manual and the Michigan Quality Assurance Procedures Manual*, and participate in the MDOT round robin process, or they must be *AASHTO Materials Reference Laboratory (AMRL)* accredited for *AASHTO T30* or *T27*, and *AASHTO T164* or *T308*. Ensure on non-National Highway System (NHS) routes, Contractor labs are made available, and may be used, but they must be qualified labs as previously stated. Contractor labs may not be used on NHS routes. Material acceptance testing will be completed by the Engineer within 14 calendar days, except holidays and Sundays, for projects with less than 5,000 tons (plan quantity) of HMA and within 7 calendar days, except holidays and Sundays, for projects with 5,000 tons (plan quantity) or more of HMA, after the Engineer has obtained the samples. QA test results will be provided to the Contractor after the Engineer receives the QC test results. Failure on the part of the Engineer or the laboratory to provide QA test results within the specified time frame does not relieve the Contractor of their responsibility to provide an asphalt mix within specifications.

The correlation procedure for ignition oven will be established as follows. Asphalt binder content based on ignition method from *MTM 319*. Gradation (*ASTM D5444*) and Crushed particle content (*MTM 117*) based on aggregate from *MTM 319*. The incineration temperature will be established

at the pre-production meeting. The Contractor will provide a laboratory mixture sample to the acceptance laboratory to establish the correction factor for each mix. Ensure this sample is provided to the Engineer a minimum of 14 calendar days prior to production.

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

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

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

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

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

Option 1 - Direct Density Method

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

Option 2 - Roller Method

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

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

Use of the Roller Method requires developing and establishing density frequency curves, and

meeting the requirements of Table 2. A density frequency curve is defined as the measurement and documentation of each pass of the finished roller until the in-place density results indicate a decrease in value. The previous recording will be deemed the optimal density. The Contractor is responsible for establishing and documenting an initial or QC rolling pattern that achieves the optimal in-place density. When the density frequency curve is used, the Engineer will run and document the density frequency curve for each half day of production to determine the number of passes to achieve the maximum density. Table 5, located at the end of this special provision, can be used as an aid in developing the density frequency curve. The Engineer will perform density tests using an approved nuclear or non-nuclear gauge per the manufacturer's recommended procedures.

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

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

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

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

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

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

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

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

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

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

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

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

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

Table 3: Penalty Per Parameter

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

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

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

Table 4: Calculating Total Price Adjustment

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

Table 5: Density Frequency Curve Development

Tested by: _____ Date/Time: _____

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

Roller #1 Type:

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

Roller #2 Type:

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

Roller #3 Type:

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

Summary: _____

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
**CONCRETE CURB, AND GUTTER, WITH ___ FIBER REINFORCED POLYMER,
DETAIL ___**

STR:MJC

1 of 4

APPR:JAB:JFS:02-19-21

FHWA:APPR:03-05-21

a. Description. This work consists of constructing concrete curb, gutter, and dividers, using glass fiber reinforced polymer (GFRP), or basalt fiber reinforced polymer (BFRP) reinforcement in accordance with section 802 of the Standard Specifications for Construction, and as modified on the plans and this special provision. At the Contractors option the number 3 size GFRP or BFRP may be substituted for longitudinal epoxy coated number 4 conventional steel reinforcement shown on Standard Plans R-27 Series, R-30 Series, R-31 Series, and R-33 Series. Do not use GRFP or BFRP for lane ties, or any other transverse reinforcement.

b. Materials. Provide materials in accordance with subsection 802.02 of the Standard Specifications for Construction except as modified by this special provision. Furnish GFRP or BFRP reinforcement that meet the following material specifications and requirements. Provide GFRP or BFRP reinforcement in accordance with the details shown on the plans. Do not mix reinforcement types.

1. **Fibers.** Use fibers in the form of unidirectional rovings of given size and weight with fiber sizing and coupling agents that are compatible with the resin system used to impregnate them. The GFRP reinforcement must contain 70 percent, minimum, by weight of glass fiber in accordance with *ASTM D7957/D7957M, Standard Specification for Solid Round Glass Fiber Reinforced Polymer Bars for Concrete Reinforcement*. The BFRP reinforcement must contain 70 percent, minimum, by weight of basalt fiber in accordance with *ASTM D258, Standard Test Method for Ignition Loss of Cured Reinforced Resins*.

2. **Resin Matrix.** Use commercial grades of epoxy, polyurethanes, or vinyl ester resins. Thermo-set resin systems or their blending are permitted. Ensure the base polymer in the resin system does not contain any polyester. Blending of vinyl ester and epoxy resins is permitted. Ensure the glass transition temperature (T_g) of the resin is not less than 212 degrees Fahrenheit in accordance with the Differential Scanning Calorimetry (DSC) method described in *ASTM E1356, Standard Test Method for Assignment of the Glass Transition Temperatures by Differential Scanning Calorimetry*.

3. **Fillers.** Inorganic fillers and secondary fibers may be used, but their quantity must not exceed 20 percent by weight of the base polymer resin specified. Commercial grade additives and process aids such as release agents, low profile shrink additives, initiators, promoters, hardeners, catalysts, pigments, fire-retardants, and ultraviolet inhibitors are permitted and depend on the process method. If used, limit shrink additives to less than 20 percent by weight of the polymer resin.

4. **Mechanical Properties.** Furnish GFRP or BFRP bars with the following minimum requirements:

A. Tensile Strength. The minimum tensile strength of #3 GFRP or BFRP reinforcement is 140 kips per square inch (ksi). Test in accordance with *ASTM D7205/D7205M, Standard Test Method for Tensile Properties of Fiber Reinforced Polymer Matrix Composite Bars*.

B. Tensile Modulus. Ensure the nominal tensile modulus of elasticity averages 6,000 (ksi) in accordance with *ASTM D7205/D7205M*.

C. Transverse Shear. Ensure the minimum transverse shear strength is not less than 20 ksi, as tested in accordance with *ASTM D7617/D7617M, Standard Test Method for Transverse Shear Strength of Fiber-Reinforced Polymer Matrix Composite Bars*.

D. Moisture Absorption. Test moisture absorption in accordance with *ASTM D570, Standard test Method for Water Absorption of Plastic*. The maximum value of this test must follow ACI recommendations and be less than 1.0 percent.

E. Bond Strength. The bond strength for all bars must follow ACI recommendations of *ACI 440.6-08*, 1.4 ksi. The manufacturer must report the test method used for testing bond strength. Follow *ACI 440.3R test method B3* or a method approved by the Engineer.

F. Ultimate Tensile Strain. Ensure the ultimate tensile strain is at least 1.1 percent.

G. Provide GFRP as manufactured by:

(1) Neuvokas Corp., *GatorBar*, 3206 Number 6 Road, PO Box 220, Ahmeek, MI 49901, Ph. (906) 934-2661.

(2) Owens Corning Infrastructure Solutions, LLC, *PinkBar*, 123 S 9th street, Seward, NE, 68434. Ph. (402) 202-5379.

(3) Approved equal.

H. Provide BFRP as manufactured by:

(1) Neuvokas Corp., *GatorBar*, 3206 Number 6 Road, PO Box 220, Ahmeek, MI 49901, Ph. (906) 934-2661.

(2) Raw Energy Materials Corp., 1190 South Dixie Hwy Southeast, Pompano Beach, FL 33060, Ph: 954-803-9206, Alt: 954-270-9000.

(3) Approved equal.

c. Acceptance. Provide the Engineer a General Certification from the GFRP or BFRP reinforcement manufacturer stating the materials furnished meet the specifications as described herein.

The Department will sample three 4 foot in length quality assurance samples for informational purposes, of GFRP or BFRP bar at the beginning of each project.

d. Construction. Construct the concrete curb and gutter in accordance with the standard

specifications, except as modified by the details on the plans and this special provision. Ensure GFRP or BFRP reinforcement bars are uniform in diameter/size and free of defects. Defects include exposed fibers, cracks, kinks, and surface pitting. Slight discoloration is not cause for rejection.

1. **Field Fabrication.** Provide GFRP or BFRP reinforcement in accordance with the details shown on the plans. Field fabrication, except for tying and cutting, and gradual bending in accordance with manufacturer's recommendations, of GFRP or BFRP reinforcement is prohibited. The minimum bending radius for GFRP or BFRP reinforcement is two feet and must utilize the necessary tying and stabilization methods to ensure the GFRP or BFRP remains in the proper position before and during concrete placement. Field cut GFRP or BFRP reinforcement using high speed grinding cutter, fine blade saw, diamond blade, or masonry blade. Ensure all surface damage due to cutting is repaired or replaced as directed by the Engineer, at no additional expense to the contract.

2. **Handling.** Ensure GFRP bars are handled and transported as to not damage or fracture the bars. Cracked or damaged GFRP bars are not to be used. BFRP bars can be handled similar to their steel counterparts. Minor scratches and chipping that do not impact performance may be permitted with approval of the Engineer.

3. **Storage of GFRP or BFRP Reinforcement.** Store reinforcement above the surface of the ground on platforms, skids, pallets, or other supports. Cover the GFRP or BFRP bars with a tarp or other protective cover if it is anticipated that the GFRP or BFRP bars will be stored outdoors for more than 2 months. Protective cover must eliminate exposure to ultraviolet (UV) light.

4. **Placing and Fastening.** Place all reinforcement within the tolerances recommended in the CRSI "Manual of Standard Practice" unless otherwise specified in the contract. Secure reinforcement firmly with mechanical fasteners during the placing and setting of the concrete. Suspend concrete placement and take corrective action if it is observed that the GFRP or BFRP reinforcement is not adequately supported or tied to resist settlement, floating upward, or movement in any direction during concrete placement.

5. **Ties and Supports.** Ensure all accessories for use with the GFRP or BFRP bars such as tie wires, bar chairs, supports or clips are either plastic coated steel or plastic. Place all reinforcement in locations as shown on the plans and securely hold in position while placing and consolidating concrete. Fasten bars together with ties at all intersections.

6. **Lap Splices.** Lap splices are the only approved method to tie bars together to make a continuous bar. Mechanical splices are prohibited. Ensure lap length and spacing is as specified in the contract. Provide the same cover clearances for splices that is shown or specified for the reinforcement.

e. 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
Curb and Gutter, Conc, with GFRP Reinf, Det ____	Foot
Valley Gutter, Conc, with GFRP Reinf	Foot
Curb and Gutter, Bridge Approach, with GFRP Reinf, Det ____	Foot

Curb and Gutter, Conc, with BFRP Reinf, Det __Foot
 Valley Gutter, Conc, with BFRP Reinf.....Foot
 Curb and Gutter, Bridge Approach, with BFRP Reinf, Det __Foot

**Curb and Gutter, Conc, with GFRP Reinf, Det __; Valley Gutter, Conc, with GFRP Reinf;
 Curb and Gutter, Bridge Approach, with GFRP Reinf, Det __; Curb and Gutter, Conc, with
 BFRP Reinf, Det __; Valley Gutter, Conc, with BFRP Reinf; and Curb and Gutter, Bridge
 Approach, with BFRP Reinf, Det __** include the provision of documentation certifications and
 submittal of informational samples.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
WORK ZONE SIGNING ON LOCAL AGENCY PROJECTS

OFS:MWB

1 of 3

APPR:CRB:AJU:04-02-20
FHWA:APPR:04-03-20

a. Description. In addition to all other maintaining traffic signs required on this project, place work zone signing in accordance with the MDOT Traffic and Safety Maintaining Traffic Typical(s) contained in the proposal, except as modified herein.

On all "Advance Signing Treatment..." Maintaining Traffic Typical(s) (M0030 - M0080):

Replace the R5-18b sign "INJURE/KILL A WORKER \$7500 + 15 YEARS" sign with the R5-18bLA "INJURE/KILL A WORKER // FINE - \$ 7500 // JAIL - 15 YRS" sign, as detailed in the attached graphics.

Delete the R5-18 "TRAFFIC FINES DOUBLED IN WORK ZONES" sign or the R5-18a "TO PROTECT HIGHWAY WORKERS FINES DOUBLED IN WORK ZONES" sign, along with the prescribed 'D' spacing distance.

On all other "Typical Temporary Traffic Control..." Maintaining Traffic Typical(s) (M0110 et. al.):

Replace the R5-18c "WORK ZONE BEGINS" sign with the R5-18cLA "WORK ZONE BEGINS // TRAFFIC FINES DOUBLED" sign, as detailed in the attached graphics.

Place the G20-1 "ROAD WORK NEXT ___ MILES" sign and the G20-2 "END ROAD WORK" sign in accordance with the appropriate MDOT Traffic and Safety Maintaining Traffic Typical.

Place all other work zone signing in accordance with the project plans and specifications, including the appropriate MDOT Traffic and Safety Maintaining Traffic Typical(s). Place all work zone signing in accordance with the standard specifications.

b. Measurement and Payment. Quantities for Local Agency work zone signs will be included in the plan quantities for the pay items **Sign, Type B, Temp, Furn** and **Sign, Type B, Temp, Oper** or **Sign, Type B, Temp, Prismatic, Furn** and **Sign, Type B, Temp, Prismatic, Oper**. Payment for the signs will be made at the contract unit prices.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
TEMPORARY PEDESTRIAN TYPE II BARRICADE

COS:CRB

1 of 2

APPR:CAL:CT:03-01-21
APPR:FHWA:03-08-21

a. Description. This work consists of delivering, installing, maintaining, relocating, and removing a temporary pedestrian Type II barricade section as identified in the proposal or on the plans. Use temporary pedestrian Type II barricades to close non-motorized facilities including sidewalks, bicycle paths, pedestrian paths, and shared use paths that are not part of the roadway. One pedestrian Type II barricade is defined as a barricade section at least 43 inches wide, including all supports, ballast, and hardware.

b. Materials. Provide a temporary pedestrian Type II barricade that meets the requirements of *National Cooperative Highway Research Program Report 350 (NCHRP 350)* or *Manual for Assessing Safety Hardware (MASH)*, in addition to meeting the following requirements:

1. Provide barricade sections at least 43 inches wide, designed to interconnect to ensure a continuous accessible tactile barrier. Ensure the connection includes provisions to accommodate non-linear alignment as well as variations in elevation at the installation area.

2. Ensure the top surface of the barricade is designed to function as a hand-trailing edge and has a height between 32 and 38 inches. Ensure the lower edge of the barricade is no more than 2 inches above the surface of the non-motorized facility. Ensure the top edge of the bottom rail of the barricade is a minimum of 8 inches above the surface of the non-motorized facility. The barricade may have a solid continuous face. Finally, all features on the front face of the barricade (the face in contact with pedestrians) must share a common vertical plane.

3. Equip both sides of the barricade with bands of alternating 6-inch wide orange and white vertical stripes of reflective sheeting. Two bands of sheeting 6 inches tall and a minimum of 36 inches long containing at least two orange and two white stripes each are required. One band placed near the top and one near the bottom if the barricade section has a solid face. If the barricade consists of two rails, affix one band of sheeting to each rail. Ensure the stripes of reflective sheeting are aligned vertically. Ensure this sheeting meets or exceeds the requirements of *ASTM D4956, Type IV* sheeting.

c. Construction. Construct the temporary pedestrian Type II barricade in accordance with the manufacturer's recommendations, MMUTCD, the plans, and the following requirements:

1. Install the barricade as shown on the plans and as directed by the Engineer. Interconnect all barricade sections using hinge components, if necessary, to ensure a continuous detectable edge for the entire installation. Ensure the barricade is ballasted in accordance with the manufacturer's recommendations to ensure stability during wind events and contact with pedestrians.

2. When the barricade is installed near motor vehicle traffic, ensure reflective sheeting is visible to motorists.

3. When temporary pedestrian Type II barricades are used to close a non-motorized facility, ensure a sufficient number of barricade sections are used to block the entire width of the facility. The barricade may extend outside the edge of the non-motorized facility but must not be less than the full width of the facility.

4. If sections of multiple-colored barriers are used (i.e. safety orange and white) install the sections such that the colors alternate to increase conspicuity.

5. Ensure temporary pedestrian Type II barricades are not used to close a motor vehicle facility. Ensure these barricades are not used to guide pedestrian traffic on a motor vehicle facility in the presence of active traffic. This prohibition includes bicycle/shared use lanes or shoulders in the presence of active traffic.

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

Pay Item	Pay Unit
Pedestrian Type II Barricade, Temp	Each

Pedestrian Type II Barricade, Temp, includes delivering, installing, maintaining, relocating, and removing one barricade section that is at least 43 inches wide. Additional payment will not be made if wider sections are provided. Payment will be made on delivery for the quantity delivered to the project site, up to planned quantity. Any amount delivered exceeding plan quantity will not be paid unless approved by the Engineer. This includes all rails, supports, ballast, hinge points, reflective sheeting, and miscellaneous hardware needed to install and maintain a barricade section.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
TEMPORARY PAVEMENT MARKING, TYPE R TAPE REVISION

COS:CRB

1 of 1

APPR:LLR:MKB:04-18-22
FHWA:APPR:05-05-22

Delete subsection 922.06.A.1 of the Standard Specifications for Construction, in its entirety and replace with the following:

1. **Pavement Marking, Wet Reflective, Type R.** Provide wet reflective Type R temporary pavement marking as preformed tape. Apply and remove preformed tape in accordance with the manufacturer's instructions. The tape must remain flexible and conform to the texture of the pavement surface during use. Select one of the following materials:
 - a. 3M™ Stamark™ Wet Reflective Removable Tape Series IR710 White manufactured by 3M Traffic Safety & Security Division, 3M Center, 225-4N-14 St. Paul, MN, 55144, (800)-553-1380.
 - b. 3M™ Stamark™ Wet Reflective Removable Tape Series IR711 Yellow manufactured by 3M Traffic Safety & Security Division, 3M Center, 225-4N-14 St. Paul, MN, 55144, (800)-553-1380.
 - c. Deltaline Temporary Wet Reflective/TWR-HP white manufactured by Brite-line LLC 10660 East 51st Ave. Denver, CO 80239, phone 303-375-1293.
 - d. Deltaline Temporary Wet Reflective/TWR-HP yellow manufactured by Brite-line LLC 10660 East 51st Ave. Denver, CO 80239, phone 303-375-1293.

Local Agencies may use a material listed above or select wet reflective Type R markings from the Qualified Products List (922.06A).

MICHIGAN
DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
FOR
ERRATA TO THE 2020 STANDARD SPECIFICATIONS

1 of 8

10-31-22

Page	Subsection	Errata
1-06	101.02	Delete the second abbreviation of the list on this page reading: “IES Illuminating Engineering Society
1-06	101.02	Add the abbreviation to the list on this page reading: “IESNA Illuminating Engineering Society of North America
1-83	108.05.A.2	In the first paragraph of this subsection change the language “MDOT Form 1130” to read “MDOT Form 1130A”.
1-88	108.08.D	Move the last paragraph of this subsection to the left one indent to align with the first paragraph of the subsection and not with the subsection 108.08.D.3.
2-29	205.03.P.1	Delete the first sentence of this subsection and replace with the following: “Do not dispose of material, temporarily or permanently, beyond the normal plan fill slope across wetlands or floodplains.”
2-30	205.03.P.2	Delete the first sentence of this subsection and replace with the following: “Do not dispose of material, temporarily or permanently, in wetlands or floodplains.”
2-30	205.03.P.3	Delete the second paragraph of this subsection and replace with the following: “Contact the appropriate regulatory agencies to determine whether an area is a regulated wetland or floodplain before disposing of surplus or unsuitable material in areas outside the right-of-way and not shown on the plans as disposal sites.”
2-30	205.03.P.3	Delete the first sentence of the third paragraph of this subsection and replace with the following: “Immediately move to an upland site any surplus or unsuitable material that was disposed of in portions of wetlands or floodplains not shown on the plans as disposal sites, at no additional cost to the Department.”
2-30	205.03.P.4	Delete the first sentence of this subsection and replace with the following:

“The Department will notify the applicable regulatory agencies if the Department becomes aware that the Contractor disposed of surplus or unsuitable material in portions of a wetland or floodplain not shown on the plans.”

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|------|------------|---|
| 3-31 | 308.04.D | Change the subsection title from “D. General. ” to read “A. General. ” |
| 4-7 | 401.03.E | Delete the third sentence of the second paragraph of this subsection and replace with the following:
“Use precast or cast-in-place footings for precast end sections as required.” |
| 4-11 | 401.04 | Change the eighth pay item from the bottom of the list on this page to read as follows:
Culv End Sect __ inch, Grate.....Each |
| 4-12 | 401.04.C.4 | Change this subsection to read:
“The Engineer will measure Culv End Sect __ inch, Grate by each as shown on the plans for the size of grate required.” |
| 4-39 | 406.02 | Change the third line in the list of materials to read:
Coarse Aggregate 6A, 6AA, 17A.....902 |
| 4-41 | 406.03.A.3 | Delete the third paragraph of this subsection and replace with the following:
“Design joints between adjacent box culvert sections in accordance with Section 9 of ASTM C1577 and to accommodate the joint sealing material in accordance with section 914 as applicable.” |
| 4-50 | 406.03.G.3 | Change the first sentence of the first paragraph to read:
“Unless otherwise shown on the plans, construct culvert bedding for box culverts by placing a 9-inch-thick layer of 46G aggregate, covered with a 3-inch-thick layer of 34G, 34R aggregate, or approved equal.” |
| 4-52 | 406.04.B | In the second paragraph of this subsection delete the first sentence and replace with the following:
“The Department will pay separately for cast-in-place concrete, other than for culvert segments, headwalls, wingwalls, aprons, and curtain walls.” |
| 5-26 | 502.02 | Delete the first sentence of the subsection and the listed materials in this subsection. |
| 5-26 | 502.02.A | Add the following to the end of the first sentence in this subsection:
“(914.04A)” |
| 5-26 | 502.02.B | Add the following to the end of the first sentence in this subsection:
“(502.02B)” |

- 6-20 602.04 Delete the fifteenth pay item of the list on this page reading:
"Shoulder, Reinf Conc..... Square Yard
- 6-20 602.04 Change the sixteenth thru the eighteenth pay items on this page to read as follows:
Shld, Nonreinf Conc..... Square Yard
Shld, Nonreinf Conc, High Performance Square Yard
Shld, Freeway Square Yard
- 6-21 602.04.B.1 Delete this subsection and replace with the following:
"Shld, Nonreinf Conc; and Shld, Nonreinf Conc, High Performance. The Engineer will measure, and the Department will pay for, **Shld, Nonreinf Conc; and Shld, Nonreinf Conc, High Performance** by area, based on plan quantities in accordance with subsection 109.01."
- 6-21 602.04.B.2 Delete this subsection and replace with the following:
"Shld, Freeway. The Engineer will measure, and the Department will pay for, **Shld, Freeway** based on plan quantities in accordance with subsection 109.01. If the Contractor uses concrete for the shoulder, the unit price for **Shld, Freeway** includes the cost of the transverse joints in the shoulder and the external longitudinal pavement joints."
- 6-23 602.04.F Add the following sentence to the end of the first paragraph of this subsection:
Temporary concrete pavement, pavement within 4 feet of an obstruction, pavement areas less than 300 square yards, or pavement less than 3 feet wide will not be cored.
- 6-23 602.04.F Delete the following language from this subsection on this page:
"The Engineer will not core the following:
1. Temporary concrete pavement;
 2. Pavement within 4 feet of an obstruction;
 3. Pavement areas less than 300 square yards; or
 4. Pavement less than 3 feet wide."
- 6-24 602.04 Rename the following subsections as follows:
"1. Initial Core.
- 6-24 602.04 2. Additional Cores.
- 6-24 602.04 3. Price Adjustment for Thickness.
- 6-25 602.04 4. Price Adjustments for Steel Locations within the Pavement.
- 6-26 602.04 5. Remove and Replace."
- 7-107 709.04 Change the Pay Unit on the second pay item from the top of the list on this page to read as follows:
Thousand Board Foot

- 8-12 804.03.B.2 Change the first sentence in this subsection to read:
“Cast in place light standard and sign support foundations using fixed forms in accordance with the *MDOT Standard Plan R-50 series.*”
- 8-44 810.03.J.9 Add a period to the end of the third sentence in this subsection.
- 8-53 810.03.V Add a period to the end of the second sentence of the first paragraph of this subsection.
- 8-53 810.04 Change the fourth pay item from the top of the list on this page to read as follows:
Post, Steel, __ pound.....Foot
- 8-53 810.04 Change the last four pay items at the bottom of this page to read as follows:
Fdn, Truss Sign Structure Type __, __ inch dia, Cased.....Foot
Fdn, Truss Sign Structure Type __, __ inch dia, Uncased.....Foot
Fdn, Cantilever Sign Structure Type __, __ inch dia, CasedFoot
Fdn, Cantilever Sign Structure Type __, __ inch dia, Uncased.Foot
- 8-55 810.04.B.1 Delete the second paragraph of this subsection and replace with the following:
“The unit prices for **Fdn, Truss Sign Structure Type __, __ inch dia, Cased** and **Fdn, Cantilever Sign Structure Type __, __ inch dia, Cased** include the cost of concrete, slurry, steel reinforcement, permanent casings, anchor bolts, excavation, and disposal of excavated material.”
- 8-55 810.04.B.2 Delete this subsection and replace with the following:
“**Foundation, Truss Sign Structure, Uncased and Foundation, Cantilever Sign Structure, Uncased.** The unit prices for **Fdn, Truss Sign Structure Type __, __ inch dia, Uncased** and **Fdn, Cantilever Sign Structure Type __, __ inch dia, Uncased** include the cost of concrete, slurry, steel reinforcement, temporary casings, anchor bolts, excavation, and disposal of excavated material.”
- 8-57 810.04.I Delete the first paragraph of this subsection and replace with the following:
“The unit price for **Sign, Rem** of the type required includes the cost of removing signs from supports and stacking by shape and size.”
- 8-57 810.04.I Delete the second paragraph of this subsection and replace with the following:
“The unit prices for **Ground Mtd Sign Supports, Rem; Cantilever, Rem** and **Truss, Rem** include the cost of removing ground mounted sign supports, cantilever or truss supports.”
- 8-57 810.04.L Change this subsection to read:

“The unit price for Sign, Erect, Salv of the type required includes erecting the salvaged sign on a new sign support or existing sign support, as shown on the plans, and attaching devices, and hardware, including brackets.”

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| 8-58 | 810.04.N | Delete this subsection in its entirety. |
| 8-110 | 812.04 | Change the fifth and sixth pay item from the top of the list on this page to read as follows:
Sign, Type B, Temp, Prismatic, Spec, Furn Square Foot
Sign, Type B, Temp, Prismatic, Spec, Oper Square Foot |
| 8-141 | 815.04.C.1.d | Delete this subsection in its entirety. |
| 8-142 | 815.04.C.2.d | Change this subsection to read:
"During the first watering of the second growing season, remove and dispose of the guying material, identification tags, and inspection tags." |
| 8-144 | 816.03.A | Change the third sentence in this subsection to read:
“Use topsoil from within the project limits; or from off-site sources meeting the requirements in subsection 917.06.” |
| 8-167 | 818.04 | Add the pay item to the bottom of the list on this page as follows:
Power Company (Estimated Cost to Contractor) Dollar |
| 8-170 | 818.04.G | Delete this subsection in its entirety. |
| 8-170 | 818.04 | Rename the following subsections as follows:
“G. Handholes (Hh).
H. Service Disconnect.
I. Metered Service.
J. Unmetered Service.
K. Wood Pole.
L. Concrete Pole, Fit Up.
M. Steel Pole, Fit Up.
N. Bracket Arm. ” |
| 8-171 | 818.04 | |
| 8-171 | 818.04 | |
| 8-171 | 818.04 | |
| 8-172 | 818.04 | |
| 8-172 | 818.04 | |
| 8-172 | 818.04 | |
| 8-172 | 818.04 | |
| 8-172 | 818.04 | |
| 8-171 | 818.04.J | Delete the second paragraph of this subsection and replace with the following:
“The pay item, Power Company (Estimated Cost to Contractor) , establishes a budgeted amount in the contract to cover the cost of reimbursing the Contractor for payments made to the power company for providing electrical power at the locations shown on the plans. The Department will estimate the reimbursement costs to the Contractor and establish a budgeted amount as shown on the plans. The Department will pay the Contractor for power company invoices paid, as submitted to the Engineer.” |
| 8-185 | 820.01.B | Add a period to the end of the first sentence of this subsection. |

8-199	820.04	Add the pay item to the list on this page: TS, (number) Way (type) Mtd (LED) Optic
8-200	820.04	Change the second pay item from the top of the list on this page to read as follows: TS Head, TempEach
8-200	820.04	Change the eleventh pay item from the top of the list on this page to read as follows: TS, Lens, Pedestrian Sym (LED)Each
8-200	820.04	Delete the following pay items from the list: Strain Pole, Steel, 6 bolt, __ foot.....Each Mast Arm Pole, Cat.....Each Mast Arm, __Foot, Cat.....Each
8-200	820.04	Change the eleventh pay item from the bottom of the list on this page to read as follows: Mast Arm, Rem.....Each
8-201	820.04	Delete the following pay item from the list: Power Co. (Est Cost to Contractor)..... Dollar
8-202	820.04	Add the following pay item to the list: Bracket, Truss, Salv.....Each
8-204	820.04.C	Delete the last paragraph of this subsection in its entirety.
8-204	820.04.D	Delete the first paragraph of this subsection in its entirety.
9-9	902.03.C.1.b	Delete the first sentence in this subsection and replace with the following: “The physical requirements for the coarse aggregate are as specified in Table 902-2 and as follows:”
9-16	Table 902-2	Delete the superscript footnote in the first through fourth rows under the header row that reads “(m)” in the column Loss, % max, LA Abrasion (MTM 102).
9-16	Table 902-2	Add the superscript footnote in the header row that reads “(m)” in the column Loss, % max, LA Abrasion (MTM 102).
9-15	Table 902-2	Delete the footnote (d) in one location in the table.
9-17	Table 902-2	Delete the footnote (d) in one location in the table.
9-21	Table 902-6	Delete the footnote (b) in two locations in the table.
9-21	Table 902-6	Change the footnote (c) to read (b) in two locations in the table.
9-21	Table 902-6	Change the footnote (d) to read (c) in two locations in the table.

9-70	909.05.D	Change the first sentence in this subsection to read: "Provide steel pipe for jacking in place meeting the requirements of ASTM A53/A53M for Type E or Type S, Grade B, or ASTM A139/A139M for Grade B."
9-94	Table 910-01	Change the value in the fifth row under the header row in the Permittivity (min) (per second) column from 0.5 to read: "0.05"
9-94	Table 910-01	Change the value in the seventh row under the header row in the Permittivity (min.) (per second) column from 0.5 to read: "0.05"
9-95	Table 910-2	Change the second row under the Ultimate strength section to read: "CMD ^(c) 1950 lb/ft"
9-119	913.06	Change this subsection to read: Circular precast concrete units with circular reinforcement for adjusting rings, tops, risers, and sump bases for manholes, catch basins, and inlets must meet the requirements of AASHTO M199 and the following additions and exceptions:
9-133	917.03	Rename the four subsections following the first paragraph on this page as follows: D. Deciduous Shade Trees. E. Small Trees, Ornamentals, and Shrubs. F. Evergreen Trees. G. Vines, Ground Cover, and Herbaceous Ornamental Plants.
9-170	920.02.C	Change the reference to Table 920-2 to read Table 920-3 in two locations.
10-23	1003.03.B	Delete the last sentence of this subsection and replace with the following: "Aggregate sampling for concrete will be performed by an MCAT-certified Aggregate Technician Level II."
10-43	Table 1006-02	Replace Table 1006-02 with the Table 1006-02 below.
1A - 20A	Pay Item Index	Replace the Pay Item Index in its entirety.

**Table 1006-2:
Overlay Mixtures**

Mixture Type	Aggregate	Slump (inch)	Air Content	Admixture Required	Mixture Proportions lb/yd ³ , dry weight					
					Cement ^(a)	Dry Densified Silica Fume ^(b)	Net Mix Water	Fine Agg	Coarse Agg	Latex Admixture
SFMC	2NS and 26A ^(c)	4-6	6.5 ± 1.5%	(d),(e),(f)	618	40	273 ^(g)	1273	1601	—
LMC	2NS and 26A ^(c)	(h)	4.5 ± 1.5%	—	658	—	(h)	1490 ^{(i),(j)}	1300 ^{(i),(j)}	206

(a) Use only Type I Portland cement.

(b) For SFMC mixtures, the Contractor may use a blended silica fume Portland cement. However, if the silica fume content of the blended material is greater than 8% of the total cementitious material, submit to the Engineer modified mix proportions with Type I Portland cement added to the blended material to achieve the equivalent individual cementitious material mixture proportions.

(c) Provide coarse aggregate, 95% minimum crushed materials in accordance with Michigan Test Method (MTM) 117, with an absorption no greater than 2.5%, in accordance with ASTM C127.

(d) Water-reducing high-range admixture or water-reducing high-range and retarding admixture.

(e) Virgin polypropylene collated fibers at 2 lb/yd³.

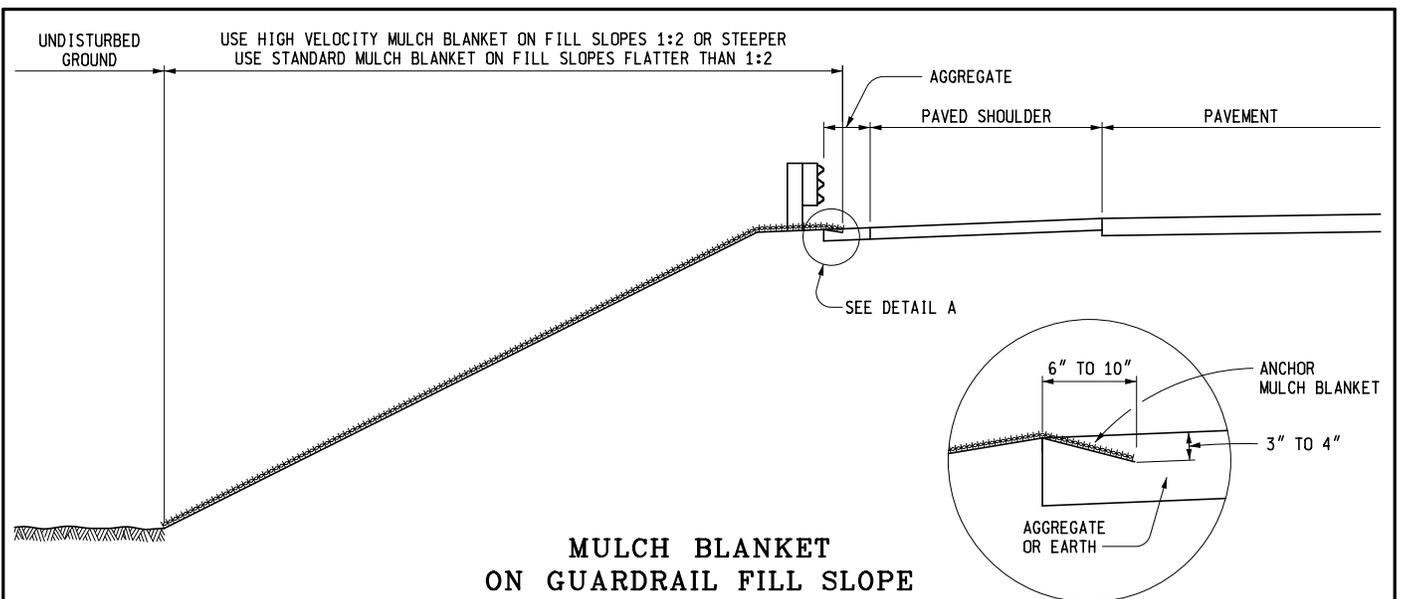
(f) Air-entraining admixture.

(g) Provide a net water to cementitious material ratio of 0.41 (cementitious material includes cement and silica fume).

(h) Add water in addition to water in the latex admixture to control slump to within 3 to 5 inches. Measure slump from 4 to 5 minutes after discharge from the mixer. During the waiting period, deposit concrete on the deck and do not disturb. If placing mixtures on sections within superelevated curves, the Contractor may need to use the lower allowable range of the slump requirement, as determined by the Engineer. Do not exceed water-cement ratio, by weight, of 0.30 including water contained in the latex emulsion.

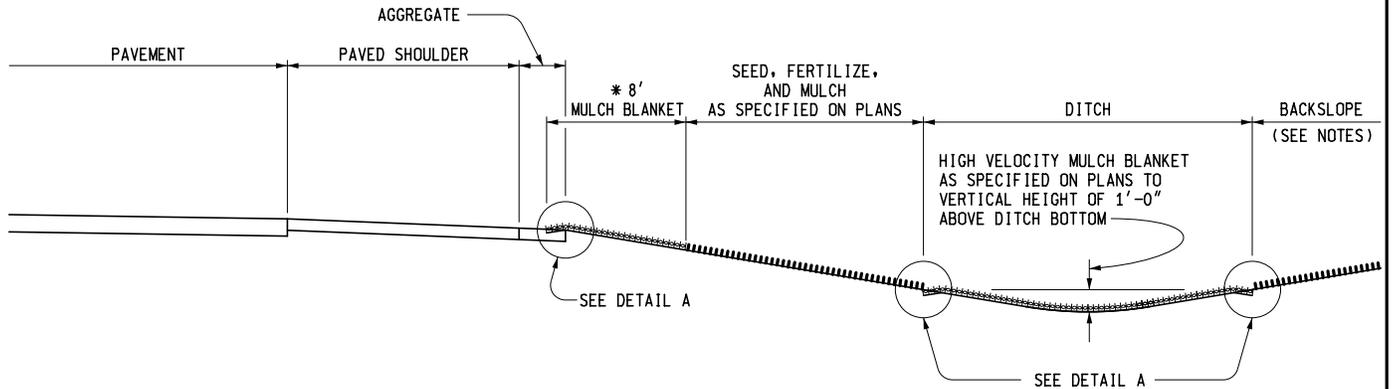
(i) Aggregate proportions are approximate; due to gradation changes, the Contractor may increase proportions by no greater than 5% by weight of total aggregate if reducing coarse aggregate by an equivalent volume.

(j) Aggregate weights specified in the table are based on a dry bulk specific gravity of 2.65 for gravel and stone. Adjust the weights if the specific gravity of the materials used varies by more than 0.02 from the specified values.

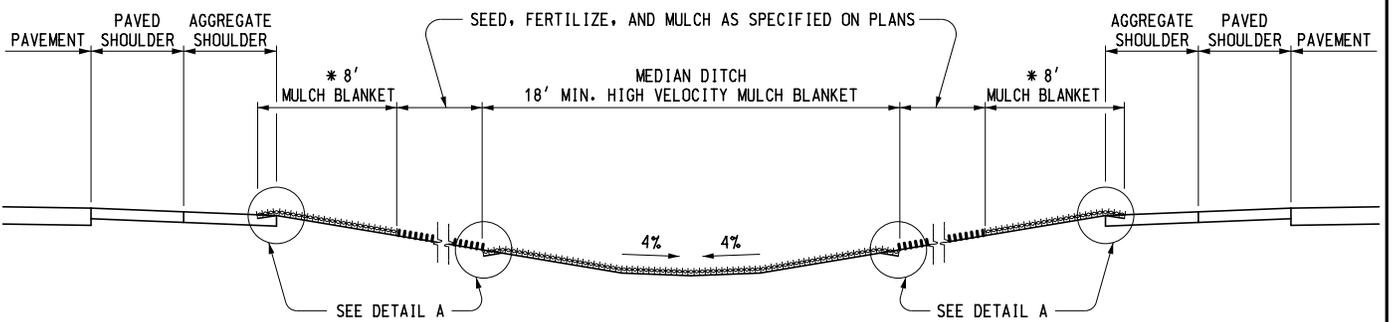


MULCH BLANKET ON GUARDRAIL FILL SLOPE

DETAIL A



TYPICAL SLOPE AND DITCH PROTECTION

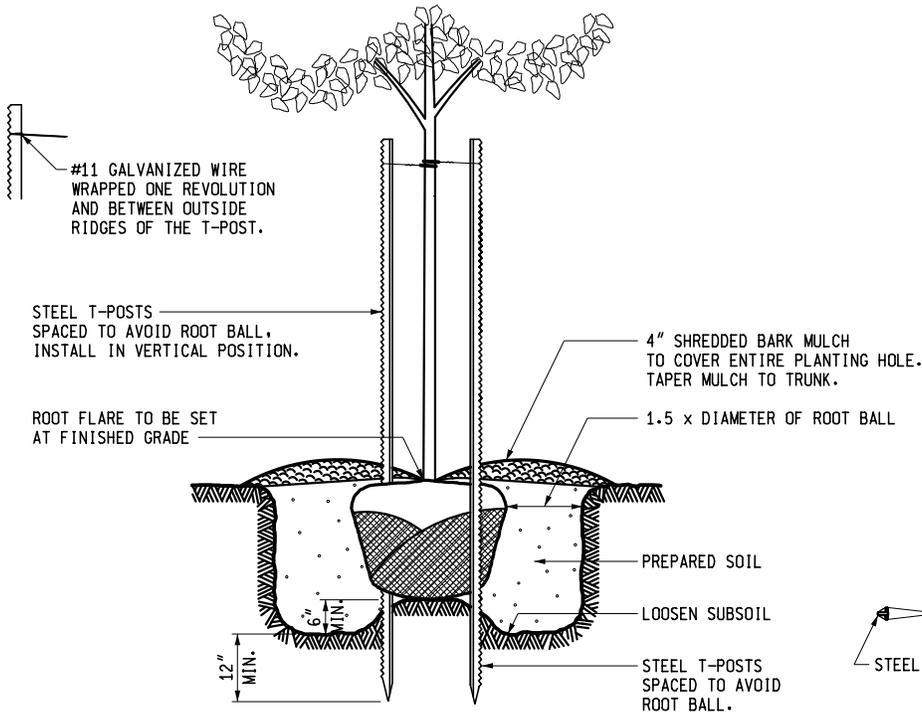


MULCH BLANKET SPILLWAY DITCH

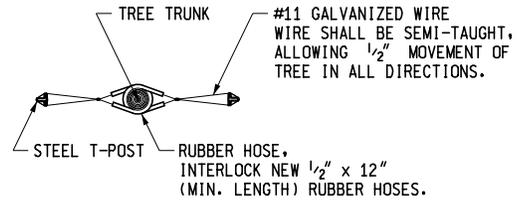
* NOTE:

MULCH BLANKET SHALL BE USED ON BOTH SIDES OF NORMAL SECTIONS, HIGH SIDES OF ALL SUPERELEVATED SECTIONS, AND LOW SIDES OF PAVEMENTS HAVING A SUPERELEVATION OF 5% OR LESS. HIGH VELOCITY MULCH BLANKET SHALL BE USED ON THE LOW SIDE OF PAVEMENTS HAVING A RATE OF SUPERELEVATION GREATER THAN 5%.

	DEPARTMENT DIRECTOR Paul C. Ajegba	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR		
	PREPARED BY DESIGN DIVISION	APPROVED BY: _____ DIRECTOR, BUREAU OF FIELD SERVICES	SEEDING AND TREE PLANTING	
DRAWN BY: <u>B.L.T.</u>	APPROVED BY: _____ DIRECTOR, BUREAU OF DEVELOPMENT	8-3-2021 PLAN DATE	R-100-I	SHEET 1 OF 4
CHECKED BY: <u>W.K.P.</u>		F.H.W.A. APPROVAL		



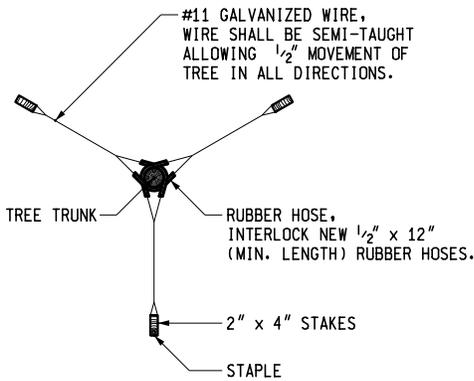
BRACING - VERTICAL STAKES



BRACING DETAIL

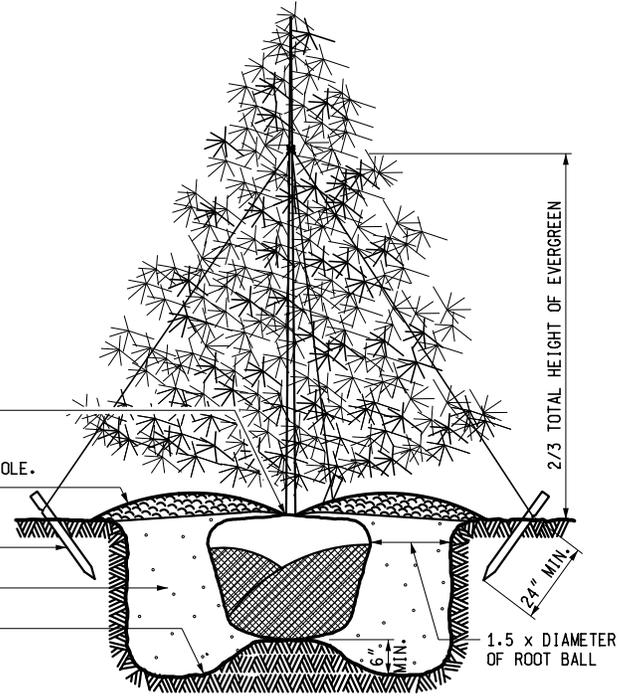
BRACE DECIDUOUS TREES 2" TO 4" IN CALIPER OR 8' OR MORE IN HEIGHT WITH TWO STAKES.

BRACE DECIDUOUS TREES LESS THAN 2" IN CALIPER OR 8' IN HEIGHT WITH ONE STAKE ON THE WESTERLY SIDE OF THE PLANT.

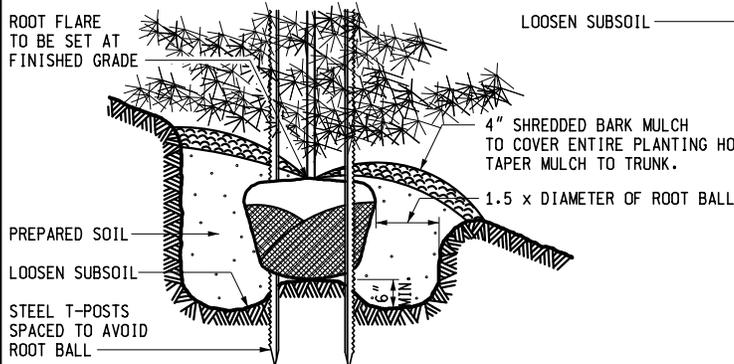


TRIPOD GUYING DETAIL

GUY EVERGREENS OVER 4" IN CALIPER OR 6' IN HEIGHT WITH THE TRIPOD METHOD AND UNDER 6' IN HEIGHT WITH TWO STAKES.



GUYING - TRIPOD METHOD

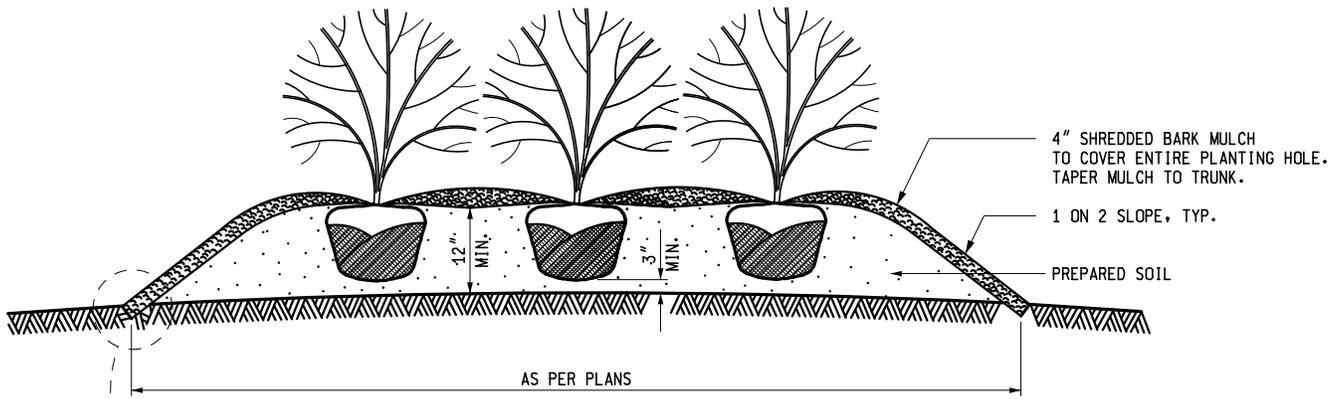


SLOPE PLANTING

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

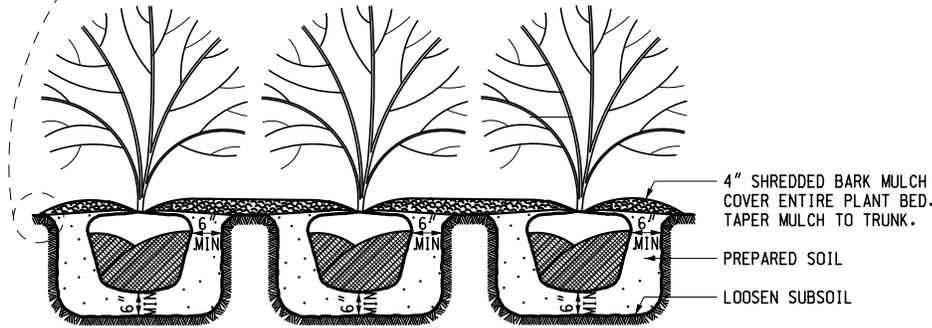
**SEEDING
AND TREE PLANTING**

F.H.W.A. APPROVAL	8-3-2021 PLAN DATE	R-100-I	SHEET 2 OF 4
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RAISED SHRUB BED DETAIL

SHRUB BED EDGING DETAIL



SHRUB BED DETAIL

FIRST AND SECOND WATERING AND CULTIVATION SHALL INCLUDE SHRUB BEDS.

CUT 6" X 12" (MIN.) EDGING AROUND THE PERIMETER OF ALL SHRUB BEDS SHOWN ON THE PLANS. SPRAY A NON-PERSISTANT GLYPHOSATE HERBICIDE TO ENTIRE SHRUB BEDS PRIOR TO PLANTING AND BARK PLACEMENT.

SHRUB BEDS ARE TO BE PAID FOR BY THE PAY ITEM 'SITE PREPARATION'.

ALL PLANTS SHALL BE SET PLUMB AND HAVE THE BEST SIDE OF PLANT FACING THE MAIN VIEWING DIRECTION.

PLANTING NOTES:

ALL EXCAVATED MATERIAL SHALL BE REMOVED FROM THE SITE - IMMEDIATELY.

LOOSEN SUBSOIL TO A DEPTH OF 4". LOOSEN EARTH ON SIDES OF PLANT POCKET TO BREAK ANY GLAZING CAUSED BY DIGGING.

FILL PREPARED SOIL TO 1/2 THE DEPTH OF THE ROOT BALL, PACK FIRMLY, AND PUDDLE WITH WATER.

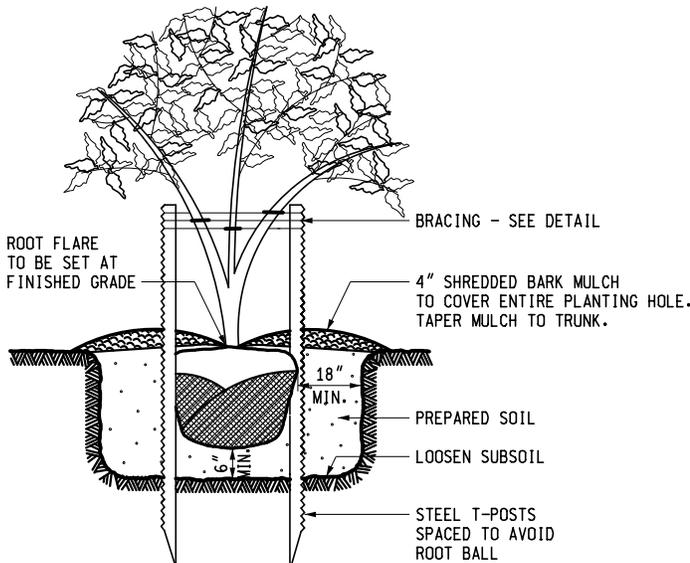
BACKFILL WITH PREPARED SOIL WHICH, AFTER COMPACTION, IS FLUSH WITH SURROUNDING GROUND LEVEL.

COVER ENTIRE PLANT POCKET AREA WITH 4" MULCH. PRUNE AND BRACE AND GUY.

WHEN PLANTS ARE FURNISHED IN CONTAINERS, CONTAINERS SHALL BE COMPLETELY REMOVED AT THE TIME OF PLANTING.

TREE HEIGHTS ARE SHOWN BEFORE PRUNING. TREE PLANTING DEPTHS ARE SHOWN AFTER SETTLING.

TREES AND SHRUBS SHALL NOT BE PLANTED WITHIN 50' AND 30' RESPECTIVELY OF THE NEAREST EDGE OF METAL - EXCEPT WHERE INACCESSIBLE TO VEHICLES.

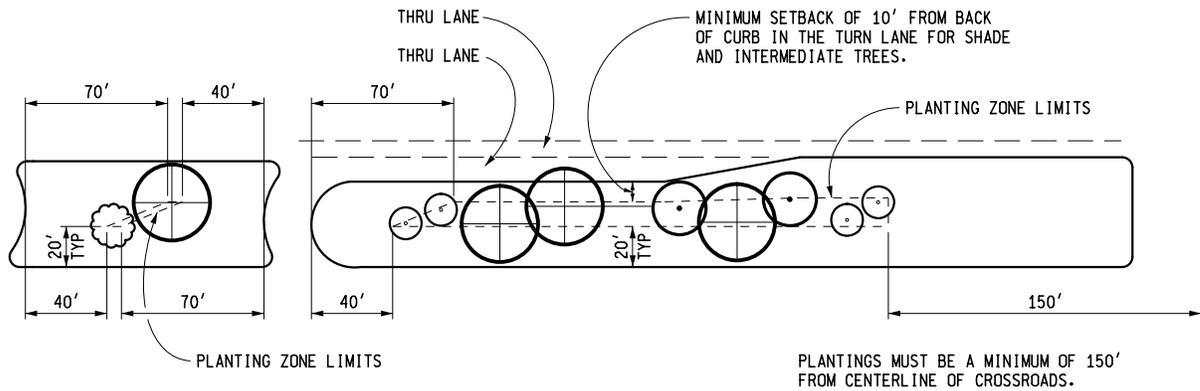


MULTIPLE STEM TREES

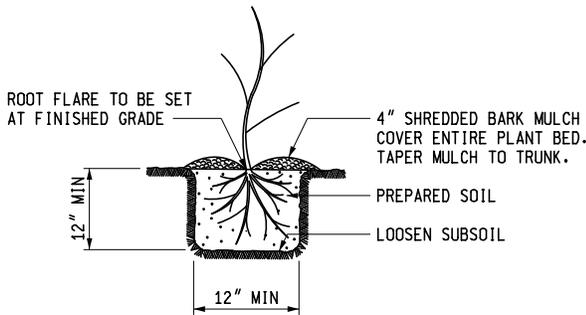
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

**SEEDING
AND TREE PLANTING**

F.H.W.A. APPROVAL	8-3-2021 PLAN DATE	R-100-I	SHEET 3 OF 4
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MEDIAN PLANTING
NOT TO SCALE



BARE ROOT PLANTS

PLANTING BARE ROOT PLANT MATERIAL

REFER TO THE "SPECIAL PROVISIONS FOR BARE ROOT PLANTING" FOR SHIPPING, STORAGE AND HANDLING REQUIREMENTS.

MAINTAIN ROOT MOISTURE BY KEEPING ROOTS IMMERSSED IN WATER PRIOR TO PLANTING.

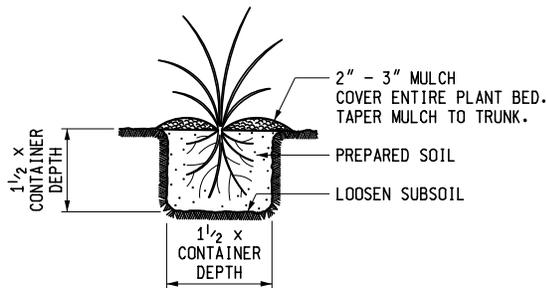
ROOT PRUNE AS NECESSARY TO REMOVE ALL DAMAGED OR BROKEN ROOTS, AND AS REQUIRED BY THE DISTRICT FORESTER OR RESOURCE SPECIALIST.

DIG PLANTING HOLES AT LEAST 12" WIDE AND 12" DEEP TO ACCOMMODATE ROOT MASS.

SET PLANTS PLUMB WITH THE ROOTS SPREAD PUT IN A NATURAL POSITION AT A DEPTH EQUAL TO THE DEPTH AT THE NURSERY.

HOLD PLANT FIRMLY AND PUDDLE (NOT TAMP) THE BACKFILL AROUND THE ROOTS WITH WATER. SUFFICIENT WATER SHALL BE USED TO ENSURE SATURATION OF THE BACKFILL, BUT CARE SHOULD BE TAKEN NOT TO OVERWATER, CAUSING A FLOATING SOIL MASS THAT PREVENTS COMPACTION AND MAY RESULT IN AIR POCKETS ADJACENT TO THE ROOTS. BACKFILL SHOULD BE FLUSH WITH THE GROUND AFTER COMPACTION.

COVER ENTIRE PLANT POCKET AREA WITH 4" MULCH AS SHOWN.



PERENNIAL PLANTS

FIRST AND SECOND WATERING AND CULTIVATION SHALL INCLUDE PERENNIAL BEDS.

PERENNIALS ARE TO BE FULLY DEVELOPED TWO YEAR #2 CONTAINER PLANTS.

ENTIRE PERENNIAL BED SHALL BE EXCAVATED DOWN 12" AND REPLACED WITH 12" OF PREPARED SOIL.

PERENNIAL BEDS ARE TO BE PAID FOR BY THE PAY ITEM 'SITE PREPARATION'.

SEEDING NOTES:

THIS STANDARD ILLUSTRATES THE TYPICAL USE OF SEEDING WITH MULCH, AS THESE ITEMS RELATE TO ROADWAY CONSTRUCTION. THE ACTUAL DESIGN AND MATERIALS USED TO CONSTRUCT THE COMPLETE SECTION, WHICH INCLUDES SEEDING WITH MULCHING, WILL BE ACCORDING TO THE PLANS AND CURRENT SPECIFICATIONS.

ITEMS CALLED FOR ON THIS STANDARD MAY ALSO BE USED DURING CONSTRUCTION AS AN EROSION CONTROL MEASURE. SEE STANDARD PLAN R-96-SERIES.

ALL DITCHES SHOULD HAVE HIGH VELOCITY MULCH BLANKET FOR EROSION CONTROL.

THE FIRST 8' BEHIND THE CURB OR SHOULDER IN URBAN MEDIAN AREAS WILL BE SEEDED, FERTILIZED, AND MULCHED WITH MULCH BLANKET. THE REMAINING AREAS WILL BE SEEDED, FERTILIZED, AND MULCHED WITH MULCH BLANKET OR STANDARD MULCH ANCHORED IN PLACE WITH A MULCH ADHESIVE OR WITH A MULCH NET.

ALL AREAS WHERE MULCH BLANKET IS CALLED FOR SHALL BE SEEDED, FERTILIZED, AND TOPSOILED AS SPECIFIED ON PLANS. NO MULCH OR ANCHORING MULCH IS REQUIRED WHERE MULCH BLANKET IS INSTALLED.

BACKSLOPE RESTORATION TREATMENT SHALL BE THE SAME AS THE FRONT SLOPE.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

**SEEDING
AND TREE PLANTING**

F.H.W.A. APPROVAL	8-3-2021 PLAN DATE	R-100-I	SHEET 4 OF 4
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SIGN MATERIAL SELECTION TABLE

SIGN SIZE	SIGN MATERIAL TYPE		
	TYPE I	TYPE II	TYPE III
≤ 36" X 36"		X	X
>36" X 36" ≤ 96" TO WIDE		X	
> 96" WIDE TO 144" WIDE	X	X	
> 144" WIDE	X		

TYPE I ALUMINUM EXTRUSION
 TYPE II PLYWOOD
 TYPE III ALUMINUM SHEET

ROUNDING OF CORNERS IS NOT REQUIRED FOR TYPE I OR II SIGNS.
 VERTICAL JOINTS ARE NOT PERMITTED.
 HORIZONTAL JOINTS THROUGH SIGN LEGEND OR SYMBOLS ARE NOT PERMITTED.

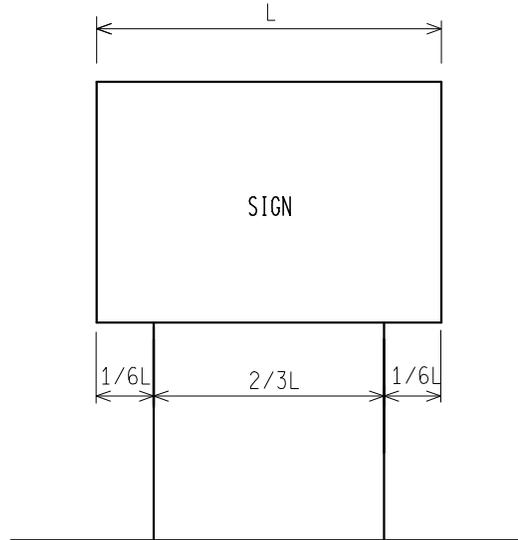
POST SIZE REQUIREMENTS TABLE

SIGN AREA (ft ²)	POST TYPE		
	U-CHANNEL STEEL	SQUARE TUBULAR STEEL	WOOD
≤ 9	1 - 3 lb/ft*	1 - 2" 12 or 14 GA*	N/A
9 ≤ 20	2 - 3 lb/ft	2 - 2" 12 or 14 GA	1 - 4" X 6"*
> 20 ≤ 30	N/A	N/A	2 - 4" X 6"
> 30 ≤ 60	N/A	N/A	2 - 6" X 8"
> 60 ≤ 84	N/A	N/A	3 - 6" X 8"

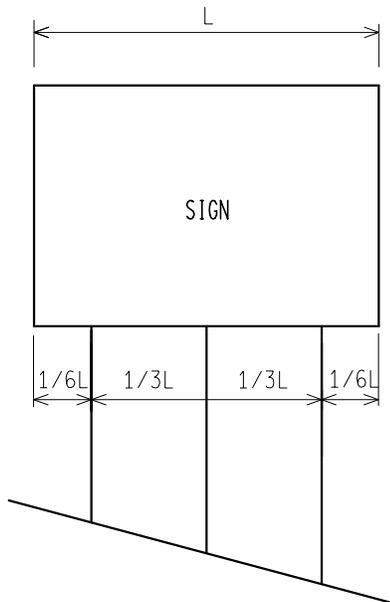
*SIGNS 4 FEET AND GREATER IN WIDTH REQUIRE 2 POSTS.
 SIGNS GREATER THAN 8 FEET IN WIDTH REQUIRE 2 OR 3 WOOD
 POSTS DEPENDING ON AREA OF SIGN.
 A MAXIMUM OF 2 POSTS WITHIN A 7' PATH IS PERMITTED.

 PREPARED BY DESIGN DIVISION	DEPARTMENT DIRECTOR Kirk T. Steudle APPROVED BY: _____ DIRECTOR, BUREAU OF FIELD SERVICES	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR GROUND DRIVEN SIGN SUPPORTS FOR TEMP SIGNS		
	DRAWN BY: <u>CON/ECH</u> CHECKED BY: <u>AUG</u>	APPROVED BY: _____ DIRECTOR, BUREAU OF DEVELOPMENT	_____ F.H.W.A. APPROVAL	<u>11/2/2017</u> PLAN DATE

2 POST SIGN SUPPORT SPACING



3 POST SIGN SUPPORT SPACING



* FOR ALL 11' AND 12' LONG SIGNS ON 3 WOOD SUPPORTS, SPREAD POSTS SO AS TO HAVE A 8' MIN. TO 9' MAX. DISTANCE BETWEEN OUTSIDE POSTS.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN

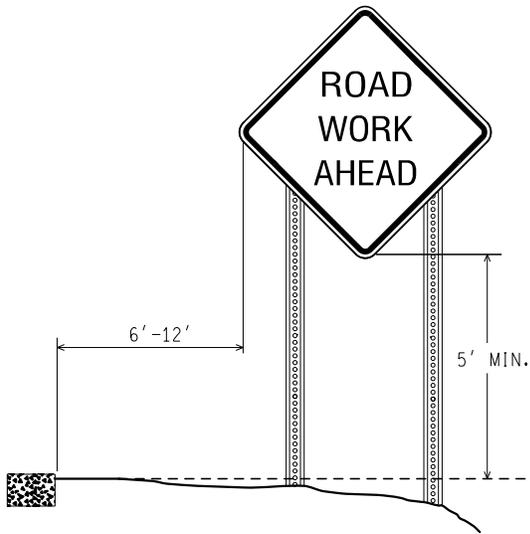
F.H.W.A. APPROVAL

11/2/2017
PLAN DATE

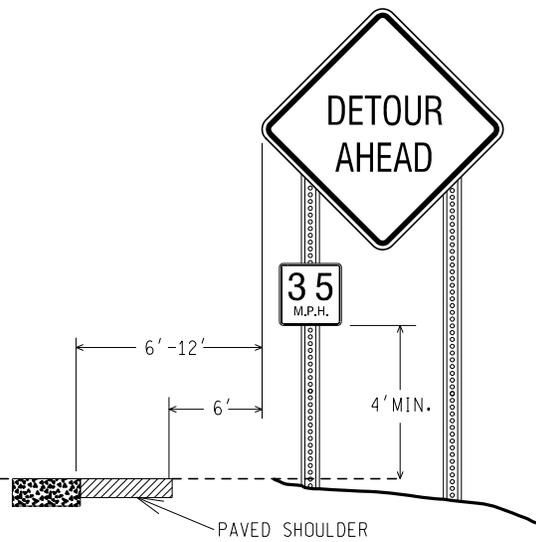
WZD-100-A

SHEET
2 OF 11

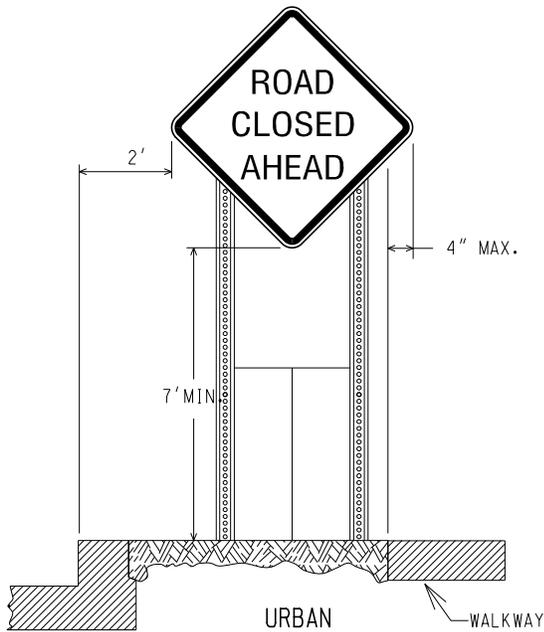
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RURAL



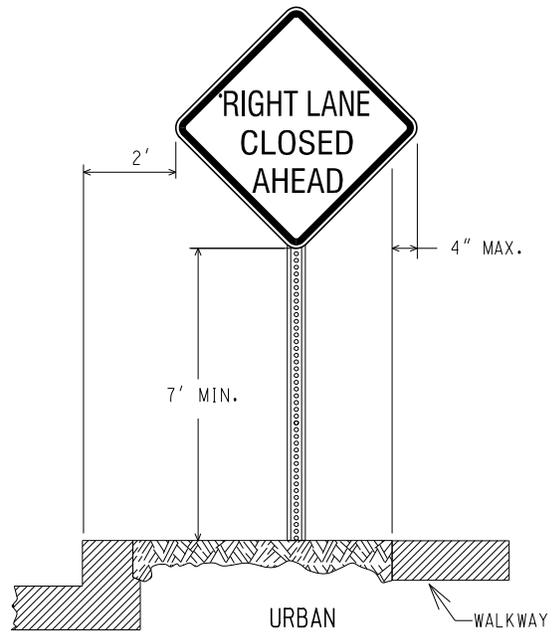
RURAL WITH ADVISORY SPEED PLATE



URBAN

WALKWAY

(CURBED AREAS OR WHERE WALKWAYS ARE PRESENT)



URBAN

WALKWAY

(CURBED AREAS OR WHERE WALKWAYS ARE PRESENT)

BOTTOM HEIGHT AND OFFSET

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
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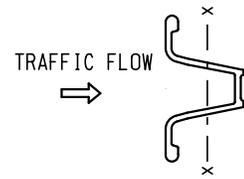
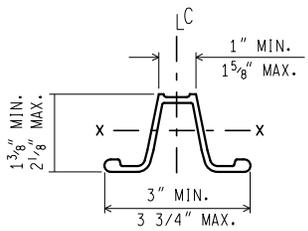
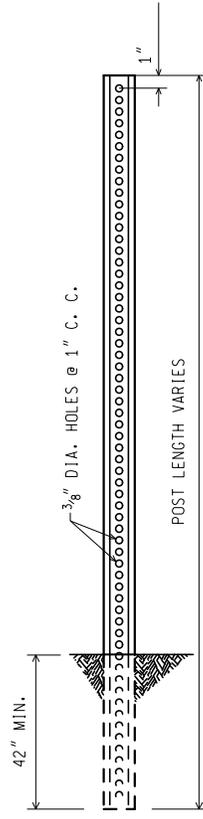
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11/2/2017
PLAN DATE

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WEIGHT = 3 lbs/ft
 SECT. MOD. X.-X. = 0.31 CUBIC INCHES MIN.

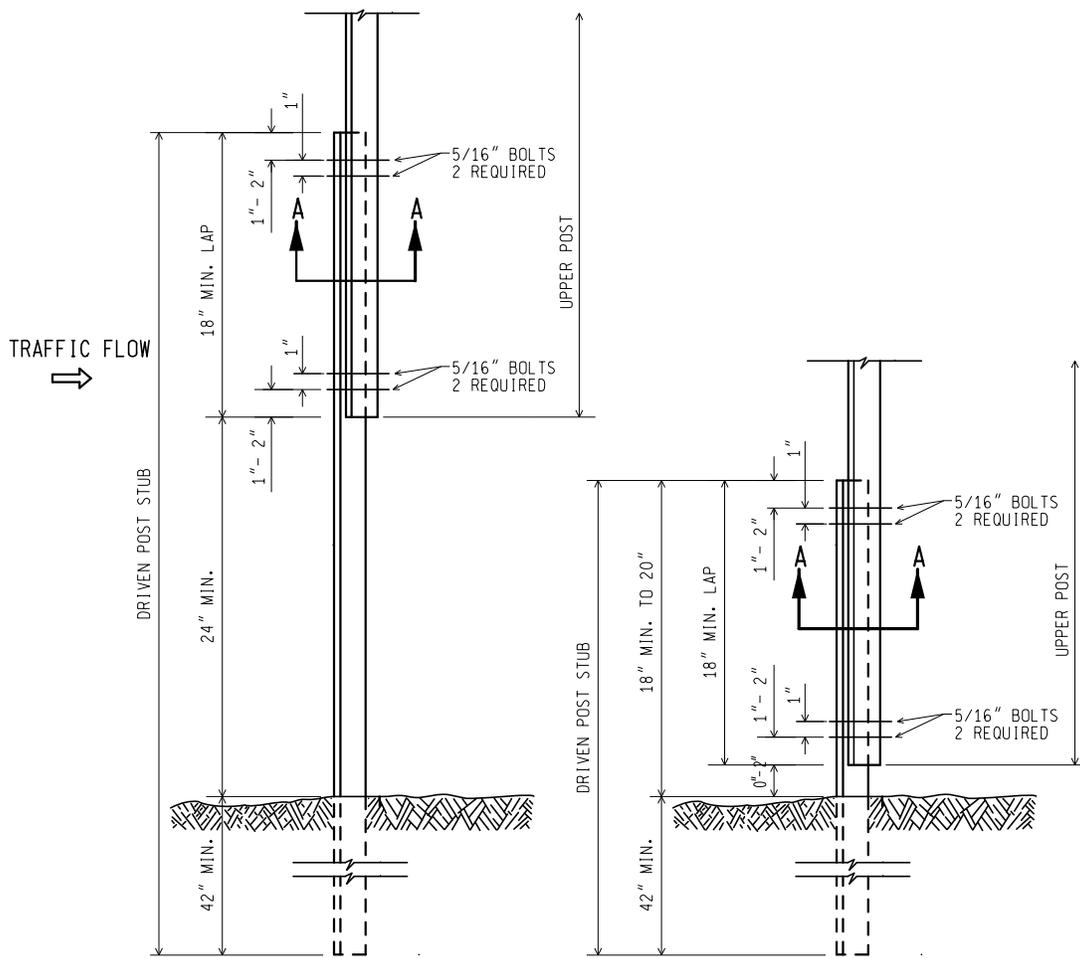
3 lb. U - CHANNEL STEEL POST
 (NO SPLICE)

MOUNT SIGN ON OPEN FACE OF
 U - CHANNEL STEEL POST

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 4 OF 11
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UPPER SPLICE

LOWER SPLICE

3 lb. U - CHANNEL STEEL POST
(WITH SPLICE)

MOUNT SIGN ON OPEN FACE OF
UPPER U - CHANNEL STEEL POST

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN

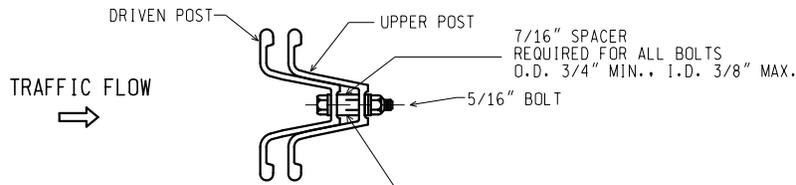
F.H.W.A. APPROVAL

11/2/2017
PLAN DATE

WZD-100-A

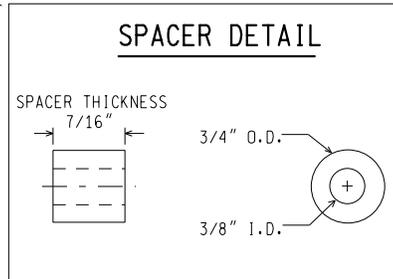
SHEET
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SECTION A-A

7/16" SPACER
 REQUIRED FOR ALL BOLTS
 O.D. 3/4" MIN., I.D. 3/8" MAX.



NOTES:

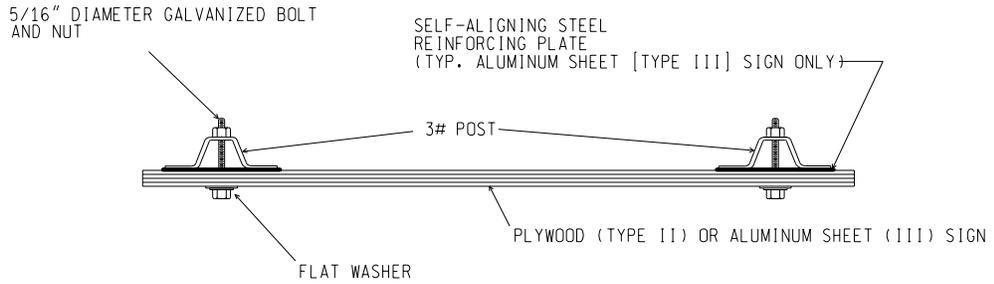
1. THE SPACER THICKNESS SHALL BE 1/16" LESS THAN THE GAP BETWEEN THE POST WHEN POSITIONED IN THE UNBOLTED CONFIGURATION.
2. THE EXTERIOR BOLT (CLOSEST TO LAP), SPACER, WASHER, AND NUT SHALL BE INSTALLED IN A PREPUNCHED HOLE 1" TO 2" FROM THE END OF THE LAP.
3. THE INTERIOR BOLT (FARTHEST FROM LAP), SPACER, WASHER, AND NUT SHALL BE INSTALLED IN THE NEXT PREPUNCHED HOLE.
4. THE DRIVEN POST SHALL ALWAYS BE MOUNTED IN FRONT OF THE UPPER POST WITH RESPECT TO THE ADJACENT ONCOMING TRAFFIC, REGARDLESS OF THE DIRECTION THE SIGN IS FACING.
5. THE SPLICE LAP SHALL BE FASTENED BY FOUR-5/16" DIA. GALVANIZED A449 BOLTS (SAE J429 GRADE 5) OR GALVANIZED A325 BOLTS.

3 lb. U - CHANNEL STEEL POST
 (WITH SPLICE)

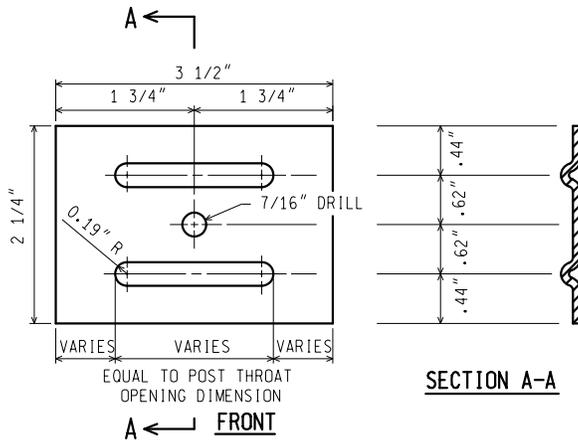
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 6 OF 11
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SIGN TO 3 lb. POST CONNECTION



NOTES: (FOR STEEL SIGN REINF' PLATE)

1. MATERIAL: 12 GAUGE CARBON STEEL.
2. TOLERANCE ON ALL DIMENSIONS $\pm 0.0625"$
3. FINISH-AFTER STAMPING AND PUNCHING, GALVANIZE ACCORDING TO CURRENT SPECIFICATIONS FOR ZINC (HOT GALVANIZE) COATINGS ON PRODUCTS FABRICATED FROM PLATES OR STRIPS

STEEL SIGN REINFORCING PLATE
REQUIRED FOR TYPE III SIGNS ONLY

3 lb. U - CHANNEL STEEL POST SIGN CONNECTION

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN

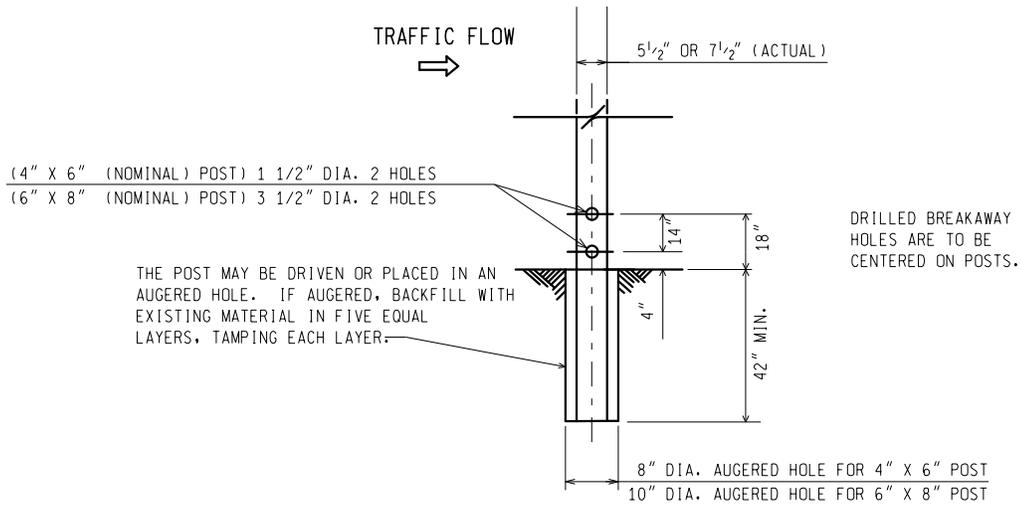
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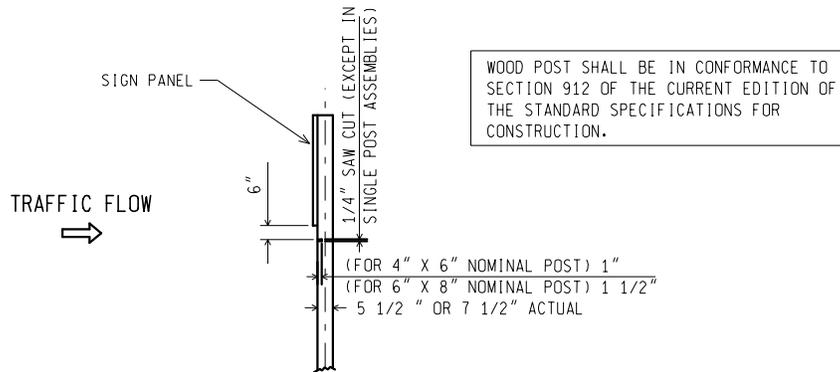
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**WOOD POST BREAKAWAY HOLES/
 DIRECT EMBEDMENT DETAILS**



**SAW CUT DETAIL
 (MULTIPLE POST INSTALLATIONS)**

WOOD POST DETAILS

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF DEVELOPMENT STANDARD PLAN

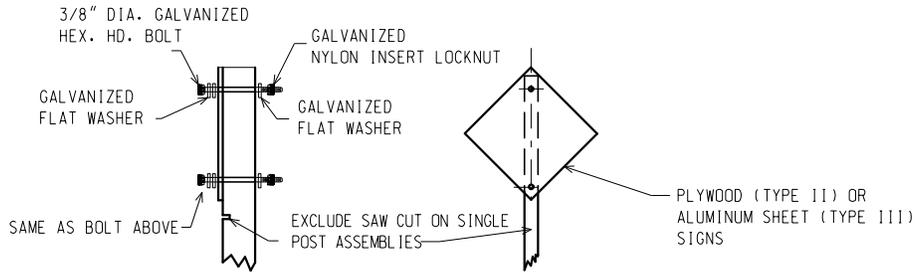
F.H.W.A. APPROVAL

11/2/2017
 PLAN DATE

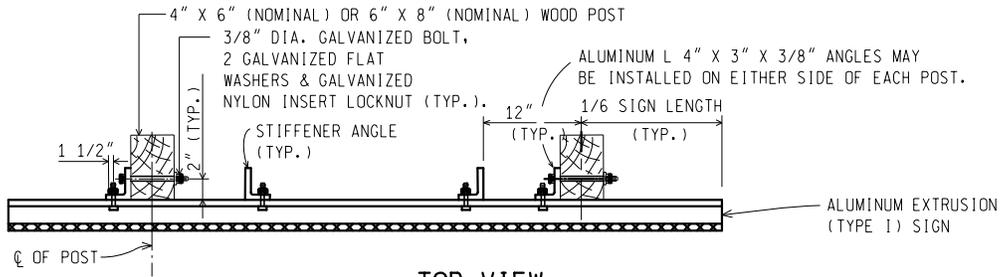
WZD-100-A

SHEET
 8 OF 11

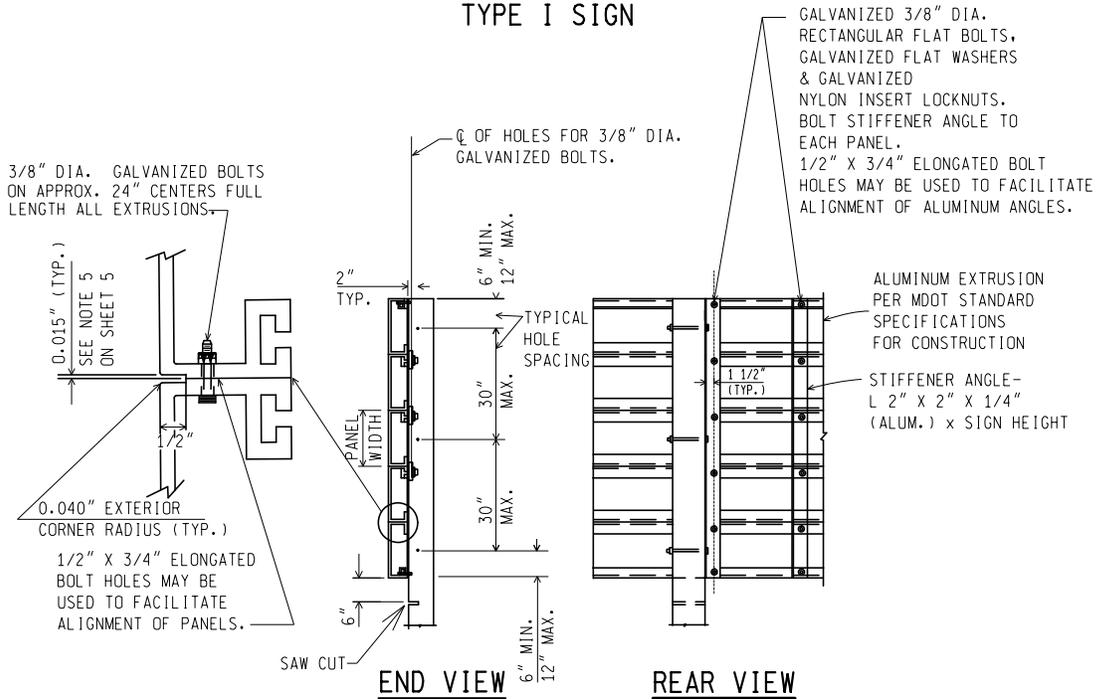
NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.



TYPE II AND TYPE III SIGNS



**TOP VIEW
TYPE I SIGN**



TYPE I SIGN - ERECTION DETAILS

WOOD POST CONNECTIONS

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN

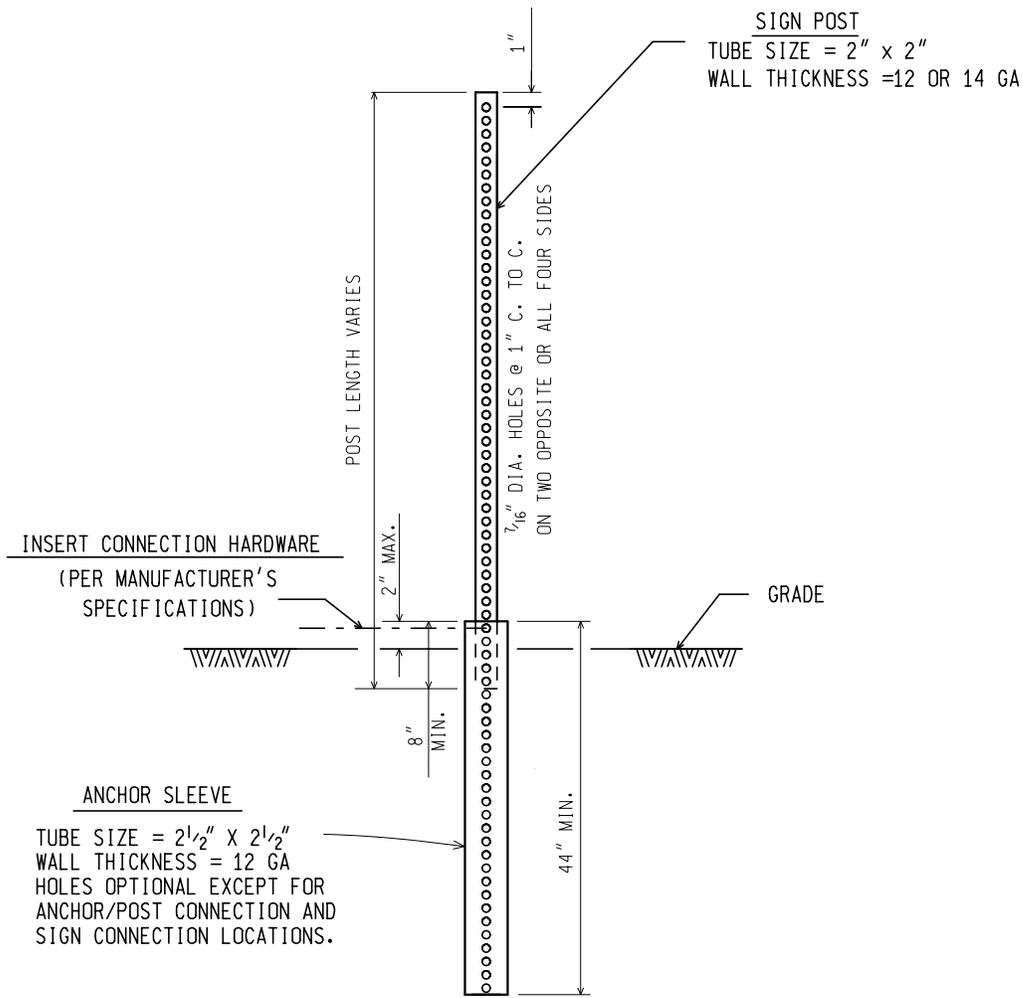
F.H.W.A. APPROVAL

11/2/2017
PLAN DATE

WZD-100-A

SHEET
9 OF 11

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.



SQUARE TUBULAR STEEL POST

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 10 OF 11
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NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.

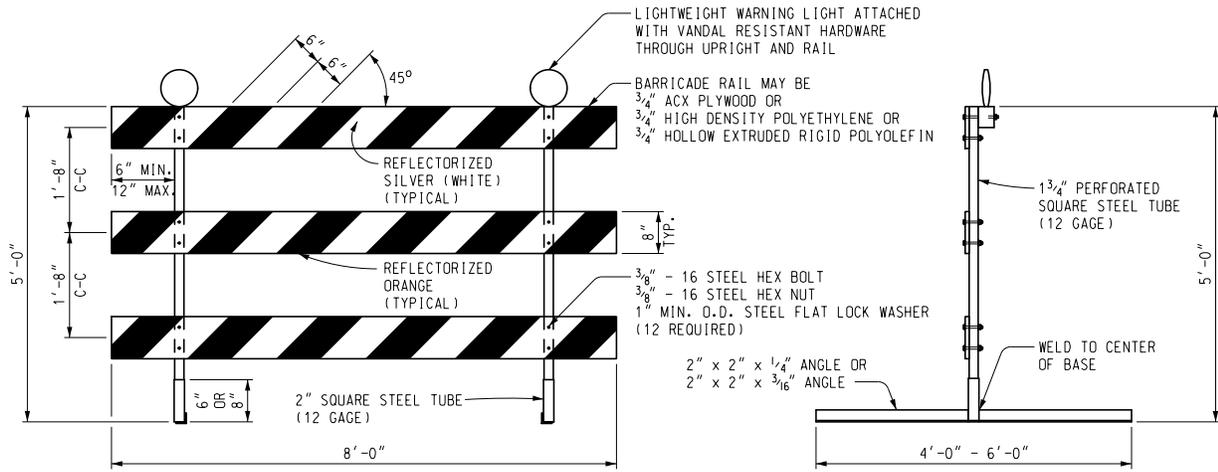
GENERAL NOTES:

1. A MAXIMUM OF TWO POSTS WITHIN A 7 FOOT PATH IS PERMITTED.
2. ALL SIGN POSTS SHALL COMPLY WITH NCHRP 350.
3. ALL POSTS SHALL BE EMBEDDED A MINIMUM OF 42".
4. BRACING OF POST IS NOT PERMITTED.
5. SIGN SHALL BE LEVEL, AND UPRIGHT FOR THE DURATION OF INSTALLATION.
6. ERECT POSTS SO THE SIGN FACE AND SUPPORTS DO NOT VARY FROM PLUMB BY MORE THAN 3/16" IN 3'. PROVIDE A CENTER-TO-CENTER DISTANCE BETWEEN POSTS WITHIN 2 PERCENT OF PLAN DISTANCE.
7. NO MORE THAN ONE SPLICE PER POST, AS SHOWN, WILL BE PERMITTED.
8. POST TYPES SHALL NOT BE MIXED WITHIN A SIGN SUPPORT INSTALLATION.
9. NO VERTICAL JOINTS ARE PERMITTED IN SIGN. NO HORIZONTAL JOINTS THROUGH SIGN LEGEND OR SYMBOLS ARE PERMITTED IN SIGN
10. REMOVE SIGN POSTS AND/OR POST STUBS IN THEIR ENTIRETY WHEN NO LONGER REQUIRED.
11. ALL LABOR, MATERIALS, AND EQUIPMENT, INCLUDING TEMPORARY SUPPORTS REQUIRED TO INSTALL, MAINTAIN, RELOCATE, AND/OR REMOVE THE TEMPORARY SIGN, INCLUDING SUPPORTS, ARE CONSIDERED TO BE INCLUDED IN THE COST OF THE TEMPORARY SIGN.
12. SAW CUTS IN WOOD POSTS ARE TO BE PARALLEL TO THE BOTTOM OF THE SIGN.
13. POSTS SHALL NOT EXTEND MORE THAN 4" ABOVE TOP OF SIGN.
14. TEMPORARY WOOD SUPPORTS DO NOT REQUIRE PRESERVATIVE TREATMENT.

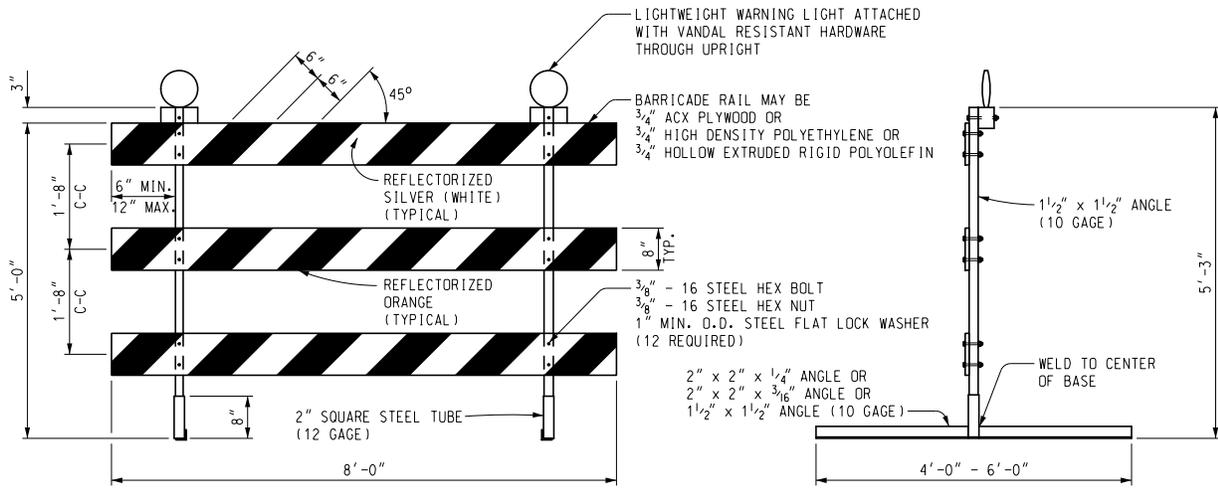
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 11 OF 11
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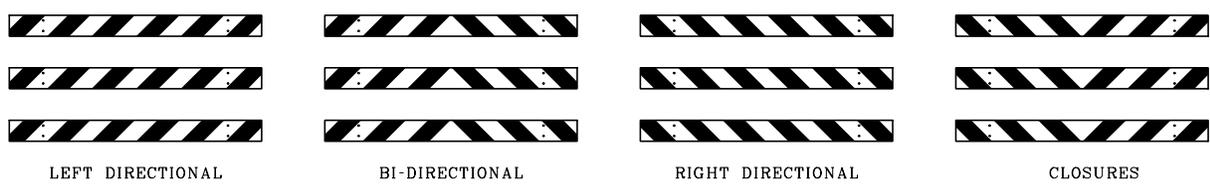
NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.



FRONT ELEVATION SIDE VIEW
PERFORATED SQUARE STEEL TUBE OPTION



FRONT ELEVATION SIDE VIEW
ANGLE IRON OPTION



**BARRICADE RAIL SHEETING OPTIONS
 TYPE III BARRICADES**

Other Type III Barricades meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm

MDOT
 Michigan Department of Transportation

PREPARED BY
 OPERATIONS
 FIELD SERVICES

DRAWN BY: ECH

CHECKED BY: MWB

DEPARTMENT DIRECTOR
 Paul C. Ajegba

APPROVED BY: _____
 DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: _____
 (SPECIAL DETAIL)
 DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT

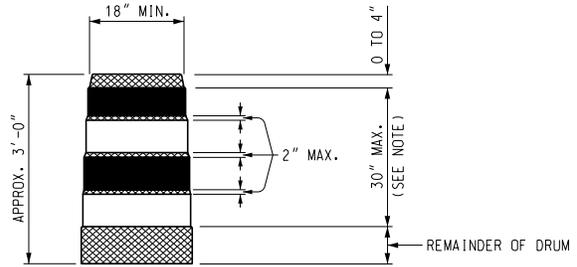
MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF FIELD SERVICES SPECIAL DETAIL FOR

Temporary
 Traffic Control Devices

6/16/22
 PLAN DATE

WZD-125-E

SHEET 1 OF 3



- REFLECTORIZED ORANGE
- REFLECTORIZED WHITE
- NON REFLECTORIZED ORANGE

NOTE:
 DRUMS SHALL HAVE AT LEAST 4 HORIZONTAL REFLECTORIZED STRIPES (2 ORANGE AND 2 WHITE) OF 6" UNIFORM WIDTH, ALTERNATING IN COLOR WITH THE TOPMOST REFLECTORIZED STRIPE BEING ORANGE. NON REFLECTORIZED SPACES BETWEEN THE HORIZONTAL REFLECTORIZED ORANGE AND WHITE STRIPES SHALL BE ORANGE IN COLOR AND EQUAL IN WIDTH.

PLASTIC DRUM

NOTES:

2" PERFORATED SQUARE STEEL TUBES MAY BE USED TO FABRICATE THE HORIZONTAL BASE OF THE TYPE III BARRICADE.

WARNING LIGHTS SHALL BE PLACED ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND ALL OTHER PROVISIONS IN THE CONTRACT ON TYPE III BARRICADES.

SEE ROAD STANDARD PLANS R-113-SERIES FOR TEMPORARY CROSSOVERS FOR DIVIDED ROADWAY, AND R-126-SERIES FOR TYPICAL LOCATION AND SPACING OF PLASTIC DRUMS FOR PLACEMENT OF TEMPORARY CONCRETE BARRIER.

SIGNS, BARRICADES, AND PLASTIC DRUMS SHALL BE FACED WITH PRESSURE-SENSITIVE REFLECTIVE SHEETING ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

SANDBAGS SHALL BE USED WHEN SUPPLEMENTAL WEIGHTS ARE REQUIRED TO ACHIEVE STABILITY OF THE BARRICADE. THE SANDBAGS SHALL BE PLACED SO THEY WILL NOT COVER OR OBSTRUCT ANY REFLECTIVE PORTION OF THE TRAFFIC CONTROL DEVICE.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF FIELD SERVICES SPECIAL DETAIL

(SPECIAL DETAIL)
 F.H.W.A. APPROVAL

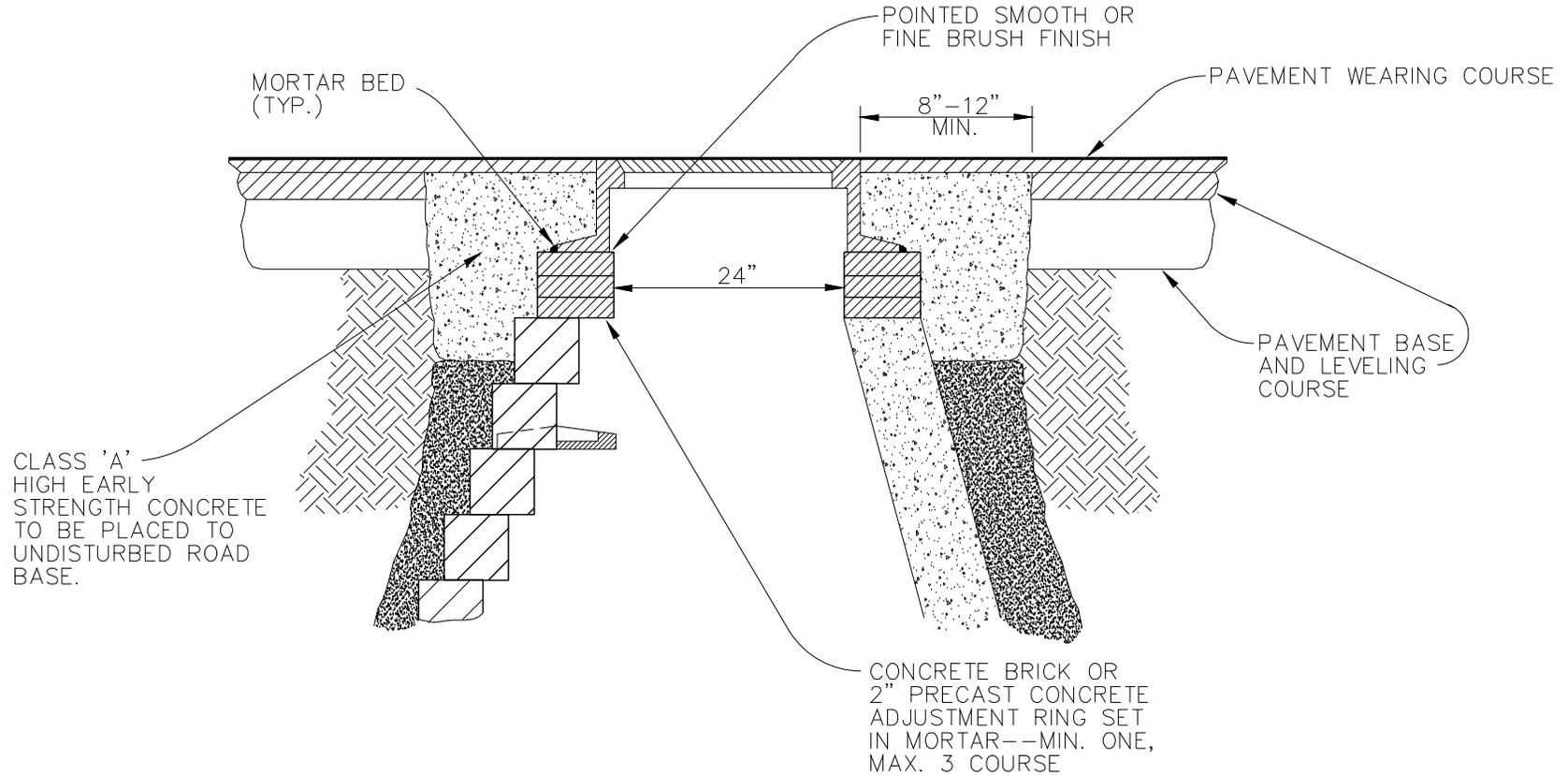
6/16/22
 PLAN DATE

WZD-125-E

SHEET
 3 OF 3

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.

RAISE M.H. CASTING TO PROPOSED
FINISH STREET GRADE AFTER
PLACEMENT OF LEVELING
COURSE(S) AND PRIOR TO PLACING
FINAL SURFACE COURSE.



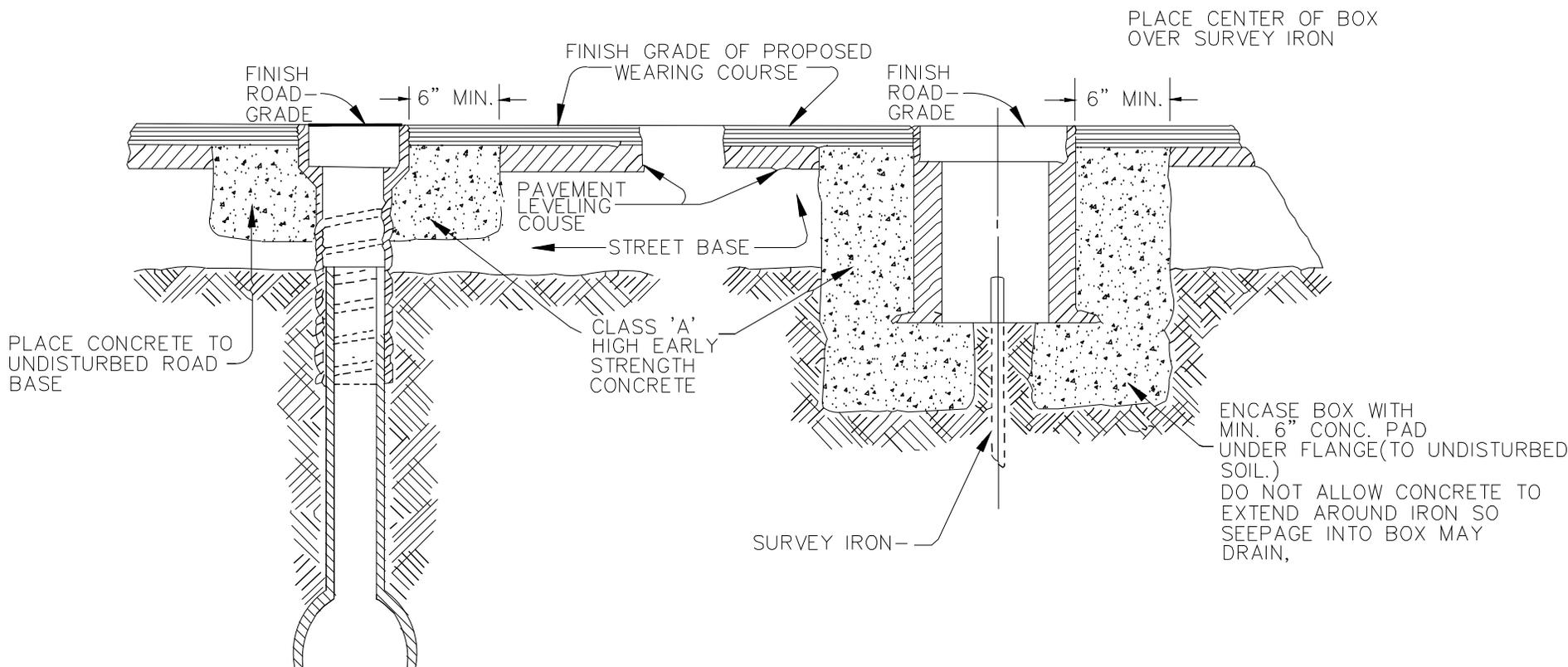
NOTE: IF MANHOLE TO BE PLACED IN GRAVEL ROAD,
CASTING TO BE SET 6" TO 8" BELOW
BROADWAY GRADE. ALL CONSTRUCTION METHODS
SHALL REMAIN AS SHOWN ABOVE.

REVISIONS					REV. NO.	DR. BY	CH. BY	DATE
PUBLIC SERVICES DEPARTMENT CITY OF ANN ARBOR								
MANHOLE CASTING ADJUSTMENT								
DR. BY	DF	CH. BY	CSS	DRAWING NO.				
SCALE	NONE	DATE	11-6-92	SD-GU-6				
INCH	0  1			SHEET NO. _____ OF _____				

WATER OR GAS VALVE BOX ADJUSTMENT

MONUMENT BOX ADJUSTMENT

NOTE: GAS VALVE BOXES TO BE ADJUSTED BY THE GAS COMPANY.

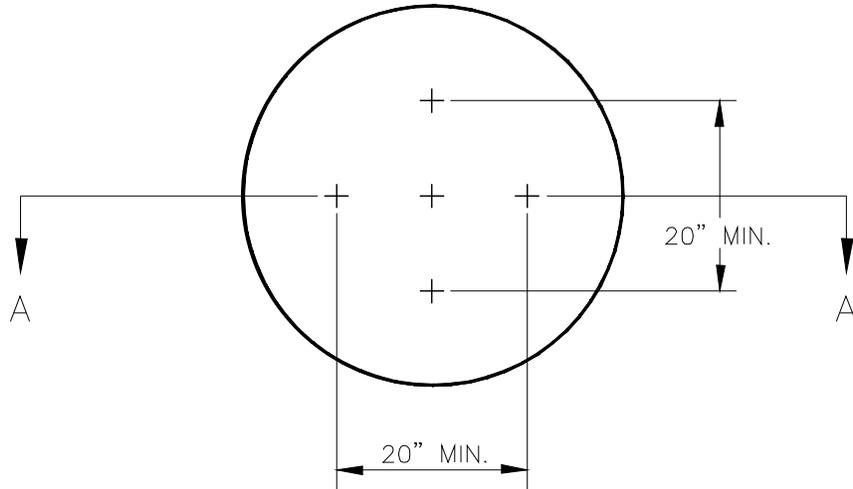


PLACE CONCRETE TO UNDISTURBED ROAD BASE

ENCASE BOX WITH MIN. 6" CONC. PAD UNDER FLANGE (TO UNDISTURBED SOIL.) DO NOT ALLOW CONCRETE TO EXTEND AROUND IRON SO SEEPAGE INTO BOX MAY DRAIN,

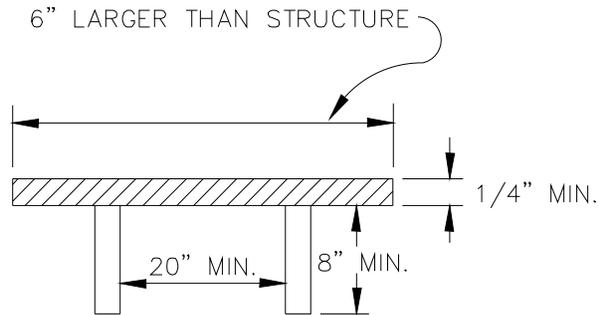
NOTE: RAISE CASTING TO PROPOSED FINISH STREET GRADE AFTER PLACEMENT OF LEVELING COURSE(S) AND PRIOR TO PLACING FINAL SURFACE COURSE

REVISIONS					REV. NO.	DR. BY	CH. BY	DATE
PUBLIC SERVICES DEPARTMENT CITY OF ANN ARBOR								
VALVE/MONUMENT BOX ADJUSTMENT								
DR. BY	DF	CH. BY	CSS	DRAWING NO.				
SCALE	NONE	DATE	11-6-92	SD-GU-7				
INCH	0  1			SHEET NO. _____ OF _____				



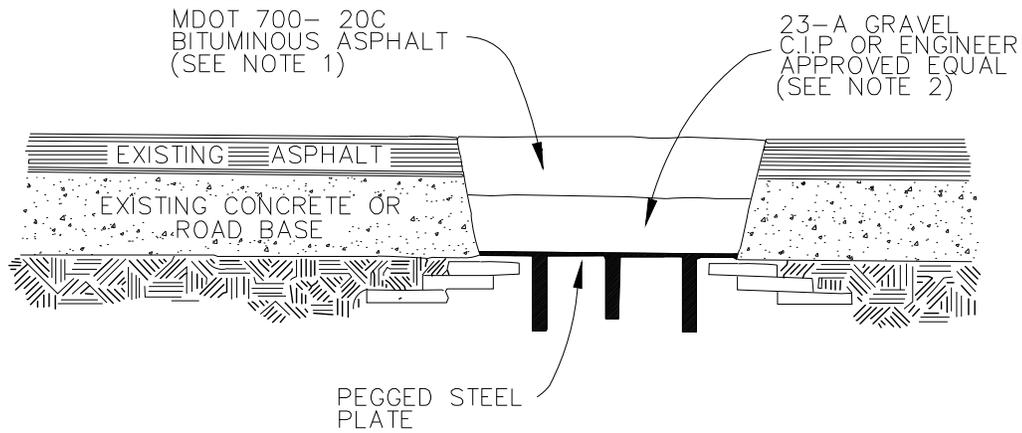
NOTE: PLATE MAY BE CIRCULAR, SQUARE OR RECTANGULAR

SECTION A - A

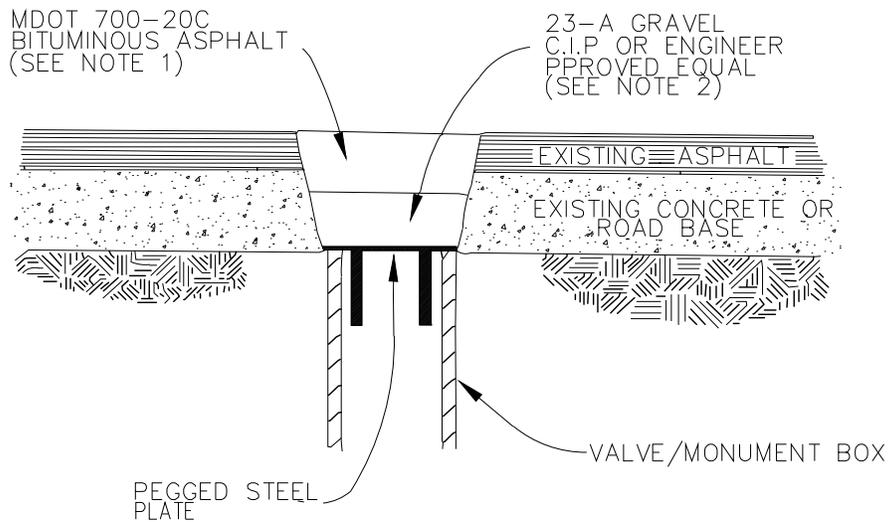


1/4" MIN. THICKNESS AND SUFFICIENT TO CARRY THE CONSTRUCTION LOAD.

REVISIONS		REV. NO.	DR. BY	CH. BY	DATE
PUBLIC SERVICES DEPARTMENT CITY OF ANN ARBOR					
STRUCTURE PLATE					
DR. BY	DF	CH. BY	CSS	DRAWING NO.	
SCALE	NONE	DATE	11-6-92	SD-GU-8	
INCH				SHEET NO. ____ OF ____	



MANHOLE LOWERING DETAIL



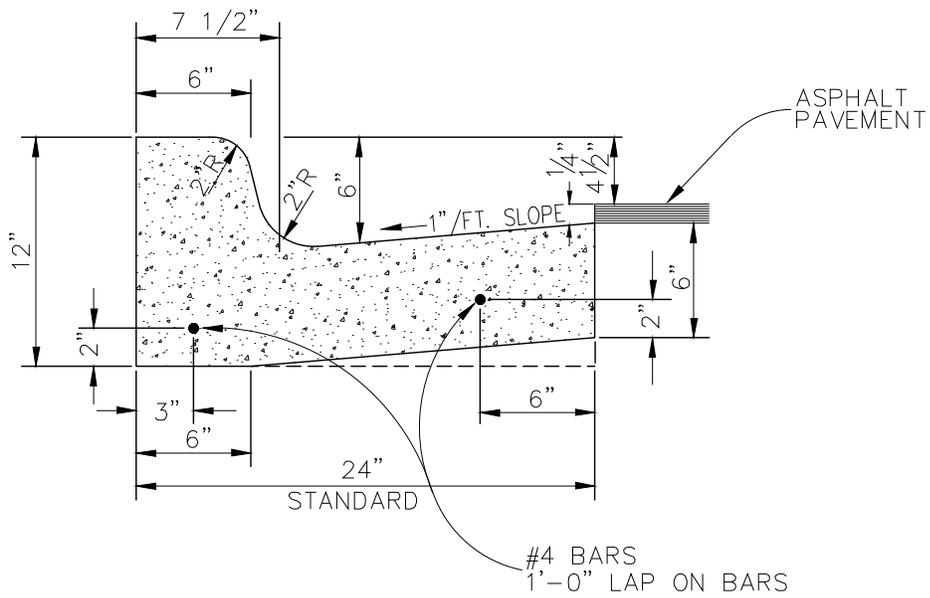
VALVE BOX/MONUMENT BOX LOWERING DETAIL (SEE NOTE 3)

NOTE 1: IF TRAFFIC IS TO BE MAINTAINED ON THE ROADWAY BEFORE OR AFTER THE COLD MILLING OPERATION, THE STRUCTURE SHALL BE LOWERED TO THE EXTENT THAT A MINIMUM OF THREE(3) INCHES ASPHALT MATERIAL MDOT 700-20C OR ENGINEER APPROVED EQUAL, REMAINS TO SUPPORT TRAFFIC.

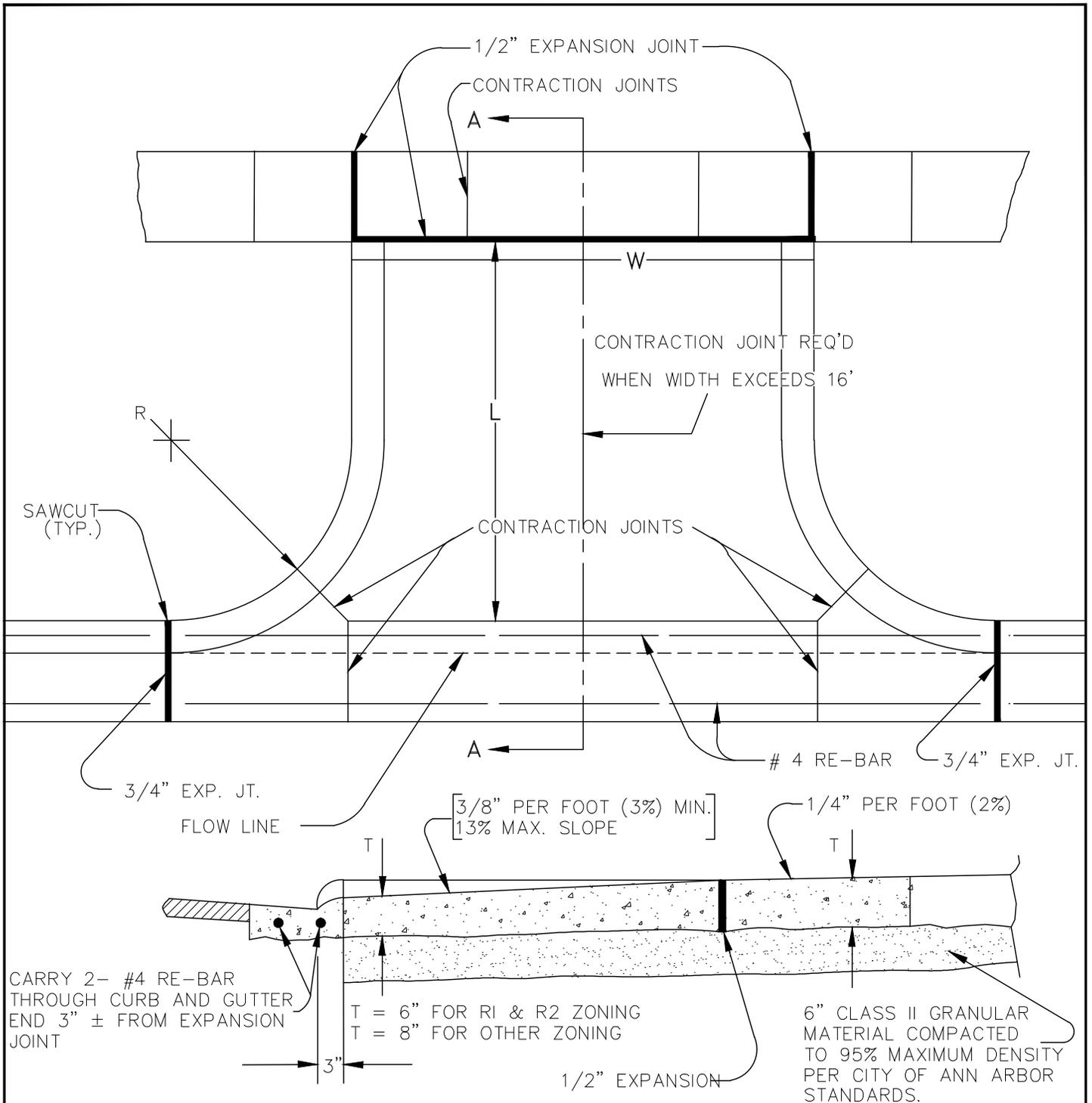
NOTE 2: IF THE ROADWAY BEING MILLED IS CLOSED TO TRAFFIC, THE STRUCTURE SHALL BE LOWERED SUCH THAT THE STEEL PLATE IS A MINIMUM OF FOUR(4) INCHES BELOW THE PROPOSED ROAD GRADE AND THE RESULTING VOID SHALL BE FILLED WITH COMPACTED 23-A GRAVEL OR ENGINEER APPROVED EQUAL.

NOTE 3: WHERE A MONUMENT IS TO BE LOWERED, THE CONTRACTOR SHALL GIVE THE ENGINEER A MINIMUM OF 48 HOURS WRITTEN NOTICE SO THAT THE MONUMENT CAN BE PROPERLY WITNESSED OR PROTECTED. FAILURE TO DO SO SHALL RESULT IN THE ENGINEER REPLACING SAID MONUMENT AT THE CONTRACTORS EXPENSE.

REVISIONS					REV. NO.	DR. BY	CH. BY	DATE
PUBLIC SERVICES DEPARTMENT CITY OF ANN ARBOR								
MANHOLE & VALVE/MONUMENT BOX LOWERING								
DR. BY	DF	CH. BY	CSS	DRAWING NO.				
SCALE	NONE	DATE	11-6-92	SD-GU-9				
INCH	0  1			SHEET NO. _____ OF _____				



REVISIONS					REV. NO.	DR. BY	CH. BY	DATE
PUBLIC SERVICES DEPARTMENT CITY OF ANN ARBOR								
BARRIER CURB AND GUTTER								
DR. BY	DF	CH. BY	CSS	DRAWING NO.				
SCALE	NONE	DATE	11-6-92	SD-R-1				
INCH	0  1			SHEET NO. _____ OF _____				



MEASUREMENT OF AREA

$W \times L = \text{AREA}$

SEC. A - A

NOTE: DRIVE APPROACH TO BE CLASS 'A' CONCRETE

NOTE: R(RADIUS) AND W(DRIVE WIDTH) AS REQUIRED FOR ZONING BY CITY CODE

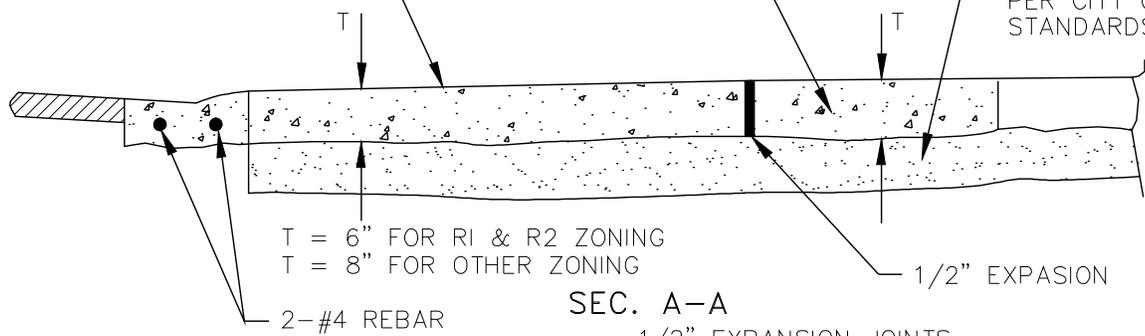
NOTE: IF GUTTER IS OVERLAYED, GUTTER OF THE APPROACH SHALL BE AT SAME ELEVATION AS EXISTING GUTTER AND ASPHALT WEDGE SHALL BE PLACED IN THE APPROACH.

S/W GRADE REVISED		1	NCF	CSS	1-31-94
REVISIONS		REV. NO.	DR. BY	CH. BY	DATE
PUBLIC SERVICES DEPARTMENT CITY OF ANN ARBOR					
TYPE 'M' DRIVE APPROACH (FOR USE ON ASPHALT STREETS WITH BARRIER CURB)					
DR. BY	DF	CH. BY	CSS	DRAWING NO.	
SCALE	NONE	DATE	11-6-92	SD-R-6	
INCH	0  1			SHEET NO. _____ OF _____	

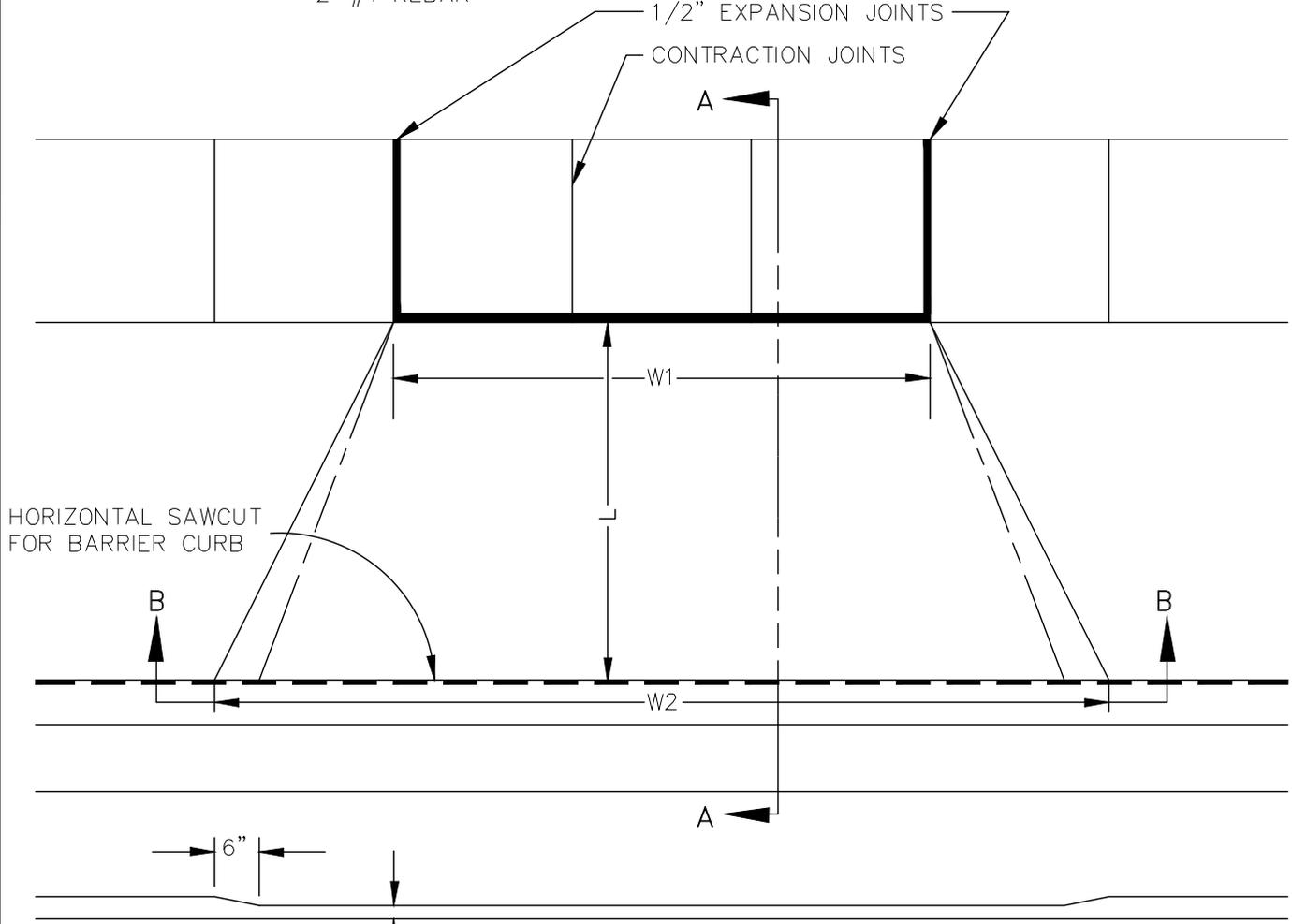
3/8" PER FOOT (3%) MIN.
13% MAX. SLOPE

1/4" PER FOOT (2%)

6" CLASS II GRANULAR
MATERIAL COMPACTED
TO 95% MAXIMUM DENSITY
PER CITY OF ANN ARBOR
STANDARDS.



SEC. A-A



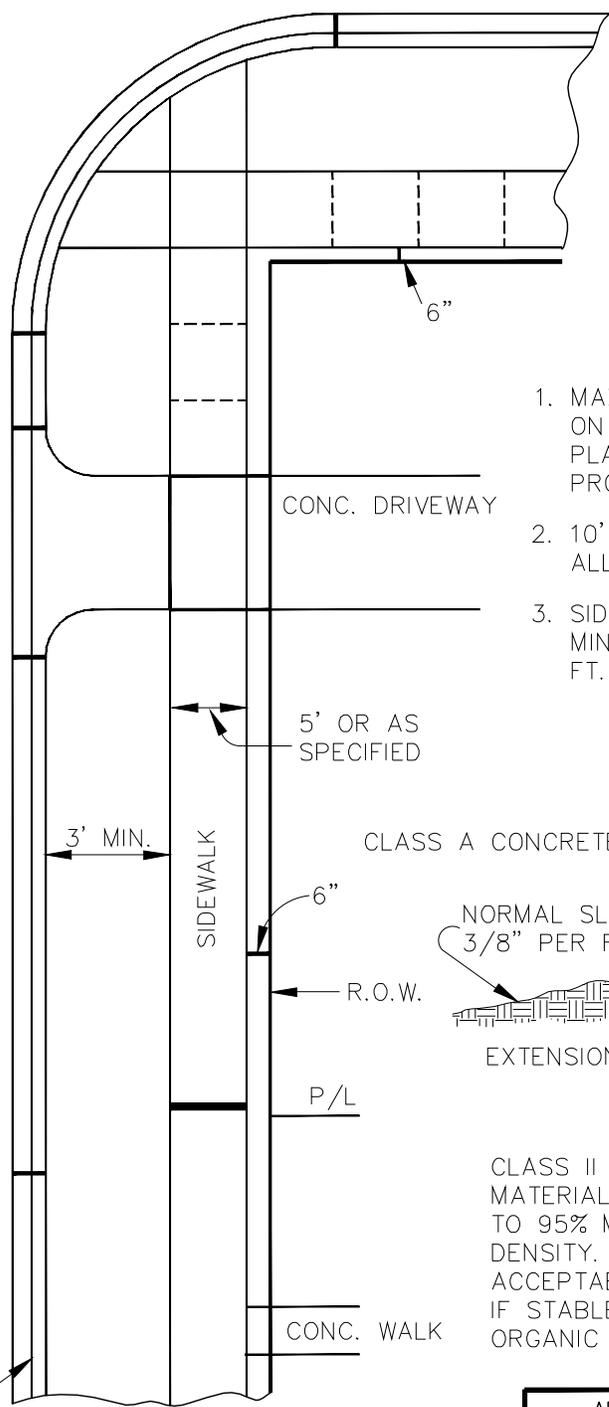
SEC. B-B

NOTE: W1 (DRIVE OPENING WIDTH) AND
W2 (CURB CUT WIDTH)
AS REQUIRED FOR ZONING
BY CITY CODE.

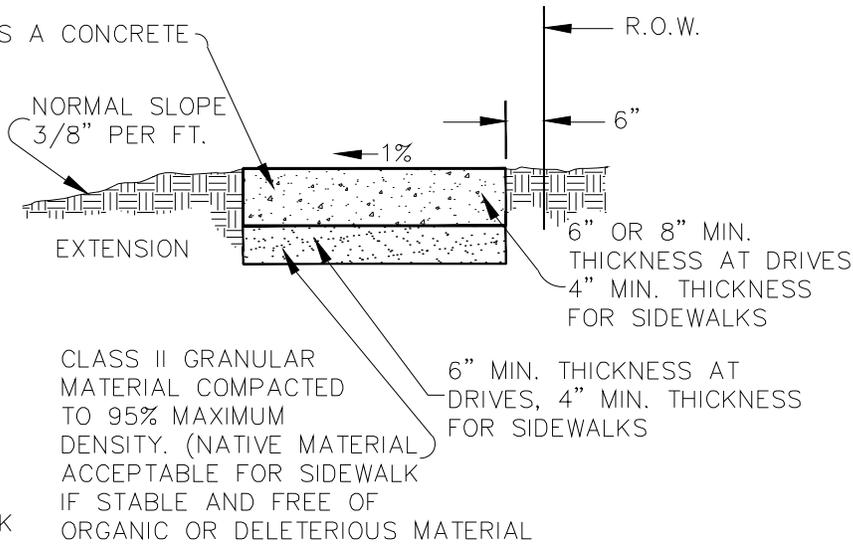
MEASUREMENT OF AREA:
 $1/2 (W1+W2) \times L = \text{AREA}$

NOTE: DRIVE APPROACH TO BE
CLASS 'A' CONCRETE

SEC. B-B; S/W GRADE	1	DPF	CSS	1-31-94
REVISIONS	REV. NO.	DR. BY	CH. BY	DATE
PUBLIC SERVICES DEPARTMENT CITY OF ANN ARBOR				
TYPE 'L' DRIVE APPROACH (FOR USE ON STREETS WITH BARRIER OR MOUNTABLE CURB)				
DR. BY	DF/DCO	CH. BY	CSS/DF	DRAWING NO.
SCALE	NONE	DATE	11-6-92	SD-R-7
INCH	0 1			SHEET NO. ____ OF ____



1. MAX. 300' SPACING BETWEEN ALL EXPANSION JOINTS. ON CURB AND GUTTER. EXPANSION JOINTS TO BE PLACED IN SIDEWALKS AT THE EXTENSION OF ALL PROPERTY LINES.
2. 10' NORMAL, 8' MIN. SPACING BETWEEN ALL CURB CONTRACTION JOINTS.
3. SIDEWALK CONTRACTION JOINT SPACING IS 5' MIN. AREA 16 SQ. FT., MAX. AREA 36 SQ. FT.



CURB & GUTTER

LEGEND:

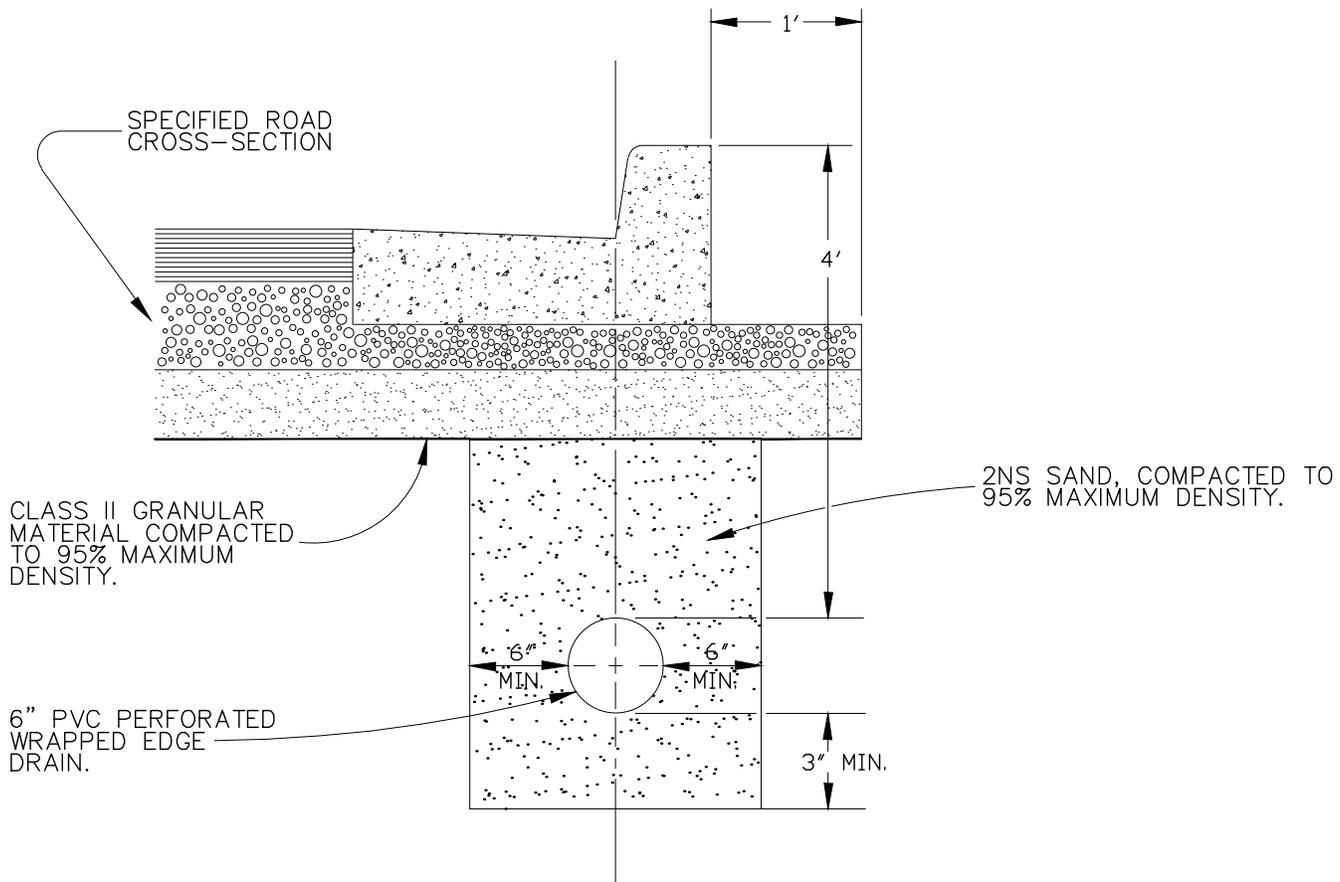
- CONTRACTION JOINTS - - - - -
- 1/2" EXPANSION JOINTS ———
- 3/4" EXPANSION JOINTS ———

ADA COMPLIANCE REVS.	2	DPF	TB/DC/MGN	
TRANSVERSE GRADE REV.	1	NCF	CSS	1-31-94
REVISIONS		REV. NO.	DR. BY	CH. BY

**PUBLIC SERVICES AREA
CITY OF ANN ARBOR**

SIDEWALK & CURB & GUTTER JOINTS

DR. BY	DPF	CH. BY	CSS	DRAWING NO. SD-R-9
SCALE	NONE	DATE	11-6-92	
INCH	0 1			SHEET NO. 1 OF 1



NOTE: FOR PAVEMENT BASE AND SUBBASE THICKNESS, SEE TYPICAL PAVEMENT CROSS-SECTION.

NOTE: DENSITY TESTING PER CITY OF ANN ARBOR SPECIFICATIONS.

NOTE: TRENCH DETAILS SHOW TYPE OF BACKFILL AND SURFACE RESTORATION ONLY.

NOTE: ALL TRENCHING TO CONFORM TO ALL APPLICABLE M.I.O.S.H.A. STANDARDS

REVISIONS		REV. NO.	DR. BY	CH. BY	DATE
PUBLIC SERVICES DEPARTMENT CITY OF ANN ARBOR					
TYPICAL EDGEDRAIN TRENCH					
DR. BY	DF	CH. BY	CSS	DRAWING NO.	
SCALE	NONE	DATE	11-6-92	SD-TD-10	
INCH	0  1			SHEET NO. ____ OF ____	

Testing Engineers & Consultants, Inc.

City of Ann Arbor
Guy C. Larson City Hall
301 E. Huron 4th Floor
Ann Arbor, Michigan 48104

GEOTECHNICAL INVESTIGATION

FOR

Research Park Drive &
Broadway Street from the
Roundabout to Plymouth Road
Ann Arbor, Michigan

TEC Report: 62011

By:

Testing Engineers & Consultants, Inc.
1343 Rochester Road
P.O. Box 249
Troy, Michigan 48099-0249
(248) 588-6200

September 8, 2021



Testing Engineers & Consultants, Inc.

1343 Rochester Road • PO Box 249 • Troy, Michigan 48099-0249
(248) 588-6200 or (313) T-E-S-T-I-N-G • Fax (248) 588-6232
www.testingengineers.com

Engineering Client Success

TEC Report: 62011
Date Issued: September 8, 2021

Ms. Jane Allen, P.E.
City of Ann Arbor
Guy C. Larson City Hall
301 E. Huron 4th Floor
Ann Arbor, Michigan 48104

Re: Geotechnical Investigation For
Research Park Drive &
Broadway Street from the
Roundabout to Plymouth Road
Ann Arbor, Michigan

Dear Ms. Allen:

Please find enclosed the results of a geotechnical investigation performed at the above referenced site. This geotechnical report presents our field and laboratory results; engineering analysis; and our subgrade recommendations, as well as important construction considerations.

As you may know, Testing Engineers & Consultants, Inc. (TEC) has fifty-five years of experience in Quality Control Testing and Construction Inspection. We would be pleased to provide these services on this project.

Should you have any questions regarding this report, please let us know. It has been a pleasure to be of service to you.

Respectfully submitted,

TESTING ENGINEERS & CONSULTANTS, INC.

A handwritten signature in blue ink, appearing to read "C. Suhan".

Carey J. Suhan, P.E.,
Vice President, Geotechnical
& Environmental Services

CJS/ln
Enclosure

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All services undertaken are subject to the following policy. Reports are submitted for exclusive use of the clients to whom they are addressed. Their significance is subject to the adequacy and representative character of the samples and the comprehensiveness of the tests, examinations and surveys made. No quotation from reports or use of TEC's name is permitted except as expressly authorized by TEC in writing.

CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION
OFFICES IN ANN ARBOR, DETROIT, AND TROY
FOUNDED IN 1966



Testing Engineers & Consultants, Inc.

Ms. Jane Allen, P.E.
City of Ann Arbor
September 8, 2021

TEC Report: 62011

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1.0	INTRODUCTION	1
2.0	FIELD INVESTIGATION	1
3.0	LABORATORY TESTING	2
4.0	GENERAL SUBSURFACE CONDITIONS	2
4.1	Subsoil Conditions	2
4.2	Ground Water Observations	4
6.0	DESIGN REVIEW AND FIELD MONITORING	5

APPENDIX

TEST BORING LOCATION PLANS

LOGS OF TEST BORINGS

GENERAL NOTES FOR SOIL CLASSIFICATION

Testing Engineers & Consultants, Inc.

Ms. Jane Allen, P.E.
City of Ann Arbor
September 8, 2021

TEC Report: 62011

1.0 INTRODUCTION

This report presents the results of a geotechnical investigation for Research Park Drive and Broadway Street from the roundabout northeast to Plymouth Road in Ann Arbor, Michigan. Authorization to perform this investigation was given by Ms. Jane Allen, in accordance with the contract for 2020 Geotechnical and Environmental Services.

The purpose of this investigation was to obtain information necessary to determine basic engineering properties of soils at the site through a series of test borings and laboratory tests performed on the soil samples obtained during the field investigation. This information has been evaluated to provide the general recommendations for pavement rehabilitation and other geotechnical information.

2.0 FIELD INVESTIGATION

Five test borings were drilled on Research Park Drive and thirteen borings were drilled on Broadway Street at the locations shown on the Test Boring Location Plan. The Research Park borings are numbered with the prefix RP and the Broadway borings with the prefix B. The locations are accurate to within a short distance of the locations shown on the location plans included in the appendix. The test borings were drilled on August 28 and 30, 2021 with truck-mounted auger equipment to depths of five feet below the existing grade.

Drilling methods and standard penetration tests were performed in general accordance with the current ASTM D1452 and D1586 procedures, respectively. These procedures specify that a standard 2-inch O.D. split-barrel sampler be driven by a 140-pound hammer with a free fall of 30 inches. The number of hammer blows required to drive the split-barrel sampler through three successive 6-inch increments is recorded on the Test Boring Log. The first 6-inch increment is used for setting the sampler firmly in the soil and the sum of the hammer blows for the second and third increments is referred to as the "Standard Penetration Index" (N). N values were obtained with an automatic trip hammer.

From the standard penetration test a soil sample is recovered in the liner sampler tubes that are located inside the split-barrel sampler. Upon recovery of a soil sample, the liner tubes are removed from the split-barrel sampler and placed in a container which is sealed to minimize moisture losses during transportation to the laboratory. Standard penetration tests are usually made at depths of 2 ½, 5, 7 ½ and 10 feet and at 5-foot depth intervals thereafter. These parameters may vary for a given project depending on the nature of the subsoils and the geotechnical information required.

The pavement was cored at each boring location with a diamond tipped core barrel to obtain more accurate thickness measurements.

Testing Engineers & Consultants, Inc.

Ms. Jane Allen, P.E.
City of Ann Arbor
September 8, 2021

TEC Report: 62011

3.0 LABORATORY TESTING

The laboratory testing consisted of determining the unconfined compressive strength, the natural bulk density and the natural moisture content of the soil samples recovered in the liner sampler tubes. In the unconfined compression tests, the compressive strength of the soil is determined by axially loading a soil sample until failure is observed or 15% strain, whichever occurs first. The above referenced test data are recorded on the boring logs. Some test results may deviate from the norm because of variations in texture, imperfect samples, presence of pebbles and/or sand streaks, etc. The results are still reported although they may not be relevant.

Samples taken in the field are retained in our laboratory for 60 days and are then destroyed unless special disposition is requested by the client. Samples retained over a long period of time are subject to moisture loss and are then no longer representative of the conditions initially encountered.

4.0 GENERAL SUBSURFACE CONDITIONS

4.1 Subsoil Conditions

The soil conditions encountered in the borings are presented on the individual boring logs. Each log presents the soil types encountered at that location as well as laboratory test data, ground water data, and other pertinent information. Descriptions of the various soil consistencies, relative densities and particle sizes are given in the Appendix. Definitions of the terms and symbols utilized in this report may be found in ASTM D653.

Research Park Drive

The route is paved with Hot Mix Asphalt (HMA) pavement which ranged from 3 inches to 5 inches thick at the boring locations. The HMA is underlain by what appears to be fill consisting of fine sand with a trace to some gravel. This material ranges from about 8 ¼ to 13 inches thick.

The underlying soils are primarily fine sand with a trace of gravel extending to the five foot terminal depth of the borings.

Standard penetration values range from 4 to 48 blows per foot with moisture contents of 3.1 to 16.9 percent of the dry weight of the soil. The pavement and subgrade descriptions along with the estimated resilient modulus is tabulated below.

Testing Engineers & Consultants, Inc.

Ms. Jane Allen, P.E.
City of Ann Arbor
September 8, 2021

TEC Report: 62011

4.1 Subsoil Conditions (Cont'd)

Research Park Drive (Cont'd)

Boring No.	Pavement Thickness (Inches)	Base Thickness (Inches)	Base Description	Estimated Resilient Modulus of Subgrade (psi)
RP-1	3 ³ / ₄	8 ¹ / ₄	Fine Sand With Trace Of Gravel	7,500
RP-2	5	10	Sand With Trace Of Gravel	6,000
RP-3	3	11	Sand With Some Gravel	7,500
RP-4	4	13	Fine Sand & Gravel	7,500
RP-5	4 ¹ / ₂	-	Native Fine Sand With Some Gravel	7,500

Broadway Street

The route is paved with HMA pavement which ranged from 2 ³/₄ inches to 12 inches thick at the boring locations. The HMA is underlain by what appears to be fill at about one half of the boring locations, consisting of generally sand with some gravel and clayey sand with some gravel at Boring No. 13, nearest to Plymouth Road, crushed stone.

The native soils beneath the apparent base and beneath the HMA at the other areas is predominantly sand with some gravel or clayey sand with some gravel. At Boring No. 4 the subgrade was clay with some silt and trace of gravel. Clayey seams and clay layers were encountered at deeper depths as well.

Standard penetration tests range from 4 to 43 blows per foot with moisture contents of 4.2 to 26.5 percent. Bulk densities range from 118 to 140 pounds per cubic foot (pcf), with unconfined compressive strengths of 2,880 to 7,416 pounds per square foot (psf). The pavement and subgrade descriptions along with the estimated resilient modulus is tabulated below.

Boring No.	Pavement Thickness (Inches)	Base Thickness (Inches)	Base Description	Estimated Resilient Modulus of Subgrade (psi)
B-1	4 ³ / ₄	-	Native Sand With Some Gravel	6,000

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City of Ann Arbor
September 8, 2021

TEC Report: 62011

4.1 Subsoil Conditions (Cont'd)

Broadway Street (Cont'd)

Boring No.	Pavement Thickness (Inches)	Base Thickness (Inches)	Base Description	Estimated Resilient Modulus of Subgrade (psi)
B-2	3	-	Native Sand With Trace Of Gravel	6,000
B-3	3	5	Sand With Some Gravel	6,000
B-4	12	-	Clay Subgrade	4,500
B-5	3 ½	-	Native Sand With Some Gravel & Clayey Seams	6,000
B-6	5 ½	4 ½	Sand With Some Gravel	4,500
B-7	2 ¾	4 ¼	Clayey Sand With Some Gravel	4,500
B-8	4 ¼	-	Native Clayey Sand With Trace Of Gravel & Clay Layer	4,500
B-9	3 ¾	7 ¼	Sand With Some Gravel	4,500
B-10	3 ¾	-	Native Clayey Sand With Trace Of Gravel	4,500
B-11	3 ¾	8 ¼	Sand With Some Gravel & Crushed Stone	4,500
B-12	3 ¼	-	Native Clayey Sand With Trace Of Gravel	4,500
B-13	7	5	Crushed Stone	7,500

4.2 Ground Water Observations

Water level readings were taken in the bore holes during and after the completion of drilling. These observations are noted on the respective Test Boring Logs.

Ground water was encountered only in Boring No. 1 on Research Park Drive. It was encountered at 3 feet below existing pavement during drilling. After completion of drilling the borehole caved in at 3'2" below pavement grade. No ground water was encountered during drilling or after completion of drilling at the remaining Research Park Drive borings or any of the Broadway Street borings.

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City of Ann Arbor
September 8, 2021

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6.0 DESIGN REVIEW AND FIELD MONITORING

The evaluations and recommendations presented in this report relative to site preparation and paving have been formulated on the basis of assumed and provided data relating to the location, type and finished grades for the proposed routes. Any significant change in this data should be brought to our attention for review and evaluation with respect to the prevailing subsoil conditions.

When the plans are finalized, a consultation should be arranged with us for a review to verify that the evaluations and recommendations have been properly interpreted.

Soil conditions at the site could vary from those generalized on the basis of test borings made at specific locations. It is therefore recommended that Testing Engineers & Consultants, Inc. be retained to provide soil engineering services during the site preparation, excavation and paving phases of the proposed project. This is to observe compliance with the design concepts, specifications and recommendations. Also, this provides opportunity for design changes to be made in the event that subsurface conditions differ from those anticipated prior to the start of construction.



Carey J. Suhan, P.E.
Vice President, Geotechnical
& Environmental Services

CJS/In

I:\gs\Job Files\62000-62099\62011 Ann Arbor Research Park\62011.doc

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City of Ann Arbor
September 8, 2021

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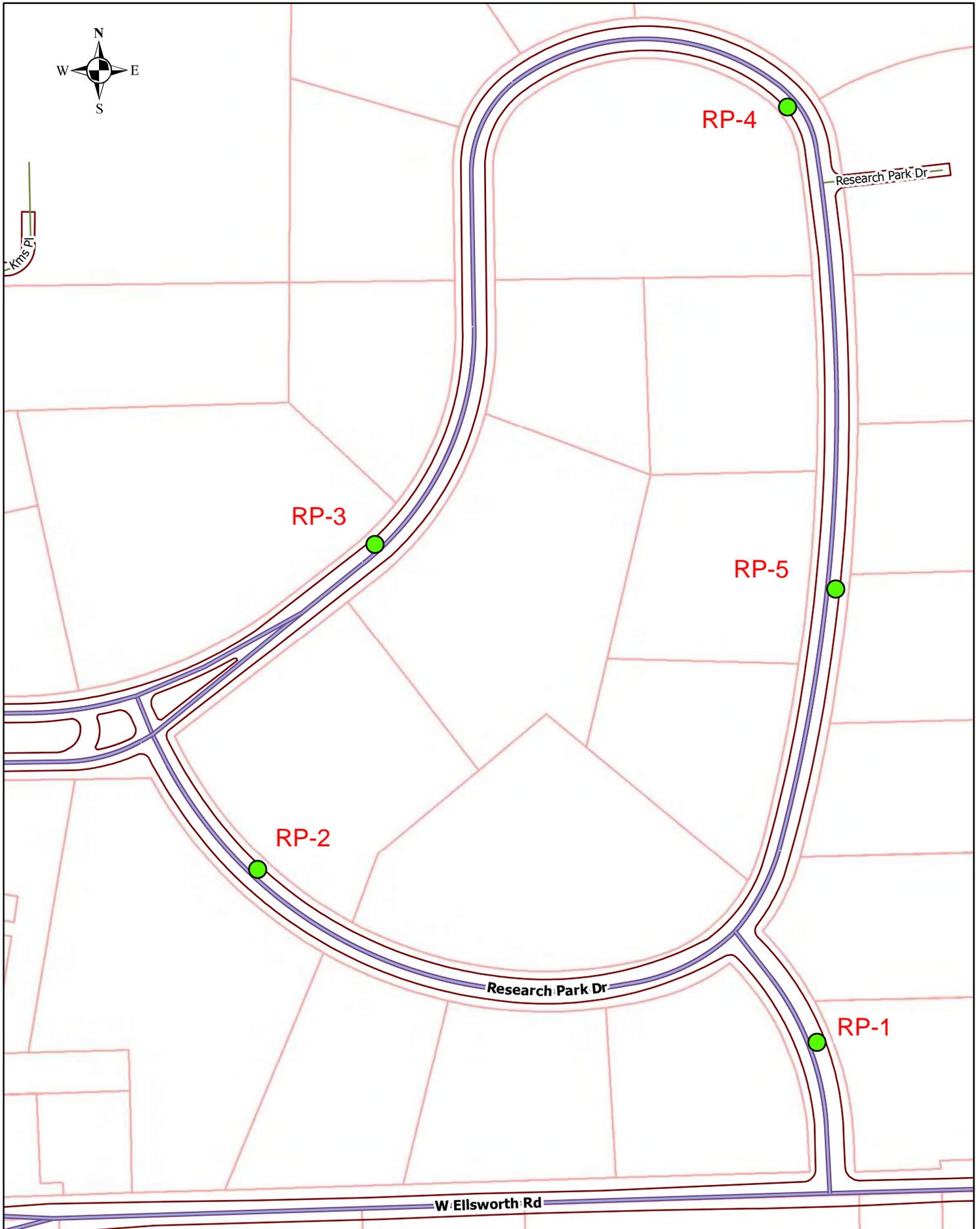
APPENDIX

Test Boring Location Plans

Logs Of Test Borings

General Notes For Soil Classification

Soil Boring Location Map - Research Park Drive





Broadway South

Write a description for your map.

Legend

B-2, 10',1305
Broadway

B-1, 5',1139
Broadway

Google Earth

200 ft

Broadway Middle Drawing 2

Write a description for your map.

Legend



B-4, 10',1435
Broadway

B-3, 5',1400
Broadway

Broadway St

Google Earth

© 2021 Google

200 m

Broadway Middle Drawing 3

Write a description for your map.

Legend



B-6, 5',1601
Broadway

B-12, 10',1533
and 1541
Broadway

B-5, 5',1520
Broadway

Broadway Middle Drawing 4

Write a description for your map.

Legend



B-7, 10',1628
Broadway

B-10,
10',1673
Broadway

B-8, 5',1638
Broadway

B-9, 5',S.
Broadview
Lane
Intersection

Google Earth

400 ft

Broadway North Drawing 5

Write a description for your map.

Legend



B-13, 5', at gas station

B-11, 5',1707 Broadway

Google Earth

400 ft



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Boring No.: RP-1	Job No.: 62011	Project: Research Park Drive, Northwest of Ellsworth & East of S. State Street
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: R. Favor
Drilling Method: Solid Stem Augers		Started: 8/30/2021
Ground Surface Elevation:		Completed: 8/30/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
0.0			.31				
0.0 - 2.5	LS	8 14 24	1	ASPHALT (3 3/4")	8.7		
2.5 - 5.0	LS	8 11 13	3	Moist Brown Fine SAND With Trace Of Gravel-Possible Fill (8 1/4")		124	
5.0 - 7.5			5	Compact Moist Brown Fine SAND With Trace Of Gravel & Clay Layers	16.9		
7.5 - 10.0				Medium Compact Wet Brown Fine SAND With Trace Of Gravel			
10.0 - 22.5				Bottom of Boring at 5'			

"N" - Standard Penetration Resistance SS - 2").D. Split Spoon Sample LS - Sectional Liner Sample ST - Shelby Tube Sample AS - Auger Sample	w - H2O, % of dry weight d - Bulk Density, pcf qu - Unconfined Compression, tsf DP - Direct Push RC - Rock Core	Water Encountered: 3'0" At Completion: Caved In 3'2" Boring No. RP-1
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Boring No.: RP-2	Job No.: 62011	Project: Research Park Drive, Northwest of Ellsworth & East of S. State Street
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: R. Favor
Drilling Method: Solid Stem Augers		Started: 8/30/2021
Ground Surface Elevation:		Completed: 8/30/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
			.42				
	LS	7	1.25	ASPHALT (5")	3.1		
2.5		5		Moist Dark Brown Fine SAND With Trace Of Gravel & Clay-Possible Fill			
	LS	3	3.33		4.5		
5.0		2		Loose Moist Brown Fine SAND With Trace Of Gravel			
		2	5	Very Loose Moist Brown Fine SAND With Trace Of Gravel			
7.5				Bottom of Boring at 5'			
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							

<p>"N" - Standard Penetration Resistance SS - 2").D. Split Spoon Sample LS - Sectional Liner Sample ST - Shelby Tube Sample AS - Auger Sample</p>	<p>w - H2O, % of dry weight d - Bulk Density, pcf qu - Unconfined Compression, tsf DP - Direct Push RC - Rock Core</p>	<p>Water Encountered: None</p> <p>At Completion: None</p> <p>Boring No. RP-2</p>
--	--	---



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Boring No.: RP-3	Job No.: 62011	Project: Research Park Drive, Northwest of Ellsworth & East of S. State Street
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: R. Favor
Drilling Method: Solid Stem Augers		Started: 8/30/2021
Ground Surface Elevation:		Completed: 8/30/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
2.5	LS	9 16 28	.25 1.17	ASPHALT (3") Moist Brown Fine SAND With Some Gravel & Trace Of Clay-Possible Fill	6.4		
5.0	LS	13 23 25	5	Compact Moist Brown Fine SAND With Trace Of Gravel Bottom of Boring at 5'	3.7		
7.5							
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							

<p>"N" - Standard Penetration Resistance SS - 2" D. Split Spoon Sample LS - Sectional Liner Sample ST - Shelby Tube Sample AS - Auger Sample</p>	<p>w - H₂O, % of dry weight d - Bulk Density, pcf qu - Unconfined Compression, tsf DP - Direct Push RC - Rock Core</p>	<p>Water Encountered: None</p> <p>At Completion: None</p> <p>Boring No. RP-3</p>
--	---	---



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Boring No.: RP-4

Job No.: 62011

Project: Research Park Drive, Northwest of Ellsworth & East of S. State Street

Client: City of Ann Arbor

Location: Ann Arbor, Michigan

Type of Rig: Truck

Drilled By: R. Favor

Drilling Method: Solid Stem Augers

Started: 8/30/2021

Ground Surface Elevation:

Completed: 8/30/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
			.35				
2.5	LS	6 14 18	1.42	ASPHALT (4 1/4")	4.8		
				Moist Brown Fine SAND & Gravel With Trace Of Clay-Possible Fill			
5.0	LS	6 17 23	5	Compact Moist Brown Fine SAND With Some Gravel	4.5		
				Bottom of Boring at 5'			
7.5							
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							

"N" - Standard Penetration Resistance
 SS - 2" D. Split Spoon Sample
 LS - Sectional Liner Sample
 ST - Shelby Tube Sample
 AS - Auger Sample

w - H₂O, % of dry weight
 d - Bulk Density, pcf
 qu - Unconfined Compression, tsf
 DP - Direct Push
 RC - Rock Core

Water Encountered: None

At Completion: None

Boring No. RP-4



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Boring No.: RP-5	Job No.: 62011	Project: Research Park Drive, Northwest of Ellsworth & East of S. State Street
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: R. Favor
Drilling Method: Solid Stem Augers		Started: 8/30/2021
Ground Surface Elevation:		Completed: 8/30/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
			.38	ASPHALT (4 1/2")			
2.5	LS	12 20 21		Compact Moist Brown Fine SAND With Some Gravel	3.6		
			3.5				
5.0	LS	9 9 10		Medium Compact Moist Brown Fine SAND With Some Gravel	6.3		
			5	Bottom of Boring at 5'			
7.5							
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							

<p>"N" - Standard Penetration Resistance SS - 2" D. Split Spoon Sample LS - Sectional Liner Sample ST - Shelby Tube Sample AS - Auger Sample</p>	<p>w - H₂O, % of dry weight d - Bulk Density, pcf qu - Unconfined Compression, tsf DP - Direct Push RC - Rock Core</p>	<p>Water Encountered: None</p> <p>At Completion: None</p> <p>Boring No. RP-5</p>
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Boring No.: B-1	Job No.: 62013	Project: Broadway Street Roundabout To Plymouth Road
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: I. Mickle
Drilling Method: Solid Stem Augers		Started: 8/28/2021
Ground Surface Elevation:		Completed: 8/28/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
			.4	ASPHALT (4 3/4")	6.6	137	
2.5	LS	7 10 8	3.3	Medium Compact Moist Brown SAND With Some Gravel & Trace Of Clay			
5.0	LS	2 3 3	5	Loose Moist Brown SAND With Trace Of Gravel & Dark Gray Seam	13.2	127	
7.5				Bottom of Boring at 5'			
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							

"N" - Standard Penetration Resistance w - H₂O, % of dry weight
 SS - 2" D. Split Spoon Sample d - Bulk Density, pcf
 LS - Sectional Liner Sample qu - Unconfined Compression, tsf
 ST - Shelby Tube Sample DP - Direct Push
 AS - Auger Sample RC - Rock Core

Water Encountered: None
At Completion: None
Boring No. B-1



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Boring No.: B-10	Job No.: 62013	Project: Broadway Street Roundabout To Plymouth Road
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: I. Mickle
Drilling Method: Solid Stem Augers		Started: 8/28/2021
Ground Surface Elevation:		Completed: 8/28/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
			.31	ASPHALT (3 3/4")			
2.5	LS	3 5 4		Loose Moist Brown Clayey SAND With Trace Of Gravel	12.6	128	
5.0	LS	3 4 4			14.8	125	
7.5	LS	11 15 21	5.5	Compact Moist Brown SAND With Some Gravel & Clayey Seams	5.1	139	
10.0	LS	17 21 22	10	Bottom of Boring at 10'	7.1	136	
12.5							
15.0							
17.5							
20.0							
22.5							

"N" - Standard Penetration Resistance
 SS - 2" D. Split Spoon Sample
 LS - Sectional Liner Sample
 ST - Shelby Tube Sample
 AS - Auger Sample
 w - H₂O, % of dry weight
 d - Bulk Density, pcf
 qu - Unconfined Compression, tsf
 DP - Direct Push
 RC - Rock Core

Water Encountered: None

At Completion: None

Boring No. B-10



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Boring No.: B-11	Job No.: 62013	Project: Broadway Street Roundabout To Plymouth Road
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: I. Mickle
Drilling Method: Solid Stem Augers		Started: 8/28/2021
Ground Surface Elevation:		Completed: 8/28/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
			.31				
			1	ASPHALT (3 3/4")			
2.5	LS	2			19.0	122	
		3					
		2		Moist Brown Sand With Some Gravel & Crushed Stone-FILL (8 1/4")			
5.0	LS	2			16.3	126	
		2					
		3	5	Plastic Moist Brown CLAY With Some Silt			
				Bottom of Boring at 5'			

"N" - Standard Penetration Resistance SS - 2" D. Split Spoon Sample LS - Sectional Liner Sample ST - Shelby Tube Sample AS - Auger Sample	w - H ₂ O, % of dry weight d - Bulk Density, pcf qu - Unconfined Compression, tsf DP - Direct Push RC - Rock Core	Water Encountered: None At Completion: None Boring No. B-11
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Boring No.: B-12	Job No.: 62013	Project: Broadway Street Roundabout To Plymouth Road
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: I. Mickle
Drilling Method: Solid Stem Augers		Started: 8/28/2021
Ground Surface Elevation:		Completed: 8/28/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
			.27	ASPHALT (3 1/4")			
2.5	LS	4 4 4		Loose Moist Brown Clayey SAND With Trace Of Gravel	8.5	133	
5.0	LS	3 4 4	5.5		17.9	121	
7.5	LS	2 2 2	8	Very Loose Moist Brown Clayey SAND With Trace Of Gravel	9.7	132	
10.0	LS	7 12 29	10	Compact Moist Brown SAND With Trace Of Gravel & Pebble	4.9	139	
12.5				Bottom of Boring at 10'			
15.0							
17.5							
20.0							
22.5							

"N" - Standard Penetration Resistance w - H₂O, % of dry weight
 SS - 2").D. Split Spoon Sample d - Bulk Density, pcf
 LS - Sectional Liner Sample qu - Unconfined Compression, tsf
 ST - Shelby Tube Sample DP - Direct Push
 AS - Auger Sample RC - Rock Core

Water Encountered: None
At Completion: None
Boring No. B-12



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Boring No.: B-13	Job No.: 62013	Project: Broadway Street Roundabout To Plymouth Road
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: I. Mickle
Drilling Method: Solid Stem Augers		Started: 8/28/2021
Ground Surface Elevation:		Completed: 8/28/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
0.0			.58				
1.2	LS	12	1	ASPHALT (7")	5.0	139	
2.5		16					
3.0		18	3	Crushed Stone-FILL (5")			
4.5	LS	7					
5.0		8	5	Compact Moist Brown SAND With Trace Of Gravel			
5.5		8					
6.0				Medium Compact Moist Brown SAND With Trace Of Gravel			
7.5				Bottom of Boring at 5'			
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							

"N" - Standard Penetration Resistance
 SS - 2").D. Split Spoon Sample
 LS - Sectional Liner Sample
 ST - Shelby Tube Sample
 AS - Auger Sample
 w - H2O, % of dry weight
 d - Bulk Density, pcf
 qu - Unconfined Compression, tsf
 DP - Direct Push
 RC - Rock Core

Water Encountered: None

At Completion: None

Boring No. B-13



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Boring No.: B-2	Job No.: 62013	Project: Broadway Street Roundabout To Plymouth Road
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: I. Mickle
Drilling Method: Solid Stem Augers		Started: 8/28/2021
Ground Surface Elevation:		Completed: 8/28/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
			.25	ASPHALT (3")			
2.5	LS	3 2 4		Loose Moist Brown Fine SAND With Trace Of Gravel & Clay	6.8	127	
5.0	LS	2 2 4			6.5	128	
7.5	LS	9 13 17	5.75	Medium Compact Moist Brown Fine SAND With Trace Of Gravel	4.2	139	
10.0	LS	9 13 14	10	Bottom of Boring at 10'	4.7	138	
12.5							
15.0							
17.5							
20.0							
22.5							

"N" - Standard Penetration Resistance
 SS - 2").D. Split Spoon Sample
 LS - Sectional Liner Sample
 ST - Shelby Tube Sample
 AS - Auger Sample

w - H₂O, % of dry weight
 d - Bulk Density, pcf
 qu - Unconfined Compression, tsf
 DP - Direct Push
 RC - Rock Core

Water Encountered: None

At Completion: None

Boring No. B-2



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Boring No.: B-3	Job No.: 62013	Project: Broadway Street Roundabout To Plymouth Road
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: I. Mickle
Drilling Method: Solid Stem Augers		Started: 8/28/2021
Ground Surface Elevation:		Completed: 8/28/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
0.00			.25				
0.25			.67	ASPHALT (3")	17.9	130	
2.50	LS	3		Moist Brown Sand With Some Gravel-FILL (5")			
2.75		8					
3.00		6	3	Medium Compact Moist Brown SAND With Trace Of Gravel & Clay	11.5	129	
5.00	LS	2		Loose Moist Brown SAND With Clayey Seams			
5.25		3					
5.50		4	5				
7.50				Bottom of Boring at 5'			
10.00							
12.50							
15.00							
17.50							
20.00							
22.50							

"N" - Standard Penetration Resistance
 SS - 2").D. Split Spoon Sample
 LS - Sectional Liner Sample
 ST - Shelby Tube Sample
 AS - Auger Sample

w - H2O, % of dry weight
 d - Bulk Density, pcf
 qu - Unconfined Compression, tsf
 DP - Direct Push
 RC - Rock Core

Water Encountered: None

At Completion: None

Boring No. B-3



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Boring No.: B-4	Job No.: 62013	Project: Broadway Street Roundabout To Plymouth Road
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: I. Mickle
Drilling Method: Solid Stem Augers		Started: 8/28/2021
Ground Surface Elevation:		Completed: 8/28/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
2.5	LS	3 5 5	1 2.08	ASPHALT Stiff Moist Brown Clay With Some Silt & Trace Of Gravel-FILL	11.1	133	4120
5.0	LS	2 2 3	3.5	Loose Moist Brown Fine Sand With Trace Of Gravel-FILL	11.5	129	
7.5	LS	5 6 9	6	Loose Moist Brown Fine Sand With Trace Of Gravel & Crushed Asphalt-FILL Medium Compact Moist Brown Fine SAND With Trace Of Gravel	6.3	137	
10.0	LS	10 12 12	10	Bottom of Boring at 10'	4.4	130	

"N" - Standard Penetration Resistance SS - 2").D. Split Spoon Sample LS - Sectional Liner Sample ST - Shelby Tube Sample AS - Auger Sample	w - H2O, % of dry weight d - Bulk Density, pcf qu - Unconfined Compression, tsf DP - Direct Push RC - Rock Core	Water Encountered: None At Completion: None Boring No. B-4
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Boring No.: B-5	Job No.: 62013	Project: Broadway Street Roundabout To Plymouth Road
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: I. Mickle
Drilling Method: Solid Stem Augers		Started: 8/28/2021
Ground Surface Elevation:		Completed: 8/28/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
			.29	ASPHALT (3 1/2")			
2.5	LS	4 6 7		Medium Compact Moist Brown SAND With Some Gravel & Clayey Seams	6.8	136	
5.0	LS	4 5 7	5	Bottom of Boring at 5'	5.1	139	
7.5							
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							

"N" - Standard Penetration Resistance SS - 2" D. Split Spoon Sample LS - Sectional Liner Sample ST - Shelby Tube Sample AS - Auger Sample	w - H ₂ O, % of dry weight d - Bulk Density, pcf qu - Unconfined Compression, tsf DP - Direct Push RC - Rock Core	Water Encountered: None At Completion: None Boring No. B-5
---	--	---



Testing Engineers & Consultants, Inc.

1343 Rochester Road - PO Box 249 - Troy, Michigan - 48099-0249
 (248) 588-6200 or (313) T-E-S-T-I-N-G
 Fax (248) 588-6232

Boring No.: B-6	Job No.: 62013	Project: Broadway Street Roundabout To Plymouth Road
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: I. Mickle
Drilling Method: Solid Stem Augers		Started: 8/28/2021
Ground Surface Elevation:		Completed: 8/28/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
2.5	LS	4 8 7	.46 .83	<div style="border: 1px solid black; padding: 2px;"> ASPHALT (5 1/2") </div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;"> Moist Brown Sand With Some Gravel-FILL (4 1/2") </div>	11.9	137	
5.0	LS	4 7 10	5	Stiff Moist Brown CLAY With Some Silt Bottom of Boring at 5'	26.5	118	7420
7.5							
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							

<p>"N" - Standard Penetration Resistance SS - 2").D. Split Spoon Sample LS - Sectional Liner Sample ST - Shelby Tube Sample AS - Auger Sample</p>	<p>w - H2O, % of dry weight d - Bulk Density, pcf qu - Unconfined Compression, tsf DP - Direct Push RC - Rock Core</p>	<p>Water Encountered: None</p> <p>At Completion: None</p> <p>Boring No. B-6</p>
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Testing Engineers & Consultants, Inc.

1343 Rochester Road - PO Box 249 - Troy, Michigan - 48099-0249
 (248) 588-6200 or (313) T-E-S-T-I-N-G
 Fax (248) 588-6232

Boring No.: B-7	Job No.: 62013	Project: Broadway Street Roundabout To Plymouth Road
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: I. Mickle
Drilling Method: Solid Stem Augers		Started: 8/28/2021
Ground Surface Elevation:		Completed: 8/28/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
			.23				
			.58	ASPHALT (2 3/4")			
2.5	LS	3			10.8	138	2880
		4					
		4	3	Moist Brown Clayey Sand With Some Gravel-FILL (4 1/4")			
	LS	5			8.9	133	
		4					
5.0		3		Firm Moist Brown CLAY With Some Silt			
			5.5				
				Loose Moist Brown SAND With Some Gravel			
	LS	5			9.6	140	
		7					
7.5		10		Medium Compact Moist Brown SAND With Some Gravel			
			8				
	LS	4			11.4	137	
		8					
10.0		8	10	Medium Compact Moist Brown Clayey SAND With Trace Of Gravel			
				Bottom of Boring at 10'			
12.5							
15.0							
17.5							
20.0							
22.5							

"N" - Standard Penetration Resistance
 SS - 2" D. Split Spoon Sample
 LS - Sectional Liner Sample
 ST - Shelby Tube Sample
 AS - Auger Sample

w - H₂O, % of dry weight
 d - Bulk Density, pcf
 qu - Unconfined Compression, tsf
 DP - Direct Push
 RC - Rock Core

Water Encountered: None

At Completion: None

Boring No. B-7



Testing Engineers & Consultants, Inc.

1343 Rochester Road - PO Box 249 - Troy, Michigan - 48099-0249
 (248) 588-6200 or (313) T-E-S-T-I-N-G
 Fax (248) 588-6232

Boring No.: B-8	Job No.: 62013	Project: Broadway Street Roundabout To Plymouth Road
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: I. Mickle
Drilling Method: Solid Stem Augers		Started: 8/28/2021
Ground Surface Elevation:		Completed: 8/28/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
			.35	ASPHALT (4 1/4")			
2.5	LS	9 15 12		Medium Compact Moist Brown Clayey SAND With Trace Of Gravel & Clay Layers	9.9	140	
5.0	LS	7 9 7	5	Bottom of Boring at 5'	13.8	134	
7.5							
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							

"N" - Standard Penetration Resistance SS - 2" D. Split Spoon Sample LS - Sectional Liner Sample ST - Shelby Tube Sample AS - Auger Sample	w - H2O, % of dry weight d - Bulk Density, pcf qu - Unconfined Compression, tsf DP - Direct Push RC - Rock Core	Water Encountered: None At Completion: None Boring No. B-8
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Testing Engineers & Consultants, Inc.

1343 Rochester Road - PO Box 249 - Troy, Michigan - 48099-0249
 (248) 588-6200 or (313) T-E-S-T-I-N-G
 Fax (248) 588-6232

Boring No.: B-9	Job No.: 62013	Project: Broadway Street Roundabout To Plymouth Road
Client: City of Ann Arbor		Location: Ann Arbor, Michigan
Type of Rig: Truck		Drilled By: I. Mickle
Drilling Method: Solid Stem Augers		Started: 8/28/2021
Ground Surface Elevation:		Completed: 8/28/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
			.31				
			.92	ASPHALT (3 3/4")	12.2	130	
2.5	LS	2					
		2					
		2		Moist Brown Sand With Some Gravel-FILL (7 1/4")			
			3				
	LS	3		Soft Moist Brown CLAY With Some Silt	7.5	119	
		4					
		6					
5.0			5	Loose Moist Brown SAND With Trace Of Gravel			
				Bottom of Boring at 5'			
7.5							
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							

"N" - Standard Penetration Resistance SS - 2").D. Split Spoon Sample LS - Sectional Liner Sample ST - Shelby Tube Sample AS - Auger Sample	w - H2O, % of dry weight d - Bulk Density, pcf qu - Unconfined Compression, tsf DP - Direct Push RC - Rock Core	Water Encountered: None At Completion: None Boring No. B-9
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Testing Engineers & Consultants, Inc.

Ms. Jane Allen, P.E.
City of Ann Arbor
September 8, 2021

TEC Report: 62011

SOIL DESCRIPTIONS

In order to provide uniformity throughout our projects, the following nomenclature has been adopted to describe soil characteristics:

CONSISTENCY AND RELATIVE DENSITY

COHESIVE SOILS			GRANULAR SOILS	
UNCONFINED COMPRESSIVE STRENGTH, PSF	“N” VALUES	CONSISTENCY	“N” VALUES	RELATIVE DENSITY
Below 500	0 – 2	Very Soft	0 – 4	Very Loose
500 – 1,000	3 – 4	Soft	5 – 10	Loose
1,000 – 2,000	5 – 8	Plastic	11 – 30	Medium Compact
2,000 – 4,000	9 – 15	Firm	31 – 50	Compact
4,000 – 8,000	16 – 30	Stiff	50+	Dense
8,000 – 16,000	31 – 50	Ex. Stiff		
Over 16,000	51+	Hard		

Material Types By Particle Size

BOULDERS

COBBLES

GRAVEL

COARSE SAND

MEDIUM SAND

ASTM D2487

Stones Over 12” In Diameter

Stones 3” To 12” In Diameter

#4 To 3” Diameter

#10 To #4 Sieves

#40 To #10 Sieves

Testing Engineers & Consultants, Inc.

Ms. Jane Allen, P.E.
City of Ann Arbor
September 8, 2021

TEC Report: 62011

SOIL DESCRIPTIONS (Cont'd)

Material Types By Particle Size

FINE SAND

SILT

CLAY

PEAT

MARL

SWAMP BOTTOM DEPOSITS

ASTM D2487

#200 To #40 Sieves

Minus #200 Sieve Material,
Fairly Non-Plastic, Falls Below
"A"-Line

Minus #200 Sieve Material Plastic
Material That Has A Tendency To
Stick Together, Can Be Rolled
Into Fine Rods When Moistened;
Falls Above "A"-Line

Black Organic Material
Containing Partially Decayed
Vegetable Matter

Fresh Water Deposits Of Calcium
Carbonate, Often Containing
Percentages Of Peat, Clay
& Fine Sand

Mixtures Of Peat, Marl,
Vegetation & Fine Sand
Containing Large Amounts Of
Decayable Organic Material

ADDENDUM No. 1

RFP No. 23-10

Research Park Drive Resurfacing Project

Due: March 21, 2023 at 2:00 PM (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 eighty three (83) pages.**

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

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

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

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

I. CORRECTIONS/ADDITIONS/DELETIONS

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

Section/Page(s)

Change

Pages 15-19
Section III.E

Schedule of Pricing/Cost Forms; replace with pages Addendum-1-4 to 8. Added pay item 4037050 - _Dr Structure Cover, Type Q, Modified.

Replaced pay item 4037050 - _Dr Structure Cover, Type C Modified with pay item 4037050 - _Dr Structure Cover, Type D, Modified.

Removed pay items 2057011 - _Grading, Sidewalk; 4037050 - _Dr Structure Cover, Type Q-1, Modified; 4037050 - _Dr Structure Cover, Type Q-2, Modified; and 5012012 - HMA, 3EL.

Pages 15-19 Section III.E (continued)	Revised estimated quantities for pay items 2057011 - _Machine Grading, Modified; 3020050 - Aggregate Base, Conditioning; 4037050 - _Dr Structure Cover, Type K, Modified; and 5012024 - HMA, 4EL.
Pages DS-25 to DS-28 Detailed Specifications	Detailed Specification for Machine Grading, Modified; replace with pages Addendum-1-9 to 14. Revised the Construction, and the Measurement and Payment requirements sections.
Pages DS-36 to DS-39 Detailed Specifications	Detailed Specification for Adjusting Structures Covers; replace with pages Addendum-1-15 to 18. Revised the Construction, and the Measurement and Payment requirements sections.
Page DS-40 Detailed Specifications	Detailed Specification for Drainage and Utility Structures; replace with page Addendum-1-19. Revised Construction, and Measurement and Payment sections.
Pages DS-41 to DS-46 Detailed Specifications	Detailed Specification for Structure Covers; replace with pages Addendum-1-20 to 25. Revised Materials, Construction, and Measurement and Payment sections.
Page DS-49 Detailed Specifications	Detailed Specification for Hot Mix Asphalt (HMA) Mixtures and Application Estimate; replace with page Addendum-1- 26. Revised Materials section.
Pages DS-50 to DS-52 Detailed Specifications	Detailed Specification for Hot Mix Asphalt (HMA) Paving; replace with pages Addendum-1-30 to 33. Revised Materials, Construction, and Measurement and Payment sections.
Pages DS-57 to DS-58 Detailed Specifications	Detailed Specification for Concrete Sidewalk, Curb Ramp and Driveway Approach; replace with pages Addendum-1- 31 to 32. Revised Construction, and Measurement and Payment sections.
Pages DS-63 to DS-67 Detailed Specifications	Detailed Specification for Maintenance of Traffic; replace with pages Addendum-1-33 to 37. Revised Description, Materials, and Construction sections.
Pages DS-72 to DS-76 Detailed Specifications	Detailed Specification for Turf Establishment, Performance; replace with pages Addendum-1-38 to 42. Revised Description, Materials, Construction, and Measurement and Payment sections.
Plans Sheets 1 to 41	Replace Plan Set in its entirety. Sheet revisions are noted below.
Sheet 1	Revised "Sheet List Table".

Sheet 9	Revised call outs on proposed typical section related to hot mix asphalt leveling and top courses. Revised HMA Application Table
Sheets 10-13	Revised call outs on proposed typical sections related to hot mix asphalt leveling and top courses.
Sheets 20-27	Revised call outs related to storm structure covers and adjustments.

II. QUESTIONS AND ANSWERS

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

Question 1: We have downloaded all the documents for the above project; however, we are missing Special Detail plan sheets 42-47. Please forward these or advise if they will be in an upcoming addendum or intentionally omitted.

Answer 1: Those sheets were shown in error on the cover sheet index and were not included as part of the plan set. The cover sheet index together with other plan revisions will be addressed as part of an addendum.

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

ATTACHMENT B
GENERAL DECLARATIONS

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

Ladies and Gentlemen:

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

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

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

In accordance with these bid documents, and Addenda numbered 1 , 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 21st DAY OF March, 202³.

Ajax Paving Industries, Inc.

Bidder's Name


Authorized Signature of Bidder

1957 Crooks Road, Suite A, Troy, MI 48084

Official Address

Benjamin J. Kohler

(Print Name of Signer Above)

248-244-3300

Telephone Number

bkohler@ajaxpaving.com

Email Address for Award Notice

ATTACHMENT C
LEGAL STATUS OF BIDDER

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

Bidder declares that it is:

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

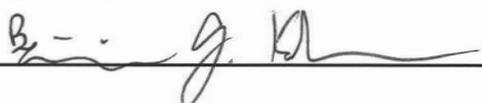
NOTE: If not incorporated in Michigan, please attach the corporation's Certificate of Authority

• 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 March 21, 202³

(Print) Name Benjamin J. Kohler Title Project Estimator

Company:
Ajax Paving Industries, Inc.

Address:
1957 Crooks Road, Suite A, Troy, MI 48084

Contact Phone () 248-244-3300 Fax () 248-244-0800

Email bkohler@ajaxpaving.com

ATTACHMENT D
PREVAILING WAGE DECLARATION OF COMPLIANCE

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

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

The Contractor agrees:

- (a) To pay each of its employees whose wage level is required to comply with federal, state or local prevailing wage law, for work covered or funded by this contract with the City,
- (b) To require each subcontractor performing work covered or funded by this contract with the City to pay each of its employees the applicable prescribed wage level under the conditions stated in subsection (a) or (b) above.
- (c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.
- (d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.

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

Ajax Paving Industries, Inc.

Company Name



03/21/2023

Signature of Authorized Representative

Date

Benjamin J. Kohler, Project Estimator

Print Name and Title

1957 Crooks Road, Suite A, Troy, MI 48084

Address, City, State, Zip

248-244-3300 // bkohler@ajaxpaving.com

Phone/Email address

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

ATTACHMENT E
LIVING WAGE ORDINANCE DECLARATION OF COMPLIANCE

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

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

The Contractor or Grantee agrees:

- (a) To pay each of its employees whose wage level is not required to comply with federal, state or local prevailing wage law, for work covered or funded by a contract with or grant from the City, no less than the Living Wage. The current Living Wage is defined as \$14.82/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 \$16.52/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

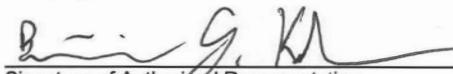
- Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage without health benefits
- Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage with health benefits

- (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.

Ajax Paving Industries, Inc.
Company Name

1957 Crooks Road, Suite A
Street Address


Signature of Authorized Representative

03/21/2023
Date

Troy, MI 48084
City, State, Zip

Benjamin J. Kohler, Project Estimator
Print Name and Title

248-244-3300 // bkohler@ajaxpaving.com
Phone/Email address

Attachment F

CITY OF ANN ARBOR LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2022 - ENDING APRIL 29, 2023

\$14.82 per hour

If the employer provides health care benefits*

\$16.52 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**



ATTACHEMENT G

Vendor Conflict of Interest Disclosure Form

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

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

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

Conflict of Interest Disclosure*	
Name of City of Ann Arbor employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	<input type="checkbox"/> Relationship to employee <input type="checkbox"/> Interest in vendor's company <input type="checkbox"/> Other (please describe in box below)
<p style="font-size: 1.2em; font-family: cursive;">No CONFLICT OF INTEREST</p>	

*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:		
Ajax Paving Industries, Inc.	248-244-3300	
Vendor Name	Vendor Phone Number	
	03/21/2023	Benjamin J. Kohler, Project Estimator
Signature of Vendor Authorized Representative	Date	Printed Name of Vendor Authorized Representative

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

ATTACHMENT H

DECLARATION OF COMPLIANCE

Non-Discrimination Ordinance

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

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

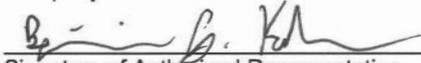
The Contractor agrees:

- (a) To comply with the terms of the City of Ann Arbor's Non-Discrimination Ordinance and contract compliance administrative policy, including but not limited to an acceptable affirmative action program if applicable.
- (b) To post the City of Ann Arbor's Non-Discrimination Ordinance Notice in every work place or other location in which employees or other persons are contracted to provide services under a contract with the City.
- (c) To provide documentation within the specified time frame in connection with any workforce verification, compliance review or complaint investigation.
- (d) To permit access to employees and work sites to City representatives for the purposes of monitoring compliance, or investigating complaints of non-compliance.

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

Ajax Paving Industries, Inc.

Company Name



03/21/2023

Signature of Authorized Representative

Date

Benjamin J. Kohler, Project Estimator

Print Name and Title

1957 Crooks Road, Suite A

Address, City, State, Zip

248-244-3300 // bkohler@ajaxpaving.com

Phone/Email Address

Questions about the Notice or the City Administrative Policy, Please contact:

Procurement Office of the City of Ann Arbor
(734) 794-6500

ATTACHMENT I

CITY OF ANN ARBOR NON-DISCRIMINATION ORDINANCE

Relevant provisions of Chapter 112, Nondiscrimination, of the Ann Arbor City Code are included below.

You can review the entire ordinance at www.a2gov.org/humanrights.

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

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

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

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

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

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

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