

ADDENDUM No. 1

ITB No. 4556

2019 Miscellaneous Utility Project

Bids Due: March 27, 2019 at 2:00 P.M. (Local Time)

The following changes, additions, and/or deletions shall be made to the Invitation to Bid for 2019 Miscellaneous Utility Project, ITB No. 4556, on which proposals will be received on/or before March 27, 2019, at 2:00 P.M. (local time).

The information contained herein shall take precedence over the original documents and all previous addenda (if any), and is appended thereto. **This Addendum includes One Hundred and Forty Three (143) pages.**

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

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

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

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

I. CORRECTIONS/ADDITIONS/DELETIONS

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

<u>Section/Page(s)</u>	<u>Change</u>
Attachments	City of Ann Arbor Living Wage Ordinance Declaration of Compliance and Living Wage Poster, should be replaced with the versions provided in this Addendum. The change reflects an increase in the City of Ann Arbor Living Wage that will be in effect during the period of work under this project.
TC-1 & TC-2	As provided in ITB No. 4556 Bid Document: Table of Contents As updated herein: Table of Contents reorganized due to adding new Detailed Specifications

for new pay items and renumbering some pay items, all Detailed Specifications have a new page number.

Comment: The intent with this change is to simply replace the entire DS section provided in the ITB Document with the updated DS-1 thru DS-82 provided herein.

BF-1 to BF-4 As provided in ITB No. 4556 Bid Document:

Bid Forms

As updated herein:

Bid Form, Section 1 – Schedule of Prices as Pages BF-1 to BF-4.

Comment: The intent with this change is to simply replace the inaccurate Page BF-1 to BF-4 provided in the ITB Document with the accurate Page BF-1 to BF-4 provided herein.

DS-1 As provided in ITB No. 4556 Bid Document:

Progress Schedule

As updated herein:

The Detailed Specification for Project Schedule has revised the order of construction, with Maywood now first and Bucholz second

DS-41 As provided in ITB No. 4556 Bid Document:

Clean-up and Restoration, special, Max \$10,000

As updated herein:

The Detailed Specification for Clean-up and Restoration, special, Max \$10,000 was changed to remove the turf establishment items to their own separate pay items. A Max cost was then added.

DS-48 As provided in ITB No. 4556 Bid Document:

Temporary Water Main Line Stops

As updated herein:

The Detailed Specification for Temporary Water Main Line Stops was changed to add the pay item #242 and #244, Temporary Water Main Line Stop, Additional Rental Day and revise the Measurement and Payment section.

DS-48 As provided in ITB No. 4556 Bid Document:

Temporary Water Main Line Stops

As updated herein:

The Detailed Specification for Temporary Water Main Line Stops was changed to have remove pavement removal and restoration, including aggregate base course and asphalt courses, from the pay item, these will be paid for separately. Trench backfill is still included in the temporary line stop pay items.

Absent As provided in ITB No. 4556 Bid Document:

Replacement of Private Water Service Leads, 1" Copper

As updated herein:

The Detailed Specification for Replacement of Private Water Service Leads, 1" Copper, was removed from this contract

DS-61 As provided in ITB No. 4556 Bid Document:
Machine Grading, Modified

As updated herein:

The Detailed Specification for Machine Grading Modified was changed due to creating pay items for turf establishment.

DS-63 As provided in ITB No. 4556 Bid Document:
Aggregate Surface Course

As updated herein:

The Detailed Specification was updated to clarify that the aggregate surface course for the proposed gravel road on Cedar Bend will be 21AA, all references to 22A were removed from the document

DS-65 As provided in ITB No. 4556 Bid Document:
Gravel Road Preparation, Clearing and Earthwork, Item #271

As updated herein:

The Detailed Specification was updated to include "Clearing" in the title and to estimate the total cubic yards of excavation and the total cubic yards of embankment required to prepare the surface for construction of the realigned gravel road on Cedar Bend Drive.

DS-81 As provided in ITB No. 4556 Bid Document:
Absent

As updated herein:

The Detailed Specification for Turf Establishment was added to give new pay items for #295 "Fertilizer, Chemical Nutrient, CI A", #296 "Mulch Blanket, High Velocity", #297 "Seeding, Mixture THM", and #298 "Topsoil Surface, Furn, 4 inch" when those items were removed from DS-41 #213 "Clean-up and Restoration, special, Max \$10,000.

APDX-1 As provided in ITB No. 4556 Bid Document:
Appendix

As updated herein:

The Appendix was changed to include the details for the new City castings required in this project.

Plan Sheets As provided in ITB No. 4556 Bid Document:
Plan Sheets 1-31

As updated herein:

Plan Sheets 1-31 were updated to add the Revision 1: Addendum 03/15/2019 in the Title Block.

Plan Sheets 5 was updated to remove Trench Detail Type II. Trench Detail Type I remains on Sheet 5 and states the surface treatment will be paid for separately. As shown on the detail, Class II granular backfill is to be included in the cost of the pipe. A standard sidewalk detail was also added to this sheet.

Plan Sheet 6 was updated with a modified curb detail for Bucholz Ct.

Plan Sheets 6-8 were updated to clarify the pay items and construction methods being used in the Cross-Sections.

Plan Sheet 15 The note regarding replacement of the private water service leads was updated to reflect this work will be completed by the City, and shall require coordination from the contractor.

Plan Sheet 17 The note regarding protection of the signal equipment was updated to "contractor to coordinate removal and reinstallation of signal loop detector with City of Ann Arbor Signs & Signals 734-794-6361"

II. QUESTIONS AND ANSWERS

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

Question 1: Can Turf Establishment and Restoration have its own pay items?

Answer 1: Yes, pay items for Fertilizer, Chemical Nutrient, CI A, Mulch Blanket, High Velocity, Seeding, Mixture THM, and Topsoil Surface, Furn, 4 inch have been added as DS-81 and as items # 295-298 on the Bid Forms.

Question 2: Can you consider making the pay item for Line Stops unit per day, as Contractors get charged for equipment rental for additional days

Answer 2: The pay items for Line Stops remain as EACH for their initial installation and use. An additional pay item was created to pay for additional days after the first as DS-48, item #246 and #248 on the Bid Forms

Question 3: What is included in the Line Stop pay items?

Answer 3: Excavation, installation, and backfill will be incidental to the Line Stop. Pavement removal, Aggregate Base and HMA will be paid for separately.

Question 4: Clarify the payment of sidewalk and sand base.

Answer 4: The sidewalk pay items include the concrete. Sand base/subbase will be paid for as "Sand Subbase Course, Class II – C.I.P." See DS-74.

Question 5: The Standard Specification states that the Contractor will be charged for the City installing corporation in Gate Valve in Wells. What are those fees?

Answer 5: Currently, a 1" corporation costs \$466 and a 2" corporation costs \$614 EACH. This fee is paid at the Customer Service desk in City Hall.

Question 6: How is the existing water main to be abandoned?

Answer 6: Per City Standard Specification Division IV Utility Installation – Section 3G Abandonment of Water Main, which state the ends of the existing water main shall be capped and all structures shall be broken down and removed.

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

III. PRE-BID MEETING MINUTES AND SIGN-IN SHEET

See attached pre-bid meeting minutes and sign in sheet

**Pre-Bid Meeting for the
2019 Miscellaneous Utility Project**

March 11, 2019 @ 2:00 p.m. in the Larcom Fourth Floor Conference Room, City Hall
Meeting Minutes Italicized

I. Introductions

See attached sign in sheet

II. Project Overview

a. Bucholz – Water Main

i. Upsize water main to 8-inch

ii. Replace water services upto meter in each resident

Discussion around this item (Pay Item 251) included concerns in the difficulty in projecting an “Each” price for this work, with the number of unknowns in each residential home and the work required to coordinate with each resident. The City has determined that this work will be paid for separately, and will be eliminated from this contract as part of Addendum #1.

iii. Concrete Restoration – curb type

Addendum #1 will include a modification to the curb type for Bucholz Ct

b. Cedar Bend - Road and Water Main

i. Realignment of end of gravel road – see sheet 19 for existing and proposed grades

ii. Clearing and Earthwork included in item 271 (to be renamed “Gravel Road Preparation – Clearing and Earthwork”)

Addendum #1 will include modifications to Pay Item 271 Gravel Road Preparation – Clearing and Earthwork, including estimating the embankment and excavation quantities and clarifying that clearing is included in this pay item

c. Maywood – Water and Storm

i. Sanitary lead and storm replacement

City staff reviewed the conflicts between the existing storm and sanitary sewer, both at the same depth and with some homes having connections to the storm sewer system and how historic new sanitary lead installation resulted in the reduction of the size of the storm pipe at the sanitary leads/storm crossing. The City’s goal at these locations is to restore full capacity (8-inch pipe) to the existing storm and to re-lay the sanitary sewer leads as necessary to accomplish this. For quantities it was assumed 30 linear feet of replacement for both storm and sanitary lead was required at each known location of conflict.

III. General

a. Standard Specifications and Detailed Specifications

b. Exploratory Excavation

The known areas of exploratory digging were reviewed:

i. Maywood

1. Tie in to 12-inch Water Main at Avondale

2. End of Storm at Stadium

3. Broken Storm Along Maywood (2 locations)

- ii. Bucholz
 - 1. Tie in to Water Main (north and south end)
- c. Project Schedule:
 - i. Starting Date – June 3rd – Can start earlier if insurance /contracts are all set. City Council Award date will be May 6, 2019
 - ii. Completion Date – October 21, 2019 (140 days after commencement of work)
 - iii. Hours of work: 7:00 a.m. to 8:00 p.m. Monday thru Saturday (Sundays with permission)
- d. Engineer’s conceptual estimate - \$1,700,000
- e. Water Main and Storm Pipe – Includes trench backfill
 - i. Pavement removal paid for separately
 - ii. Aggregate base for road paid for separately
- f. Manhole covers
 - i. Shall be labeled with “CITY OF ANN ARBOR” and “WATER”, “STORM”, or “SANITARY” – see handout.
Updated casting to be included in Addendum #1
- g. Landscaping and restoration – one LS – includes all restoration
A concern was raised that it was difficult estimate restoration as lump sum. Due to this Addendum #1 will include individual line items for fertilizer, mulch blanket, seeding, and topsoil. Addendum #1 will also modify Pay Item #213 Clean up and Restoration to eliminate all fertilizer, mulch blanket, seeding, and topsoil items from this lump sum pay item
- h. Certified Payroll Compliance – using Davis Bacon Wage Decision (for the 3/27/19 Bid Opening). Submit payroll weekly, see form at back of ITB.

IV. Addendum Items

- a. Addendum #1 – anticipated to be issued around March 15th, will include the following:
 - i. Pre-Bid minutes, including Sign-in Sheet
 - ii. Updated Plan Sheets
 - 1. Curb Type - Bucholz
 - iii. Updated Bid Form – if necessary
 - iv. Updated Detailed Specification
 - 1. Item 271 – Gravel Road Preparation – Earthwork and Clearing
- Addendum #1 will be issued on March 20, 2019*

V. Questions are due Wednesday, March 13, 2019 at 12:00 pm

- a. *Questions at Pre-Bid Meeting:*
 - i. *How was Pay Item 268 Sand Subbase Course, CL II – C.I.P quantified? Is it included under sidewalks? Addendum #1 will include updates to the plans, quantities, and detailed specifications to clarify that the sand or aggregate base under concrete items will be paid for separately from the concrete.*
 - ii. *How is existing water main to be abandoned? Per City Standard Specification Division IV Utility Installation – Section 3G Abandonment of Water Main, which state the ends of the existing water main shall be capped and all structures shall be broken down and removed.*

- iii. *Would the City consider separating out the pavement removal and restoration required for the temporary line stops from pay items 242 and 244, 6 inch Temporary Line Stop and 8-inch Temporary Line Stop? Yes, Addendum #1 will include this modification.*
- iv. *What are the City testing corporation fees? The City will install the corporation in the gate wells for testing the newly installed water main. Currently, a 1” corporation costs \$466 and a 2” corporation costs \$614 EACH. This fee is paid at the Customer Service desk in City Hall.*

VI. Bids are due Wednesday, March 27, 2019 at 2:00 pm

Contact Information:

Tesha Humphriss
Project Manager
Phone: (734) 794-6410 ext. 43672
Fax: (734) 994-1744
E-mail: thumphriss@a2gov.org

PREBID MEETING SIGN-IN SHEET

**PROJECT: 2019 Miscellaneous Utility Project
ITB #4556
Monday, March 11, 2019**

PLEASE PRINT

NAME	REPRESENTING	MAILING ADDRESS	TELEPHONE	EMAIL
Tesha Humphriss	City of Ann Arbor - Engineering	Address: 301 E. Huron Street, P.O. Box 8647 City, State: Ann Arbor, MI Zip: 48107-8647	Office: (734) 794-6410, x43672 Cell: (734) 276-5823	thumphriss@a2gov.org
Brian Slizewski	City of Ann Arbor - Engineering	Address: 301 E. Huron Street, P.O. Box 8647 City, State: Ann Arbor, MI Zip: 48107-8647	Office: (734) 794-6410, x43607 Cell: (734) 231-6376	bslizewski@a2gov.org
Mike Hausler	Douglas N. Higgins	Address: 3390 Travis Park Rd City, State: Ann Arbor Zip: 48109	Office: 734-996-9500 Cell: 734-260-1132	mikeh@dhiggins.com
Dustin Krue	E.T. Mackenzie	Address: 6400 Jackson Rd. City, State: Ann Arbor, MI Zip: 48105	Office: 734-761-5050 Cell: 734-517 494-6248	dkrue@macenzie.com
Ron Magee	Fenson Co.	Address: 7644 Whitmore Ln Rd City, State: Brighton MI Zip: 48116	Office: 810 331-5158 Cell: 810-630 3324	Benson BFenson@fensoninc.com
Ben Spada	DIPONIO Contracting, Inc.	Address: 51251 Simone Industrial Dr. City, State: Shelby Twp, MI Zip: 48316	Office: 586-997-4150 Cell: 586-894-8499	bspada@diponiocontracting.com
D. MATKOVSKI	Red Star Construction	Address: 32406 Franklin Rd. J #33987 City, State: Franklin, MI Zip: 48025	Office: Cell: (248) 350-8542	DMatko@redstarco.com

**CITY OF ANN ARBOR
LIVING WAGE ORDINANCE DECLARATION OF COMPLIANCE**

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

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

The Contractor or Grantee agrees:

- (a) To pay each of its employees whose wage level is not required to comply with federal, state or local prevailing wage law, for work covered or funded by a contract with or grant from the City, no less than the Living Wage. The current Living Wage is defined as \$13.61/hour for those employers that provide employee health care (as defined in the Ordinance at Section 1:815 Sec. 1 (a)), or no less than \$15.18/hour for those employers that do not provide health care. The Contractor or Grantor understands that the Living Wage is adjusted and established annually on April 30 in accordance with the Ordinance and covered employers shall be required to pay the adjusted amount thereafter to be in compliance with Section 1:815(3).

Check the applicable box below which applies to your workforce

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

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

- (b) To post a notice approved by the City regarding the applicability of the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.
- (c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.
- (d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.
- (e) To take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee covered by the Living Wage Ordinance or any person contracted for employment and covered by the Living Wage Ordinance in order to pay the living wage required by the Living Wage Ordinance.

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

Company Name

Street Address

Signature of Authorized Representative

Date

City, State, Zip

Print Name and Title

Phone/Email address

**CITY OF ANN ARBOR
LIVING WAGE ORDINANCE**

RATE EFFECTIVE APRIL 30, 2019 - ENDING APRIL 29, 2020

\$13.61 per hour

If the employer provides health care benefits*

\$15.18 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**

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<u>Line Item</u>	<u>Description</u>	<u>Page</u>
201	General Conditions, Max. \$40,000	DS-25
202	Project Supervision, Max. \$30,000	DS-27
203	Minor Traffic Control, Max. \$10,000	DS-30
204	Digital Audio Visual Coverage	DS-33
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206	"No Parking" Signs	DS-38
207	Type III Lighted Barricade, Furnish & Operate	DS-39
208	42 Inch Lighted Channelizing Device, Furnish & Operate	DS-39
209	Plastic Drum - Lighted, Furnish & Operate	DS-39
210	Temporary Type B Signs	DS-39
211	Solar Arrow Board, Furnish & Operate	DS-39
212	Sidewalk Barricade, Furnish & Operate	DS-39
213	Clean-up and Restoration, Special, Max \$10,000	DS-41
220	Adjust Structure Cover, Modified	DS-42
230	Manhole Tap, 15"	DS-44
232	Remove and Replace Sanitary Lead	DS-45
234	Repair Storm Sewer, 8"	DS-46
241	Fire Hydrant Assembly Abandonment	DS-47
242	6 Inch Temporary Water Main Line Stop	DS-48
244	12 Inch Temporary Water Main Line Stop	DS-48

<u>Line Item</u>	<u>Description</u>	<u>Page</u>
246	6 Inch Temp Water Main Line Stop, Additional Rental Day	DS-48
248	12 Inch Temp Water Main Line Stop, Additional Rental Day	DS-48
250	Fire Hydrant Assembly, Including 8" x 6" reducer	DS-53
261	Pavement Removal, Any Thickness	DS-54
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263	Remove Conc Sidewalk, Ramp and Drives, Any Thickness	DS-56
264	Maintenance Gravel	DS-59
265	Subgrade Undercutting and Backfill, Type II, Modified	DS-60
267	Machine Grading, Modified	DS-61
268	Sand Subbase Course, Class II - C.I.P	DS-63
269	21AA Limestone, C.I.P	DS-63
270	Aggregate Surface Course, 21AAA - C.I.P	DS-63
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276	HMA, LVSP Pavement Leveling Course	DS-67
280	Concrete Curb and Gutter, Any Type	DS-72
281	Concrete Curb and Gutter, Any Type, High Early	DS-72
282	4 Inch Concrete Sidewalk	DS-72
283	6 Inch Concrete Sidewalk or Ramp	DS-72
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295	Fertilizer, Chemical Nutrient, CL A	DS-81
296	Mulch Blanket, High Velocity	DS-81
297	Seeding Mixture, THM	DS-81
298	Topsoil Surface, Furn, 4-inch	DS-81

APPENDIX – SOIL BORINGS & CASTING DETAIL.....APDX-1

ATTACHMENTS

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

BID FORM

Section 1–Schedule of Prices

Project: 2019 Miscellaneous Utility Project

File #: 2018-025 Bid #: 4556

Company:

GENERAL ITEMS			Estimated		
<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total Price</u>
130	Protective Fencing	LF	785	\$ _____	\$ _____
135	Tree Removal (8-inches and larger)	each	1	\$ _____	\$ _____
140	Exploratory Excavation	Each	6	\$ _____	\$ _____
201	General Conditions, Max. \$40,000	LS	1	\$ _____	\$ _____
202	Project Supervision, Max. \$30,000	LS	1	\$ _____	\$ _____
203	Minor Traffic Control, Max. \$10,000	LS	1	\$ _____	\$ _____
204	Digital Audio Visual Coverage	LS	1	\$ _____	\$ _____
205	Certified Payroll Compliance and Reporting	LS	1	\$ _____	\$ _____
206	"No Parking" Signs	Each	64	\$ _____	\$ _____
207	Type III Lighted Barricade, Furnish & Operate	Each	30	\$ _____	\$ _____
208	42 inch Lighted Channelizing Device, Furn & Op	Each	40	\$ _____	\$ _____
209	Plastic Drum - Lighted, Furnish and Operate	Each	166	\$ _____	\$ _____
210	Temporary Type B Signs	SF	375	\$ _____	\$ _____
211	Solar Arrow Board, Furnish & Operate	Each	1	\$ _____	\$ _____
212	Sidewalk Barricade, Furnish and Operate	Each	10	\$ _____	\$ _____
213	Clean-Up & Restoration, Special, Max \$10,000	LS	1	\$ _____	\$ _____
220	Adjust Structure Cover, Modified	Each	20	\$ _____	\$ _____
264	Maintenance Gravel	Ton	385	\$ _____	\$ _____
295	Fertilizer, Chemical Nutrient, CI A	LBS	75	\$ _____	\$ _____
296	Mulch Blanket, High Velocity	SYD	2,000	\$ _____	\$ _____
297	Seeding Mixture, THM	LBS	100	\$ _____	\$ _____
298	Topsoil Surface, Furn, 4 inch	SYD	2,000	\$ _____	\$ _____
391	Pipe Undercut and Refill (Class II)	CY	55	\$ _____	\$ _____
392	Pipe Undercut and Refill (6A)	CY	50	\$ _____	\$ _____
563	Structure Covers	Each	5	\$ _____	\$ _____
567	Adjust Monument Box or Gate Valve Box	Each	2	\$ _____	\$ _____
702	Inlet Filter	Each	17	\$ _____	\$ _____
703	Silt Fence	LF	600	\$ _____	\$ _____
TOTAL THIS PAGE (BF-1)				\$ _____	\$ _____

BID FORM

Section 1—Schedule of Prices

Project: 2019 Miscellaneous Utility Project

File #: 2018-025 Bid #: 4556

Company:

WATER MAIN ITEMS			Estimated		
<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total Price</u>
241	Fire Hydrant Assembly Abandonment	Each	2	\$ _____	\$ _____
242	6 inch Temporary Water Main Line Stop	Each	5	\$ _____	\$ _____
244	12 inch Temporary Water Main Line Stop	Each	4	\$ _____	\$ _____
246	6 inch Temp Water Main Line Stop, Additional Day	Each	2	\$ _____	\$ _____
284	12 inch Temp Water Main Line Stop, Additional Day	Each	2	\$ _____	\$ _____
250	Fire Hydrant Assembly, Including 8" x 6" reducer	Each	4	\$ _____	\$ _____
400	6 inch, Class 50 DIP w/polywrap, Trench Detail I	LF	20	\$ _____	\$ _____
401	8 inch, Class 50 DIP w/polywrap, Trench Detail I	LF	2,100	\$ _____	\$ _____
402	12 inch Class 50 DIP w/polywrap, Trench Detail I	LF	80	\$ _____	\$ _____
410	8" 90° Bend	Each	1	\$ _____	\$ _____
411	8" 45° Bend	Each	2	\$ _____	\$ _____
412	8" 22 1/2° Bend	Each	13	\$ _____	\$ _____
413	8" 11 1/4° Bend	Each	7	\$ _____	\$ _____
414	12" 45° Bend	Each	2	\$ _____	\$ _____
415	12" 22 1/2° Bend	Each	4	\$ _____	\$ _____
416	12" 11 1/4° Bend	Each	4	\$ _____	\$ _____
417	8" x 6" Reducer	Each	5	\$ _____	\$ _____
418	8" x 8" x 8" Tee	Each	6	\$ _____	\$ _____
419	12" x 12" x 12" Tee	Each	1	\$ _____	\$ _____
420	12" x 8" Reducer	each	1	\$ _____	\$ _____
442	8" Gate Valve-in Box	Each	4	\$ _____	\$ _____
443	6" Gate Valve-in Box	Each	1	\$ _____	\$ _____
446	8" Gate Valve-in Well	Each	1	\$ _____	\$ _____
453	12" x 8" Tapping Sleeve & Valve in Well	Each	1	\$ _____	\$ _____
460	Exc & Backfill for Water Service Tap and Lead	LF	650	\$ _____	\$ _____
481	Water Main Pipe Abandonment	LF	1,975	\$ _____	\$ _____
482	Gate Valve in Box Abandonment or Removal	Each	3	\$ _____	\$ _____
483	Gate Valve in Well Abandonment or Removal	Each	3	\$ _____	\$ _____
TOTAL THIS PAGE (BF-2)				\$ _____	\$ _____

BID FORM

Section 1—Schedule of Prices

Project: 2019 Miscellaneous Utility Project

File #: 2018-025 Bid #: 4556

Company:

STORM SEWER ITEMS		Unit	Estimated Quantity	Unit Price	Total Price
<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total Price</u>
230	Manhole Tap, 15"	Each	1	\$ _____	\$ _____
232	Remove and Replace Sanitary Lead	LF	450	\$ _____	\$ _____
234	Repair Storm Sewer Pipe, 8-inch	LF	290	\$ _____	\$ _____
307	12" CL IV RCP Storm Sewer Pipe, Trench Detail I	LF	400	\$ _____	\$ _____
308	15" CL IV RCP Storm Sewer Pipe, Trench Detail I	LF	600	\$ _____	\$ _____
360	Type I Manhole	Each	5	\$ _____	\$ _____
367	Single Inlet	Each	8	\$ _____	\$ _____
385	Storm Pipe Abandonment or Removal	LF	120	\$ _____	\$ _____
386	Storm Structure Abandonment or Removal	Each	5	\$ _____	\$ _____
PAVING ITEMS					
261	Pavement Removal, Any Thickness	SY	5,695	\$ _____	\$ _____
262	Remove Conc Curb or Curb & Gutter, Any Type	LF	2,200	\$ _____	\$ _____
263	Remove Conc Sidewalk, Ramp, Drives, Any Thick	SF	2,735	\$ _____	\$ _____
265	Subgrade Undercut and Backfill - Type II, Mod	CY	85	\$ _____	\$ _____
267	Machine Grading, Modified	Sta	25	\$ _____	\$ _____
268	Sand Subbase Course, Class II - C.I.P	CY	250	\$ _____	\$ _____
269	21AA Limestone - C.I.P	CY	1,600	\$ _____	\$ _____
270	Aggregate Surface Course, 21AA - C.I.P	CY	50	\$ _____	\$ _____
271	Gravel Road Preparation -Clearing & Earthwork	LS	1	\$ _____	\$ _____
272	Rip Rap	SY	30	\$ _____	\$ _____
275	HMA, LVSP - Pavement Leveling Course	Ton	650	\$ _____	\$ _____
TOTAL THIS PAGE (BF-3)				\$ _____	\$ _____

BID FORM

Section 1—Schedule of Prices

Project: 2019 Miscellaneous Utility Project

File #: 2018-025 Bid #: 4556

Company:

PAVING ITEMS (continued)			Estimated		
<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total Price</u>
276	HMA, LVSP - Pavement Top Course	Ton	650	\$ _____	\$ _____
280	Conc Curb or Curb & Gutter, Any Type	LF	200	\$ _____	\$ _____
281	Conc Curb or Curb & Gutter, Any Type - HE	LF	2,000	\$ _____	\$ _____
282	4" Concrete Sidewalk	SF	1,270	\$ _____	\$ _____
283	6" Concrete Sidewalk, Ramp, Drive Approach	SF	60	\$ _____	\$ _____
284	6" Concrete Sidewalk, Ramp, Drive Approach - HE	SF	1,400	\$ _____	\$ _____
285	Concrete Type M Drive Opening, HE	LF	275	\$ _____	\$ _____
286	Concrete Type L Drive Opening, HE	LF	130	\$ _____	\$ _____
287	Detectable Warning, Cast In Place	SF	50	\$ _____	\$ _____
290	Pav Markings, 4" Solid White, Type R	LF	320	\$ _____	\$ _____
291	Pav Markings, Therm, 24" Stop Bar	LF	10	\$ _____	\$ _____
TOTAL THIS PAGE (BF-4)				\$ _____	
TOTAL FROM PAGE BF-1:				\$ _____	
TOTAL FROM PAGE BF-2:				\$ _____	
TOTAL FROM PAGE BF-3:				\$ _____	
TOTAL BASE BID:				\$ _____	

**DETAILED SPECIFICATION
FOR
PROJECT SCHEDULE AND PAYMENT**

1 of 2

DESCRIPTION

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

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

1. The Contractor shall begin the work of this project on or before **June 3, 2019**, and only upon receipt of the fully executed Contract and Notice to Proceed. Appropriate time extensions shall be granted if the Notice to Proceed is delayed beyond this date.
2. This contract requires storm sewer and/or water main work at three separate locations, and shall be completed sequentially as listed below. With the exception of setting up/removing traffic control devices, **the contractor may not perform any construction activities at more than two locations at the same time.**
 - 1) Maywood – Work consists of the installation of new storm sewer, new water main, and associated work. Work shall commence at this location no later than the completion of all work at the Bucholz Ct location. Utility construction, including all appurtenances and construction of leads, shall be completed within **forty-nine (49) consecutive calendar days** of the notice to proceed.. The entire work at this location as required by this Contract, including the stabilization of all disturbed areas, and the removal of any and all traffic control devices shall be completed within **seventy (70) consecutive calendar days** of the Notice to Proceed.
 - 2) Bucholz Ct – Work consists of the installation of new water main and associated work. Utility construction, including all appurtenances and construction of leads, shall be completed within **twenty-one (21) consecutive calendar days** after commencing with the work. The entire work at this location as required by this Contract, including the stabilization of all disturbed areas shall be completed within **thirty-five (35) consecutive calendar days** after commencing with the work.
 - 3) Cedar Bend – Work consists of the installation of new water main, reconfiguration of the dead end gravel road, and associated work. Work shall commence at this location no later than the completion of all work at the Maywood location. Utility construction, including all appurtenances and construction of leads, shall be completed within **twenty-one (21) consecutive calendar days** after commencing with the work. The entire work at this location as required by this Contract, including the stabilization of all disturbed areas, and the removal of any and all traffic control devices shall be completed within **thirty-five (35) consecutive calendar** after commencing with the work.

**DETAILED SPECIFICATION
FOR
PROJECT SCHEDULE AND PAYMENT**

2 of 2

The Contractor is expected to be furnished with two (2) copies of the Contract, for his/her execution, on or before **April 29, 2019**. The Contractor shall properly execute both copies of the Contract and return them, with the required Bonds and Insurance Certificate, to the City within **ten (10) days**. The Contractor shall not begin the work before the applicable date(s) as describes herein without approval from the Project Engineer, and in no case before the receipt of the fully executed Contract. City Council approval is expected on **May 6, 2019**.

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

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

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

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

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, **\$400.00** in Liquidated Damages, and not as a penalty, for delays in the completion of the work for each and every calendar day beyond the "Calendar Days to Complete" for each sub-phase, as required by this Detailed Specification.

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

**DETAILED SPECIFICATION
FOR
MAINTENANCE OF TRAFFIC**

1 of 2

DESCRIPTION

Traffic shall be maintained in accordance with the City of Ann Arbor Public Services Department Standard Specifications and as specified in Sections 104.11, 812, and 922 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, the 2011 Michigan Manual of Uniform Traffic Control Devices (MMUTCD), and as described herein.

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

MATERIALS

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

Maintenance of Local Traffic

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

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

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

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

At times, when it becomes necessary to temporarily obstruct local traffic during the performance of the work, the Contractor shall provide traffic regulator control in conformance with Chapter 6E of the MMUTCD, Sections 6E.01 thru 6E.08. A minimum of two traffic regulators are required. The cost of traffic regulator control shall be included in the contract pay item "Minor Traffic Control, Maximum \$10,000".

A lane-closure permit shall be obtained by the Contractor from the Project Management Services Unit, at least 48 hours in advance of any proposed lane or street closing. No lane closures shall be permitted July 4, and during the Labor Day and Memorial Day weekends.

**DETAILED SPECIFICATION
FOR
MAINTENANCE OF TRAFFIC**

2 of 2

The hours of work on all Local streets are 7:00 a.m. to 8:00 p.m., Monday through Saturday, or as specified on the lane-closure permit. No equipment will be allowed in the street before or after these hours. Local streets may only be closed to through traffic (local access only) with written authorization of the Engineer. Work must be completed each day such that all streets are re-opened to through traffic by 8:00 p.m. unless otherwise specified, directed, or authorized in writing by the Engineer. All major changes in traffic control shall be made either between 9:30 a.m. and 3:30 p.m. or between 7:00 p.m. and 6:30 a.m. in order to minimize interference with rush-hour traffic. All traffic controls must be in-place and ready for traffic each day by 6:30 a.m. and 3:30 p.m.

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

The Contractor shall use quantities of dust palliative, maintenance aggregate, and cold patching/HMA mixtures for use as temporary base, surfacing, and dust control at utility crossings, side roads and driveways (wherever required to maintain traffic), and where directed by the Engineer to maintain local access. The cost for the use of dust palliative, maintenance aggregate, cold patch and/or hot mix asphalt 36A mixture, as required and directed by the Engineer for maintenance of traffic and local access, shall be included in contract pay item "General Conditions, Maximum, \$40,000", and it will not be paid for separately.

The work of maintaining and relocating existing warning, regulatory and/or guide signs; and of removing, salvaging and reinstalling existing signs and supports is included in the bid price for the contract pay item "Minor Traffic Control, Maximum \$10,000".

Mailboxes and newspaper boxes that are in the way of the construction shall be removed and reset immediately in a temporary location approved by the Engineer. Mail and paper delivery shall not be interrupted during the construction. Upon completion of the construction, all mailboxes and newspaper boxes, including their supports, shall be repositioned in their permanent locations as approved by the Engineer. This work shall be included the contract unit price for the contract pay item "General Conditions, Maximum, \$40,000", and it will not be paid for separately.

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

The Contractor shall furnish, erect, maintain, and upon completion of the work, remove any and all traffic control devices utilized on the project.

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

**DETAILED SPECIFICATION
FOR
GENERAL CONSTRUCTION NOTES**

1 of 1

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

1. All work shall conform to latest revision of the City Standard Specifications.
2. The Contractor shall maintain access to all drives throughout the course of construction. Drives shall never be closed during non-working hours, unless otherwise authorized in writing by the Engineer.
3. The Contractor shall completely restore all existing site features to better than, or equal to, their existing condition.
4. The Contractor shall be aware that there are above-ground and below-ground utilities existing in and on these streets which include, but are not limited to: gas mains and service leads; water mains and service leads; storm sewer mains and service leads; sanitary sewer mains and service leads; telephone poles, wires, cables and conduits; electrical poles, wires, cables and conduits; cable television wires, cables and conduits, and other various utilities. The Contractor shall conduct all of its work so as not to damage or alter in any way, any existing utility, except where specified on the Plans or where directed by the Engineer.
5. The Contractor is solely responsible for any delays, damages, costs and/or charges incurred due to and/or by reason of any utility, structure, feature and/or site condition, whether shown on the Plans or not, and the Contractor shall repair and/or replace, at its sole expense, to as good or better condition, any and all utilities, structures, features and/or site conditions which are impacted by reason of the work, or injured by its operations, or injured during the operations of its subcontractors or suppliers.
6. No extra payments or adjustments to unit prices will be made for damages, delays, costs and/or charges due to existing utilities, structures, features and/or site conditions not shown or being incorrectly shown or represented on the Plans.

**DETAILED SPECIFICATION
FOR
COORDINATION AND COOPERATION WITH OTHERS
AND
WORK BY OTHERS**

1 of 1

The Contractor is reminded as to the requirements of article 104.07 of the 2012 edition of the MDOT Standard Specifications, "Cooperation by the Contractor."

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

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

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

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

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

On all projects:

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

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

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

Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions, Maximum, \$40,000".

**DETAILED SPECIFICATION
FOR
DISPOSING OF EXCAVATED MATERIALS**

1 of 1

The Contractor shall dispose of, at the Contractor's expense, all excavated material. Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions, Modified, Maximum, \$40,000".

**DETAILED SPECIFICATION
FOR
PROTECTION OF UTILITIES**

1 of 1

Damages to utilities by the Contractor's operations shall be repaired by the utility owner at the Contractor's expense.

Delays to the work due to utility repairs are the sole responsibility of the Contractor.

The Contractor shall keep construction debris out of utilities at all times. The Contractor shall be back charged an amount of \$50.00 per day for each manhole/inlet/utility pipe that contains construction debris caused as a result of the Contractor's (including subcontractors and suppliers) work.

The Contractor is solely responsible for any damages to the utilities or abutting properties due to construction debris.

Certain sanitary and storm sewers within the influence of construction may have been cleaned and videotaped prior to construction. The City may also choose to videotape utility line(s) during or after the work of this Contract to inspect them for damages and/or construction debris. If such inspection shows damage and/or debris, then all costs of such inspection, cleaning, repairs, etc, shall be the Contractor's sole responsibility. If such inspection is negative, the City will be responsible for the costs of such inspection.

Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions, Modified, Maximum, \$40,000".

**DETAILED SPECIFICATION
FOR
SOIL EROSION AND SEDIMENTATION CONTROL MEASURES**

1 of 1

The Contractor shall furnish, place, maintain and remove soil erosion and sedimentation control measures, in accordance with all applicable City (and other governmental agencies) codes and standards, as directed by the Engineer, as detailed in the Standard Specifications, and as required to maintain compliance.

Costs for this work, other than specifically identified in the bid items, will not be paid for separately, but shall be included in the bid price of the Contract Item “General Conditions, Maximum, \$40,000”.

**DETAILED SPECIFICATION
FOR
VACUUM TYPE STREET AND UTILITY STRUCTURE CLEANING EQUIPMENT**

1 of 1

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

Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions, Maximum, \$40,000".

**DETAILED SPECIFICATION
FOR
MATERIALS AND SUPPLIES CERTIFICATIONS**

1 of 1

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

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

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

Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions, Maximum, \$40,000".

**DETAILED SPECIFICATION
FOR
CONTRACT DRAWINGS/PLANS**

1 of 1

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

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

**DETAILED SPECIFICATION
FOR
SOIL BORING AND PAVEMENT SECTION DATA**

1 of 1

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

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

**DETAILED SPECIFICATION
FOR
WORKING IN THE DARK OR IN THE RAIN**

1 of 1

Working in the Rain

The Contractor shall not work in the rain unless authorized in writing by the Engineer.

The Engineer may delay or stop the work due to threatening weather conditions.

The Contractor shall not be compensated for unused materials or downtime due to rain, or the threat of rain.

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

Working in the Dark

The Contractor shall not work in the dark except as approved by the Engineer.

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

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

The Contractor is solely responsible for repairing all damages to the work and to the site,

Including road infrastructures, road subgrades, and any adjacent properties, which are caused as a result of working in the dark.

**DETAILED SPECIFICATION
FOR
QUANTITIES AND UNIT PRICES**

1 of 1

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

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

**DETAILED SPECIFICATION
FOR
WATERMAIN INSTALLATION AND TESTING**

1 of 2

DESCRIPTION

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

CONSTRUCTION METHODS

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

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

**DETAILED SPECIFICATION
FOR
WATERMAIN INSTALLATION AND TESTING**

2 of 2

5. During the chlorination process, the proper level of chlorination must be achieved throughout the entire length pipe. Chlorine levels shall be checked at intermediate locations as directed by the Engineer and the Contractor shall add chlorine until such time as the required levels are achieved at all points. The “plug method” of chlorinating the pipe shall not be allowed. The Contractor shall chlorinate the proposed water main to a minimum residual concentration of 100 parts per million with commercial liquid chlorine solution. The chlorine concentrate shall be a minimum of 10% chlorine (sodium hypochlorite) by volume. Solid chlorine “pellets” or powder shall not be allowed. Any chlorine containing compound used on the project shall be approved by the Engineer. The minimum recommended dosage of chlorine (sodium hypochlorite) is as follows (based on 10% available chlorine):

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

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

6. Bacteriological testing shall be performed by the City with the Contractor present. The Engineer shall determine the number, location, and type of testing points for each section of water main being tested. Bacteriological samples shall only be drawn from copper or brass sampling points. The use of galvanized steel blow-offs or sampling points are strictly prohibited. Obtaining bacteriological samples from fire hydrants will not be allowed.
7. If a new water main fails two consecutive sets of bacteriological tests, the Engineer may require the Contractor to re-swab the water main in accordance with Section 3H, Flushing and Swabbing, as described above. Additional flushing, prior to subsequent bacteriological sampling will also be required. The required additional swabbing and flushing of the water main by the Contractor shall be performed at no additional cost to the City of Ann Arbor.

MEASUREMENT AND PAYMENT

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

Payment for all water main pipes shall be as follows:

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

**DETAILED SPECIFICATION
FOR
ASPHALTIC SEAL COATINGS DUCTILE IRON PIPE FITTINGS**

1 of 1

DESCRIPTION

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

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

The Contractor shall complete the water main work in a manner which minimizes the disruption of water service. Water quality issues arise and treatment costs increase when the well field system is taken off line. No shut downs at the well field shall occur on Saturdays or Sundays. Shut downs shall not be for longer than 8.0 hours for any given shutdown event. Liquidated damages as detailed and described on page C-2 of these documents shall apply to any shut downs that occur on Saturday or Sunday or for a period of time longer than 8.0 hours in any given 24 hour period.

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

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

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

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

MEASUREMENT AND PAYMENT

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

**DETAILED SPECIFICATION
FOR
CONCRETE DURABILITY**

1 of 6

DESCRIPTION

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

MATERIALS

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

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

* Fine and coarse aggregates shall consist of natural aggregates as defined in the Michigan Department of Transportation 2012 Standard Specifications for Construction Section 902.02.A.1.

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

Alkali-Silica Reactivity

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

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

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

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

**DETAILED SPECIFICATION
FOR
CONCRETE DURABILITY**

2 of 6

The maximum substitution of cement with the fly ash permitted shall be 25% by weight of total cementitious material (cement plus fly ash). Additional requirements for the Fly Ash, Class F are that the Calcium Oxide (CaO) percent shall be less than 10 % and the available alkalis shall not exceed a maximum of 1.5%. A copy of the most recent mill test report shall be submitted to verify. Note: a Class C fly ash with a minimum total oxides ($\text{SiO}_2 + \text{Al}_2\text{O}_3 + \text{Fe}_2\text{O}_3$) of 66% and a minimum SiO_2 of 38% may be used in lieu of Type F fly ash.

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

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

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

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

Method 2. Use low alkali cement and maintain the total alkali content from the cementitious at no more than 3.0 lbs/cyd ($\text{Na}_2\text{O}_{\text{eq}}$). The total alkali contribution is calculated by the quantity contained in the Portland cement only.

Requirements for Low Alkali Cement are that the alkali content does not exceed 0.60% expressed as Na_2O equivalent. Equivalent sodium oxide is calculated as: $(\text{percent Na}_2\text{O} + 0.658 \times \text{percent K}_2\text{O})$.

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

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

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

**DETAILED SPECIFICATION
FOR
CONCRETE DURABILITY**

3 of 6

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

Air Entrainment

Air entrainment shall be accomplished by addition of an approved air entraining agent. Air content as determined by ASTM C 231 or ASTM C 173, shall be determined on each day of production as early and as frequently as necessary until the air content is consistently acceptable. If during the period of time while adjustments are being made to the concrete to create a mixture that is consistently acceptable, concrete is produced that does not meet the requirements of this Detailed Specification, the Engineer may reject the material and direct it to be removed from the jobsite. Any rejected material shall be removed from the jobsite at the Contractor's sole expense. Quality Control testing performed by the Contractor to ensure compliance with the project specifications shall be performed on the grade ahead of the placement operation.

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

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

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

**DETAILED SPECIFICATION
FOR
CONCRETE DURABILITY**

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CONSTRUCTION METHODS

Aggregate Control

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

CONSTRUCTION METHODS

Aggregate Control

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

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

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

Mixing

Central mix plants - The total volume of the batch shall not exceed the designated size of the mixer or the rated capacity as shown on the manufacturer's rating plate.

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

Ribbon mixers: After all solid materials are assembled in the mixer; the mixing time shall be a minimum of 30 seconds and a maximum of 2.5 minutes. The mixing time may be decreased if the ASTM C-94 11.3.3 mixer efficiency tests show that the concrete mixing is satisfactory. The Engineer may require an increase in the minimum mix time if the mixer efficiency test determines that the concrete is not being mixed satisfactorily. The minimum mixing time shall be indicated by an accurate timing device which is automatically started when the mixer is fully charged. Mixers shall be operated at the speed recommended by the manufacturer as mixing speed. The mixer shall be charged so that a uniform blend of materials reached the mixer through out the charging cycle.

**DETAILED SPECIFICATION
FOR
CONCRETE DURABILITY**

5 of 6

After any additional slump water is added to the mixing chamber the mixing shall continue for a minimum of 10 seconds. Mixers shall not be used if the mixer is not clean or if the mixing blades are damaged or badly worn.

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

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

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

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

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

CURING

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

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

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

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

**DETAILED SPECIFICATION
FOR
CONCRETE DURABILITY**

6 of 6

COMPLIANCE WITH STANDARDS

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

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

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

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

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

MEASUREMENT AND PAYMENT

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

**DETAILED SPECIFICATION
FOR
ITEM #201 – GENERAL CONDITIONS, MAXIMUM \$40,000**

1 of 2

DESCRIPTION

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

- Scheduling 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.
- Placing, maintaining, and removing additional needed soil erosion and sedimentation controls that are not paid separately.
- Maintaining drainage.
- 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.
- Site clean-up.
- Coordination efforts to furnish various HMA mixtures as directed by the Engineer
- Coordination efforts to furnish and operate various-size vehicles/equipment as directed by the Engineer
- Furnishing and operating vacuum-type street cleaning equipment a minimum of once per week or more frequently as directed by the Engineer
- Furnishing and operating vacuum-type utility structure cleaning equipment
- Furnishing and operating both vibratory plate and pneumatic-type (“pogo-stick”) compactors
- Furnishing and operating a backhoe during all work activities
- Furnishing and operating a jackhammer and air compressor during all work activities
- Noise and dust control
- Mobilization(s) and demobilization(s).
- Furnishing submittals and certifications for materials and supplies
- Disposing of excavated materials and debris - The Contractor shall dispose of, at the Contractor’s expense, all excavated material. Costs for this work will not be paid for separately.
- All miscellaneous and incidental items such as overhead, insurance, and permits.
- Meeting all requirements relating to Debarment Certification, Davis Bacon Act, and Disadvantaged Business Enterprise, and providing the necessary documentation.

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

**DETAILED SPECIFICATION
FOR
ITEM #201 – GENERAL CONDITIONS, MAXIMUM \$40,000**

2 of 2

MEASUREMENT AND PAYMENT

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

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

PAY ITEM

General Conditions, Maximum \$40,000

PAY UNIT

Lump Sum

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

**DETAILED SPECIFICATION
FOR
ITEM #202 - PROJECT SUPERVISION, MAXIMUM \$30,000**

1 of 3

DESCRIPTION

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

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

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

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

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

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

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

DUTIES AND RESPONSIBILITIES

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

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

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

**DETAILED SPECIFICATION
FOR
ITEM #202 - PROJECT SUPERVISION, MAXIMUM \$30,000**

2 of 3

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

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

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

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

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

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

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

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

ADDITIONAL PERFORMANCE REQUIREMENTS

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

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

**DETAILED SPECIFICATION
FOR
ITEM #202 - PROJECT SUPERVISION, MAXIMUM \$30,000**

3 of 3

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

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

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

MEASUREMENT AND PAYMENT

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

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

PAY ITEM

PAY UNIT

Project Supervision, Maximum \$30,000

Lump Sum

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

**DETAILED SPECIFICATION
FOR
ITEM #203 – MINOR TRAFFIC CONTROL, MAXIMUM \$10,000**

1 of 3

DESCRIPTION

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

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

This work shall consist of protecting and maintaining vehicular and pedestrian traffic, in accordance with Sections 104.11 and 812 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction; Part 6 of the 2011 Edition of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD); and the City of Ann Arbor Standard Specifications for Construction, except as modified herein.

MATERIALS, EQUIPMENT, AND CONSTRUCTION METHODS

Materials and equipment shall meet the requirements specified in the above designated sections of the MDOT 2012 Standard Specifications for Construction.

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

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

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

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

The Contractor shall obtain a Traffic Detour or Lane Closure Permit from the City's Project Management Services Unit, at least 48 hours in advance of any proposed lane or street closing.

**DETAILED SPECIFICATION
FOR
ITEM #203 – MINOR TRAFFIC CONTROL, MAXIMUM \$10,000**

2 of 3

Traffic on major streets should not be impacted between the hours of 7:00 a.m. to 9:00 a.m. and from 3:30 p.m. to 6:00 p.m. without written permission from the Engineer or as specified on the Lane Closure Permit. All major changes in traffic control shall be made either between 9:00 a.m. and 3:30 p.m. or between 7:00 p.m. and 6:30 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 6:30 a.m. and 3:30 p.m.

The hours of work on all local streets are 7:00 a.m. to 8:00 p.m., Monday through Saturday, or as specified on the Lane Closure Permit.

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

The Contractor shall replace missing or damaged traffic control devices as directed by the Engineer. When traffic control devices have been damaged by, or due to, the negligence of the Contractor, its subcontractors or material suppliers, the traffic control devices shall be replaced at the Contractor's expense.

The work for Minor Traffic Control, Modified shall include: furnishing and operating of miscellaneous signs and warning devices; furnishing cones; operating additional signs furnished by the City throughout the life of the Contract; furnishing and operating pedestrian traffic control devices; maintaining a safe trench during all non-working hours; maintaining access to all drives; covering conflicting existing signs and removal of these covers; and any and all other miscellaneous and/or incidental items which are necessary to properly perform the work.

The Contractor shall maintain vehicular and pedestrian traffic during the work by the use of traffic regulators, channelizing devices and signs as necessary, as directed by the Engineer, and in accordance with 2011 Edition of the MMUTCD. Typical applications for maintaining pedestrian traffic in accordance with the 2011 Edition of the MMUTCD are included in this detailed specification.

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. Such repeated covering and uncovering of signs shall be included in this item of work and shall not be paid for separately.

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

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

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

MEASUREMENT AND PAYMENT

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

**DETAILED SPECIFICATION
FOR
ITEM #203 – MINOR TRAFFIC CONTROL, MAXIMUM \$10,000**

3 of 3

Costs for transporting barricades and other temporary traffic control devices shall be included in the bid prices for the individual items of work.

Minor Traffic Control, Maximum \$10,000 will be paid for on a pro rata basis with each progress payment. Measurement will be based on the ratio between work completed during the payment period and the total contract amount. When all of the work of this Contract has been completed, the measurement of this item shall be 1.0 Lump Sum.

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

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Minor Traffic Control, Maximum \$10,000	Lump Sum

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

**DETAILED SPECIFICATION
FOR
ITEM #204 – DIGITAL AUDIO VISUAL TAPE COVERAGE**

1 of 3

DESCRIPTION

This work shall include digital audiovisual record of the physical, structural, and aesthetic conditions of the construction site and adjacent areas as provided herein. This work will be performed for the entire project limits prior to the start of construction.

The audio-visual filming shall be:

1. Of professional quality, providing a clear and accurate audio and visual record of existing conditions.
2. Prepared within the two (2) week period immediately prior to the start of construction.
3. Furnished to the Engineer 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 one (1) copy of the completed audiovisual record to the Engineer. An index of the footage shall be included, which will enable any particular area of the project to be easily found. **This includes indexing the files according to street and Station number as applicable.** The Contractor shall retain a second copy of the audiovisual record for his/her own use.

Any portion of the film determined by the Engineer to be unacceptable for the documentation of existing conditions shall be filmed again at the Contractor's sole expense prior to mobilizing onto the site.

PRODUCTION

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

1. DVD Format, No Editing - The filming shall be done in color using equipment that allows audio and visual information to be recorded. Splicing or editing of the tape shall not be allowed and the speed and electronics of the videotaping equipment and DVD shall be equal to that which is standard to the videotaping industry.
2. Perspective / Speed / Pan / Zoom - To ensure proper perspective, the distance from the ground to the camera lens shall not be less than 10 feet and the filming must proceed in the general direction of travel at a speed not to exceed 48 feet per minute. Pan and zoom rates shall be controlled sufficiently so that playback will ensure quality of the object viewed.
3. Display - The recording equipment shall have transparent time, date stamp and digital annotation capabilities. The final copies of the tape 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, where applicable, shall be included in the lower half of the frame in standard format (i.e. 1+00). Below the stationing periodic information is to be shown, including project name, name of area shown, street address, direction of travel, viewing direction, etc. If in the event, the stationing has not been established on-site, refer to the plans and approximate the proposed stationing.

**DETAILED SPECIFICATION
FOR
ITEM #204 – DIGITAL AUDIO VISUAL TAPE COVERAGE**

2 of 3

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 filming route. Additional audio commentary shall be provided as necessary during filming to describe streets, buildings, landmarks, and other details, which will enhance the record of existing conditions.
5. Visibility / Ground Cover - The filming shall be performed during a time of good visibility. Filming shall not be performed during periods of precipitation or when snow, leaves, or other natural debris obstruct the area being filmed. The Contractor shall notify the Engineer in writing in the event that the weather or snow cover is anticipated to cause a delay in filming.

COVERAGE

The audio-visual film coverage shall include the following:

1. General Criteria - This general criteria shall apply to all filming 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. The filming shall extend an additional 50 feet outside of all areas. The filming 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. Other Areas - The Contractor shall film at his sole expense other areas where, in his/her opinion, the establishment of a record of existing conditions is warranted. The Contractor shall notify the Engineer in writing of such areas.

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

AUDIOVISUAL FILMING SERVICES

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

Construction Video Media
Midwest Company
Topo Video, Inc.
Video Media Corp.
Finishing Touch Photo & Vide

**DETAILED SPECIFICATION
FOR
ITEM #204 – DIGITAL AUDIO VISUAL TAPE COVERAGE**

3 of 3

MEASUREMENT AND PAYMENT

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

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Digital Audio Visual Coverage	Lump Sum

Audiovisual Tape Coverage shall include all labor, equipment, and materials required to perform the filming and to provide the finished video the Engineer. The unit price includes filming the entire project limits, for each and every project location, as described above.

**DETAILED SPECIFICATION
FOR
ITEM #205 – CERTIFIED PAYROLL COMPLIANCE AND REPORTING**

1 of 2

DESCRIPTION

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

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

GENERAL

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

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

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

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

UNBALANCED BIDDING

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

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

**DETAILED SPECIFICATION
FOR
ITEM #205 – CERTIFIED PAYROLL COMPLIANCE AND REPORTING**

2 of 2

MEASUREMENT AND PAYMENT

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

PAY ITEM

Certified Payroll Compliance and Reporting

PAY UNIT

Lump Sum

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

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

**DETAILED SPECIFICATION
FOR
ITEM #206 – “NO PARKING” SIGN**

1 of 1

DESCRIPTION

This work shall consist of installing, maintaining and removing of "No Parking" signs and posts as outlined herein and as referenced on the plans. "No Parking" signs shall be installed in accordance with the Public Services Department Standard Specifications and the 2011 Michigan Manual of Uniform Traffic Control Devices (MMUTCD).

MATERIAL

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

CONSTRUCTION METHODS

Prior to the commencement of any construction activity, the Contractor shall place “No Parking” signs as directed by the Engineer. The Contractor shall obtain a permit for “Temporary Permission of Reserve Parking Lane for Work Related Purposes” from the City’s Project Management Services Unit. This permit shall be obtained a minimum of 5 business days prior to the posting of “No Parking” signs.

The City will furnish "No Parking" signs to the Contractor at no cost. The Contractor shall furnish the signposts and shall securely bolt the signs to the signposts as directed by the Engineer. The Contractor shall install the signposts at least two feet deep into the ground, and there shall be a minimum of six feet and maximum of seven feet of clearance maintained between the bottom of the sign and the ground. The signs are to be placed at intervals no more than 150 feet and as necessary to eliminate parking in the construction area.

The installation of "No Parking" signs shall be in accordance with the permit. "No Parking" signs shall be installed by the Contractor, as directed by the Engineer, at least 48 hours prior to the proposed start-of-work/enforcement date. "No Parking" signs shall be covered by the Contractor, thereby allowing on-street parking, until between 48 and 24 hours prior to the start of the work. "No Parking" signs shall be covered by the Contractor whenever there is no work being performed for a period of time longer than 72 hours. "No Parking" signs shall be returned to the City upon the completion of work. The cost of unreturned signs will be back charged to the Contractor.

MEASUREMENT AND PAYMENT

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

PAY ITEM

“No Parking” Sign

PAY UNIT

Each

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

**DETAILED SPECIFICATION
FOR
ITEM #207 –TYPE III LIGHTED BARRICADE, FURN & OPER
ITEM #208 – 42 INCH LIGHTED CHANNELIZING DEVICE, FURN & OPER
ITEM #209 – PLASTIC DRUM, LIGHTED, FURN & OPER
ITEM #210 – TEMPORARY TYPE B SIGNS, FURN & OPER
ITEM #211 – SOLAR ARROW BOARD, FURN & OPER
ITEM #212 – SIDEWALK BARRICADE, FURN & OPER**

1 of 2

DESCRIPTION

This work shall consist of protecting and maintaining vehicular and pedestrian traffic in accordance with Sections 140.11, 812, and 922 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction; Part 6 of the 2011 Edition of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD); and the City of Ann Arbor Standard Specifications for Construction, except as modified herein.

MATERIALS, EQUIPMENT, AND CONSTRUCTION METHODS

Materials and equipment shall meet the requirements specified in the above designated sections of the MDOT 2012 Standard Specifications for Construction, and be furnished and operated as directed by the Engineer.

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

The Contractor shall maintain pedestrian traffic at all times. For maintaining normal pedestrian traffic while performing sidewalk and driveway repair, Sidewalk Barricades shall be placed by the Contractor, as directed by the Engineer. "Sidewalk Closed" and/or "Cross Here" signs shall be placed, by the Contractor, when directed by the Engineer.

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

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

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

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

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

Lighted plastic drums shall be sufficiently ballasted to minimize tipping.

**DETAILED SPECIFICATION
FOR
ITEM #207 –TYPE III LIGHTED BARRICADE, FURN & OPER
ITEM #208 – 42 INCH LIGHTED CHANNELIZING DEVICE, FURN & OPER
ITEM #209 – PLASTIC DRUM, LIGHTED, FURN & OPER
ITEM #210 – TEMPORARY TYPE B SIGNS, FURN & OPER
ITEM #211 – SOLAR ARROW BOARD, FURN & OPER
ITEM #212 – SIDEWALK BARRICADE, FURN & OPER**

2 of 2

Sufficient signs shall be provided by the Contractor to insure the safety of the workers and the general public in accordance with the 2011 Edition of the MMUTCD.

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

MEASUREMENT AND PAYMENT

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

Costs for transporting barricades and other temporary traffic control devices shall be included in the bid prices for the individual items of work.

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

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

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

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Type III Lighted Barricade, Furn & Oper	Each
42 inch Lighted Channelizing Device, Furn & Oper	Each
Plastic Drum, Lighted, Furn & Oper	Each
Temporary Type B Signs, Furn & Oper	Sq Ft
Solar Arrow Board, Furn & Oper	Each
Sidewalk Barricade, Furn & Oper	Each

**DETAILED SPECIFICATION
FOR
ITEM #213 – CLEAN-UP & RESTORATION, SPECIAL, MAXIMUM \$10,000**

1 of 2

DESCRIPTION

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

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

CONSTRUCTION METHODS

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

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

MEASUREMENT AND PAYMENT

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

The completed work for “Clean-Up & Restoration, Special, Max \$10,000” will be paid for on a lump sum (LS) basis. 80% of said lump sum shall be paid upon completion and approval of the site by the Engineer. By May 31st of the year following the completion of the project, the Engineer will inspect the seeded turf to ensure that the end product is well established; weed free, and in a growing and vibrant condition. If the Engineer determines that the restored areas meet the project requirements, the remaining 20% of the lump sum will be paid. If the Engineer determines that the restored areas do not meet the project requirements, the Contractor will continue with any and all measures necessary to meet the project requirements. All costs associated with the remedial measures shall be borne entirely by the Contractor.

Pay Item

Clean-Up & Restoration, Special, Max \$10,000

Pay Unit

Lump Sum

**DETAILED SPECIFICATION
FOR
ITEM #220 – ADJUST STRUCTURE COVER, MODIFIED**

1 of 2

DESCRIPTION

This work shall consist of the final adjustment of existing public utility structure covers, including monument boxes, in accordance with Section 403 of Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, as herein specified, and as directed by the Engineer.

MATERIALS

The concrete used for encasing the final adjustment of all structure covers shall meet the requirements for P-NC concrete (658 lb/cyd) as specified in Section 601 of the MDOT 2012 Standard Specifications for Construction.

CONSTRUCTION METHODS

Manhole covers, water valve boxes and all other public utility underground access or control point covers shall be adjusted to conform to the finished surface section and elevation. The adjusting of castings in areas of concrete pavement or lawn shall be performed in a one-step process. The adjusting of castings in a HMA pavement area shall be done 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 surface.

All structures final adjustment are to be to the elevation, which results in their top surface being flush with the finished grade. The work is to be accomplished and checked by using a 10-foot straight edge parallel with 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 manhole and valve covers (Edison, Gas, Ameritech, etc.) will be adjusted during this project by the Utility. 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 transporting of replacement castings from and/or salvaged castings to the City of Ann Arbor Utilities Yard, at the W.R. Wheeler Service Center at 4251 Stone School Road, Ann Arbor, MI 48108, shall be considered included in the items of work "Drainage Structure Covers, Adjust, Modified". All salvaged covers and castings (of any type) shall be returned by the Contractor, at his expense, to the City's Yard at 2000 South Industrial Highway within two days from the date of their removal.

All drainage structures covers, utility covers, monuments, and gate valve boxes shall be backfilled with Grade HE concrete from the depth of excavation necessary for adjustment to an elevation 2" below the top flange or adjusted casting. This material shall be included in this item of work and will not be paid for separately.

The Contractor shall replace covers and/or castings, as directed 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. This work will be paid as Adjust Structure Cover, Modified.

**DETAILED SPECIFICATION
FOR
ITEM #220 – ADJUST STRUCTURE COVER, MODIFIED**

2 of 2

MEASUREMENT AND PAYMENT

The completed work as measured for Adjust Structure Cover, Modified will be paid for at the contract unit price for the following contract item:

PAY ITEM

PAY UNIT

Adjust Structure Cover, Modified

Each

Adjust Structure Cover, Modified will be measured and paid for at the contract unit price for each structure that is adjusted, which price shall be payment in full for all labor, equipment and material needed to accomplish this work.

**DETAILED SPECIFICATION
FOR
ITEM #230 –MANHOLE TAP, 15 INCH**

1 of 1

DESCRIPTION

This work shall include making a connection or tapping into an existing manhole as required by the Plans. All work shall be done in accordance with the City of Ann Arbor Public Services Department Standard Specifications, and as directed by the Engineer.

CONSTRUCTION METHODS

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

Make connections to existing manholes in accordance with the plans. If tapping an existing manhole, cut an opening into the receiving structure at least equal to the outside diameter of the inlet pipe plus 6 inches and insert the pipe with an approved boot. Pack a layer of mortar at least 3 inches thick around the inlet pipe and strike smooth with the inner wall of the receiving structure.

The Contractor shall take care not to cause undue damage to the existing manhole while coring the new opening. Repair or replacement of existing manhole(s) damaged by Contractor operations during tapping shall be at the Contractor's expense and shall not be at any additional cost to the City.

MEASUREMENT AND PAYMENT

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

PAY ITEM

PAY UNIT

Manhole Tap, 15 inch

Each

**DETAILED SPECIFICATION
FOR
ITEM #232 – REMOVE AND REPLACE SANITARY LEAD**

1 of 1

DESCRIPTION

This work shall consist of removing and replacing existing sanitary lead pipe in new utility trenches as directed by engineer when conflicts with new utilities are identified or when the condition of the existing pipe prevents proper utility protection. Work includes cutting lead, carefully removing, replacing with SDR 26 PVC pipe and fittings along with Fernco connections. All materials need to accomplish this work is included in this pay item. All work shall be done in accordance with the City of Ann Arbor Public Services Department Standard Specifications, and as directed by the Engineer.

CONSTRUCTION METHODS

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

MEASUREMENT AND PAYMENT

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

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

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

PAY ITEM

Remove and Replace Sanitary Sewer Lead

PAY UNIT

Linear Foot

**DETAILED SPECIFICATION
FOR
ITEM #234 – REPAIR STORM SEWER, 8-INCH**

1 of 1

DESCRIPTION

This work shall consist of removing and replacing the existing 8-inch storm sewer as noted on the plans and as directed by engineer when conflicts with existing or new utilities are identified or when the condition of the existing pipe prevents proper utility function. Work includes cutting existing storm sewer pipe, carefully removing, replacing with SDR 26 PVC pipe and fittings along with Fernco connections. All materials need to accomplish this work is included in this pay item. All work shall be done in accordance with the City of Ann Arbor Public Services Department Standard Specifications, and as directed by the Engineer.

CONSTRUCTION METHODS

The Construction Methods shall meet all requirements of the City of Ann Arbor Standard Specifications. Sewer leads are private and no official City records are kept. Approximate locations of leads that intersect the existing storm have been placed on plans per survey data when available. Contractor to carefully excavate to storm sewer to be repaired and protect existing utilities and leads as necessary to complete the storm sewer repair. Trench must be carefully backfilled to prevent damage. Prior to placement of HMA contractor will have repaired storm area televised to verify condition of repaired sections and to verify sufficient slope has been provided. Any defects in the repaired sections shall be exposed and repaired at contractor's expense.

MEASUREMENT AND PAYMENT

The unit price for the pay item "Repair Storm Sewer, 8-inch" includes all labor, material and equipment costs associated with the complete installation of the sewer lead, as specified herein, including but not limited to, excavation, MDOT CL II backfill, compaction.

Payment shall include all labor, equipment, and materials necessary to repair the storm sewer as directed by the Engineer.

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

PAY ITEM

Repair Storm Sewer, 8-inch

PAY UNIT

Linear Foot

**DETAILED SPECIFICATION
FOR
ITEM #241 – FIRE ASSEMBLY ABANDONMENT
1 OF 2**

DESCRIPTION

This work shall include abandoning fire hydrant assemblies of various sizes as required by the Plans. All work shall be done in accordance with the City of Ann Arbor Public Services Department Standard Specifications, and as directed by the Engineer.

MATERIALS

All materials shall meet the requirements specified in Division 7 and 9 of the MDOT 2012 Standard Specifications for Construction as follows:

Mortar Type II Section 702
MDOT Class II Sand Section 902
Masonry Units Section 913

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

METHODS OF CONSTRUCTION

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

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

MEASUREMENT AND PAYMENT

The unit price for the pay item "Fire Hydrant Assembly Abandonment," includes all labor, material and equipment costs associated with the complete removal of the existing fire hydrant assembly, as specified herein, including but not limited to, excavation MDOT CL II Backfill and compaction; pipe cutting; thrust block removal; pipe plug; thrust block; salvaging of fire hydrant, valve and valve box and delivery of fire hydrant, valve and valve box to the City of Ann Arbor Public Works Unit located at the W.R. Wheeler Service Center at 4251 Stone School Road, Ann Arbor, MI 48108.

PAY ITEM

Fire Hydrant Assembly Abandonment

PAY UNIT

Each

**DETAILED SPECIFICATION
FOR
ITEM #242 – 6 INCH TEMPORARY WATER MAIN LINE STOP
ITEM #244 – 12 INCH TEMPORARY WATER MAIN LINE STOP
ITEM #246 – 6 INCH TEMP WATER MAIN LINE STOP, ADDITIONAL RENTAL DAY
ITEM #248 – 12 INCH TEMP WATER MAIN LINE STOP, ADDITIONAL RENTAL DAY**

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DESCRIPTION

All water main work shall be performed in accordance with the current City of Ann Arbor Public Services Area Standard Specifications and as detailed herein. The Contractor shall furnish all materials, labor and equipment to properly install and set water main line stops into the existing water main(s) at the locations as shown on the plans or as directed by the Engineer.

If the existing mains, upstream and downstream of the proposed new water mains cannot be shut down or taken out of service, locations of proposed line stops will be identified by the Engineer. To ensure that the entire operation shall be accomplished without interruption of service or flow, the installation shall be accomplished by Contractor personnel skilled and experienced in the procedures specific to line stops of the required size(s).

The work shall include, but not be limited to; the furnishing, placement and compaction of approved bedding and backfill materials; furnishing and placing suitable, clean, gravel to create a stable working surface at the bottom of the excavation; de-watering; pipe cleaning, measuring, and performing all advance work necessary to prepare for the performance of the line stop; nighttime lighting as required; the removal of all materials and equipment associated with the work when no longer needed; and, any other items needed to complete the work as detailed on the plans and as specified herein.

MATERIALS

Bedding and backfill for areas contained within a segment of water main designated as Trench Detail I (under roadbed), Modified, shall be Granular Material, Class II, meeting the requirements of Section 902. For work within a segment of water main designated as Trench Detail V (outside of the 1:1 influence line of roadbed or curb and gutter), Modified, Granular Material, Class II and Engineer approved native material, placed in accordance with the trench details, shall be used.

The Contractor shall submit to the Engineer two (2) sets of drawings, furnished by manufacturers, fully and distinctly illustrated and describing the Line Stop fittings proposed to be furnished. Work shall not commence until such time as the drawings have been reviewed and accepted by the Engineer.

Line Stop Fittings shall be full encirclement, pressure retention type split tee. It shall consist of two steel weldments; an upper line stop flange saddle plate and a lower saddle plate. These two saddle plates shall be contiguous.

Line Stop Flange: The outlet of each fitting shall be machined from a 150 lb. forged steel flange (ASTM A181 or A105) or from pressure vessel quality steel plate (ASTM A285, Grade C); flat faced and drilled per ANSI B16.5). Suitable independently operated locking devices shall be provided in the periphery of the flange to secure the completion plug.

Line stop Nozzle: The nozzle, which lies between the saddle and the flange shall be fabricated from steel pipe (ASTM A234). After welding and stress relief, the nozzle shall be accurately bored as follows to accommodate the Line stop plugging head:

- a) Machine an internal circular shoulder to seal against the circumferential gasket carried on the plugging head.

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Completion Plug: The completion plug shall be machined from a stress relieved carbon steel weldment. It shall contain two (2) circumferential grooves: one to receive the locking devices from the Line stop flange, and the second to contain a compressible "O" ring to seal pressure tight against the bore of the flange.

Blind Flange: Each Line stop fitting shall be closed with a blind flange. Facing and drilling of the blind flange shall be compatible with that of the Line stop flange. Minimum blind flange thickness shall be that of AWWA Spec. 207, Class D.

Saddle Alignment Marking: Each saddle-half shall be matched and marked with serial numbers, to insure proper alignment in the field.

Fasteners: All bolts, studs, and nuts used on Line stop, drain/equalization fittings, blind flange, and other elements that shall remain upon completion of the work shall be stainless steel and meet the requirements of ASTM F 593.

General: Manufacturer will exercise extreme care to insure that weldments are of adequate strength, properly shaped, securely reinforced, and free from distortion that could stress the ductile iron main during installation, pressure tapping, or Line stopping operations. All steel shall meet the requirements of ASTM A36, as a minimum. All weldments shall be braced and stress relieved.

Gaskets: Shall be molded from elastomer compounds that resist compression setting and are compatible with water in the 32 to 140 deg. F temperature range.

Upper Line stop Flange Saddle: Shall consist of a saddle plate, a Line stop flange, and a Line Stop nozzle. The interior of the saddle plate, adjacent to and concentric with the O.D. of the nozzle, shall be grooved to retain a gasket which shall seal the saddle plate to the exterior of the ductile iron main. This gasket shall constitute the only seal between the main and the fitting. The flange saddle shall also meet the following requirements:

- a) Saddle plate shall be of a minimum of 0.375" in thickness. It shall be shaped to be concentric to the outside of the ductile iron main. The smallest I.D. of the saddle and its interior rings shall exceed the O.D. of the main by a minimum of 0.250" to allow for ovality of the main;
- b) Line stop nozzle of 0.375" min. wall thickness shall be securely welded to the saddle plate;
- c) The Line Stop flange shall be securely welded to the nozzle. After welding, the assembly shall be braced, stress relieved, and bored to receive the completion plug and the circumferential gasket of the Line Stop machine plugging head; and,
- d) Bolt, nut of stud, nut, and washer assemblies shall be furnished to draw the upper and lower saddles together for sealing. Bolting brackets shall be gusseted.

Lower Saddle Plate: Saddle plate shall be of a minimum 0.375" thickness and shall be shaped to be concentric to the outside brackets shall match upper half.

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EQUIPMENT

The equipment shall consist of a cylindrical plugging head that contains a flat, expandable elastomer sealing element. The plugging head shall be advanced into and retracted from the main by means of a linear actuator. When retracted, the plugging head and carrier are housed in an adapter, bolted pressure tight between the tapping valve and the actuator.

Sealing Element: The element shall be monolithically molded from a suitable polyurethane compound. The element shall be flat in a plane perpendicular to the flow in the main. Minimum thickness of the element shall be 4". The bottom of the element shall be semi-circular to conform to the bore of the main.

Drilling equipment: Shall be in good working condition, equipped with power drive to insure smooth cutting, and to minimize shock and vibration. Cutting equipment shall be carbide tipped and capable of being replaced without removal from the jobsite.

Plugging Head: The diameter of the cylindrical plugging head shall be slightly smaller than the bore of the Line Stop nozzle. The plugging head shall have a suitable circumferential gasket to seal against the shoulder in the Line stop nozzle. This gasket shall also seal against the sealing element to prevent bypass flow around the Line stop.

Deposits in Bore of Main: The semi-cylindrical bottom of the plugging head shall be designed to break and dislodge tuberculation and other deposits in the bore of the main which might interfere with a satisfactory Line stop.

CONSTRUCTION METHODS

Installation of proposed line stops mains will require work in close proximity to existing utilities. This must be taken into consideration when the contractor determines the required trench safety requirements. All excavation shall conform to MIOSHA Standards; the Contractor is solely responsible for determining all excavation and trench safety requirements.

If necessary, The City will reduce the pressure to 100 psig or less for the duration of the installations. The entire operation of installing the line stop shall be accomplished without reduction of water pressure in the main(s) below 100 psig. It shall be the responsibility of the Contractor to verify pressure prior to commencing the installation.

Preliminary Field Inspection of Water Main:

Dimensional, specification, and other data regarding the existing mains have been taken from existing records. This information may be inaccurate, out of date, and/or inadequate. The data have not been verified by field inspections. Further, the water main consists of ductile iron pipe which may contain dimensional and structural flaws. In addition, the Contractor shall anticipate that exterior main conditions, bells, service connections, or presence of adjoining utilities may require relocation of proposed line stop. Prior to proceeding with the installation of any line stop, it is necessary to know the exact main outside diameter of the water main, if it has any ovality,

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and the internal diameter of the pipe before line stop fittings and plugging head sealing elements can be manufactured and/or ordered.

Prior to ordering material, Contractor shall excavate at each proposed location and carefully measure the outside diameter of the water main with calipers along at least four (4) locations to determine ovality and the critical outside diameter of the water main. The Contractor shall determine main wall thickness, uniformity, and structural integrity by means of ultrasonic testing. Data shall be taken to determine extent of internal deposits, tuberculation, etc..

If the Engineer determines that Contractor's data are not adequate, the Engineer may direct Contractor to make one or more pressure taps on main to obtain test pipe coupons for the Engineer's evaluation. The minimum size of the test coupon shall be 5" diameter, drilled through a nominal 6" valve. Pressure tapping saddles and other materials used for inspection taps shall conform to the requirements of this Detailed Specification. The Contractor shall anticipate that heavy interior corrosion and/or tuberculation exists within the water main.

If, in Engineer's opinion, the proposed location is unsatisfactory based on measurements of the existing pipe at the locations of the proposed line stops, the Engineer will direct excavation at another site. Excavating, de-watering, inspections, backfill, and restoration will be paid for separately in accordance with the applicable contract unit prices or Section 109.05.C and 109.05.D whichever the Engineer deems most appropriate.

Because of possible internal corrosion and deposits in existing water mains, a "bottle-tight" shut down may not occur. A satisfactory shutdown which allows the work to be accomplished (i.e. valve replacement, water main tie-in, etc.) using drainage pumps to de-water excavations, with workmen wearing boots and raingear, if necessary, must be obtained. The Contractor will not be allowed to proceed with further work until an acceptable shutdown is achieved. The Contractor shall be aware that this may require the halting of work and re-scheduling of all work operations.

Contractor shall power wire brush and grind the exterior of the water main to remove any debris, corrosion deposits, or other surface irregularities that might interfere with proper seating and sealing of each line stop fitting against each main. Any structural defects in the water main, service connections, appurtenances, adjacent utilities, etc., that could interfere with the line stop installation shall be immediately reported to Engineer.

All line stop fittings and appurtenances shall be cleaned and disinfected in accordance with the current City of Ann Arbor Public Services Area Standard Specifications prior to bolting any of the line stop fittings in place or commencing any pipe cutting.

Contractor shall fit upper and lower saddle plate assemblies to main, thoroughly checking for proper fit to main. Under no circumstances shall Contractor attempt to force, reshape, or bend saddle plates by excessive tightening of saddle studs while the line stop fitting is assembled around the main. Any required retrofitting shall be accomplished with the fitting removed from the main. Any damage to fitting, accessories, or main shall be repaired at Contractor's expense to the satisfaction of Engineer.

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Upper and Lower saddle halves shall be drawn together by bolt assemblies and the Saddle plates shall be bolted together in the horizontal position.

All line stop work shall be performed in accordance with the equipment manufacturers approved work procedures and installation guidelines.

Final closure of the water main shall be accomplished by insertion of a manufacturer-approved completion plug. The Contractor shall test the completion plug sealing through the use of a bleed off assembly in the machine housing.

The Contractor shall remove the temporary valve and the installation of a blind flange shall be completed.

The Contractor shall place polyethylene encasement meeting the requirements of the City of Ann Arbor Standard Specifications for Construction around the upper and lower saddle halves, the blind flange, and to a point at least 1 foot on either side of the saddle halves. All polyethylene encasement shall be securely taped to the water main such that water entry is minimized to the greatest extent possible.

MEASUREMENT AND PAYMENT

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

<u>PAY ITEM</u>	<u>PAY UNIT</u>
6 inch Temporary Water Main Line Stop	Each
12 inch Temporary Water Main Line Stop	Each
6 inch Temporary Water Main Line Stop, Additional Rental Day	Each
12 inch Temporary Water Main Line Stop, Additional Rental Day	Each

**DETAILED SPECIFICATION
FOR
ITEM #250 – FIRE HYDRANT ASSEMBLY**

1 of 1

DESCRIPTION

This Detailed Specification is intended to supplement the current City of Ann Arbor Standard Specifications for Construction with regard to Fire Hydrant Assembly.

MATERIALS

Fire hydrants shall be either the East Jordan Model Watermaster 5BR250 with traffic flange, or the Waterous Pacer Model WB67-250 with traffic flange. All fire hydrants shall have the following features: a 6 inch push-on tyton joint connection, ANSI/AWWA C111/A21.11; one 5 inch storz connection; one 3-3/8 inch threaded Ann Arbor Standard pumper connection with 7-1/2 threads per inch and 4.05 in. O.D.; 1-3/8 inch pentagon operating and cap nuts (1-3/8 in. point-to-flat at top; 1-7/16 in. point-to-flat at base); open left; breakable flange construction; no barrel drain; and a painted red finish. Depth of bury (bottom of pipe to ground surface) is generally 6 feet but may vary depending on specific site conditions. The pumper nozzles must be 21 in. ± 3 in. above finished grade, and the breakable traffic flange must be between finished grade and 8 in. above finished grade. Fire hydrant extensions for Waterous hydrants shall be Waterous Part # K562. Extensions for East Jordan hydrants shall be hydrant model 5BR250 extension kits. All fire hydrants must be certified by Underwriters Laboratory (UL) or the National Sanitation Foundation (NSF) for use in a potable water system.

MEASUREMENT AND PAYMENT

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

PAY ITEM

PAY UNIT

Fire Hydrant Assembly

Each

Fire hydrant assemblies shall be measured per unit constructed and paid for on the basis of unit price each. The unit price for fire hydrant assemblies shall include a 6-inch gate valve in box, 3 lineal feet of 6 inch pipe, an approved hydrant with traffic flange, and a thrust block. Any required extension will be paid for separately, on a per each installed basis.

**DETAILED SPECIFICATION
FOR
ITEM #261 – PAVEMENT REMOVAL, ANY THICKNESS**

1 of 2

DESCRIPTION

This work includes removal of pavement accordance with Section 204 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications, except as modified herein, and as directed by the Engineer.

CONSTRUCTION METHOD

The Contractor shall sawcut and remove pavement as shown on the Plans, as marked in the field, and as directed by the Engineer. The Engineer will measure the removal of HMA surface, any thickness, overlying a material designated for removal or that is required to remain in place, as Pavt, Rem. The Engineer will measure the removal of the underlying material separately.

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

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

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

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

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

The Contractor shall remove pavements full depth unless other shown on the plans or directed by the Engineer.

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

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

MEASUREMENT AND PAYMENT

The areas to be removed shall be marked and measured prior to removal of any material. Measurement shall take place with both the Engineer and the Contractor (or their agents) present. Both parties shall come to an agreement regarding removal quantities prior to the actual removal of pavement.

**DETAILED SPECIFICATION
FOR
ITEM #261 – PAVEMENT REMOVAL, ANY THICKNESS**

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

PAY ITEM

PAY UNIT

Pavement Removal. Any Thickness

Square Yard

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

**DETAILED SPECIFICATION
FOR
ITEM #262 - REMOVE CONCRETE CURB OR CURB & GUTTER –
ANY TYPE, MODIFIED
ITEM #263 - REMOVE CONCRETE SIDEWALK, RAMP AND DRIVES –
ANY THICKNESS, MODIFIED**

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DESCRIPTION

This work shall consist of removing concrete curb, gutter, curb and gutter, integral curb, concrete pavement, sidewalk, sidewalk ramps, drive openings, and drive approach pavements as shown on the plans, as detailed in the Specifications, and as directed by the Engineer, in accordance with Section 204 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, except as specified herein, and as directed by the Engineer.

CONSTRUCTION METHODS

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

Prior to the start of work, the Engineer and Contractor together shall identify and field measure all items to be removed.

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

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

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

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

The Contractor shall 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.

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

**DETAILED SPECIFICATION
FOR
ITEM #262 - REMOVE CONCRETE CURB OR CURB & GUTTER –
ANY TYPE, MODIFIED
ITEM #263 - REMOVE CONCRETE SIDEWALK, RAMP AND DRIVES –
ANY THICKNESS, MODIFIED**

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

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

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

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

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

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

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

Integral curb and gutter that is removed as part of “Remove Concrete Pavement (Repair)” shall be measured and paid for by the square yard, along with the pavement removal quantity.

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

**DETAILED SPECIFICATION
FOR
ITEM #262 - REMOVE CONCRETE CURB OR CURB & GUTTER –
ANY TYPE, MODIFIED
ITEM #263 - REMOVE CONCRETE SIDEWALK, RAMP AND DRIVES –
ANY THICKNESS, MODIFIED**

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MEASUREMENT AND PAYMENT

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

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Remove Concrete Curb or Curb & Gutter - Any Type, Modified	Linear Foot
Remove Concrete Sidewalk, Ramp and Drives - Any Thickness , Modified	Square Foot

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

**DETAILED SPECIFICATION
FOR
ITEM #264 – MAINTENANCE GRAVEL**

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DESCRIPTION

This work consists placing maintenance gravel in accordance with Section 306 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, and as directed by the Engineer.

MATERIALS

Maintenance Gravel material will be Dense-Graded Aggregate 21AA in accordance with that specified in Sections 306.02 and 902 of the MDOT 2012 Standard Specifications for Construction.

CONSTRUCTION METHODS

Maintenance Gravel will be constructed in accordance with Section 306.03 of the MDOT 2012 Standard Specifications for Construction, and as directed by the Engineer.

MEASUREMENT AND PAYMENT

The completed work will be paid for at the contract unit price for the following contract item (pay item).

PAY ITEM

PAY UNIT

Maintenance Gravel

Ton

Maintenance Gravel will be measured by the unit ton in accordance with Section 306.04 of the MDOT 2012 Standard Specifications for Construction, and as directed by the Engineer, and will be paid for at the unit price per ton. The unit price for this contract item includes all labor, material, and equipment costs required to perform the work.

**DETAILED SPECIFICATION
FOR
ITEM #265 - SUBGRADE UNDERCUTTING AND BACKFILL - TYPE I, MODIFIED**

DESCRIPTION

This work includes removal of unsuitable subgrade material(s) in the areas and limits identified by the Engineer, and backfill with Class II Granular Material in accordance with the City of Ann Arbor Standard Specifications for Construction and the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, except as herein specified.

MATERIALS

Materials will be in accordance with those specified in Section 902 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction.

CONSTRUCTION METHOD

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

The undercut area shall be backfilled with Granular Material, Cl II. The backfill material shall be compacted to not less than 98% of its maximum unit weight as determined by the AASHTO T-180 test.

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

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

MEASUREMENT AND PAYMENT

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

PAY ITEM

PAY UNIT

Subgrade Undercutting and Backfill, Type I, Modified

Cubic Yard

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

**DETAILED SPECIFICATION
FOR
ITEM #267 – MACHINE GRADING, MODIFIED**

1 of 2

DESCRIPTION

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

CONSTRUCTION METHOD

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

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

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

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

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

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

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

**DETAILED SPECIFICATION
FOR
ITEM #267 – MACHINE GRADING, MODIFIED**

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

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

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

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

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

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

Butt joints are included in the pay item "Machine Grading".

Topsoil, seeding, fertilizer, and mulch shall be paid for as items "Fertilizer, Chemical Nutrient", "Mulch Blanket, High Velocity", "Seeding, Mixture THM", and "Topsoil Surface, Furn, 4 inch."

MEASUREMENT AND PAYMENT

Measurement for payment for the item "Machine Grading" shall be the along the road centerline within the limits of the work. At intersections, measurements shall be along only one of the streets. Machine grading shall be paid only once, regardless of any additional re-working that may be required.

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

PAY ITEM

Machine Grading, Modified

PAY UNIT

Square Yard

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

**DETAILED SPECIFICATION
FOR
ITEM #268 –SAND SUBBASE COURSE, CLASS II – C.I.P.
ITEM #269 – 21AA LIMESTONE – C.I.P.
ITEM #270 – AGGREGATE SURFACE COURSE, 21AA – C.I.P.**

1 of 2

DESCRIPTION

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

MATERIAL

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

CONSTRUCTION METHOD

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

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

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

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

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

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

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

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

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

**DETAILED SPECIFICATION
FOR
ITEM #268 –SAND SUBBASE COURSE, CLASS II – C.I.P.
ITEM #269 – 21AA LIMESTONE – C.I.P.
ITEM #270 – AGGREGATE SURFACE COURSE, 21AA – C.I.P.**

2 of 2

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

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

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

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

MEASUREMENT AND PAYMENT

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

Where granular materials are used as a surface course in Machine Grading areas, items of work "Aggregate Surface Course, 21AA -C.I.P." shall be measured and paid accordingly.

Where granular materials are used as fill for undercuts at locations other than Machine Grading areas, item of work shall be paid in accordance with "Subgrade Undercutting and Backfill, Type II, Modified".

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

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Sand Subbase Course, Class II - C.I.P.	Cubic Yard
21AA Limestone - C.I.P.	Cubic Yard
Aggregate Surface Course, 21AA - C.I.P.	Cubic Yard

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

**DETAILED SPECIFICATION
FOR
ITEM #271 - GRAVEL ROAD PREPARATION, CLEARING & EARTHWORK**

1 of 1

DESCRIPTION

This work shall consist of constructing all earthwork necessary to construct a gravel road in accordance with Sections 201 and 205 of the 2012 edition of the MDOT Standard Specifications for Construction, except as specified herein.

This work shall consist of all clearing, excavation, embankment, and moving of site materials to prepare existing surface for the proposed gravel road.

MATERIAL

The materials used for this work shall be Class II granular material meeting the requirements of the City of Ann Arbor Standard Specifications.

CONSTRUCTION METHOD

Before beginning earth disturbance activities, install soil erosion and sedimentation control measures as shown on the plans.

Cut, remove, and dispose of trees, stumps, brush, shrubs, roots, logs, and other vegetation. Area to be cleared for construction of Cedar Bend is 0.1 acres.

Excavate material as necessary to provide suitable subsurface for the proposed gravel road as shown the plans. Undercutting will be paid for separately. Use existing material as embankment as directed by the engineer. Total excavation quantity is estimated to be 450 cubic yards. Total embankment quantity is estimated to be 50 cubic yards.

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

PAY ITEM

Gravel Road Preparation, Earthwork

PAY UNIT

Lump Sum

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

**DETAILED SPECIFICATION
FOR
ITEM #272 – RIPRAP**

1 of 1

DESCRIPTION

This work consists of furnishing and placing riprap as detailed in the plans or as directed by the Engineer. The work shall be completed in accordance with the City Standard Specifications and Sections 813 and 910 of the Michigan Department of Transportation 2012 Standard Specifications for Construction except as modified herein.

MATERIAL

The riprap shall be an Engineer-approved, consistent, gray-colored, natural stone, or crushed limestone. Broken concrete is not acceptable. Geotextile liner shall be nonwoven and meet the requirements of Table 910-1.

CONSTRUCTION METHOD

Place riprap in accordance with subsection 813.03.E as shown on the plans or directed by the Engineer. Clear brush, trees, stumps and debris from areas to be protected by riprap. Shape all grades to the required cross section, including excavation for toe and header plan details. Place nonwoven Geotextile liner on the prepared grades. Ensure that the riprap installation does not damage the geotextile liner. The Contractor is solely responsible for determining and utilizing suitable methods of preparing the area for riprap placement and placing the riprap such that the material is placed in accordance with the requirements of the plans and specifications. The use of hand methods to prepare areas for riprap placement and placing riprap may be necessary and/or required. Repair any damage to the existing structure resulting from the placement of riprap under structures as directed by the Engineer and at no cost additional to the City.

MEASUREMENT AND PAYMENT

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

PAY ITEM

Riprap

PAY UNIT

Square Yard

Riprap shall be measured in place by the square yard and include all labor, materials, and equipment necessary to perform the work as specified.

**DETAILED SPECIFICATION
FOR
ITEM #275 – HMA, LVSP - PAVEMENT LEVELING COURSE
ITEM #276 – HMA, LVSP - PAVEMENT TOP COURSE**

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DESCRIPTION

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

MATERIALS AND EQUIPMENT

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

<u>Item Description</u>	<u>HMA Mixture</u>	<u>MDOT Section</u>
HMA, LVSP - Pavement Leveling Course	LVSP	501
HMA, LVSP - Pavement Top Course	LVSP	501

Binders for 3C and 5E3 shall be PG 64-28; and for 36A and Superpave mix LVSP shall be PG 58-28 in accordance with the HMA Application Table shown on the Plans, and shall meet the requirements specified in Section 904 of the 2012 MDOT Standard Specifications for Construction, and any current supplemental MDOT specifications.

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

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

Reclaimed Asphalt Pavement (RAP) in HMA Mixtures

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

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

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

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

**DETAILED SPECIFICATION
FOR
ITEM #275 – HMA, LVSP - PAVEMENT LEVELING COURSE
ITEM #276 – HMA, LVSP - PAVEMENT TOP COURSE**

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

CONSTRUCTION METHODS

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

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

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

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

The bond coat shall be applied at a minimum rate of 0.05 gallons/yd². Before placing the bond coat, the existing pavement surface shall be thoroughly cleaned. The Contractor shall also thoroughly clean all joints, cracks, and edges to a minimum depth of one inch with compressed air, vac-all type equipment, or other approved mechanical or hand methods, to remove all dirt, debris, and all foreign material.

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

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

The final structure adjustments must be approved by the Engineer prior to the issuance of the “Permit to Place” for the top course.

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

All HMA thickness dimensions are compacted-in-place.

**DETAILED SPECIFICATION
FOR
ITEM #275 – HMA, LVSP - PAVEMENT LEVELING COURSE
ITEM #276 – HMA, LVSP - PAVEMENT TOP COURSE**

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Paving Operation Scheduling – The Contractor shall schedule the paving operation to avoid longitudinal cold joints that would be required to be left “open” over night.

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

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

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

Longitudinal and Transverse Joints- shall conform to Section 502.03.F of the 2012 MDOT Standard Specifications for Construction and as specified herein. For mainline HMA paving, the width of the mat for each pass of the paver shall be not less than 10.5’, nor greater than 15’, except as noted in the plans and as directed by the Engineer. The Engineer will direct the layout of all HMA longitudinal joints during construction.

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

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

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

**DETAILED SPECIFICATION
FOR
ITEM #275 – HMA, LVSP - PAVEMENT LEVELING COURSE
ITEM #276 – HMA, LVSP - PAVEMENT TOP COURSE**

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

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

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

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

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

MEASUREMENT AND PAYMENT

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

Corrective action shall be enforced as described at Division 5 of the 2012 MDOT Standard Specifications for Construction and will be based on the City's testing reports.

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

**DETAILED SPECIFICATION
FOR
ITEM #275 – HMA, LVSP - PAVEMENT LEVELING COURSE
ITEM #276 – HMA, LVSP - PAVEMENT TOP COURSE**

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

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

<u>PAY ITEM</u>	<u>PAY UNIT</u>
HMA, LVSP - Pavement Leveling Course	Ton
HMA, LVSP - Pavement Top Course	Ton

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

**DETAILED SPECIFICATION
FOR
ITEM #280 – CONCRETE CURB OR CURB & GUTTER - ANY TYPE
ITEM #281 – CONCRETE CURB OR CURB & GUTTER - ANY TYPE – HIGH EARLY
ITEM #282 – 4 INCH CONCRETE SIDEWALK
ITEM #283 – 6 INCH CONCRETE SIDEWALK OR RAMP
ITEM #284 – 6 INCH CONCRETE SIDEWALK, RAMP, DRIVE APPROACH – HIGH EARLY
ITEM #285 - CONCRETE TYPE M DRIVE OPENING - HIGH EARLY
ITEM #286 - CONCRETE TYPE L DRIVE OPENING - HIGH EARLY**

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DESCRIPTION

This work shall consist of constructing concrete items including curb, gutter, curb and gutter, sidewalks, drive approaches, and drive openings, all of any type and/or dimensions, all of either regular, fibermesh reinforced, and/or high-early concrete, in accordance with Sections 801, 802, and 803 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, except as specified herein, as shown on the Plans, as described in this Detailed Specification, and as directed by the Engineer.

The Contractor is responsible to construct all sidewalks, sidewalk ramps, curbs, and all other concrete items within ADAAG compliance. All sidewalks and curb ramps must be constructed in accordance with MDOT Standard Plan R-28-J or version of standard plan/detail in place at time of the bid letting if different.

In addition, all concrete items of work shall comply with the Detailed Specifications for Concrete Durability and Concrete Placement and Protection.

MATERIALS

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

<u>Item Description</u>	<u>Concrete Mixture</u>	<u>MDOT Section</u>
All Items, Except High Early	P1, 6 sack	601
All High Early Items	P-NC, 7 sack	601

CONSTRUCTION METHODS

General

Curb, gutter, curb and gutter, sidewalk, sidewalk ramps, drive openings, and drives shall be replaced the same day they are removed.

Concrete items, including sidewalk, non-integral curb/gutter, drives, and structure adjustments shall be completed prior to the placement of pavement.

All subgrade work shall be completed prior to placing concrete items, unless directed or approved by the Engineer.

The subbase shall be trimmed to final elevation before placing curb. Curb shall not be placed on a pedestal or mound.

**DETAILED SPECIFICATION
FOR
ITEM #280 – CONCRETE CURB OR CURB & GUTTER - ANY TYPE
ITEM #281 – CONCRETE CURB OR CURB & GUTTER - ANY TYPE – HIGH EARLY
ITEM #282 – 4 INCH CONCRETE SIDEWALK
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ITEM #285 - CONCRETE TYPE M DRIVE OPENING - HIGH EARLY
ITEM #286 - CONCRETE TYPE L DRIVE OPENING - HIGH EARLY**

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The Contractor shall excavate, cut, remove stumps, remove brush, remove pavement, grade, and trim as needed and as directed, and shall import, furnish, fill, place, grade, and compact Class II granular material and 21AA Aggregate material as needed to: construct new concrete items; to repair or replace existing concrete items; to relocate existing concrete items to their new specified/directed elevations/locations, including all necessary grading at elevation changes of curb and gutter, sidewalks and ramps; and at locations where existing concrete items are to be removed and turf is to be established in its place.

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

The Contractor shall coordinate with the City Forester prior to the removal of any tree roots.

The Contractor is responsible for any damage to concrete items, including but not limited to vandalism; vehicular, pedestrian and/or miscellaneous structural damage; surface texture damage; and rain damage.

The Contractor shall maintain on-site at all times, a sufficient quantity of adequate materials to protect concrete items. The Engineer may suspend or defer concrete placement if rain protection is not available. The Contractor shall not be entitled to any additional compensation due to work suspension or deferral resulting from a lack of adequate rain protection.

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

The subbase and adjacent concrete shall be sufficiently wet-down with water prior to placing concrete, to prevent water loss from the new concrete, and to form a better bond between old and new concrete. If a cold-joint becomes necessary, the existing concrete surface(s) shall be cleaned with compressed air to expose the aggregate in the concrete.

Where it is necessary to remove existing pavement to provide space for concrete formwork, a sufficient amount of the existing pavement shall be removed to allow for the use of a vibratory plate compactor in front of the curb.

Where concrete items are placed in areas adjacent to existing pavement that is beyond the general resurfacing (pavement removal and/or milling) limits, the adjacent pavement area shall be backfilled and permanently patched within 48-hours of the removal of concrete formwork. The backfill material shall be

MDOT 21AA aggregate compacted in place to 95%, up to the elevation of the proposed bottom of pavement. The pavement patching material(s) shall be as specified and as directed by the Engineer.

**DETAILED SPECIFICATION
FOR
ITEM #280 – CONCRETE CURB OR CURB & GUTTER - ANY TYPE
ITEM #281 – CONCRETE CURB OR CURB & GUTTER - ANY TYPE – HIGH EARLY
ITEM #282 – 4 INCH CONCRETE SIDEWALK
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ITEM #284 – 6 INCH CONCRETE SIDEWALK, RAMP, DRIVE APPROACH – HIGH EARLY
ITEM #285 - CONCRETE TYPE M DRIVE OPENING - HIGH EARLY
ITEM #286 - CONCRETE TYPE L DRIVE OPENING - HIGH EARLY**

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Where concrete items are placed adjacent to existing pavement that is within areas scheduled for subsequent pavement removal and/or milling, the adjacent pavement area shall, within 48-hours of the removal of concrete formwork, be backfilled with MDOT 21AA aggregate compacted in place to 95% up to the elevation of the bottom of the adjacent pavement.

Prior to compacting backfill in front of curb and gutter, the back of curb shall be backfilled with approved material and compacted by mechanical means to 95%.

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

Restoration

The Contractor shall restore all disturbed areas to better than or equal to their original condition within two calendar days from the date of concrete placement. This includes the placement and compaction of 2.5 inches of topsoil, followed by the placement of grass seed, followed by the placement of 0.5 inches of topsoil, at all turf restoration locations, and at locations where concrete items are removed and turf is to be established. Restoration shall also include the replacement of any brickwork, decorative stone, or other adjacent materials. All restoration work and materials shall be in accordance with the City of Ann Arbor Standard Specifications for Construction.

Contraction Joints in Sidewalk

Contraction joints shall be placed at 5-foot intervals and may be tooled or sawed. The method of forming joints and spacing shall be approved by the Engineer prior to construction.

Expansion Joints in Sidewalks

$\frac{3}{4}$ -inch wide expansion joints shall be placed through concrete sidewalks in line with the extension of all property lines, at all expansion joints in the abutting curb, gutter, and combination curb and gutter, and as directed by the Engineer. Transverse expansion joints shall be placed through the sidewalks at uniform intervals of not more than 300-feet.

$\frac{1}{2}$ -inch wide expansion joints shall be placed between the sidewalk and back of abutting curb or gutter, at the juncture of two sidewalks, between the sidewalk and buildings and other rigid structures, and as directed by the Engineer.

Expansion Joints in Curb and Gutter

$\frac{3}{4}$ -inch wide expansion joints shall be placed at all street returns, at all expansion joints in an abutting pavement, at each side of all driveways (at radius points), elsewhere at 300-foot maximum intervals, and as directed by the Engineer. Expansion joint material shall extend to the full depth of the joint. After installation, the top shall not be above the concrete nor be more than $\frac{1}{2}$ -inch below it. No reinforcing steel shall extend through expansion joints.

**DETAILED SPECIFICATION
FOR
ITEM #280 – CONCRETE CURB OR CURB & GUTTER - ANY TYPE
ITEM #281 – CONCRETE CURB OR CURB & GUTTER - ANY TYPE – HIGH EARLY
ITEM #282 – 4 INCH CONCRETE SIDEWALK
ITEM #283 – 6 INCH CONCRETE SIDEWALK OR RAMP
ITEM #284 – 6 INCH CONCRETE SIDEWALK, RAMP, DRIVE APPROACH – HIGH EARLY
ITEM #285 - CONCRETE TYPE M DRIVE OPENING - HIGH EARLY
ITEM #286 - CONCRETE TYPE L DRIVE OPENING - HIGH EARLY**

4 of 5

Plane of Weakness Joints in Curb and Gutter

Intermediate plane of weakness joints shall be placed to divide the structure into uniform sections, normally 10-feet in length, with a minimum being 8-feet in length, and shall be placed opposite all plane of weakness joints in the abutting concrete base course.

Plane of weakness joints shall be formed by narrow divider plates, which shall extend 3-inches into the exposed surfaces of the curb or curb and gutter. Plates shall be notched, if necessary, to permit the steel reinforcement to be continuous through the joint.

MEASUREMENT AND PAYMENT

The work of furnishing and installing mechanical anchors and hook bolts will be measured and paid for by the number of hook bolts installed.

All concrete pavement repair, including that which is installed with integral curb and gutter, will be measured and paid for by the area actually placed in square yards (SY).

No additional compensation will be paid for the construction of concrete items adjacent to existing concrete curb, gutter, pavement, or any other pavement or surface feature(s).

A deduction in length for catch basins and inlet castings will be made to measurements of Curb and Gutter.

Curb, gutter, and curb and gutter shall be paid as "Concrete Curb or Curb & Gutter – Any Type, Modified".

Restoration work, including backfilling, compacting, HMA patching adjacent to concrete items, topsoiling and seeding will not be paid for separately, but shall be included in the appropriate associated items of work.

Payment for saw cutting for Type L and M openings and for partial removal of existing drives shall be included in the price for the item of work, "Remove Concrete Sidewalk, Ramp and Drives - Any Thickness, Modified", and will not be paid for separately.

Payment for the removal of HMA pavement and aggregate base to provide space for concrete formwork and vibratory plate compactor shall be included in the price for the item of work, "Remove Concrete Curb or Curb and Gutter - Any Type, Modified", and will not be paid for separately.

**DETAILED SPECIFICATION
FOR
ITEM #280 – CONCRETE CURB OR CURB & GUTTER - ANY TYPE
ITEM #281 – CONCRETE CURB OR CURB & GUTTER - ANY TYPE – HIGH EARLY
ITEM #282 – 4 INCH CONCRETE SIDEWALK
ITEM #283 – 6 INCH CONCRETE SIDEWALK OR RAMP
ITEM #284 – 6 INCH CONCRETE SIDEWALK, RAMP, DRIVE APPROACH – HIGH EARLY
ITEM #285 - CONCRETE TYPE M DRIVE OPENING - HIGH EARLY
ITEM #286 - CONCRETE TYPE L DRIVE OPENING - HIGH EARLY**

5 of 5

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

<u>PAY ITEMS</u>	<u>PAY UNIT</u>
Concrete Curb or Curb & Gutter	Linear Foot
Concrete Curb or Curb & Gutter, High Early	Linear Foot
4" Concrete Sidewalk	Square Foot
6" Concrete Sidewalk, Ramp, or Drive Approach	Square Foot
6" Concrete Sidewalk, Ramp, or Drive Approach, High Early	Square Foot
Concrete Type M Drive Opening, High Early	Linear Foot
Concrete Type L Drive Opening, High Early	Linear Foot

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

**DETAILED SPECIFICATION
FOR
ITEM #286 – DETECTABLE WARNING, CAST IN PLACE**

1 of 2

DESCRIPTION

This work shall consist of furnishing and installing cast in place detectable warning units in compliance with the Americans with Disability Act (ADA). All work shall be in accordance with MDOT Standard Detail R-28-J (or version in place at time of the bid letting).

MATERIALS

The detectable warning tiles shall be colored as Federal Number 22144 (variously referred to as “Clay Red” or “Brick Red”). The detectable warning tiles shall meet the following material properties, dimensions, and tolerances using the most current test methods:

1. Water Absorption: Not to exceed 0.35% when tested in accordance with ASTM-D570
2. Slip Resistance: 0.80 minimum combined wet/dry static coefficient of friction on top domes and field area, when tested in accordance with ASTM C1028.
3. Compressive Strength: 18,000 psi minimum, when tested in accordance with ASTM D695.
4. Tensile Strength: 10,000 psi minimum, when tested in accordance with ASTM D638.
5. Flexural Strength: 24,000 psi minimum, when tested in accordance with ASTM D790.
6. Chemical Stain Resistance: No reaction to 1% hydrochloric acid, urine, chewing gum, soap solution, motor oil, bleach, calcium chloride, when tested in accordance with ASTM D543 or D1308.
7. Wear Depth: 300 minimum, when tested in accordance with ASTM C501.
8. Flame Spread: 25 maximum, when tested in accordance with ASTM E84.
9. Gardner Impact: 50 in.-lbs. minimum, when tested in accordance with Geometry “GE” of ASTM D5420.
10. Accelerated Weathering of Tile when tested by ASTM-G155 or ASTM G151 shall exhibit the following result- $\Delta E < 6.0$ as well as no deterioration, fading or chalking of surface when exposed to 3000 hours minimum exposure.
11. Wheel Loading: The cast in place tile shall be mounted on a concrete platform with a ½” airspace at the underside of the tile top plate then subjected to the specified maximum load of 10,400 lbs., corresponding to an 8,000 lb individual wheel load and a 30% impact factor. The tile shall exhibit no visible damage at the maximum load of 10,400 lbs using AASHTO-HB17 single sheet HS20-44 loading “Standard Specifications for Highways and Bridges.”
12. Salt and Spray Performance of Tile and Adhesive System when tested to ASTM-B117 not to show any deterioration or other defects after 100 hours of exposure

**DETAILED SPECIFICATION
FOR
ITEM #286 – DETECTABLE WARNING, CAST IN PLACE**

2 of 2

CONSTRUCTION METHODS

Installer’s Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for this Project.

The contractor shall follow manufacturer specifications for installation, except where they conflict with MDOT Standard Detail R-28-J (or version in place at the time of bidding), or other project requirements.

MEASUREMENT AND PAYMENT

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

PAY ITEM

PAY UNIT

Detectable Warning, Cast in Place

Square Foot

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

**DETAILED SPECIFICATION
FOR
ITEM #286 – INTEGRAL SIDEWALK RETAINING WALL, 6 INCH TO 18 INCH**

1 of 1

DESCRIPTION

This work shall consist of constructing concrete retaining walls adjacent to sidewalks, in accordance with Section 802 of the 2012 edition of the MDOT Standard Specifications for Construction, except as specified herein, as shown in this Detailed Specification, and as directed by the Engineer.

MATERIAL

Concrete mixtures shall be Grade P1 or S2 concrete, or as directed by the Engineer, meeting the requirements specified in Section 803 of the MDOT Standard Specifications.

CONSTRUCTION METHODS

The Contractor shall construct the Integral Sidewalk Retaining Walls as shown herein. Construction shall be in accordance with Section 802 of the 2012 MDOT Standard Specifications for Construction.

MEASUREMENT AND PAYMENT

Payment shall be measured by the exposed face area of the retaining wall in square feet. The completed work, as described, will be measured and paid for at the contract unit price for the following pay item:

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Integral Sidewalk Retaining Wall, 6 inch to 18 inch	Square Foot

Payment for “Integral Sidewalk and Retaining Wall, 6 inch to 18 inch” shall include all labor, equipment and materials to complete this work.

**DETAILED SPECIFICATION
FOR
ITEM #290 PAVT MRKG, THERMOPLASTIC, 12 INCH CROSSWALK
ITEM #291 PAVT MRKG, THERMOPLASTIC, 24 INCH STOP BAR**

1 of 1

DESCRIPTION

This work consists of providing and placing permanent pavement markings in accordance with the Michigan Manual of Uniform Traffic Control Devices (MMTUTCD), lastest version published at time of advertisement. Provide pavement markings that conform to the Plans, the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction, MDOT Pavement Marking Standard Plans, City of Ann Arbor Special Details, and as specified herein.

MATERIALS

Provide materials in accordance with section 811 and 920 of the MDOT 2012 Standard Specifications for Construction. Provide the Material Safety Data Sheets to the Engineer for required materials and supplies. Dispose of unused material and containers in accordance with the Federal Resource Conservation Recovery Act (RCRA) of 1976 as amended, and 1994 PA 451, Part 111 Hazardous Waste Management. Provide samples of permanent marking materials upon request.

CONSTRUCTION METHODS

The preparation and placement of permanent markings shall conform to section 811 of the MDOT 2012 Standard Specifications, the Plans, and as specified herein.

MEASUREMENT AND PAYMENT

Completed work, as described, will be measured and paid for at Contract Unit Prices for the following Contract (Pay) Items:

<u>PAY ITEMS</u>	<u>PAY UNIT</u>
Pavt Mrkg, 4 inch Solid White, Type R	Foot
Pavt Mrkg, Thermoplastic, 24 inch Stop Bar	Foot

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the MDOT 2012 Standard Specifications for Construction and as modified by this Detailed Specification.

**DETAILED SPECIFICATION
FOR
ITEM #295 – FERTILIZER, CHEMICAL NUTRIENT, CL A
ITEM #296 – MULCH BLANKET, HIGH VELOCITY
ITEM #297 – SEEDING, MIXTURE THM
ITEM #298 – TOPSOIL SURFACE, FURN, 4 INCH**

DESCRIPTION

This work shall consist of furnishing and installing turf restoration items to reestablish and permanently stabilize disturbed areas within the project as shown on the plans, including all labor, equipment, and material required.

This work shall be completed in accordance with the drawings and detailed specifications of this contract, the MDOT 2012 Standard Specifications for Construction, and as herein specified, including any detailed specifications

MATERIALS

The materials shall meet the requirements specified in the MDOT 2012 Standard Specifications as designated, as specified herein, and as approved by the Engineer:

- Seed shall be THM (Turf Loamy to Heavy) seed mixture as described in MDOT Table 816-1.
- Fertilizers shall be a Class A. The percentages by weight shall be 12- 12- 12, or as approved by the Engineer.
- Water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances.
- Mulch blankets shall be High Velocity Straw Mulch Blankets as specified in MDOT section 917.
- Topsoil shall be 4 inches furnished as specified in MDOT section 917

CONSTRUCTION METHODS

These items shall be constructed as required in the MDOT 2012 Standard Specifications for Construction.

MAINTENANCE AND ACCEPTANCE

It is the responsibility of the Contractor to establish a dense lawn of permanent grasses, free from mounds and depressions prior to final acceptance and payment of this project. Any portion of a seeded area that fails to show a uniform germination shall be reseeded. Such reseeding shall be at the Contractor's expense and shall continue until a dense lawn is established. The Contractor is responsible for restoring all areas disturbed by his construction.

The Contractor shall maintain all lawn areas until they have been accepted by the Engineer. Lawn maintenance shall begin immediately after the grass seed is in place and continue until final acceptance with the following requirements:

Lawns shall be protected and maintained by watering, mowing, and reseeding as necessary, until the period of time when the final acceptance and payment is made by the Engineer for the project, to establish a uniform, weed-free, stand of the specified grasses. Maintenance includes furnishing and installing additional topsoil, and reseeding all as may be required to correct all settlement and erosion until the date of final acceptance.

Damage to seeded areas resulting from erosion shall be repaired by the Contractor at the Contractor's expense. Scattered bare spots in seeded areas will not be allowed over three (3) percent of the area nor greater than 6"x 6" in size.

When the above requirements have been fulfilled, the Engineer will accept the lawn.

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

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

MEASUREMENT AND PAYMENT

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

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Fertilizer, Chemical Nutrient, Cl A	Lbs
Mulch Blanket, High Velocity	Syd
Seeding, Mixture THM	Lbs
Topsoil Surface, Furn, 4 inch	Syd

All work indicated herein shall be included in the unit prices for the above pay items and shall include all labor, materials and equipment required to complete the work.

Memo

To: Ms. Anne Warrow – City of Ann Arbor
 From: Katherine C. Hennicken, P.E. – TTL Associates, Inc.
 Date: January 23, 2019
 Re: Geotechnical Bundle #2

TTL has completed the soil borings and pavement cores associated with Geotechnical Bundle #1 in Ann Arbor, Michigan. This memo provides a brief description the encountered pavement, as well as crushed stone thicknesses.

Twenty-four soil borings, each of which contained associated pavement cores, were performed by TTL during the period from December 27, 2018 through January 7, 2019. Additionally, ten pavement cores without borings were performed on December 14 and 15, 2018. The soil borings are designated B- and the pavement cores are designated PC-. The soil borings and pavement core locations were located in the field by the City of Ann Arbor. Additional work is ongoing for this project.

The encountered pavement thicknesses are summarized in the tables below.

Nearest Address	Soil Boring Number	Pavement Thickness		Subgrade AASHTO Lab Class	Recommended Resilient Modulus (psi)
		Asphalt (inches)	Crushed Stone (inches)		
216 Bucholz Court	Bucholz B-1	3½	8½	A-3	12,550
1000 Cedar Bend Drive	Cedar Bend B-2	3¼	5¾	A-4	11,850
1430 Coler Road	Coler B-6	2	9	A-6	8,050
1410 Dicken Drive	Dicken B-3	5¼	6	A-6	8,050
1815 Dunmore	Dunmore B-10	4	12	A-7-6	6,200
1715 Dunmore	Dunmore B-14	6½	5¾		
520 Eighth Street	Eighth Street B-4	3¾	12½	A-7-6	12,550
704 Granger	Granger B-1	2¼	6½*		10,450
820 Granger	Granger B-2	5	9*		
1006 Granger	Granger B-3	3¼	6¾*	A-7-6	
1119 Granger	Granger B-4	3¾	7¼*		
1204 Granger	Granger B-5	3½	6*		
1301 Granger	Granger B-6	3	9*		
Hartford	Hartford B-11	5	4¼	A-6	7,150
1509 Maywood	Maywood B-12	3½	4½	A-6	7,150
1405 Maywood	Maywood B-13	4	6		
2400 Platt Road	Platt B-1	5½	7½	A-4	8,050
2275 Platt Road	Platt B-2	5	9		
2203 Platt Road	Platt B-3	5	11		

Nearest Address	Soil Boring Number	Pavement Thickness		Subgrade AASHTO Lab Class	Recommended Resilient Modulus (psi)
		Asphalt (inches)	Crushed Stone (inches)		
3319 Platt Road	Platt B-4	4¾	12¼		
1444 South Boulevard	South B-5	4¾	6½	A-2-4	12,550
1706 Waverly	Waverly B-8	3¾	N.E.	A-6	8,050
1732 Waverly	Waverly B-9	3½	N.E.		
1814 Weldon	Weldon B-7	4¾	N.E.	A-6	8,050
828 Greene Street		5	N.E.	N.E.	Pavement Core Only
1008 Greene Street		5	N.E.	N.E.	
200 Hill Street		7	N.E.	N.E.	
Eastbound Hill Street		11¾	N.E.	N.E.	
142 Hoover Street		4	N.E.	N.E.	
323 Hoover Street		4½	N.E.	N.E.	
500 Hoover Street		4¾	N.E.	N.E.	
319 Mosley Street		4	N.E.	N.E.	
620 Third Street		8	N.E.	N.E.	

*Indicates concrete pavement encountered instead of crushed stone aggregate base
 N.E. – Not Encountered

Photographs of the pavement cores from each of the borings are attached to this report.

Please let us know if you have any questions or comments at this time.



TTL Associates, Inc.
 1915 N 12th Street
 Toledo, Ohio 43624
 Telephone: 419-324-2222
 Fax: 419-241-1808

BORING NUMBER Bucholz B-1

PAGE 1 OF 1

CLIENT City of Ann Arbor **PROJECT NAME** Geotechnical Bundle #2
PROJECT NUMBER 1504703 **PROJECT LOCATION** Ann Arbor, MI
DRILLING CONTRACTOR TTL Associates CW JP **RIG NO.** 844 **GROUND ELEVATION**
DRILLING METHOD Pavement Coring with 3 in. SSA **GROUND WATER LEVELS:**
DATE STARTED 12/26/18 **COMPLETED** 12/26/18 **AT TIME OF DRILLING** None
LOGGED BY KKC **CHECKED BY** KCH **AT END OF DRILLING** None
NOTES 216 Bucholz Court **0hrs AFTER DRILLING** Backfilled w/Cuttings and Patch

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL			
									20	40	60	80
0.0			ASPHALT - 3.5 Inches									
			CRUSHED STONE - 8.5 Inches									
	2.5		Moist Medium Dense Brown SILTY SAND w/Gravel (SM)	SS 1	78	8-8-10 (18)	NP					▲
	2.5		Moist Loose Brown SILTY SAND w/Gravel (SM)	SS 2	89	4-4-3 (7)	NP					▲
	5.0		Moist Medium Dense Brown POORLY GRADED SAND w/Gravel and Trace Silt (SP)	SS 3	89	10-11-12 (23)	NP					▲
	7.5		@7.5': Gray	SS 4	89	13-13-15 (28)	NP					▲
	10.0		Moist Medium Dense Brown POORLY GRADED SAND w/Silt and Gravel (SP/SM)	SS 5	89	13-8-10 (18)	NP					●▲
	10.5		Bottom of hole at 10.5 feet.									

TTL_GEOTECH_STANDARD_1504703.GPJ_GINT_US LAB.GDT 1/22/19



TTL Associates, Inc.
 1915 N 12th Street
 Toledo, Ohio 43624
 Telephone: 419-324-2222
 Fax: 419-241-1808

BORING NUMBER Cedar Bend B-2

CLIENT City of Ann Arbor	PROJECT NAME Geotechnical Bundle #2
PROJECT NUMBER 1504703	PROJECT LOCATION Ann Arbor, MI
DRILLING CONTRACTOR TTL Associates CW JP	RIG NO. 844 GROUND ELEVATION
DRILLING METHOD Pavement Coring with 3 in. SSA	GROUND WATER LEVELS:
DATE STARTED 12/26/18 COMPLETED 12/26/18	AT TIME OF DRILLING None
LOGGED BY KKC CHECKED BY KCH	AT END OF DRILLING None
NOTES 1000 Cedar Bend Drive	0hrs AFTER DRILLING Backfilled w/Cuttings and Patch

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL			
									20	40	60	80
0.0			ASPHALT - 3.25 Inches CRUSHED STONE - 5.75 Inches									
2.5	2.5'		Moist Medium Dense Gray/Brown SILTY SAND w/Trace Gravel (SM)	SS 1	89	4-8-12 (20)	NP					▲
			Moist Very Dense Gray/Brown POORLY GRADED SAND w/Gravel, Cobbles, and Trace Silt (SP)	SS 2	89	10-22-32 (54)	NP					▲
5.0			@5': Brown	SS 3	89	20-40-40 (80)	NP					▲
	7.0'		@7': Auger Refusal Bottom of hole at 7.0 feet.									



TTL Associates, Inc.
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 Telephone: 419-324-2222
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BORING NUMBER Maywood B-12

CLIENT City of Ann Arbor	PROJECT NAME Geotechnical Bundle #2
PROJECT NUMBER 1504703	PROJECT LOCATION Ann Arbor, MI
DRILLING CONTRACTOR TTL Associates TB MB	RIG NO. 844 GROUND ELEVATION
DRILLING METHOD Pavement Coring with 3 in. SSA	GROUND WATER LEVELS:
DATE STARTED 1/3/19 COMPLETED 1/3/19	▽ AT TIME OF DRILLING 9.5 ft
LOGGED BY KKC CHECKED BY KCH	▼ AT END OF DRILLING 9.0 ft
NOTES 1509 Maywood	0hrs AFTER DRILLING Backfilled w/Cuttings and Patch

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL			
									20	40	60	80
0.0			ASPHALT - 3.5 Inches									
			CRUSHED STONE - 4.5 Inches									
			Moist Stiff Brown LEAN CLAY w/Sand and Trace Gravel (CL) @2': Very Stiff	SS 1	100	4-4-5 (9)	3.25					▲ 16
2.5				SS 2	100	5-8-14 (22)	4.50					● 13
			Moist Very Stiff Brown/Gray SANDY SILT w/Trace Gravel (ML)	SS 3	100	9-12-12 (24)	4.50					● 13
5.0												
			Moist Very Stiff Brown LEAN CLAY w/Sand and Trace Gravel (CL)	SS 4	100	9-12-11 (23)	4.50					● 13
7.5												
			Wet Loose Brown SILTY CLAYEY SAND (SC/SM)	SS 5	100	5-6-2 (8)	NP					▲
10.0												
			Moist Hard Gray/Brown LEAN CLAY w/Sand and Trace Gravel (CL)	SS 6	100	8-14-20 (34)	4.50					● 15
12.5												
			Moist Hard Gray/Brown SANDY LEAN CLAY w/Trace Gravel (CL)	SS 7	100	11-20-32 (52)	4.25					● 13
15.0												
			Bottom of hole at 15.0 feet.									

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TTL Associates, Inc.
 1915 N 12th Street
 Toledo, Ohio 43624
 Telephone: 419-324-2222
 Fax: 419-241-1808

BORING NUMBER Maywood B-13

CLIENT City of Ann Arbor
PROJECT NAME Geotechnical Bundle #2
PROJECT NUMBER 1504703
PROJECT LOCATION Ann Arbor, MI
DRILLING CONTRACTOR TTL Associates TB MB
RIG NO. 844 **GROUND ELEVATION**
DRILLING METHOD Pavement Coring with 3 in. SSA
GROUND WATER LEVELS:
DATE STARTED 1/3/19 **COMPLETED** 1/3/19 **AT TIME OF DRILLING** None
LOGGED BY KKC **CHECKED BY** KCH **AT END OF DRILLING** None
NOTES 1405 Maywood **0hrs AFTER DRILLING** Backfilled w/Cuttings, Chips, and Patch

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL			
									20	40	60	80
0.0			ASPHALT - 4 Inches									
			CRUSHED STONE - 6 Inches									
			Moist Stiff Dark Brown LEAN CLAY w/Sand and Trace Gravel (CL)	SS 1	100	5-4-7 (11)	3.25					▲ 18 ●
	2.5		Moist Very Stiff Gray/Brown SANDY SILT w/Trace Gravel (ML)	SS 2	100	6-9-14 (23)	4.50					● 14 ▲
			Moist Hard Gray/Brown SANDY SILT w/Trace Gravel and Shale Fragments (ML)	SS 3	100	8-14-23 (37)	4.50					● 12 ▲
	5.0		Moist Hard Brown LEAN CLAY w/Sand and Trace Gravel (CL)	SS 4	100	9-15-21 (36)	4.50					● 13 ▲
	7.5			SS 5	100	14-18-24 (42)	4.50					● 13 ▲
	10.0			SS 6	100	14-19-22 (41)	4.50					● 14 ▲
	12.5		Moist Very Stiff Gray LEAN CLAY w/Sand and Trace Gravel (CL)	SS 7	100	6-9-13 (22)	3.50					● 15 ▲
	15.0		Bottom of hole at 15.0 feet.									

TTL_GEOTECH_STANDARD_1504703.GPJ_GINT_US_LAB_GDT_1/22/19



CORE LOG

Project: Geotechnical Bundle #2

TTL Project No. 1504703

Core Dates: December 27, 2018 through January 7, 2019

216 Bucholz Court B-1		1000 Cedar Bend Drive B-2	
Core Thickness	3½ inches	Core Thickness	3¼ inches



CORE LOG

Project: Geotechnical Bundle #2

TTL Project No. 1504703

Core Dates: December 27, 2018 through January 7, 2019

Hartford B-11		1509 Maywood B-12	
Core Thickness	5 inches	Core Thickness	3½ inches





CORE LOG

Project: Geotechnical Bundle #2

TTL Project No. 1504703

Core Dates: December 27, 2018 through January 7, 2019

1405 Maywood B-13		1815 Dunmore B-10	
			
Core Thickness	3¾ inches (Measured 4 inches along corehole sidewall)	Core Thickness	4¾ inches

TYPE OF CASTING	NEEHAH FOUNDRY	EAST JORDAN IRON WORKS
BARRIER CURB INLET	R-3013B, TYPES GRATE (500 POUNDS)	7045, TYPE M1 GRATE (490 POUNDS)
BARRIER CURB DOUBLE INLET	R- 3249F, TYPE S GRATE (410 POUNDS)	N/A
MOUNTABLE CURB INLET	R-3034B, TYPE S GRATE (500 POUNDS)	7065, TYPE M1 GRATE (470 POUNDS)
GUTTER INLET	R-3448C, TYPE S GRATE (285 POUNDS)	5080, TYPE M2 GRATE (490 POUNDS)
GUTTER DOUBLE INLET	R-3448B, TYPE S GRATE (265 POUNDS)	5000, TYPE M2 GRATE (490 POUNDS)
YARD DRAIN	R-2560-E1 (285 POUNDS)	1040, TYPE O2 GRATE (355 POUNDS)
YARD DRAIN IN CITY PARK	N/A	1040, TYPE M1 GRATE (400 POUNDS)
*MANHOLE FRAME & COVER (WATER & STORM)		1040, TYPE A COVER (400 POUNDS)
**WATERTIGHT MANHOLE FRAME & COVER (SANITARY)		1040, TYPE AGS COVER (400 POUNDS)
MONUMENT BOX	N/A	8360 (100 POUNDS)

NOTES:

*FRAMES AND COVERS MUST HAVE MACHINED BEARING SURFACES.

**MANHOLE COVERS SHALL BE LABELED WITH "CITY OF ANN ARBOR" AND "WATER", "STORM" OR "SANITARY", WHICHEVER IS APPLICABLE. ALL COVERS SHALL INCLUDE THE CITY'S CUSTOM LOGO IN USE AT THE TIME OF THE PROJECT.

***SANITARY MANHOLE COVERS SHALL BE 1040AGS WITH A 1/4" NEOPRENE GASKET TO SEAL AGAINST THE FRAME.

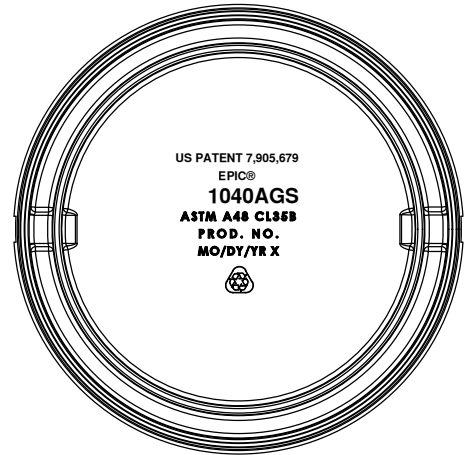
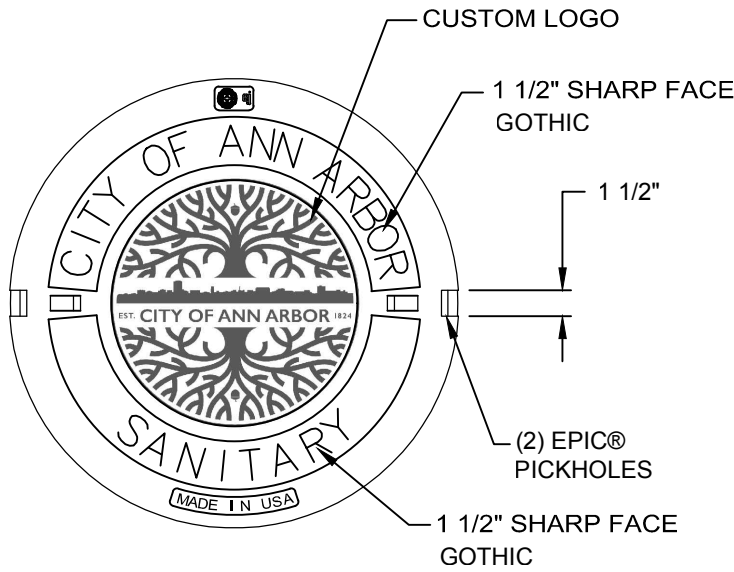
STANDARD CASTING SCHEDULE SD-GU-5

REVISED
1-24-19

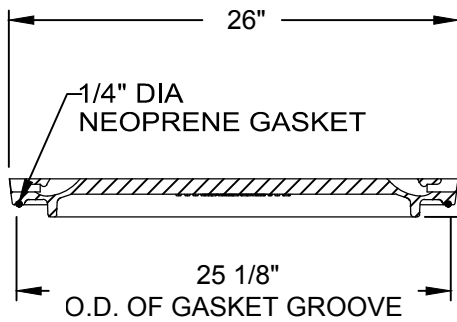


**CITY OF ANN ARBOR
PUBLIC SERVICE**
301 EAST HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
734-794-6410
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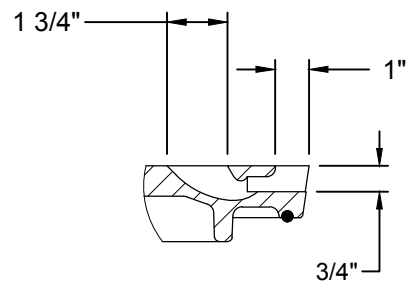
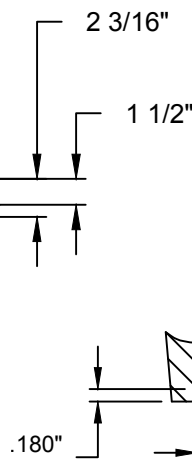
REV. NO.	DATE	DRAWN BY	CHECKED BY
STANDARD CASTING SCHEDULE			
DR. ARG	CH. CEC	DRAWING NO.	
SCALE N.T.S.	DATE 1/24/19	SD-GU-5	



BOTTOM VIEW



SECTION



EPIC ® DETAIL

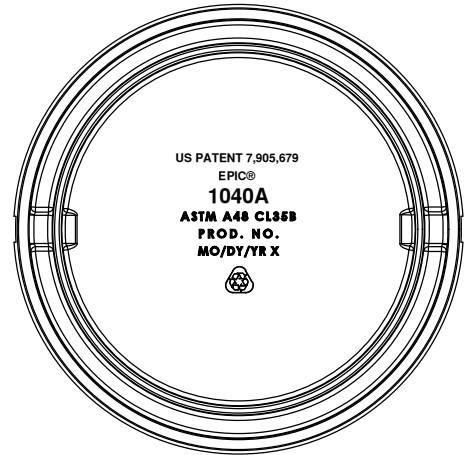
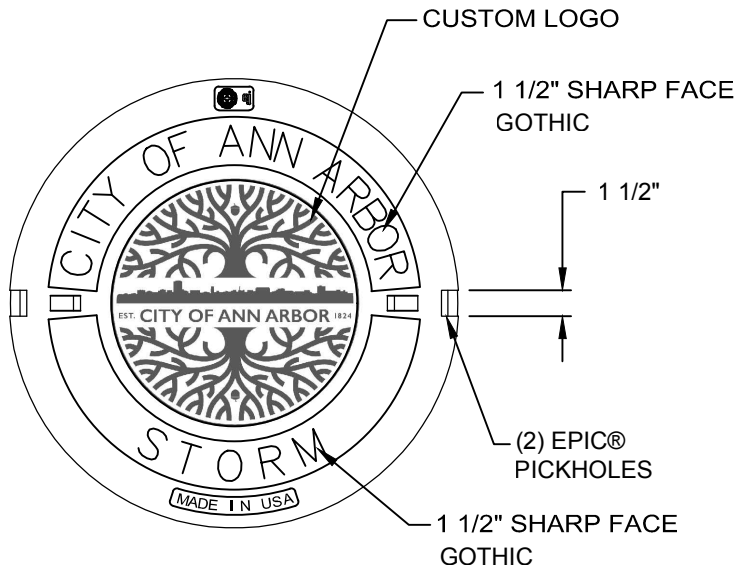
REVISED
1-24-19

EJ PRODUCT #001040326

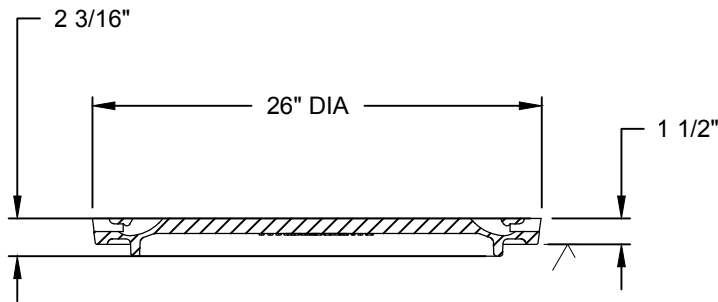


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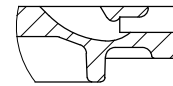
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SANITARY MANHOLE COVER 1040A			
DR. ARG	CH. CEC	DRAWING NO.	
SCALE N.T.S.	DATE 1/24/19	SAN-MH	



BOTTOM VIEW



SECTION



EPIC® DETAIL

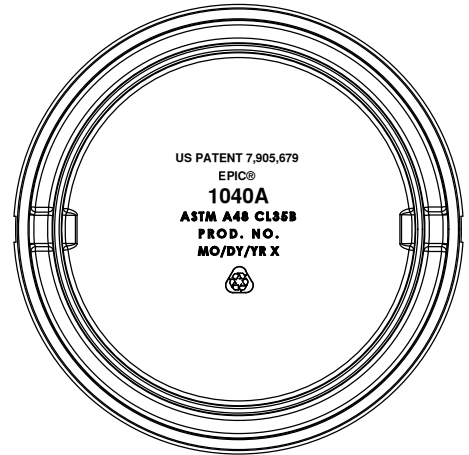
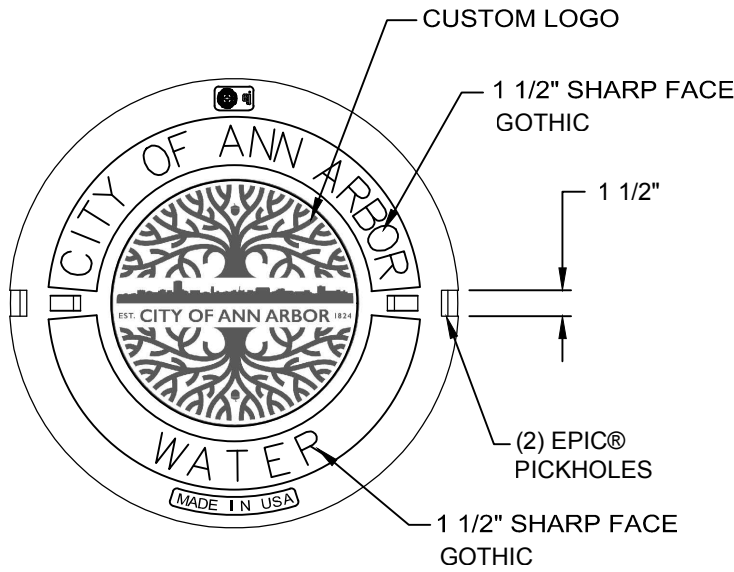
REVISED
1-24-19

EJ PRODUCT #001040325

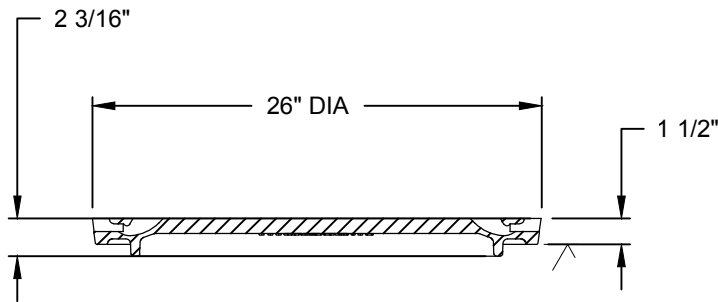


**CITY OF ANN ARBOR
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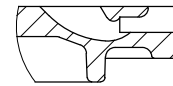
REV. NO.	DATE	DRAWN BY	CHECKED BY
STORM MANHOLE COVER 1040A			
DR. ARG	CH. CEC	DRAWING NO.	
SCALE N.T.S.	DATE 1/24/19	STM-MH	



BOTTOM VIEW



SECTION



EPIC® DETAIL

EJ PRODUCT #001040324

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1-24-19



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REV. NO.	DATE	DRAWN BY	CHECKED BY
WATER MANHOLE COVER 1040A			
DR. ARG	CH. CEC	DRAWING NO.	
SCALE N.T.S.	DATE 1/24/19	W-MH	



CITY OF ANN ARBOR ENGINEERING

2019 MISC UTILITY PROJECTS

ITB 4556, FILE No. 2018025

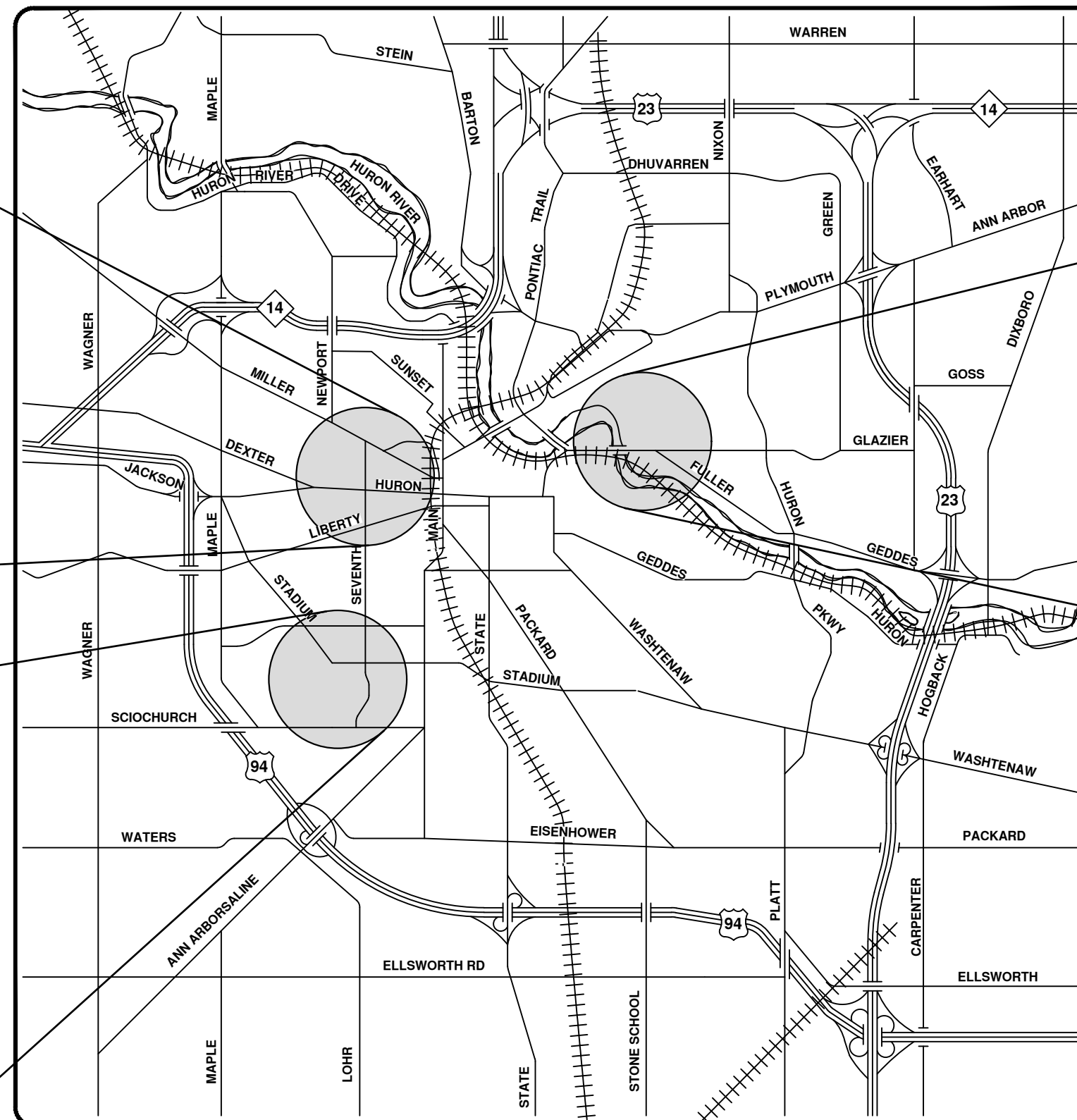
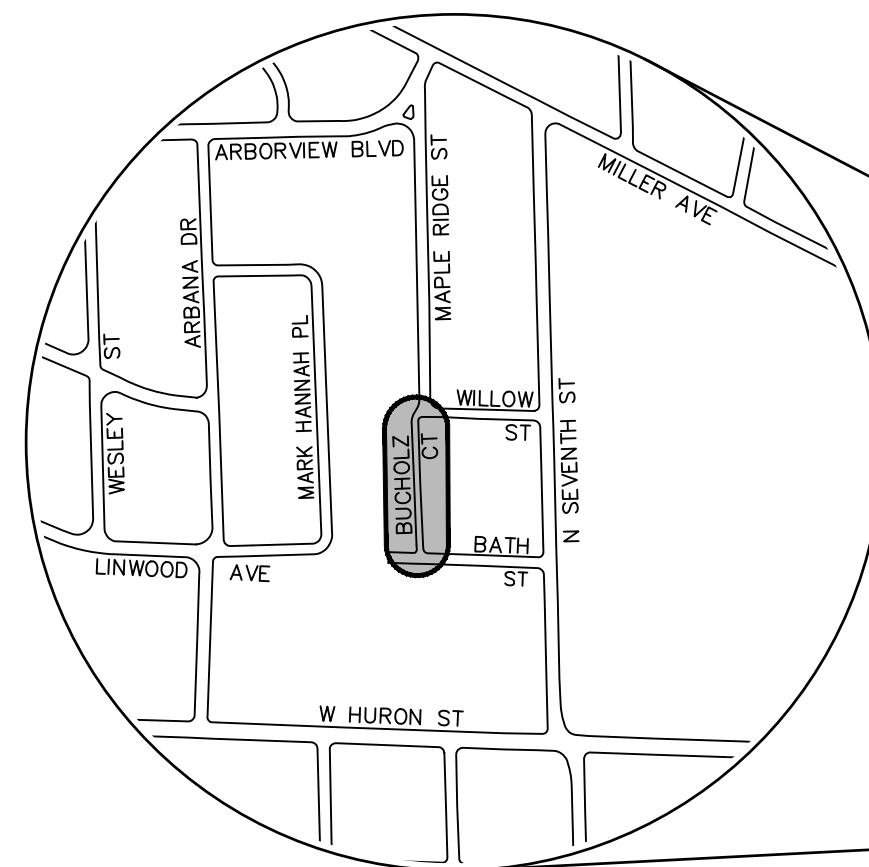
NOTES

FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013, THE CONTRACTOR SHALL CALL 811 OR 1-800-482-7171 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS, PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

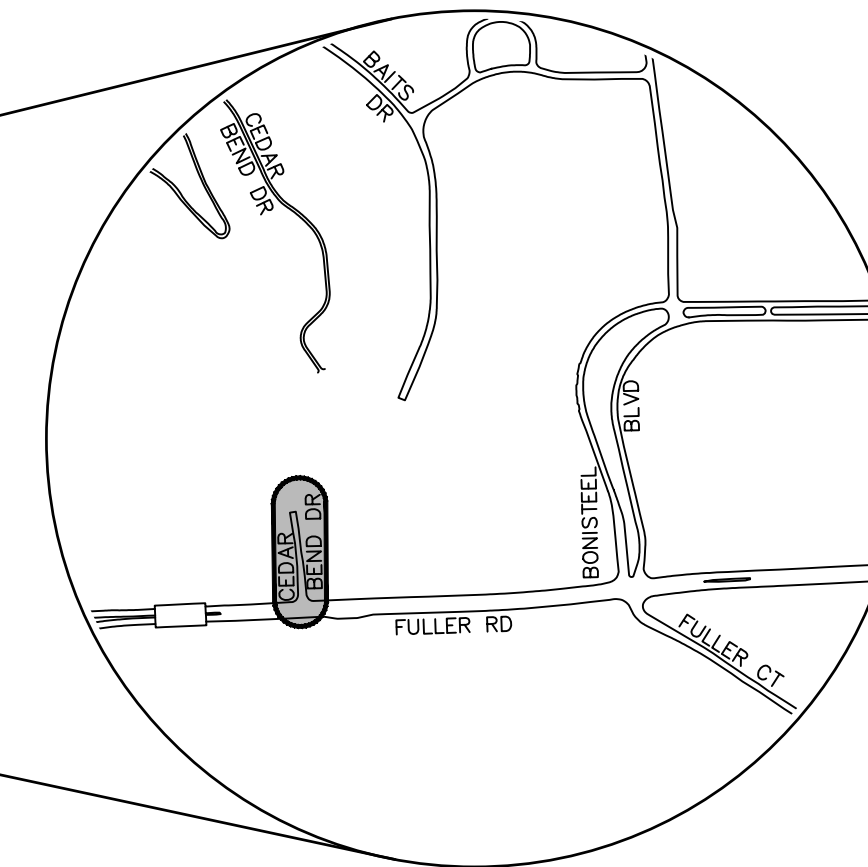
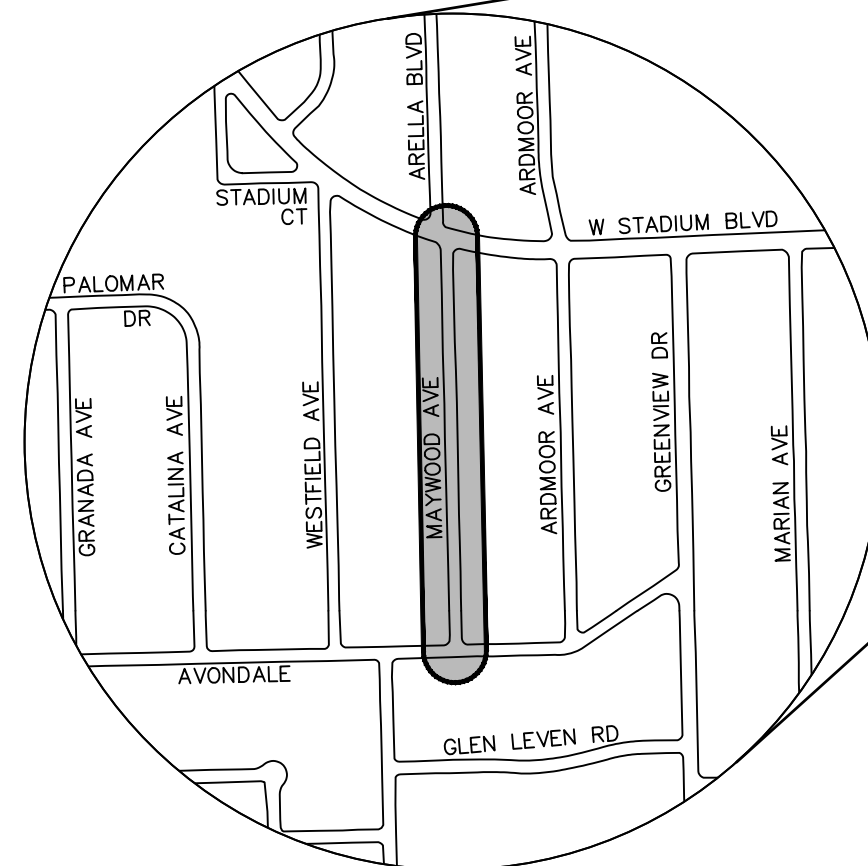
THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS, TELEPHONE, ELECTRICAL POWER, CABLE TV AND FIBER OPTIC LINES ARE APPROXIMATE. THE CITY OF ANN ARBOR ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO THE 1994 EDITION OF THE CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS, ITS DETAILS, WHICH ARE INCLUDED BY REFERENCE, AND THIS PROJECT'S CONTRACT DOCUMENTS. THE OMISSION OF ANY CURRENT STANDARD DETAIL DOES NOT RELIEVE THE CONTRACTOR FROM THIS REQUIREMENT.

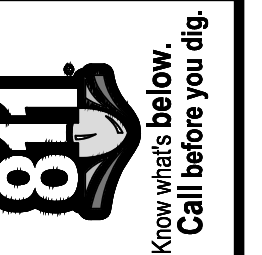
SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
1	COVER SHEET
2	STANDARD NOTES
3	LEGEND
4	WATER MAIN DETAILS
5	STORM SEWER, TRENCH AND MISC. DETAILS
6 - 8	TYPICAL SECTIONS
9	TPAR WALKWAY DEVICES
10	ALTERNATE PEDESTRIAN ROUTE (APR) DETOUR
11	TPAR RAMPS
12	ALTERNATE PEDESTRIAN ROUTE (APR) BYPASS
BUCHHOLZ COURT	
13	MAINTENANCE OF TRAFFIC
14	REMOVALS
15	WATER MAIN PLAN AND PROFILE
16	ROAD
CEDAR BEND DRIVE	
17	REMOVALS AND MAINTENANCE OF TRAFFIC
18	WATER MAIN PLAN AND PROFILE
19	ROAD
MAYWOOD AVENUE	
20	MAINTENANCE OF TRAFFIC
21 - 22	REMOVALS
23 - 26	WATER MAIN PLAN AND PROFILE
27 - 29	STORM SEWER PLAN AND PROFILE
30 - 31	ROAD



VICINITY MAP

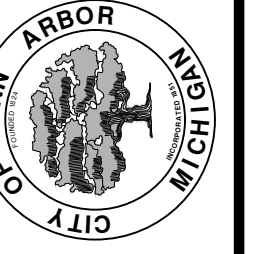


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REV.	DATE	DESCRIPTION
00	3-15-19	ADDENDUM #1
00	3-1-19	OUT FOR BID
		CC/DF/KB
		CEC
		TH
		TH
		CHECKED

CITY OF ANN ARBOR
PUBLIC SERVICES
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ANN ARBOR, MI 48106-6647
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CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING

PREPARED UNDER THE SUPERVISION OF
Tesha Humphriss
TESHA HUMPHRISS, P.E. - MI LICENSE No. 51103
PROJECT MANAGER
3/1/2019
DATE



CONSTRUCTION NOTES:

1. Driveways and entrances to buildings, real property, and the like shall not be blocked except for short durations and only when approved by the Engineer. Vehicular and pedestrian access shall be maintained at all times. It shall be the Contractor's responsibility to coordinate all necessary driveway closures with the property owner(s) and resident(s) in the areas of construction.
2. The location and depth of all existing utilities and service leads are to be field verified by the Contractor prior to construction.
3. Location and depth of utilities as depicted on the plans is approximate and shown according to the best information available. It is the Contractor's responsibility to excavate ahead and adjust depth of conflict utilities accordingly. Any damage to utilities is the Contractor's responsibility to avoid and/or repair as necessary.
4. The Contractor is to take special care to protect the existing water main and be responsible for maintaining consistent water service.
5. During non-working hours no trench shall remain open; any open trench shall be properly secured with protective fencing. This work shall be included in the item of work "General Conditions".
6. Trenches for new water services shall be excavated to MIOSHA and City of Ann Arbor Public Works requirements.
7. City of Ann Arbor Public Works will install the corporation and copper service lead(s) to transfer the connection(s). If an existing water service is found to be failing or is not copper, the lead will be replaced to the curb box by Public Works.
8. For the installation of corporations, or any other related activities, the Contractor shall not receive additional compensation for delays due to the scheduling of or coordination with the City of Ann Arbor Public Works.
9. The Contractor shall backfill trenches in accordance with Trench Detail specified on plans. This work shall be included in the item of work "Excavate and Backfill for Water Service Tap and Lead". All concrete removals and replacements required for this work will be paid for separately.
10. All ductile iron pipe and fittings shall be polyethylene wrapped per ANSI/AWWA C105/A21.5.
11. Cor-blu bolts to be used at all mechanical water main joints at hydrants and Megalug fittings
12. The Contractor shall construct, flush, and bacteriologically test the water main per Detailed Specification "Water Main Installation and Testing" and as approved by the Engineer. All chlorinated water shall be discharged directly into an approved sanitary sewer. The Contractor shall supply all necessary hoses, fittings and the like to accomplish this work.
13. Water main fittings, other than those specifically listed as separate pay items, which are required to complete the work, such as blow-off assemblies, concrete thrust blocks, solid sleeves and mechanical plugs, shall not be paid for separately, but shall be included in the pipe pay items.
14. "No Parking" signs shall be installed by the Contractor at locations as approved or directed by the Engineer. All signs shall be installed in accordance with the detailed specifications.
15. Postal delivery and refuse pickup service shall be maintained at all times by the Contractor.
16. All fittings, hydrants, valves and castings removed during construction are the property of the City of Ann Arbor. The Contractor within 48 hours shall deliver to City of Ann Arbor Public Works Facility at the W.R. Wheeler Service Center located at 4251 Stone School Road.
17. Where street curbs are undermined due to construction activities, they shall be removed and replaced as directed by the Engineer.
18. The Contractor shall be responsible for the continuous maintenance of the temporary road surface and soil erosion control measures within the construction area until the full completion of the project. This work shall be included in the item of work "General Conditions".
19. All curb, sidewalk, driveway approach removals shall be approved by Engineer before the work is done.
20. Sawed sewer pipe connections shall be coupled with a Fernco flexible coupling and a stainless steel shear ring.
21. The location of material stock piles and on-site staging areas to be approved by the Engineer.
22. All structures shall receive new castings as directed by the Engineer, as specified on the standard casting schedule. The existing castings are the property of the City of Ann Arbor. The Contractor shall deliver to City of Ann Arbor Public Works Facility at the W.R. Wheeler Service Center located at 4251 Stone School Road.
23. Payment for drainage structure sumps, where specified, shall be included in the payment for the various drainage structure sizes and or types.
24. Where sewer pipes of different sizes or materials are joined, Fernco flexible couplings with stainless steel shear rings shall be used. The Contractor's purchase price for these devices, including shipping, shall be paid as an extra. Prior to payment for this item, the Contractor shall submit receipts for the Engineer's review and approval. All other costs associated with the installation of these devices shall be included in the payment for the sewer.
25. Where sewer and water main are to be removed & replaced or added, all pipe shall be installed using Trench Detail detailed in the specifications or shown on Plans. Backfill for sewer and water construction shall be MDOT Granular Material, Class II, Modified.
26. Existing street name, guide, and regulatory signs, and mailboxes which conflict with the proposed construction shall be removed prior to construction, stored in a manner which will prevent damage, and re-set in locations as directed by the Engineer. This work will not be paid for separately, but shall be included in "Machine Grading, Modified"
27. In areas where edge drain cannot be installed in accordance with City of Ann Arbor Detail SD-TD-11, the edge drain shall be installed at the depth as indicated on the plans, or as directed by Engineer. In no case shall the edge drain be installed at a grade less than 0.50% or at a depth of less than 2' below top of proposed pavement.

GENERAL

NOTIFY THE CITY OF ANN ARBOR SOIL EROSION CONTROL OFFICE 48 HOURS PRIOR TO BEGINNING WORK ON THE PROJECT. PHONE: 734-794-6265.

1. THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN THE SOIL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER AT ALL TIMES DURING CONSTRUCTION. ANY MODIFICATIONS OR ADDITIONS TO THE SOIL EROSION CONTROL MEASURES DUE TO CONSTRUCTION OR CHANGED CONDITIONS SHALL BE AS DIRECTED AND APPROVED BY THE ENGINEER.
2. ALL SOIL EROSION AND SEDIMENTATION CONTROL WORK SHALL CONFORM TO THE PERMIT REQUIREMENTS OF THE CITY OF ANN ARBOR, CITY ORDINANCE CHAPTER 63, CITY OF ANN ARBOR STANDARDS DIVISION VII, THE LAWS OF THE STATE OF MICHIGAN, AND THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
3. DAILY, OR AFTER ANY STORM EVENT, INSPECTIONS OF EROSION CONTROL MEASURES SHALL BE MADE BY THE CONTRACTOR. PERIODIC INSPECTIONS MAY BE MADE BY THE ENGINEER TO DETERMINE THE EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL MEASURES. ANY NECESSARY CORRECTIONS SHALL BE MADE WITHOUT DELAY, AND WITHOUT ADDITIONAL COST TO THE CITY OF ANN ARBOR.
4. EROSION AND SEDIMENTATION FROM WORK ON THE SITE SHALL BE CONTAINED ON THE SITE AND NOT BE ALLOWED TO COLLECT ON ANY OFF-SITE AREAS, ROADWAYS OR WATERWAYS.
5. ALL MUD/SOIL TRACKED ONTO ROADWAYS FROM THE SITE DUE TO CONSTRUCTION, SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR. IF SO ORDERED, THE CONTRACTOR SHALL PROVIDE AND OPERATE A VACUUM-TYPE STREET SWEEPER, AT NO ADDITIONAL COST TO THE CITY OF ANN ARBOR, WITHIN FOUR (4) HOURS OF BEING SO ORDERED.
6. RESTORATION OF ALL DISTURBED AREAS, INCLUDING PLACEMENT OF TOPSOIL, SEED, FERTILIZER AND MULCH AND/OR SOD SHALL BE PERFORMED WITHIN FIVE (5) DAYS OF THE COMPLETION OF FINAL GRADE.
7. CONSTRUCTION OPERATIONS SHALL BE SCHEDULED AND PERFORMED SO THAT PREVENTATIVE SOIL EROSION CONTROL MEASURES ARE IN PLACE PRIOR TO EXCAVATION IN CRITICAL AREAS AND TEMPORARY STABILIZATION MEASURES ARE IN PLACE IMMEDIATELY FOLLOWING BACKFILLING OPERATIONS.
8. SPECIAL PRECAUTIONS WILL BE TAKEN IN THE USE OF CONSTRUCTION EQUIPMENT TO PREVENT SITUATIONS THAT PROMOTE EROSION.
9. PROPER DUST CONTROL SHALL BE MAINTAINED DURING CONSTRUCTION BY USE OF WATER TRUCKS AND/OR DUST PALLIATIVE AS REQUIRED.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY SOIL EROSION CONTROL MEASURES AND REMOVAL OF SOME MEASURES UPON AUTHORIZED COMPLETION OF THE PROJECT. FINAL COMPLETION OF PROJECT WILL NOT BE AUTHORIZED UNTIL ALL SITE WORK AND UTILITY CONSTRUCTION IS COMPLETE AND ALL SOILS ARE STABILIZED.
11. THE CONTRACTOR SHALL NOT GRADE INTO ADJACENT PROPERTIES. SILT AND PROTECTIVE FENCE SHALL BE INSTALLED AND MAINTAINED TO PREVENT GRADING, EROSION AND SEDIMENTATION INTO THE ADJACENT PROPERTIES.
12. TREE PROTECTION FENCING MUST REMAIN INTACT UNTIL RESTORATION OF THE SITE IS COMPLETE.

SEQUENCE OF EROSION CONTROL MEASURES:

1. THE CONTRACTOR IS TO SUBMIT TO THE ENGINEER, A SEQUENCE OF CONSTRUCTION WITH RESPECT TO THE SOIL EROSION CONTROL MEASURES FOR REVIEW, COMMENT AND APPROVAL. THIS SCHEDULE IS TO INCLUDE INSPECTION AND REPAIR OF ALL TEMPORARY EROSION CONTROL MEASURES DAILY AND WITHIN 24 HOURS OF A STORM EVENT.

SAMPLE SOIL EROSION AND SEDIMENTATION CONTROL INSTALLATION MINIMUM REQUIREMENTS:

- 1.1. INSTALL SILT FENCE, TREE PROTECTION FENCING, MUD MATS, INLET FILTERS ON EXISTING DRAINAGE FEATURES, AND ALL OTHER TEMPORARY SOIL EROSION CONTROLS, PRIOR TO ANY CLEARING OR EARTH MOVING OPERATION.
- 1.2. STRIP AND STOCKPILE TOPSOIL. STABILIZE STOCKPILE AS REQUIRED.
- 1.3. INSTALL WATER MAINS, STORM AND SANITARY SEWERS, AND OTHER ENCLOSED DRAINAGE FEATURES. NEW INLET FILTERS SHALL BE INSTALLED IMMEDIATELY FOLLOWING INSTALLATION OF NEW DRAINAGE INLETS.
- 1.4. PERFORM MACHINE GRADING OPERATIONS AND CONSTRUCT PAVEMENTS (MAINLINE, SIDEWALKS, DRIVES, ETC.).
- 1.5. CONTINUALLY MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES, AS REQUIRED TO ALLOW DRAINAGE AND SEDIMENT REMOVAL. REMOVE ANY ACCUMULATED SEDIMENT IMMEDIATELY.
- 1.6. COMPLETE ALL FINE GRADING.
- 1.7. TEMPORARY SEED AND INSTALL EROSION CONTROL BLANKET IN ALL DISTURBED AREAS.
- 1.8. REFER TO LANDSCAPE PLANTING PLANS FOR PERMANENT SITE STABILIZATION.
- 1.9. CLEAN OUT STORM SEWER SYSTEMS.
- 1.10. REMEDY ANY NOTED DEFECTS TO THE SATISFACTION OF THE CITY OF ANN ARBOR'S SOIL EROSION AND SEDIMENTATION CONTROL OFFICIAL.
- 1.11. ALL TEMP. SOIL EROSION CONTROL MEASURES MUST BE REMOVED, WITH ENGINEERS APPROVAL, PRIOR TO FINAL INSPECTION

NOTE: THIS SEQUENCE IS FOR INFORMATION ONLY. IT IS INTENDED TO SHOW THE SEQUENCE OF CONSTRUCTION WITH RESPECT TO THE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING THEIR OWN DETAILED CONSTRUCTION SEQUENCE AND SCHEDULE TO THE ENGINEER FOR REVIEW, COMMENT, AND APPROVAL.

TEMPORARY SEEDING:

1. SEED IN ACCORDANCE WITH PROJECT DRAWINGS AND SPECIFICATIONS.
2. ANY DISTURBED AREA NOT PAVED, SEEDED, MULCHED, SODDED OR BUILT UPON BY NOVEMBER 15TH OR JUNE 30TH IS TO BE TEMPORARILY STABILIZED PER SPECIFICATIONS.

CEDAR BEND DRIVE BENCHMARKS		
BM #	ELEV	DESCRIPTION
1	780.536	RR SPIKE IN E. SIDE OF U.P. ON E. SIDE OF CEDAR BEND DRIVE, 2ND POLE N. OF FULLER RD. BK 1116 PG 40.
2	776.316	TOP, S. SIDE OF CONC. BASE FOR SIGNAL POLE AT NE CORNER OF CEDAR BEND DRIVE AND FULLER ROAD.

PERMITS REQUIRED TO BE OBTAINED BY THE CONTRACTOR PRIOR TO THE BEGINNING OF CONSTRUCTION.

PERMIT	ISSUING AUTHORITY
LANE CLOSURE PERMIT*	CITY OF ANN ARBOR ENGINEERING
"NO PARKING" SIGNS PERMIT*	CITY OF ANN ARBOR ENGINEERING
GRADING/SOIL EROSION & SEDIMENTATION CONTROL PERMIT*	CITY OF ANN ARBOR CUSTOMER SERVICE
RIGHT-OF-WAY PERMIT*	CITY OF ANN ARBOR CUSTOMER SERVICE
* NO COST TO CONTRACTOR	

PERMITS REQUIRED TO BE OBTAINED BY THE CITY OF ANN ARBOR PRIOR TO THE BEGINNING OF CONSTRUCTION.

PERMIT	ISSUING AUTHORITY
M.D.E.Q. WATER MAIN CONSTRUCTION PERMIT	MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
M.D.E.Q. SANITARY SEWER CONSTRUCTION PERMIT	MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

CONTACT INFORMATION

PUBLIC UTILITIES	OWNER	CONTACT
WATER		
SANITARY		
STORM	CITY OF ANN ARBOR PUBLIC WORKS W.R. WHEELER SERVICE CENTER 4251 STONE SCHOOL ROAD ANN ARBOR, MI 48108	(734) 794-6350
FORESTRY		
SIGNS SIGNALS STREET LIGHTS		CHUCK FOJTIK (734) 794-6361
PRIVATE UTILITIES	OWNER	CONTACT
GAS	DTE ENERGY 3150 E. MICHIGAN AVE, YPSILANTI TOWNSHIP, MI 48198	ROBERT CZAPIEWSKI (734) 544-7818
ELECTRIC	DTE ENERGY WESTERN WAYNE SERVICE CENTER 8001 HAGGERTY ROAD BELLEVILLE, MI 48111	ANTHONY IGNASIAK (734) 397-4447
CABLE	COMCAST 27800 FRANKLIN ROAD SOUTHFIELD, MI 48034	RON SUTHERLAND (313) 999-8300
PHONE	AT&T 550 S. MAPLE ROAD ANN ARBOR, MI 48103	JEFF LEHMAN SR (734) 996-5334
FIBER OPTIC	MCI 2800 N. GLENFILLE ROAD RICHARDSON, TX 75082	DEAN BOYERS (972) 729-6016
FIBER OPTICS	WINDSTREAM 1295 S LINDEN ROAD, SUITE B FLINT, MI 48532	GREG SERICH (810) 244-3500
STREET LIGHTING	DTE ENERGY 8001 HAGGERTY ROAD BELLEVILLE, MI 48111	LANCE ALLEY (734) 397-4188

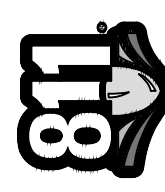
BUCHOLZ COURT BENCHMARKS

BM #	ELEV	DESCRIPTION
1	857.876	LAG SCREW IN W. FACE OF PP @ SE CORNER OF ARBANA DRIVE AND MARK HANNAH, BK 1112A PG 27
2	852.679	STEAMER VALVE ON FIRE HYDRANT, BK 1112A PG 28
3	849.550	SET RR SPIKE IN N. SIDE OF U.P. ON S. SIDE OF BATH STREET IN FRONT OF HSE NO. 1011
4	845.396	SET RR SPIKE IN E. SIDE OF U.P. ON W. SIDE OF BUCHOLZ CT. BETWEEN HSE NO. 301 AND 303.

MAYWOOD AVENUE BENCHMARKS

BM #	ELEV	DESCRIPTION
1	967.339	TOP, S. SIDE OF CONC. BASE FOR L.P. @ N.E. CORNER OF STADIUM AND ARELLA/MAYWOOD.
2	966.448	SET RR SPIKE IN E. SIDE OF U.P. ON W. SIDE OF MAYWOOD BETWEEN HSE NO. 1402 AND 1611 STADIUM BLVD.
3	962.504	TOP OF SE ANCHOR BOLT FOR L.P. ON W. SIDE OF MAYWOOD BETWEEN HSE NO. 1476 AND 1406.
4	960.651	TOP OF SE ANCHOR BOLT FOR L.P. ON W. SIDE OF MAYWOOD IN FRONT OF HSE NO. 1496.
5	956.842	TOP OF SE ANCHOR BOLT FOR L.P. ON W. SIDE OF MAYWOOD IN FRONT OF HSE NO. 1500.
6	948.232	SET RR SPIKE IN S. SIDE OF L.P. @ N.E. CORNER OF AVONDALE AND MAYWOOD.

R: \2018025 Misc Utility 2019\Plan Production\2018025Cov.dwg - _a2_standard bw.stb - Plot Date: 3/14/2019 3:02:27 PM




Know what's below. Call before you dig.

CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING


2019 MISC UTILITY PROJECTS

STANDARD NOTES

CITY OF ANN ARBOR PUBLIC SERVICES
301 EAST HURON STREET
PO BOX 8647
ANN ARBOR MI 48107-8647
www.a2gov.org



SCALE: NTS



DRAWING No. 2018025-2

SHEET No.

2 OF 31


EXISTING LEGEND

- FIRE HYDRANT
- GATE VALVE IN BOX
- GATE VALVE IN WELL
- STOP BOX
- WATER VAULT
- WELL
- CATCH BASIN (SQ)
- CATCH BASIN (RD)
- STORM MANHOLE
- NON-CURB CATCH BASIN (SQ)
- END SECTION
- SANITARY MANHOLE
- CLEAN-OUT
- POST
- PEDESTRIAN SIGNAL
- SIGN
- HAND HOLE
- ORNAMENTAL LIGHT
- FLOOD LIGHT
- UNKNOWN MANHOLE
- TELEPHONE MANHOLE
- TELEPHONE RISER
- GAS VALVE
- GAS VENT
- GAS BOX
- ELECTRICAL RISER
- TRANSFORMER
- UTILITY POLE
- LAMP POLE
- GUY ANCHOR
- GUY POLE
- MONITORING WELL
- MAILBOX
- SOIL BORING
- TRAVERSE POINT
- BENCH MARK
- IRON PIPE
- MON BOX

- WATER MAIN
- WATER MAIN ABANDONED
- STORM SEWER
- STORM SEWER ABANDONED
- SANITARY SEWER
- SANITARY SEWER ABANDONED
- GAS MAIN
- GAS MAIN (DEAD)
- ELECTRICAL OVER HEAD
- ELECTRICAL UNDER GROUND
- ELECTRICAL DUCT BANK
- TELEPHONE OVER HEAD
- TELEPHONE UNDER GROUND
- TELEPHONE DUCT BANK
- CABLE TV OVER HEAD
- CABLE TV UNDER GROUND
- FIBER OPTIC
- FIBER OPTIC DUCT BANK
- BOUNDARY
- BUILDING
- CENTERLINE OF DITCH
- CENTERLINE/CROWN OF ROAD
- CONTOUR MAJOR
- CONTOUR MINOR
- EDGE OF WATER
- FLOODPLAIN
- FENCE
- GRAVEL
- GUARDRAIL
- STONE WALL
- R.O.W.
- TREELINE
- WETLAND
- EDGE OF BRUSH
- HEDGE
- TREE (DECIDUOUS)
- TREE (CONIFEROUS)
- SHRUB (DECIDUOUS)
- STUMP
- TREE TO REMAIN & PROTECT (DECIDUOUS)
CRITICAL ROOT ZONE (C.R.Z.) = DIAMETER BREST HEIGHT (INCHES) X 10
- TREE TO REMAIN & PROTECT (CONIFEROUS)
CRITICAL ROOT ZONE (C.R.Z.) = DIAMETER BREST HEIGHT (INCHES) X 10

PROPOSED LEGEND

- HYDRANT (PLAN)
- WATER GATE WELL
- REDUCER
- WATER GATE VALVE
- WATER STOP BOX
- WATER VAULT
- INLET
- DOUBLE INLET
- INLET JUNCTION CHAMBER
- ROUND CATCH BASIN
- STORM MANHOLE
- DRAIN ARROW
- FLARED END SECTION
- SANITARY MANHOLE
- CLEAN-OUT
- SIGN
- PUSH BUTTON
- HAND HOLE
- WATER MAIN
- STORM SEWER
- SANITARY SEWER
- FIBER OPTIC
- ELECTRICAL
- CENTERLINE OF DITCH
- CENTERLINE OF ROAD
- FENCE
- GRAVEL
- SILT FENCE
- PROTECTIVE FENCE
- GUARDRAIL
- LOT/UNIT
- CURB
- TEMPORARY GRADING PERMIT
- CONTOUR MAJOR
- CONTOUR MINOR
- WATER EASMENT
- STORM EASEMENT
- SANITARY EASEMENT
- R.O.W.
- LIMITS OF CONSTRUCTION
- LIMIT OF GRADING
- STONE WALL
- DETECTABLE WARNING
- ASPHALT
- CONCRETE
- SIDEWALK
- TREE (DECIDUOUS)
- TREE (CONIFEROUS)
- TREE TO BE REMOVED (DECIDUOUS)
- TREE TO BE REMOVED (CONIFEROUS)
- STUMP TO BE REMOVED



CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING

2019 MISC UTILITY PROJECTS

SCALE: NTS

DRAWING No. **2018025-3**

SHEET No. **3 OF 31**

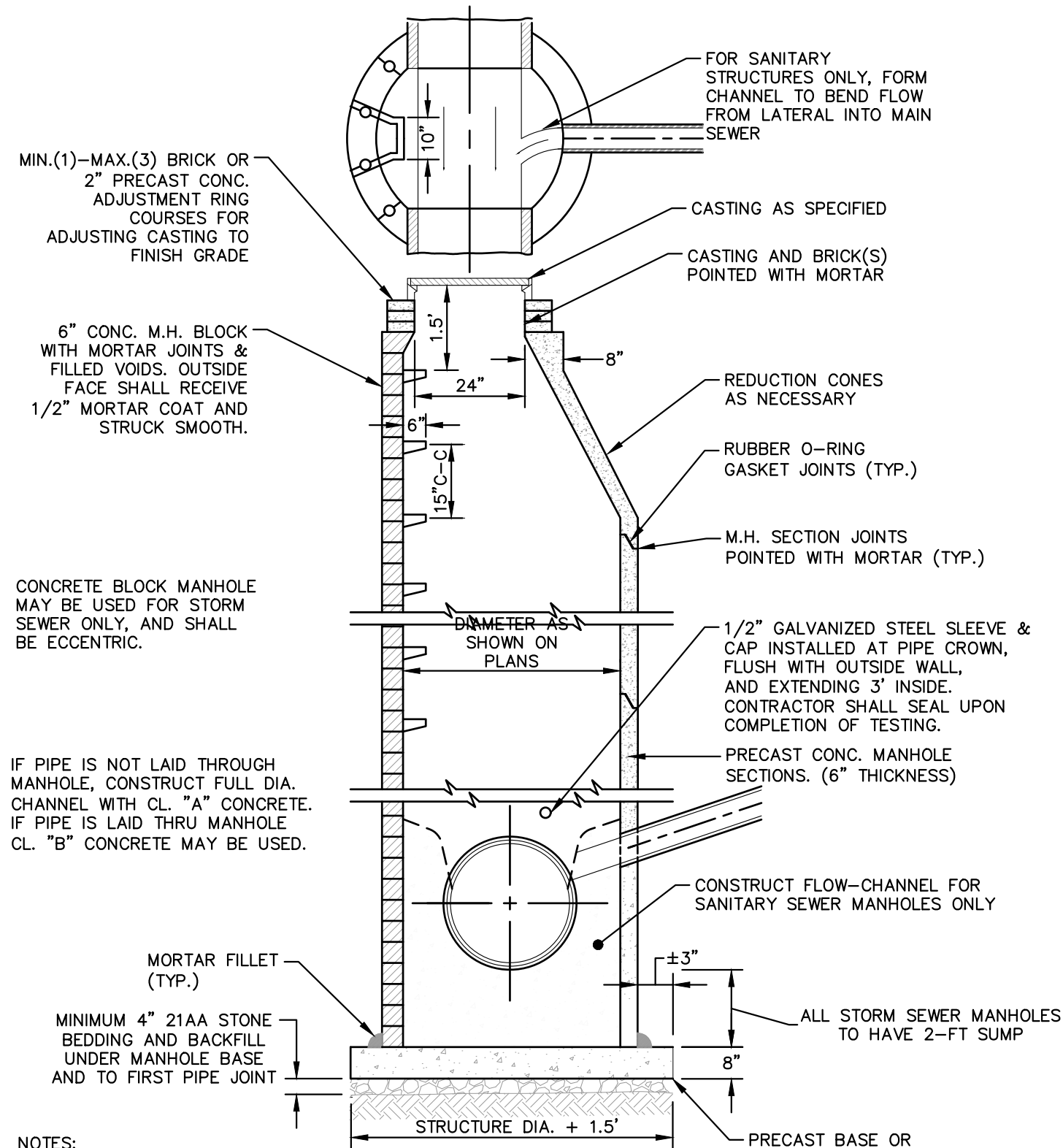
LEGEND

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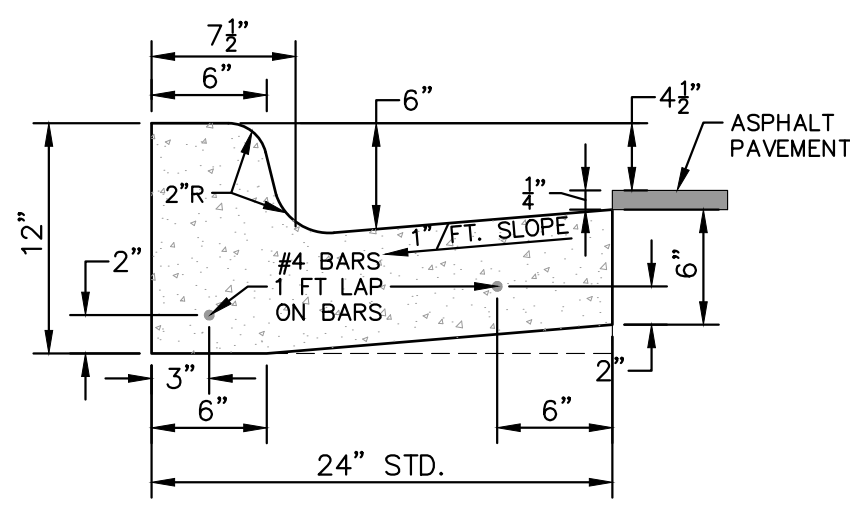
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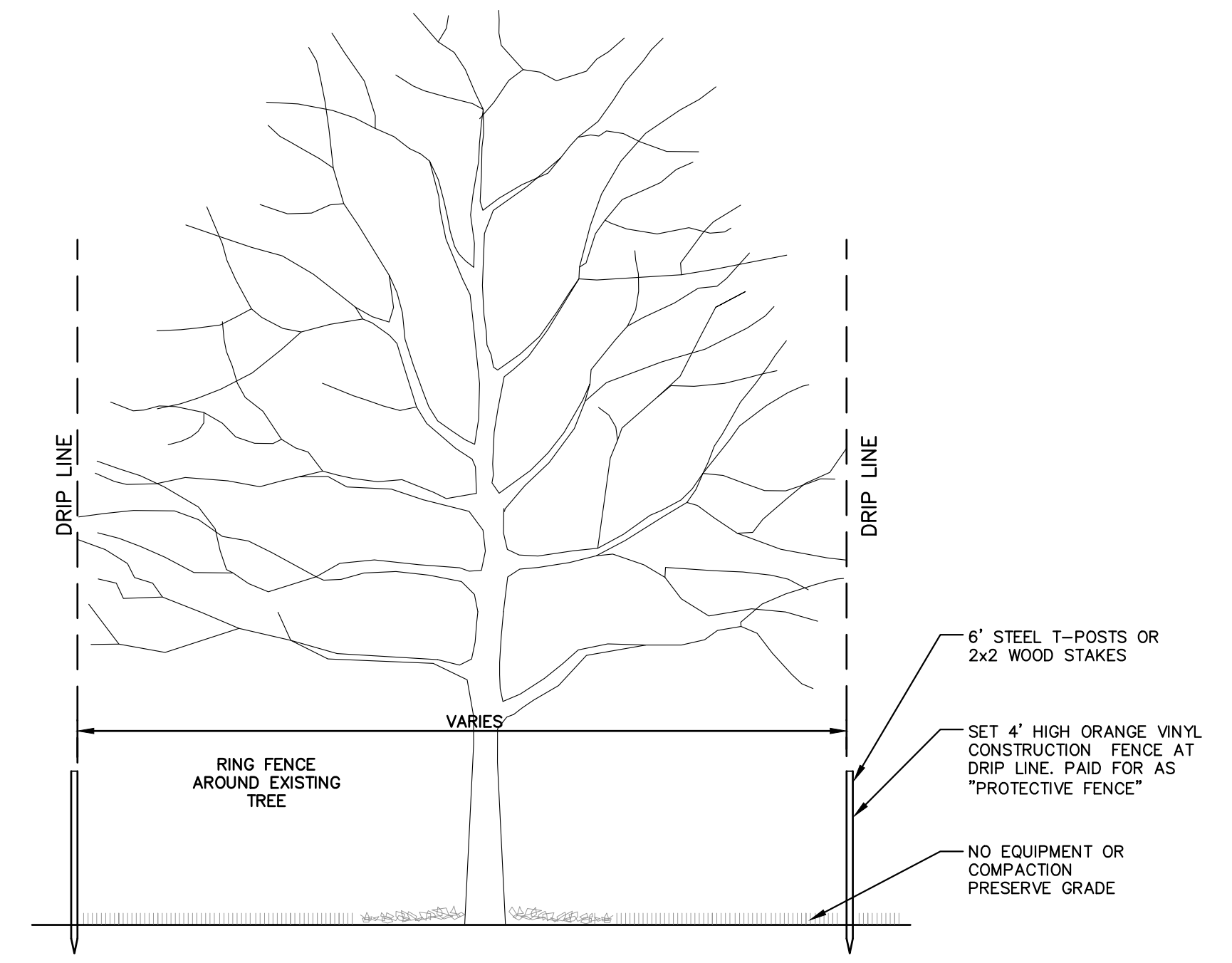


- NOTES:
1. ALL SANITARY MANHOLES SHALL BE PRECAST CONCRETE.
 2. ALL MANHOLES MUST HAVE ECCENTRIC CONES - BOTH STORM AND SANITARY
 3. ALL SANITARY SEWER OPENINGS SHALL BE PRECAST WITH RUBBER BOOT CONNECTIONS.
 4. 2' SUMP REQUIRED ON ALL DRAINAGE STRUCTURES.

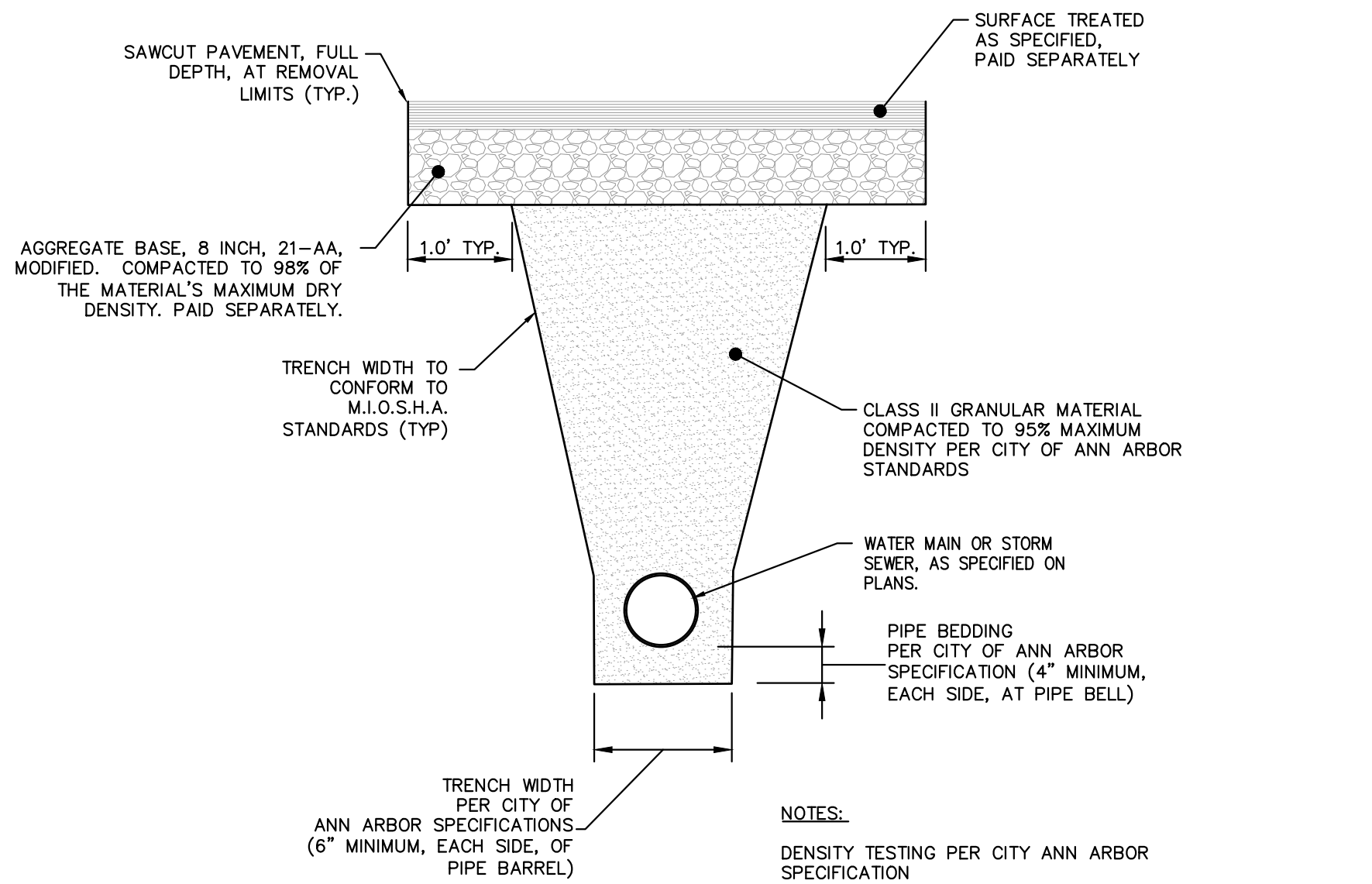
STANDARD MANHOLE (TYPE I)



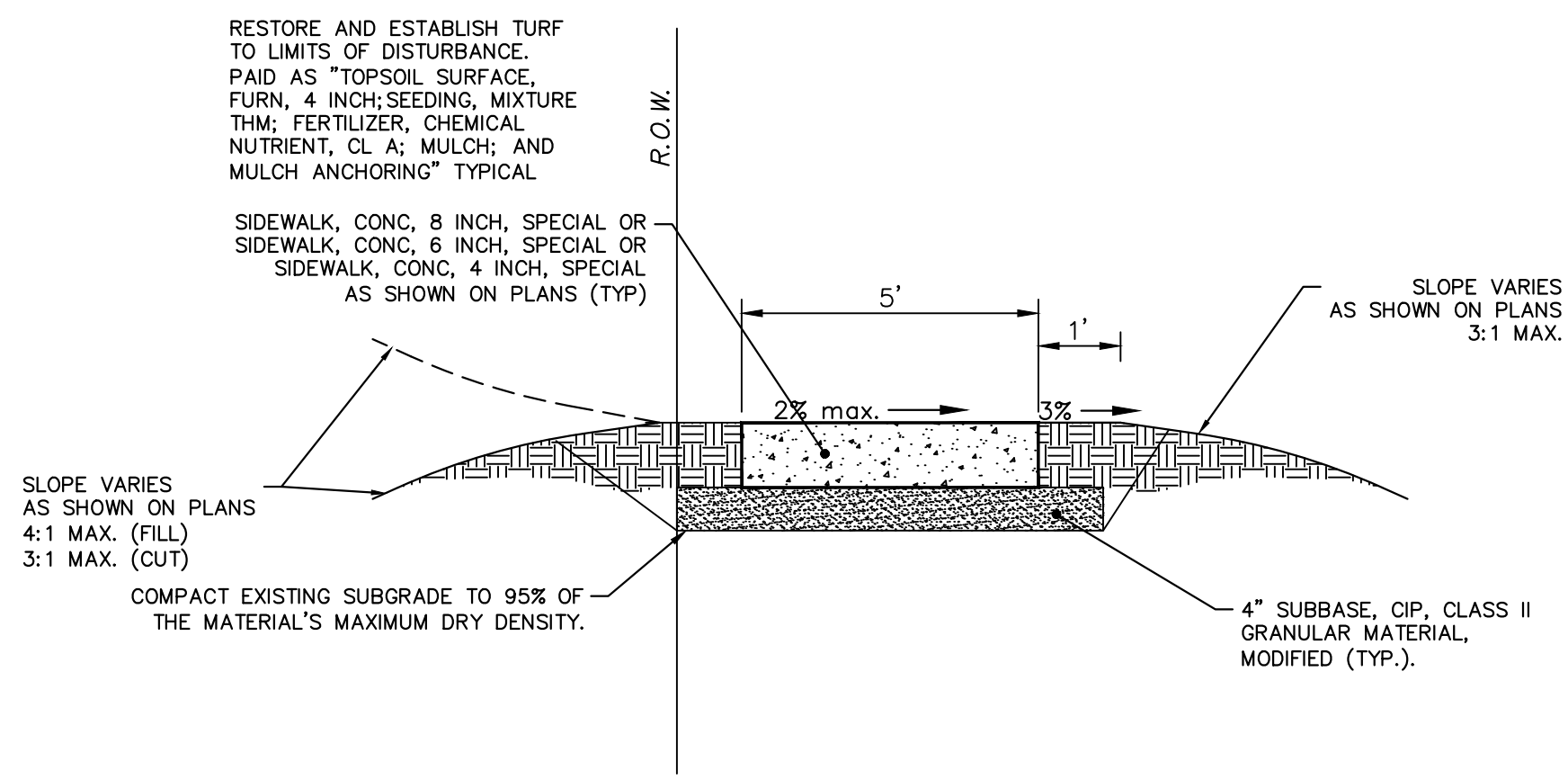
CURB AND GUTTER, CONC, DET F4, SPECIAL



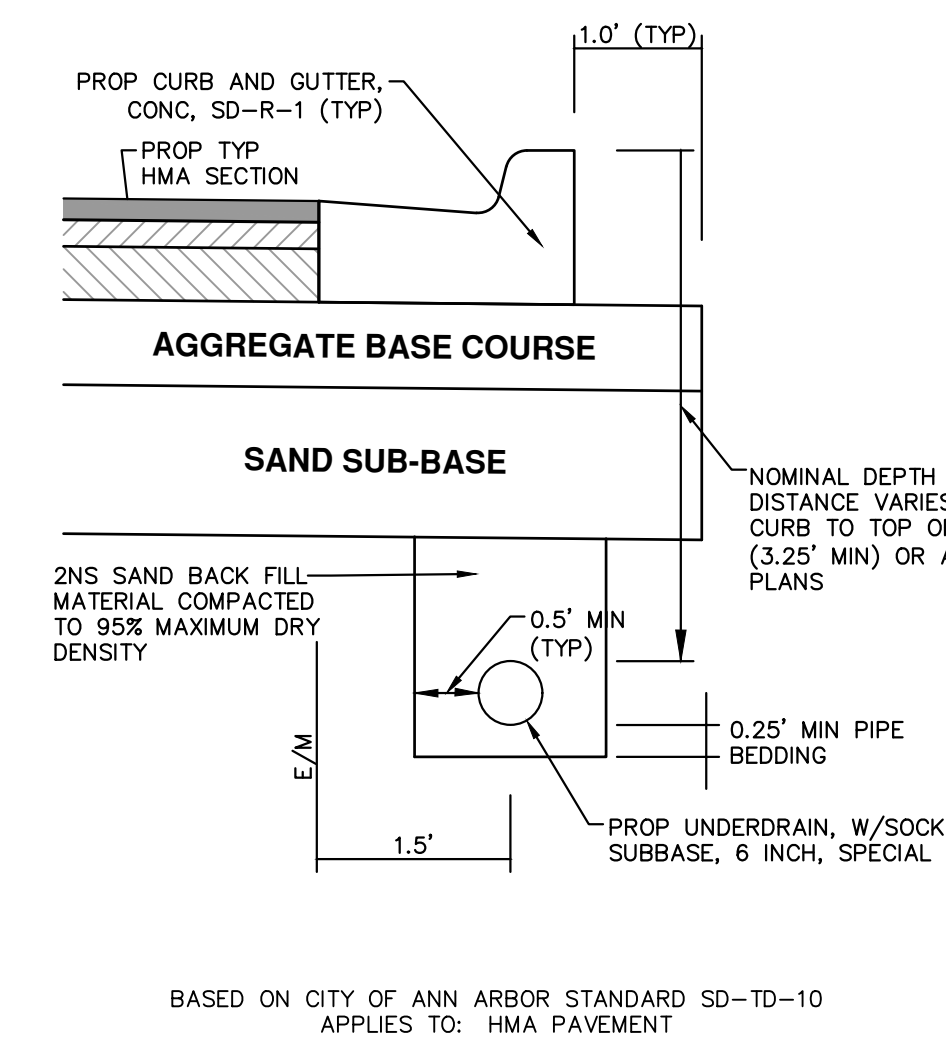
TREE PROTECTION DETAIL



TRENCH DETAIL - TYPE I, SD-TD-1, MODIFIED



TYPICAL 5 FT SIDEWALK SECTION



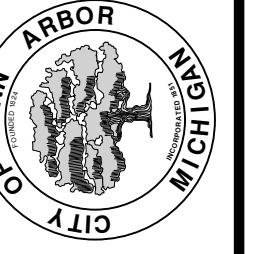
TRENCH DETAIL FOR UNDER DRAIN (UNDER HMA PAVEMENT)

- NOTES:
- IN AREAS WHERE EDGE DRAIN CANNOT BE INSTALLED IN ACCORDANCE WITH THE DETAIL, THE EDGE DRAIN SHALL BE INSTALLED AT THE DEPTH AS INDICATED ON THE PLANS, OR AS DIRECTED BY ENGINEER. IN NO CASE SHALL THE EDGE DRAIN BE INSTALLED AT A GRADE LESS THAN 0.50% OR AT A DEPTH OF LESS THAN 2' BELOW TOP OF PROPOSED PAVEMENT.
- FOR PAVEMENT BASE AND SUBBASE THICKNESS, SEE TYPICAL PAVEMENT CROSS-SECTION(S)
- TRENCH DETAILS SHOW TYPE OF BACKFILL AND SURFACE RESTORATION ONLY
- ALL TRENCHING TO CONFORM TO ALL APPLICABLE M.I.O.S.H.A. STANDARDS
- EDGE DRAINS SHALL BE CONNECTED TO A DRAINAGE STRUCTURE AND WILL EXTEND A MINIMUM OF 100 FEET UPSLOPE FROM THE STRUCTURE.
- ADDITIONAL LENGTHS OF EDGE DRAIN MAY BE REQUIRED BY THE ENGINEER BASED ON EXISTING SITE CONDITIONS, INCLUDING CONDITION OF THE SUBGRADE.



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CITY OF ANN ARBOR - ENGINEERING
2019 MISC UTILITY PROJECTS
STORM SEWER, TRENCH AND MISC DETAILS

SCALE: NTS
DRAWING No. 2018025-5
SHEET No. 5 OF 31

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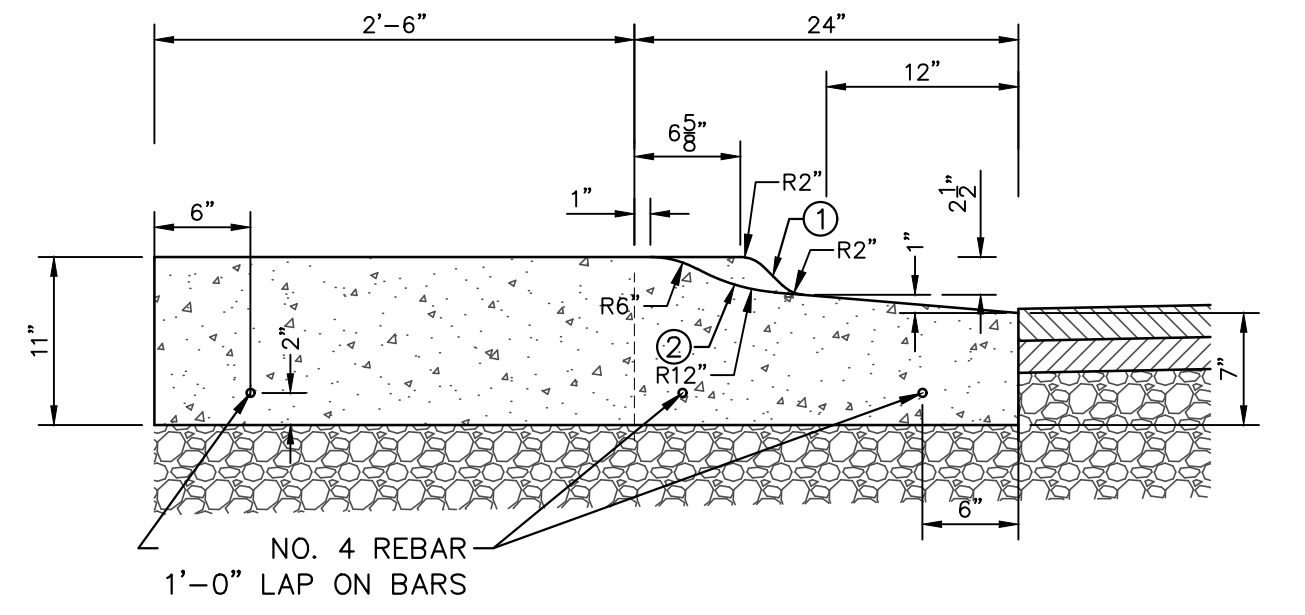
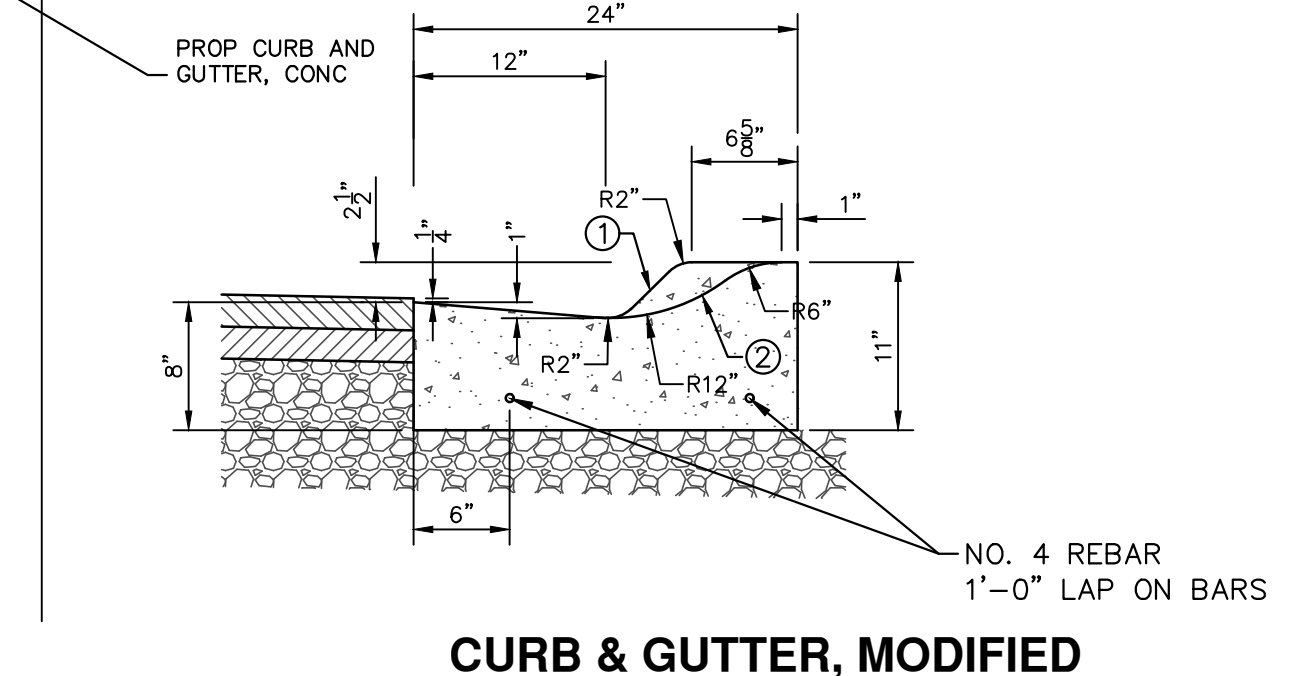
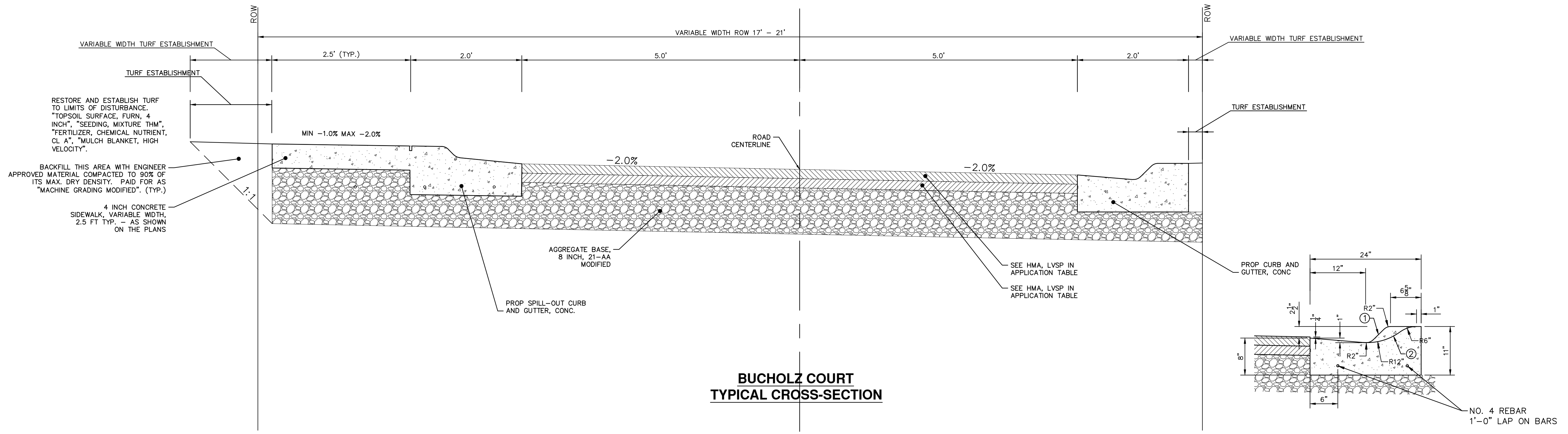


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CITY OF ANN ARBOR
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2019 MISC UTILITY PROJECTS
TYPICAL SECTIONS
BUCHOLZ COURT

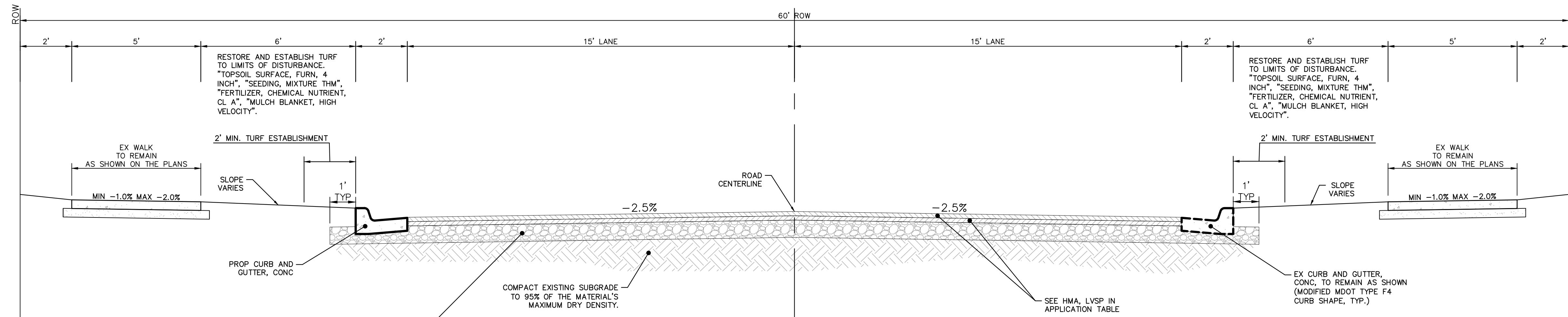
CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING
SCALE: NTS
DRAWING No. 2018025-6
SHEET No. 6 OF 31



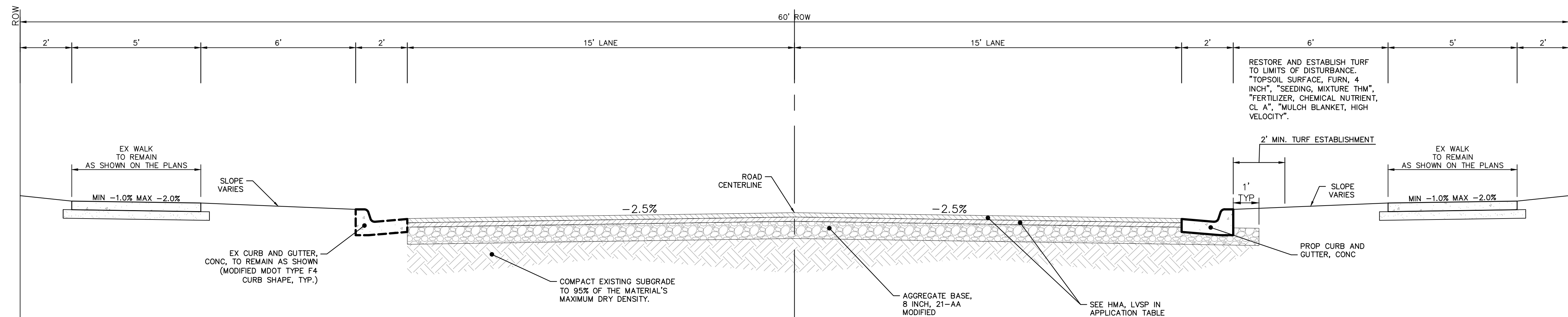
HMA APPLICATION ESTIMATE					
HMA MIX	RATE OF APPLICATION	THICKNESS (INCHES)	AWI (MIN.)	BINDER	LOCATION/NOTES
LVSP	220 LB/SYD	2.0	260 (TOP)	PG 58-28	TOP COURSE
LVSP	220 LB/SYD	2.0	-	PG 58-28	LEVELING COURSE
Bond Coat SS-1h	0.10 GAL/SYD	-	-	-	INCLUDE IN COST OF HMA ITEM

- NOTE:**
- PAID FOR AS CONC CURB AND GUTTER.
 - TRANSITION FROM MOUNTABLE CURB AND GUTTER TO BARRIER CURB AND GUTTER SHALL BE OVER 5 FEET ON EITHER SIDE OF DRIVEWAY SECTIONS.
 - FRONT EDGE OF INLET CASTING SHALL BE FLUSH WITH FRONT EDGE OF GUTTER (EDGE OF METAL).

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**MAYWOOD AVENUE
PROPOSED CROSS-SECTION**



**AVONDALE AVENUE
PROPOSED CROSS-SECTION**

HMA APPLICATION ESTIMATE					
HMA MIX	RATE OF APPLICATION	THICKNESS (INCHES)	AWI (MIN.)	BINDER	LOCATION/NOTES
LVSP	220 LB/SYD	2.0	260 (TOP)	PG 58-28	TOP COURSE
LVSP	220 LB/SYD	2.0	-	PG 58-28	LEVELING COURSE
Bond Coat SS-1h	0.10 GAL/SYD	-	-	-	INCLUDE IN COST OF HMA ITEM



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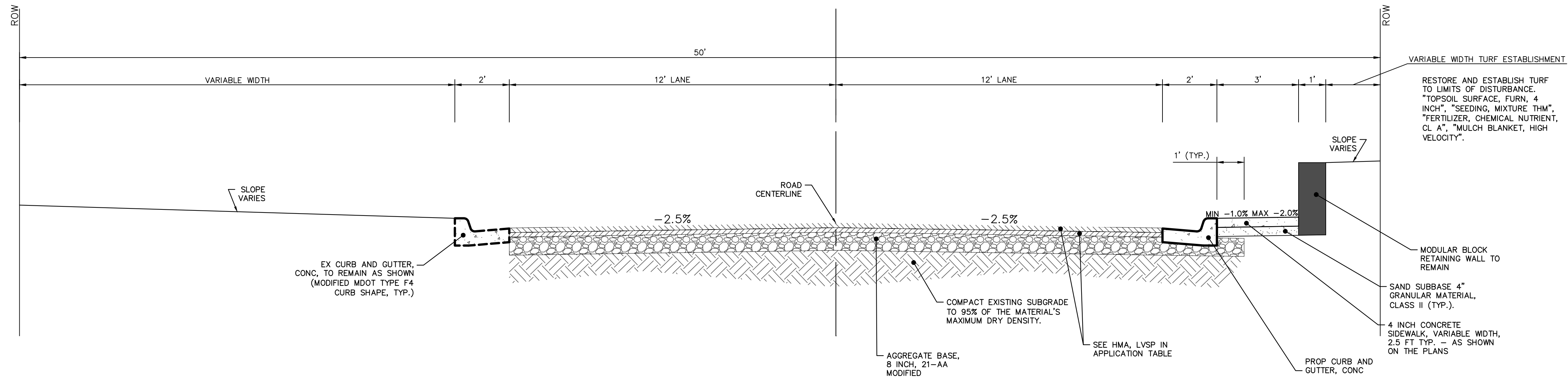
CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING
2019 MISC UTILITY PROJECTS
TYPICAL SECTIONS
MAYWOOD AVENUE & AVONDALE AVENUE

SCALE: NTS
DRAWING No. 2018025-7

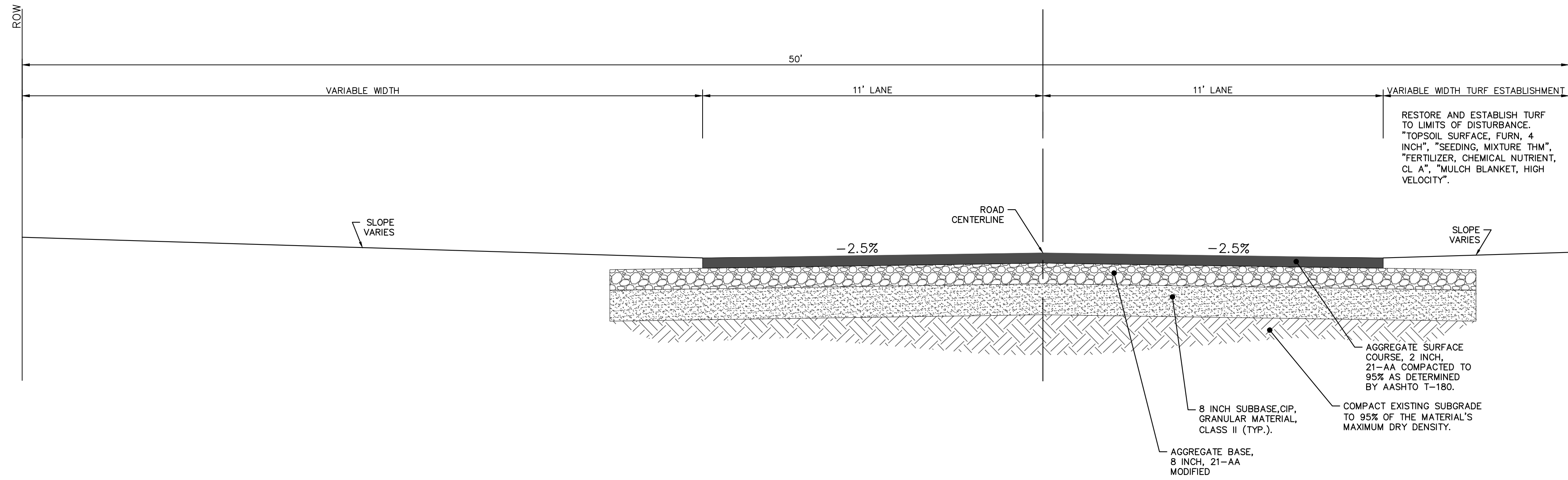
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**CEDAR BEND DRIVE
PROPOSED PAVED CROSS-SECTION**



**CEDAR BEND DRIVE
PROPOSED GRAVEL CROSS-SECTION**

HMA APPLICATION ESTIMATE					
HMA MIX	RATE OF APPLICATION	THICKNESS (INCHES)	AWI (MIN.)	BINDER	LOCATION/NOTES
LVSP	220 LB/SYD	2.0	260 (TOP)	PG 58-28	TOP COURSE
LVSP	220 LB/SYD	2.0	-	PG 58-28	LEVELING COURSE
Bond Coat SS-1h	0.10 GAL/SYD	-	-	-	INCLUDE IN COST OF HMA ITEM



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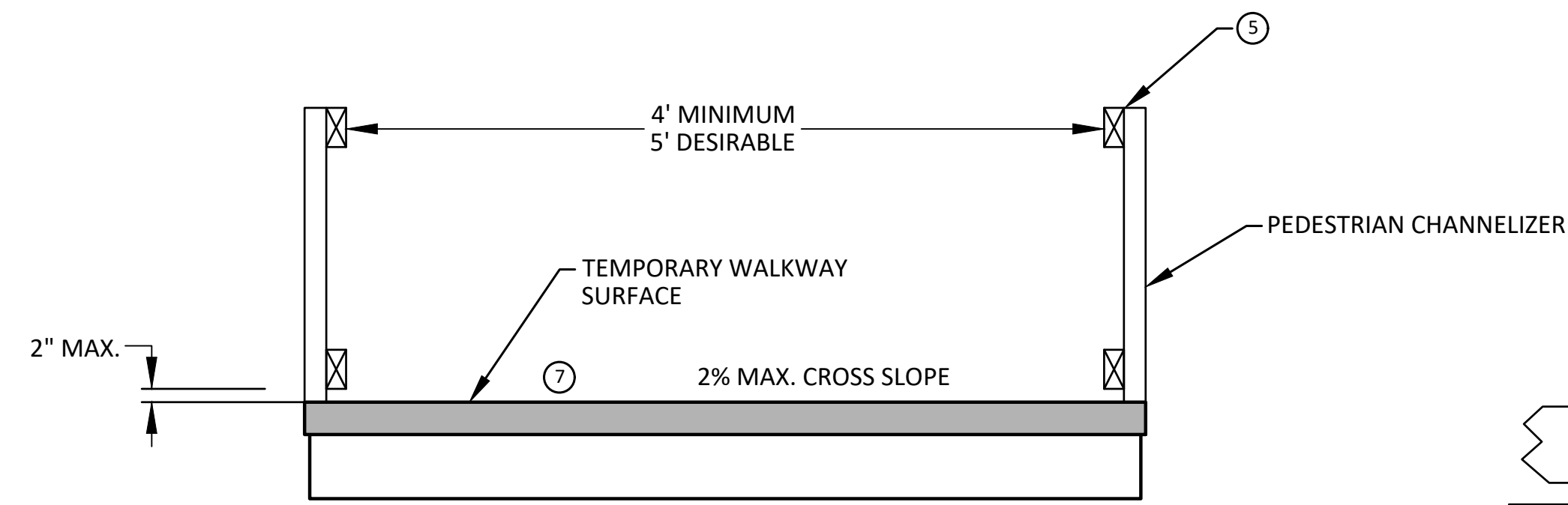
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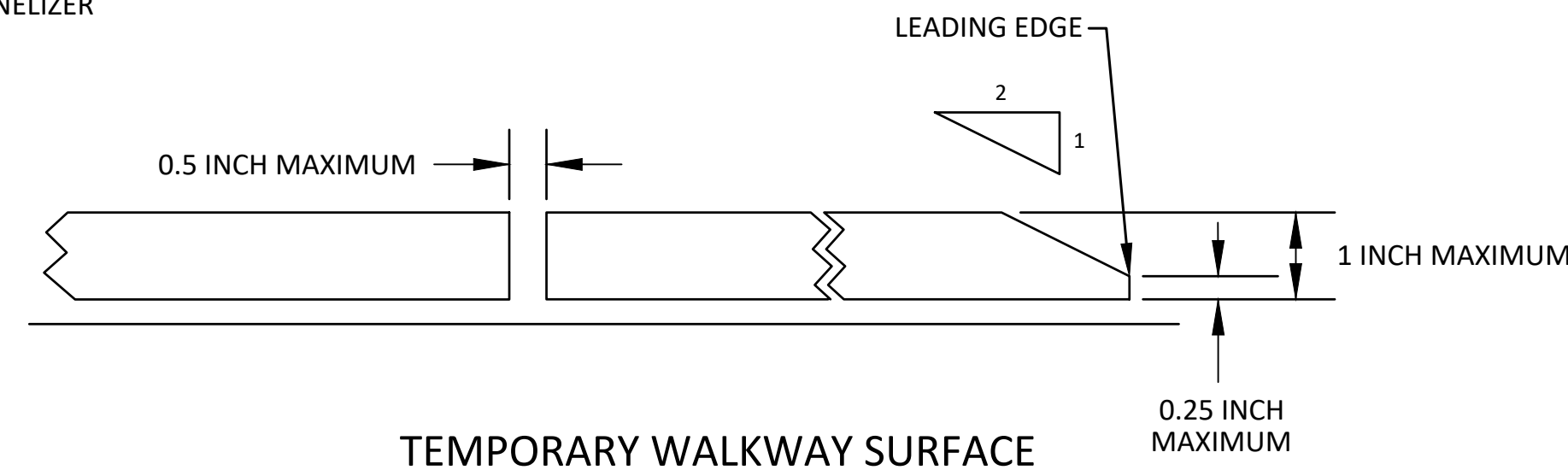
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2019 MISC UTILITY PROJECTS
TYPICAL SECTIONS
CEDAR BEND DRIVE

SCALE: NTS
DRAWING No. 2018025-8

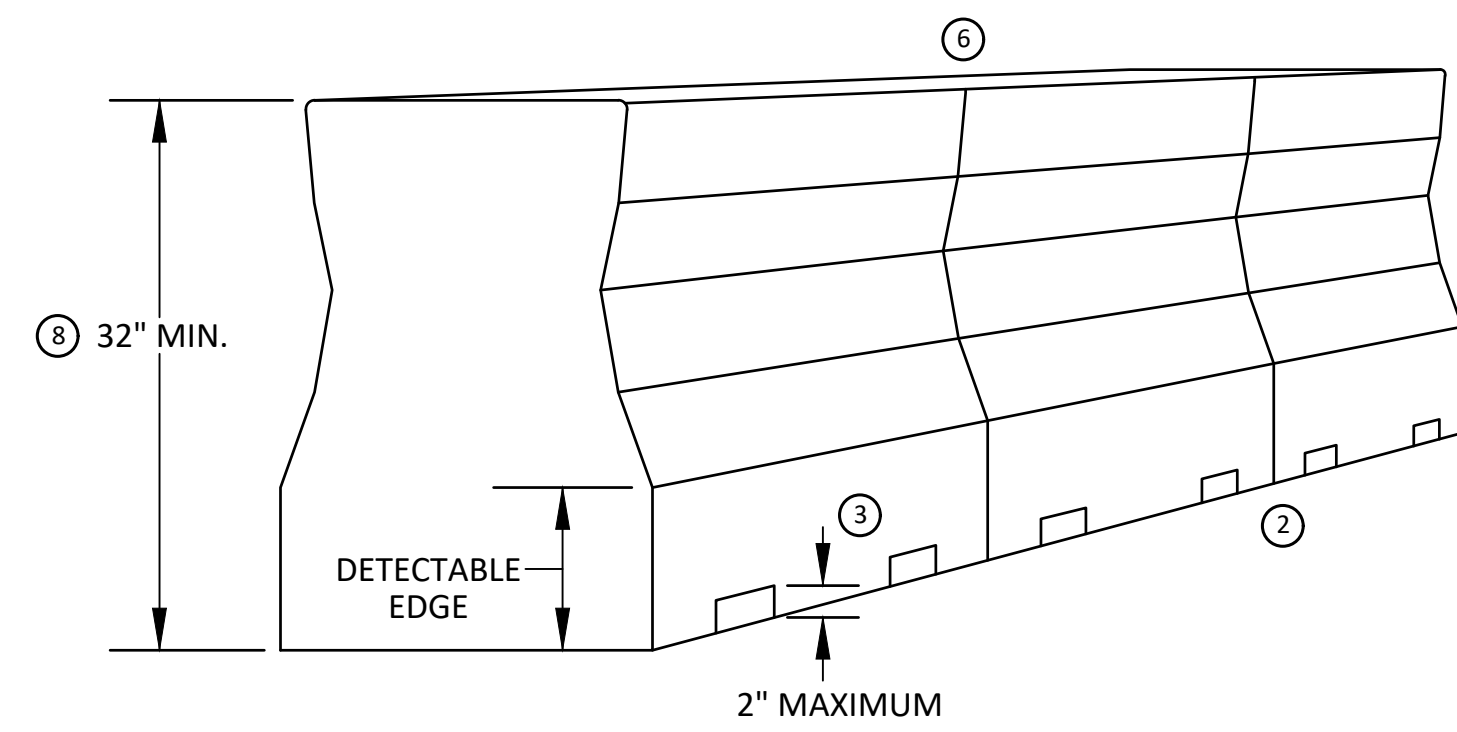
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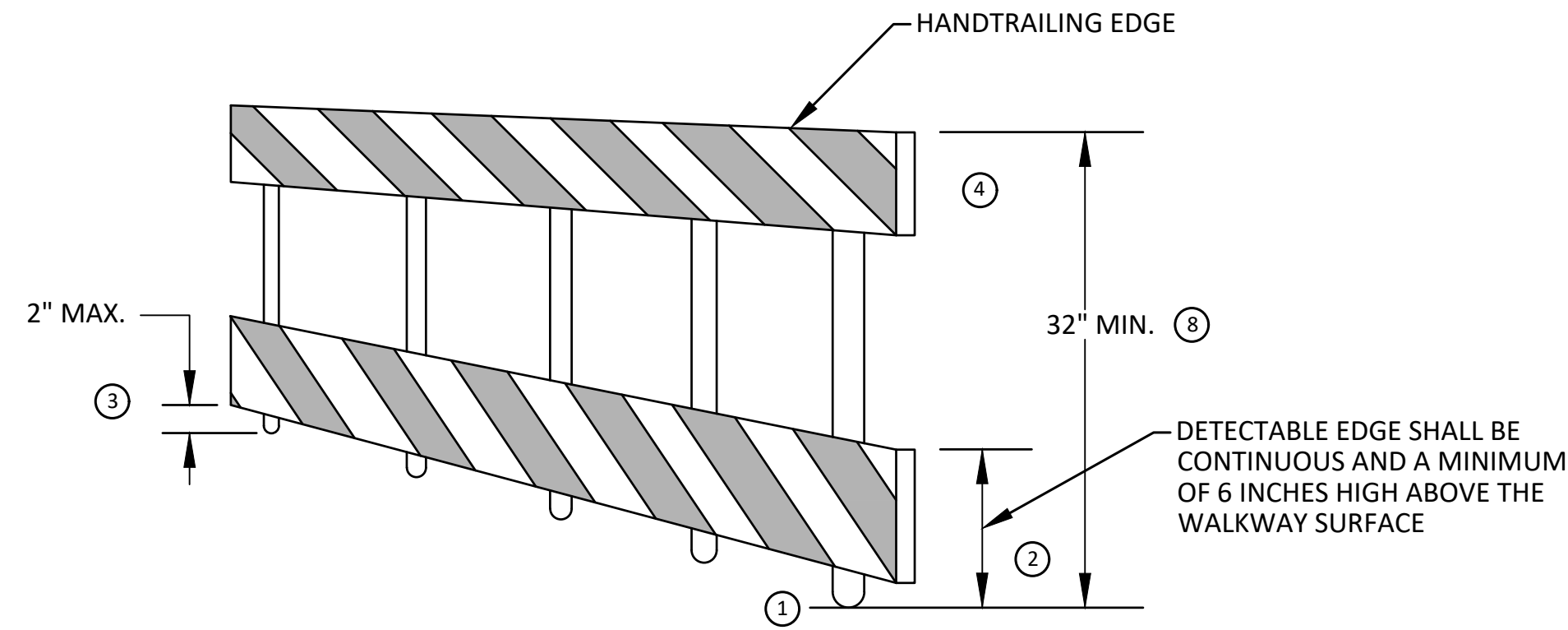
TEMPORARY PEDESTRIAN ACCESS



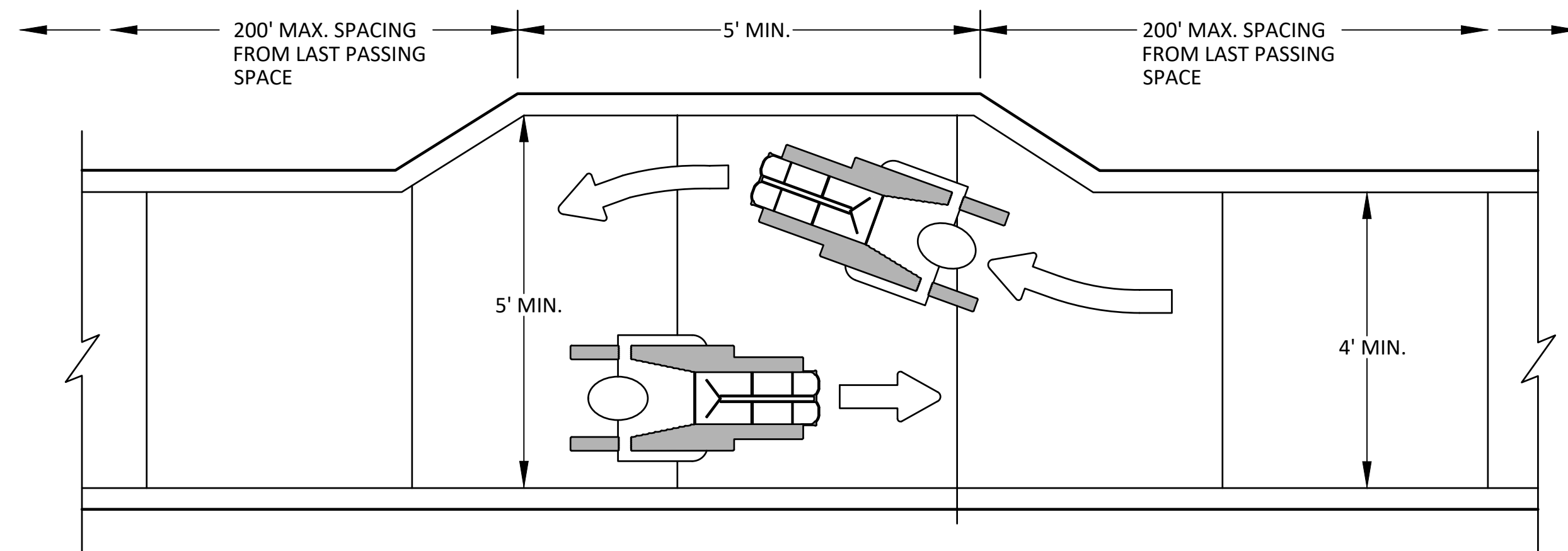
TEMPORARY WALKWAY SURFACE



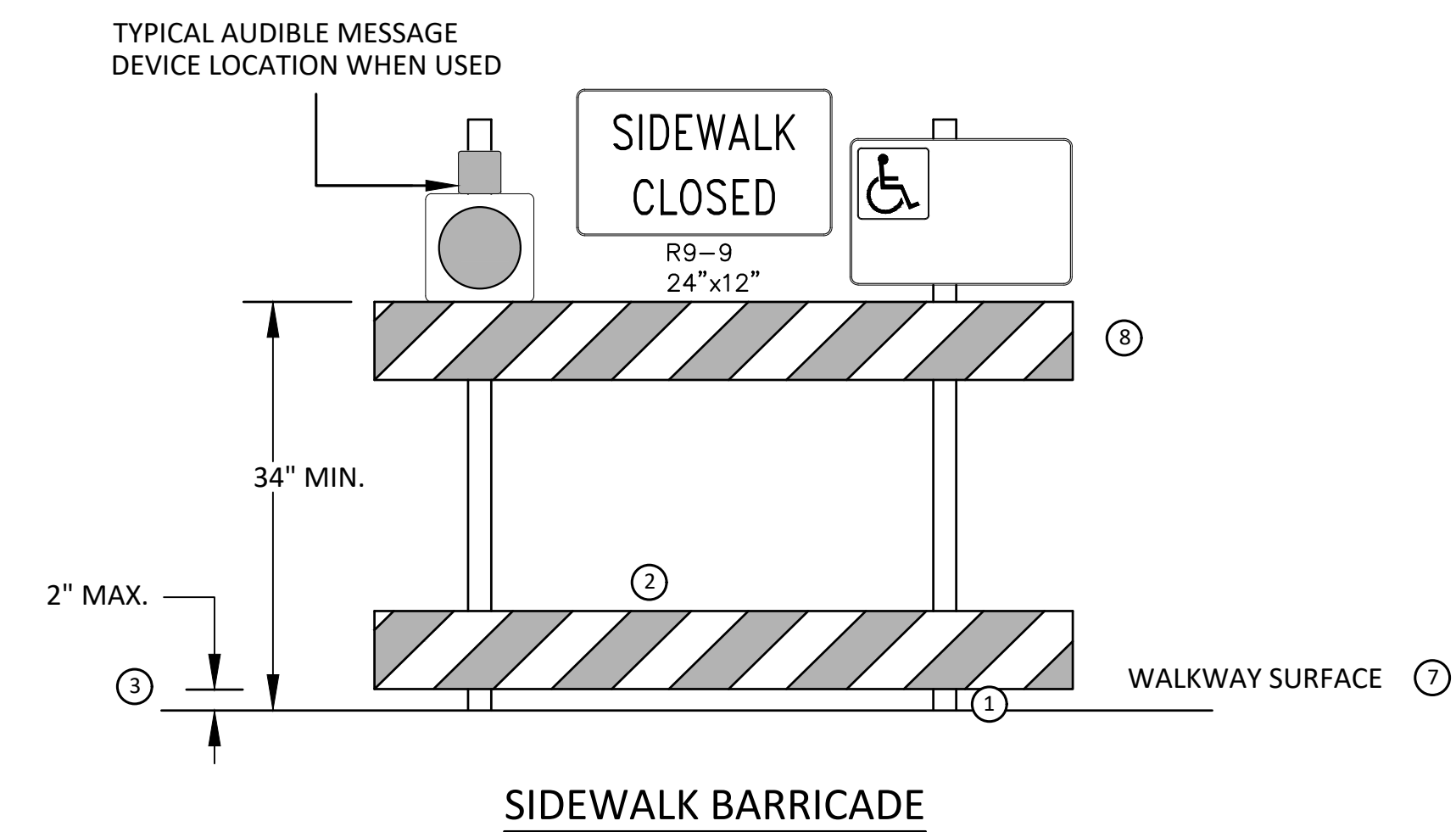
PEDESTRIAN CHANNELIZER USING A BARRIER (MINIMUM REQUIREMENTS)



PEDESTRIAN CHANNELIZER (MINIMUM REQUIREMENTS)



NARROW TEMPORARY PEDESTRIAN ACCESS ROUTE PASSING DETAIL



SIDEWALK BARRICADE

GENERAL NOTES

RAILINGS OR OTHER OBJECTS MAY PROTRUDE A MAXIMUM OF 4 INCHES INTO THE WALKWAY CLEAR SPACE WHEN LOCATED A MINIMUM OF 27 INCHES ABOVE THE WALKWAY SURFACE.

ANY PEDESTRIAN DEVICES USED TO PROVIDE POSITIVE PROTECTION FOR PEDESTRIANS OR WORKERS SHALL MEET NCHRP 350 CRASHWORTHY REQUIREMENTS APPROPRIATE FOR THE BARRIER'S APPLICATION.

BARRICADES SHALL BE PLACED CONTINUOUSLY ACROSS THE ENTIRE WIDTH OF THE WALKWAY SURFACE BEING CLOSED.

SPECIFIC NOTES

- 1 ANY TRIPPING HAZARD IN THE WALKWAY NEEDS A DETECTABLE EDGE. BALLAST SHALL BE LOCATED BEHIND OR INTERNAL TO THE DEVICE. ANY SUPPORT ON THE FRONT OF THE DEVICE SHALL NOT EXTEND INTO THE 48 INCH MINIMUM WALKWAY CLEAR SPACE AND SHALL NOT EXCEED 0.5 INCHES IN HEIGHT ABOVE THE WALKWAY SURFACE.
- 2 DETECTABLE EDGES SHALL BE CONTINUOUS AND A MINIMUM OF 6 INCHES IN HEIGHT ABOVE WALKWAY SURFACE AND HAVE COLOR MARKINGS CONTRASTING WITH THE WALKWAY SURFACE.
- 3 DEVICES SHALL NOT BLOCK WATER DRAINAGE FROM THE WALKWAY. A GAP HEIGHT OR OPENING FROM THE WALKWAY SURFACE UP TO A MAXIMUM OF 2 INCHES IS ALLOWED FOR DRAINAGE PURPOSES.
- 4 WHEN HAND GUIDANCE IS REQUIRED, THE TOP RAIL OR TOP SURFACE SHALL:
 - BE IN A VERTICAL PLANE PERPENDICULAR TO THE WALKWAY ABOVE THE DETECTABLE EDGE.
 - BE CONTINUOUS AT A HEIGHT OF 34 TO 38 INCHES ABOVE THE WALKWAY SURFACE, AND
 - BE SUPPORTED WITH MINIMAL INTERFERENCE TO THE PEDESTRIAN'S HANDS OR FINGERS.
- 5 ALL DEVICES SHALL BE FREE OF SHARP OR ROUGH EDGES, AND FASTENERS (BOLTS) SHALL BE ROUNDED TO PREVENT HARM TO HANDS, ARMS OR CLOTHING OF PEDESTRIANS.
- 6 ALL DEVICES USED TO CHANNELIZE PEDESTRIAN FLOW SHOULD INTERLOCK SUCH THAT GAPS DO NOT ALLOW PEDESTRIANS TO STRAY FROM THE INTENDED CHANNELIZED PATH.
- 7 A WALKWAY SURFACE SHALL BE FIRM, STABLE, AND SLIP RESISTANT. COMPACTED GRAVEL, AGGREGATE, OR SLAG MATERIALS ARE NOT ALLOWED.
- 8 LONGITUDINAL CHANNELIZING DEVICES FOR PEDESTRIANS SHALL BE 32 INCHES IN HEIGHT OR GREATER.



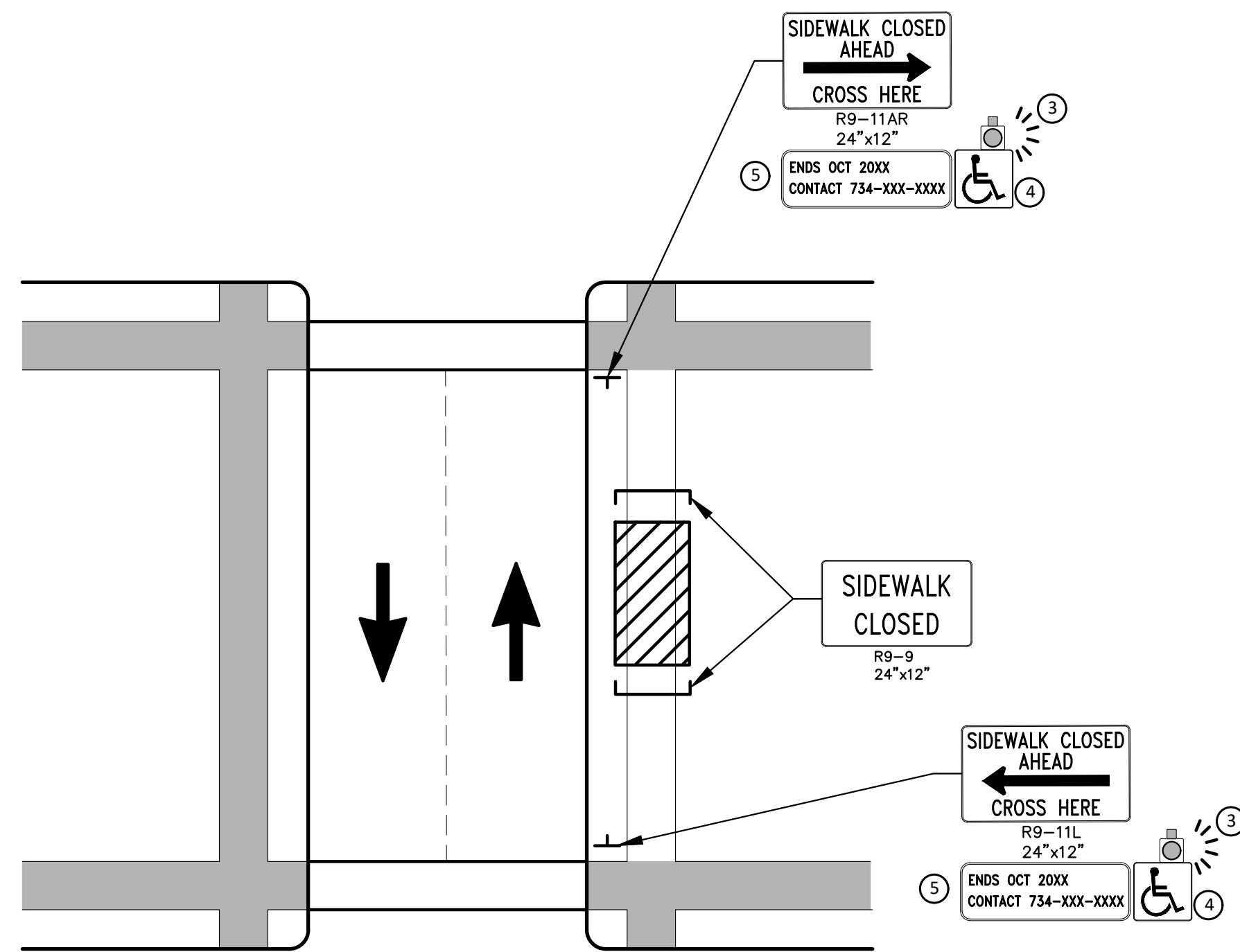
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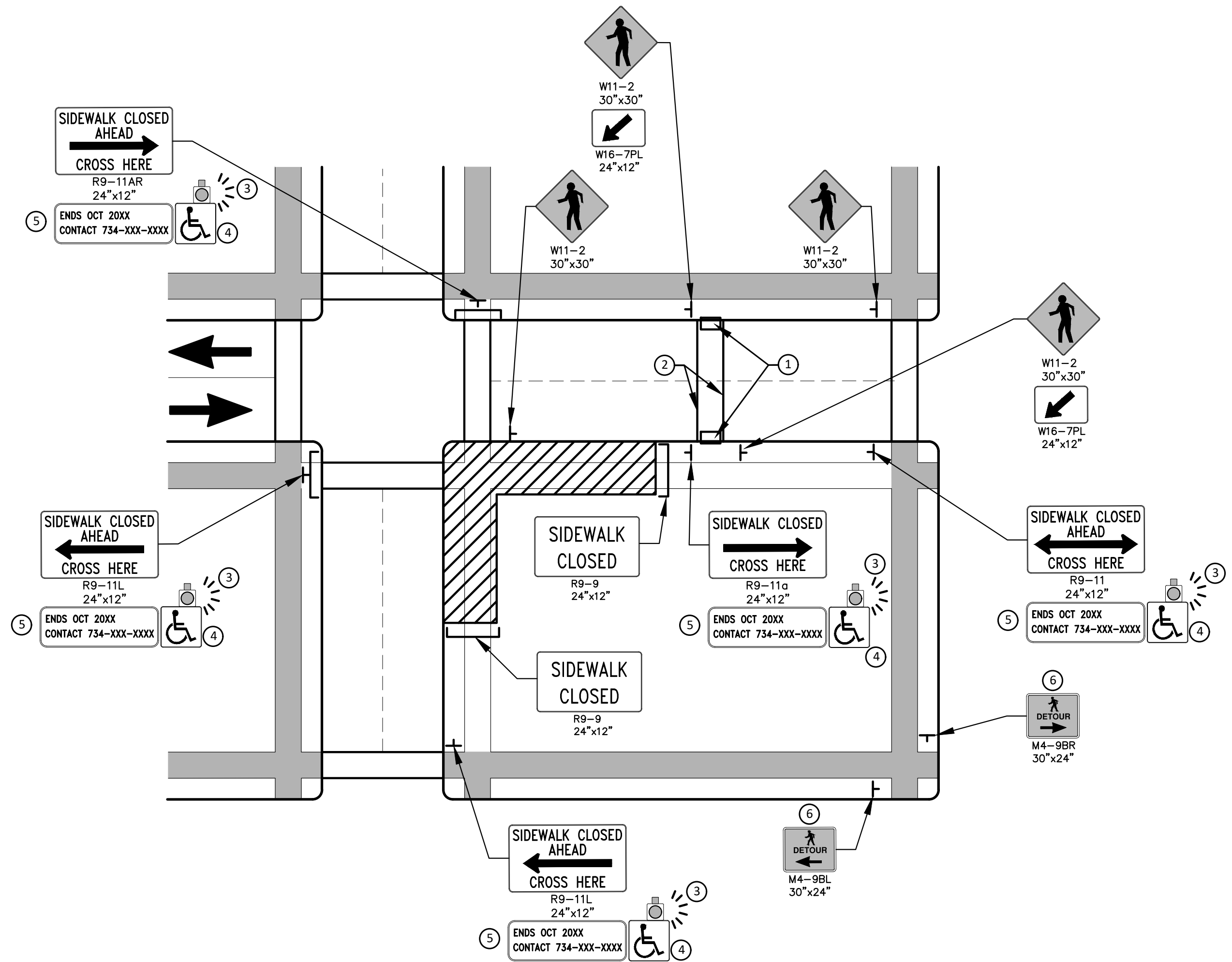
CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING
2019 MISC UTILITY PROJECTS
TPAR WALKWAY DEVICES

SCALE: N.T.S.
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PEDESTRIAN DETOUR USING OPPOSITE SIDE OF STREET



OTHER SIDE OF STREET DETOUR OR DETOUR WITH TRAILBLAZING SIGNS
(FOR CORNER SIDEWALK CLOSURE WITH OPTIONAL TEMPORARY CROSSWALK)

GENERAL NOTES

WHEN CLOSING OR RELOCATING CROSSWALKS OR SIDEWALKS, THE CONTRACTOR SHALL PROVIDE DETECTABLE TEMPORARY FACILITIES AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH EXISTING PEDESTRIAN FACILITIES.

TEMPORARY TRAFFIC CONTROL DEVICES FOR PEDESTRIANS ARE SHOWN. OTHER DEVICES MAY BE NECESSARY TO CONTROL VEHICULAR TRAFFIC. STAGE WORK, AS NECESSARY, TO PROVIDE AN ALTERNATE PEDESTRIAN ROUTE (APR) AT ALL TIMES. FOR ROADWAYS WITH NO AVAILABLE DETOURS, MAINTAIN ONE OPEN SIDEWALK AT ALL TIMES.

PROVIDE A SMOOTH, CONTINUOUS, HARD SURFACE THROUGH THE LENGTH OF THE APR. COMPACTED GRAVEL, AGGREGATE, OR SLAG MATERIALS ARE NOT ALLOWED. PROVIDE A FIRM, STABLE, AND SLIP RESISTANT TEMPORARY WALKWAY SURFACE TO COVER SHORT SEGMENTS OF ROUGH, SOFT, OR UNEVEN GROUND.

THE PEDESTRIAN TRAFFIC SIGNALS CONTROLLING CLOSED CROSSWALKS SHALL BE COVERED OR DEACTIVATED BY THE CITY OF ANN ARBOR. THE CONTRACTOR SHALL SCHEDULE AND COORDINATE THIS WORK WITH THE ENGINEER A MINIMUM OF 72 HOURS (NOT INCLUDING WEEKENDS & HOLIDAYS) PRIOR TO THE BEGINNING OF WORK THAT REQUIRES A SIDEWALK CLOSURE.

POST MOUNTED SIGNS LOCATED ADJACENT TO A SIDEWALK SHALL HAVE A 7 FOOT MINIMUM CLEARANCE FROM THE BOTTOM OF THE SIGN TO THE SIDEWALK SURFACE.

WHEN THE ENGINEER DETERMINES THAT THE CONTRACTOR'S OPERATIONS OR PLACEMENT OF TRAFFIC CONTROL DEVICES HAS CAUSED A SITUATION THAT THE VISIBILITY OF IS REDUCED ENOUGH TO CREATE A HAZARD, THE TRAFFIC CONTROL DEVICES SHALL BE DELINEATED WITH FLAGS OR OTHER ENGINEER-APPROVED DEVICES AT NO ADDITIONAL COST TO THE PROJECT.

MINIMIZE DISRUPTION TO PEDESTRIANS TO THE MAXIMUM EXTENT FEASIBLE BY PROVIDING AN APR IN THE FOLLOWING ORDER OF PREFERENCE:

1. PROVIDE THE APR ON THE SAME SIDE OF THE STREET AS THE DISRUPTED ROUTE UTILIZING BYPASSES.
2. WHERE IT IS NOT FEASIBLE TO PROVIDE A SAME SIDE APR, PROVIDE A DETOUR ON THE OTHER SIDE OF THE STREET.
3. WHERE IT IS NOT FEASIBLE TO PROVIDE AN APR ON THE OTHER SIDE OF THE ROADWAY, PROVIDE AN APR DETOUR WITH TRAILBLAZING SIGNS AS SHOWN ON THE PROJECT PLANS.

SPECIFIC NOTES

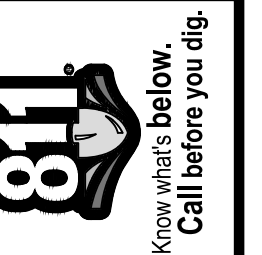
1. TEMPORARY CURB RAMPS WITH DETECTABLE WARNINGS.
2. TEMPORARY PAVEMENT MARKING FOR CROSSWALK LINES.
3. AN APPROVED AUDIBLE MESSAGE DEVICE OR TACTILE MESSAGE SHALL BE PROVIDED FOR SIGHT-IMPAIRED PEDESTRIANS.
4. THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHOULD BE DISPLAYED WHEN ANY WALKWAY THROUGH A WORK ZONE HAS BEEN DETERMINED TO BE TPAR COMPLIANT. THE SYMBOL OF ACCESSIBILITY SHALL NOT BE DISPLAYED IF PERSONS WITH DISABILITIES SHOULD NOT USE THE PRIMARY TEMPORARY PEDESTRIAN DETOUR. THE REASON FOR THE NON-COMPLIANCE SHALL BE POSTED AND AN ALTERNATE ROUTE SHALL BE POSTED WHEN THE PRIMARY TEMPORARY PEDESTRIAN DETOUR IS NON-COMPLIANT TO TPAR STANDARDS.
5. TYPICAL SIGN MESSAGE FOR A TEMPORARY PEDESTRIAN DETOUR SHALL INCLUDE INFORMATION SUCH AS THE DURATION OF THE WALKWAY RESTRICTIONS (BEGINNING AND/OR END DATES) AND A PROJECT CONTACT NUMBER FOR 24 / 7 QUESTIONS OR REPORTING HAZARDS.
6. PEDESTRIAN DETOUR TRAILBLAZING SIGNS SHALL BE USED IF THE PEDESTRIAN DETOUR IS IN A LOCATION OTHER THAN ACROSS THE STREET FROM THE SIDEWALK CLOSURE.

PEDESTRIAN TEMPORARY TRAFFIC CONTROL NOTES

1. THE CONTRACTOR SHALL MAINTAIN PEDESTRIAN THROUGH MOVEMENTS FROM ONE END OF THE CONSTRUCTION AREA TO THE OTHER, ON AT LEAST ONE SIDE OF THE STREET DURING CONSTRUCTION. ANY SIDEWALK CLOSURES SHALL MEET THE REQUIREMENTS OF THE MMUTCD, PART 6.
2. PEDESTRIAN ACCESS SHALL BE PROVIDED TO ALL ADJACENT PROPERTIES, BUILDINGS, RESIDENCES AND COMMERCIAL PROPERTIES AT ALL TIMES. THIS MAY INCLUDE TEMPORARY WALKWAYS SPANNING THE CONSTRUCTION AREA.
3. IF SIDEWALKS ARE CLOSED, A TEMPORARY PEDESTRIAN ACCESS ROUTE (TPAR) SHALL BE PROVIDED ON THE SAME SIDE OF THE ROAD AS THE CLOSED SIDEWALK, IF POSSIBLE. SIGNS AND BARRICADES SHALL BE USED TO PROVIDE ADVANCE NOTICE OF THE CLOSURE AND THE ROUTE OF ANY PEDESTRIAN DETOURS. THE TPAR SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4 FEET. IF THE TPAR IS LESS THAN 5 FEET IN WIDTH, A 5 FOOT BY 5 FOOT PASSING SPACE SHALL BE PROVIDED AT LEAST EVERY 200 FEET. THE SURFACE OF THE TPAR SHALL BE SMOOTH AND CONTINUOUS FOR THE LENGTH OF THE TPAR. THE TPAR SHALL MAINTAIN THE SAME LEVEL OF ACCESSIBILITY AND DETECTABILITY AS THE FACILITY THAT IS BEING CLOSED. THE TPAR SHALL NOT LEAD PEDESTRIANS INTO CONFLICTS WITH VEHICLES, EQUIPMENT, OR CONSTRUCTION OPERATIONS.
4. IF THE TPAR IS ADJACENT TO MOVING TRAFFIC, CONSTRUCTION OPERATIONS/EQUIPMENT, OR DROP-OFFS, THEN CRASH WORTHY CHANNELIZING DEVICES THAT MEET THE REQUIREMENTS OF NCHRP 350 AND THE MMUTCD SHALL BE USED.
5. THE CONTRACTOR SHALL NOT STORE OR PLACE ANY CONSTRUCTION MATERIALS, EQUIPMENT OR SIGNS IN THE PEDESTRIAN PATH OF TRAVEL.
6. THE CONTRACTOR'S OPERATIONS SHALL NOT OCCUPY SIDEWALKS EXCEPT WHERE PROPER PROTECTION AND A TPAR HAVE BEEN PROVIDED.
7. WHEN DIRECTED BY THE ENGINEER, OR STATED ON THE PLANS, THE CONTRACTOR SHALL PROVIDE A TEMPORARY PEDESTRIAN TRAFFIC CONTROL PLAN FOR REVIEW AND WRITTEN APPROVAL BY THE ENGINEER A MINIMUM OF THREE WEEKS BEFORE SUCH PLAN IS IMPLEMENTED. THIS PLAN SHALL DETAIL THE CONSTRUCTION PHASING AND SCHEDULE AND THE SPECIFIC METHODS OF MAINTAINING SAFE PEDESTRIAN ACCESS THROUGHOUT THE CONSTRUCTION AREA. THIS PLAN SHALL PROVIDE THE LOCATION AND DETAILS OF TEMPORARY CONSTRUCTION SIGNING, MARKINGS, BARRICADES, CHANNELIZING DEVICES, TPARS AND METHODS TO MAINTAIN ACCESS TO ADJACENT PROPERTIES, BUSINESSES, RESIDENCES, ETC. NO WORK SHALL BE ALLOWED TO BEGIN UNTIL THIS PLAN IS APPROVED BY THE ENGINEER IN WRITING.
8. PROVISION OF THE TPAR AND ALL OF ITS ELEMENTS, INCLUDING BUT NOT LIMITED TO, CREATION OF THE TEMPORARY PEDESTRIAN CONTROL PLAN, SIGNS, CHANNELIZING DEVICES, BARRICADES, TEMPORARY PAVEMENT MARKINGS AND OTHER TRAFFIC CONTROL DEVICES SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "MINOR TRAF DEVICES."

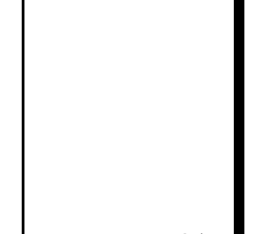
LEGEND

- SIGN
- EXISTING PEDESTRIAN SURFACE
- WORK AREA
- PEDESTRIAN CHANNELIZATION DEVICE
- BARRIER
- SIDEWALK BARRICADE
- DIRECTION OF TRAFFIC
- TRAFFIC CONTROL DEVICE



REV.	DATE	DESCRIPTION	DRAWN	CHECKED
00	3-1-19	CC/DF/AB	CEC	TH
00	3-15-19	ADDENDUM #1		

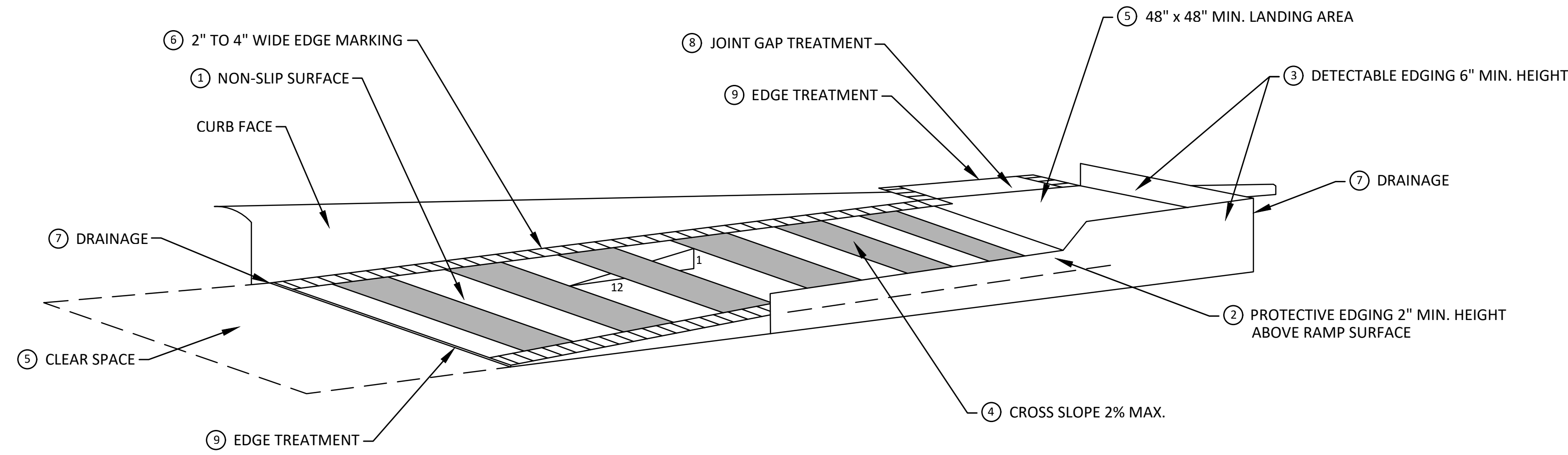
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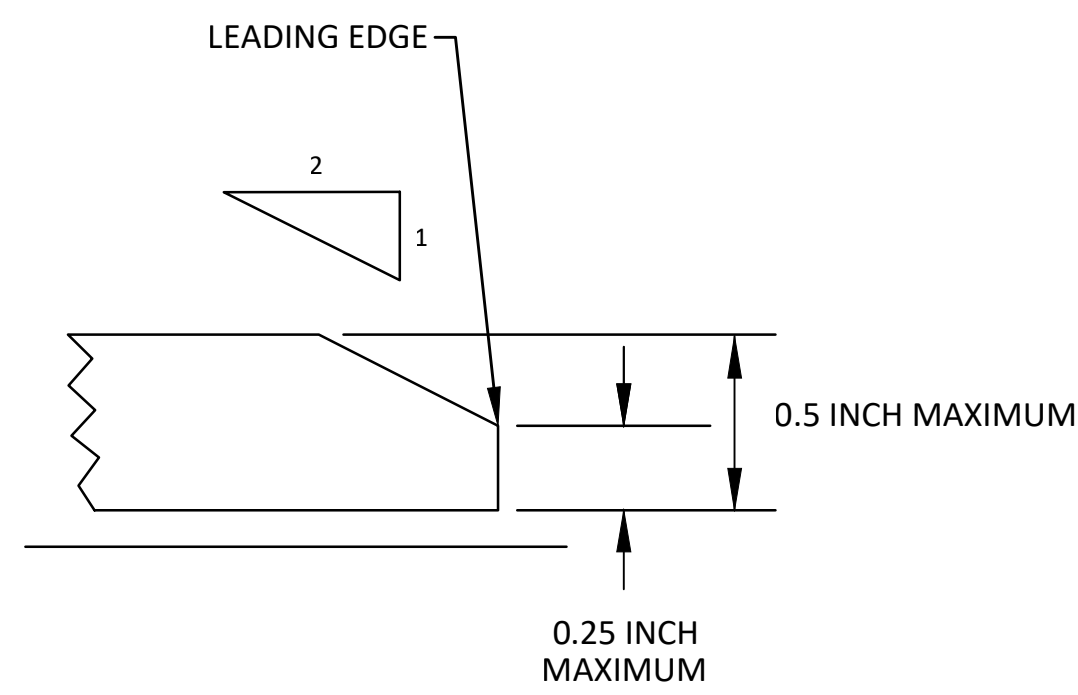
CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING
2019 MISC UTILITY PROJECTS
ALTERNATE PEDESTRIAN ROUTE (APR) DETOUR

SCALE: N.T.S.
DRAWING No. 2018025-10
SHEET No.

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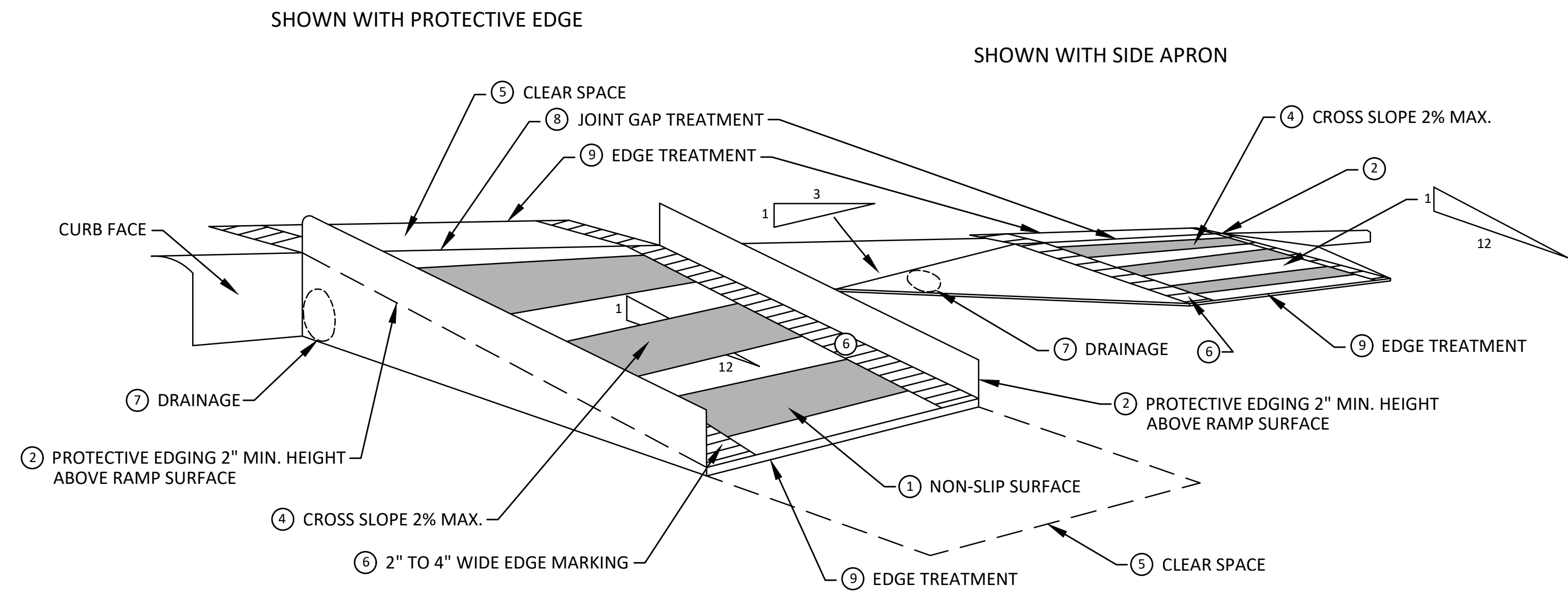
**TEMPORARY CURB RAMP
PARALLEL TO CURB**



EDGE TREATMENT

SPECIFIC NOTES

- 1 CURB RAMPS SHALL BE 48" MIN. WIDTH WITH A FIRM, STABLE AND SLIP RESISTANT SURFACE.
- 2 PROTECTIVE EDGING WITH A 2" MIN. HEIGHT SHALL BE PLACED WHEN A CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6" OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1:3. PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3" OR MORE.
- 3 DETECTABLE EDGING WITH 6" MIN. HEIGHT AND CONTRASTING COLOR SHALL BE PLACED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
- 4 CURB RAMPS AND LANDINGS SHALL HAVE A 2% MAX. CROSS SLOPE.
- 5 CLEAR SPACE OF 48" x 48" MIN. SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
- 6 THE CURB RAMP WALKWAY EDGE SHALL BE MARKED WITH A CONTRASTING COLOR, 2" TO 4" WIDE MARKING. THE MARKING IS OPTIONAL WHERE COLOR CONTRASTING EDGING IS USED.
- 7 WATER FLOW IN THE GUTTER SYSTEM SHALL NOT BE IMPEDED.
- 8 LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 1/2" WIDTH.
- 9 CHANGES BETWEEN SURFACE HEIGHTS SHALL NOT EXCEED 1/2". LATERAL EDGES SHOULD BE VERTICAL UP TO 1/4" HIGH, AND BEVELED AT 1:2 BETWEEN 1/4" AND 1/2" HEIGHT.

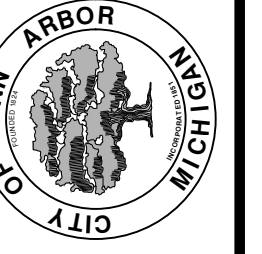


**TEMPORARY CURB RAMP
PERPENDICULAR TO CURB**



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00	3-1-19	DATE

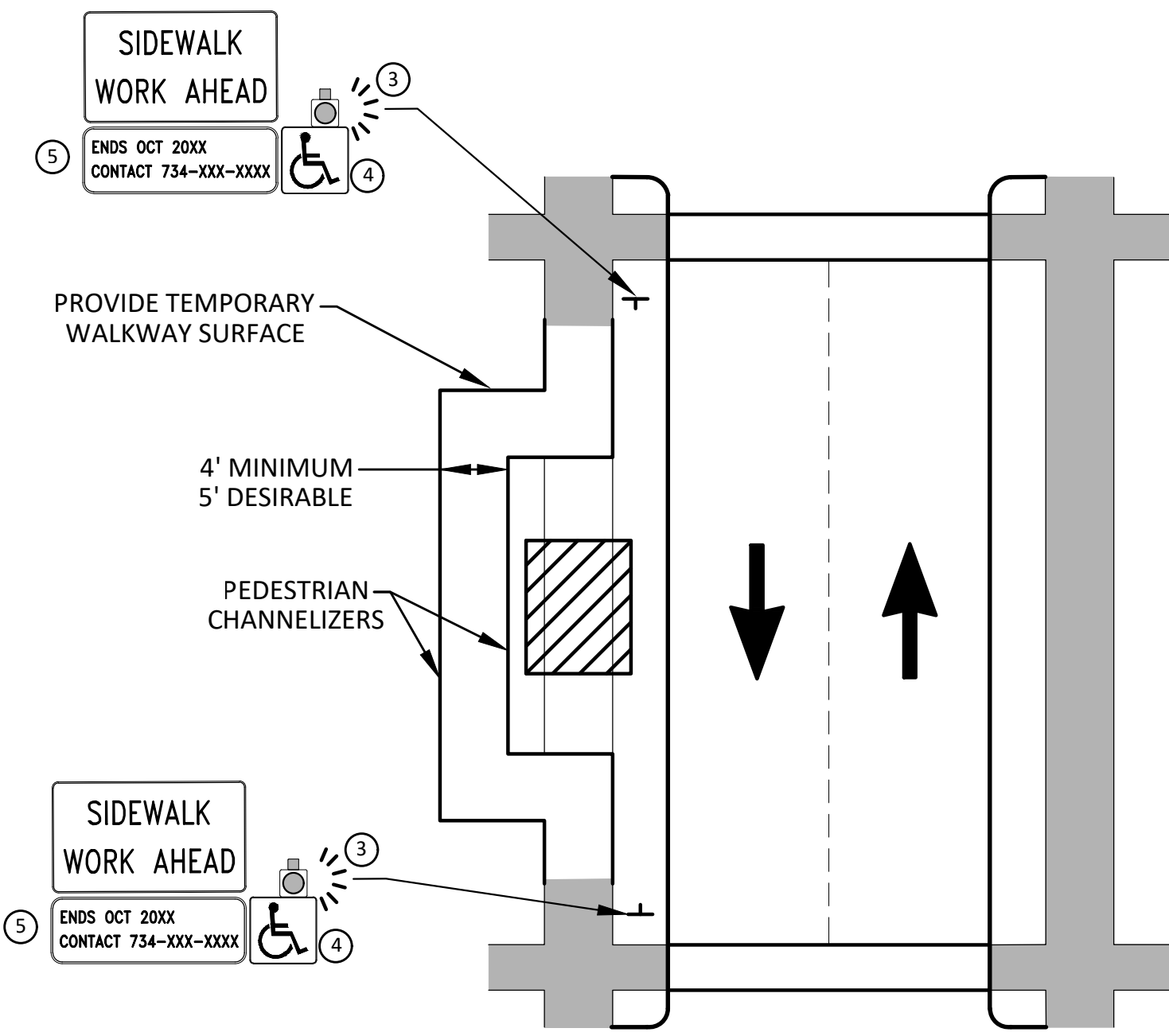
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CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING
2019 MISC UTILITY PROJECTS
TPAR RAMPS

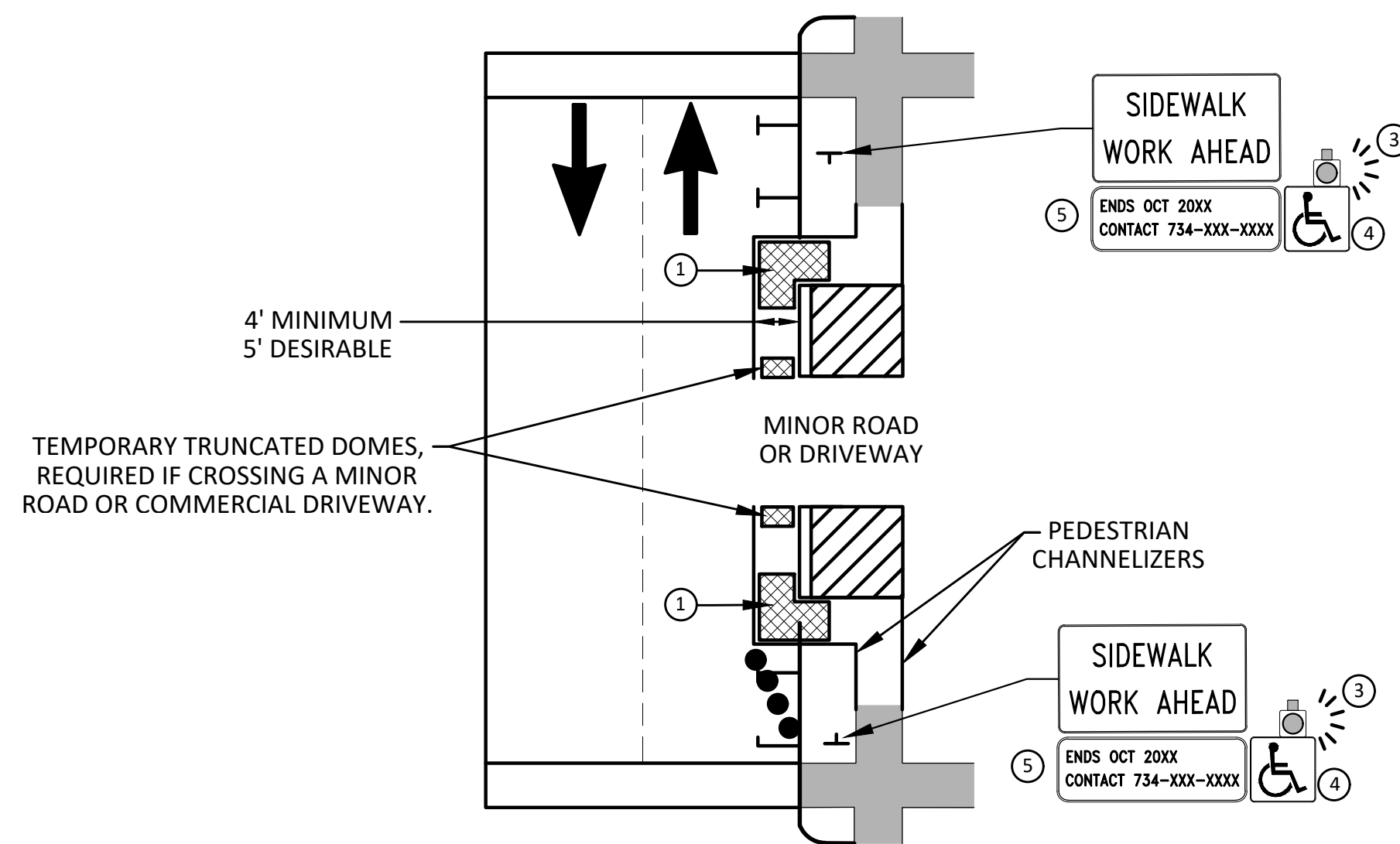
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DRAWING No. 2018025-11

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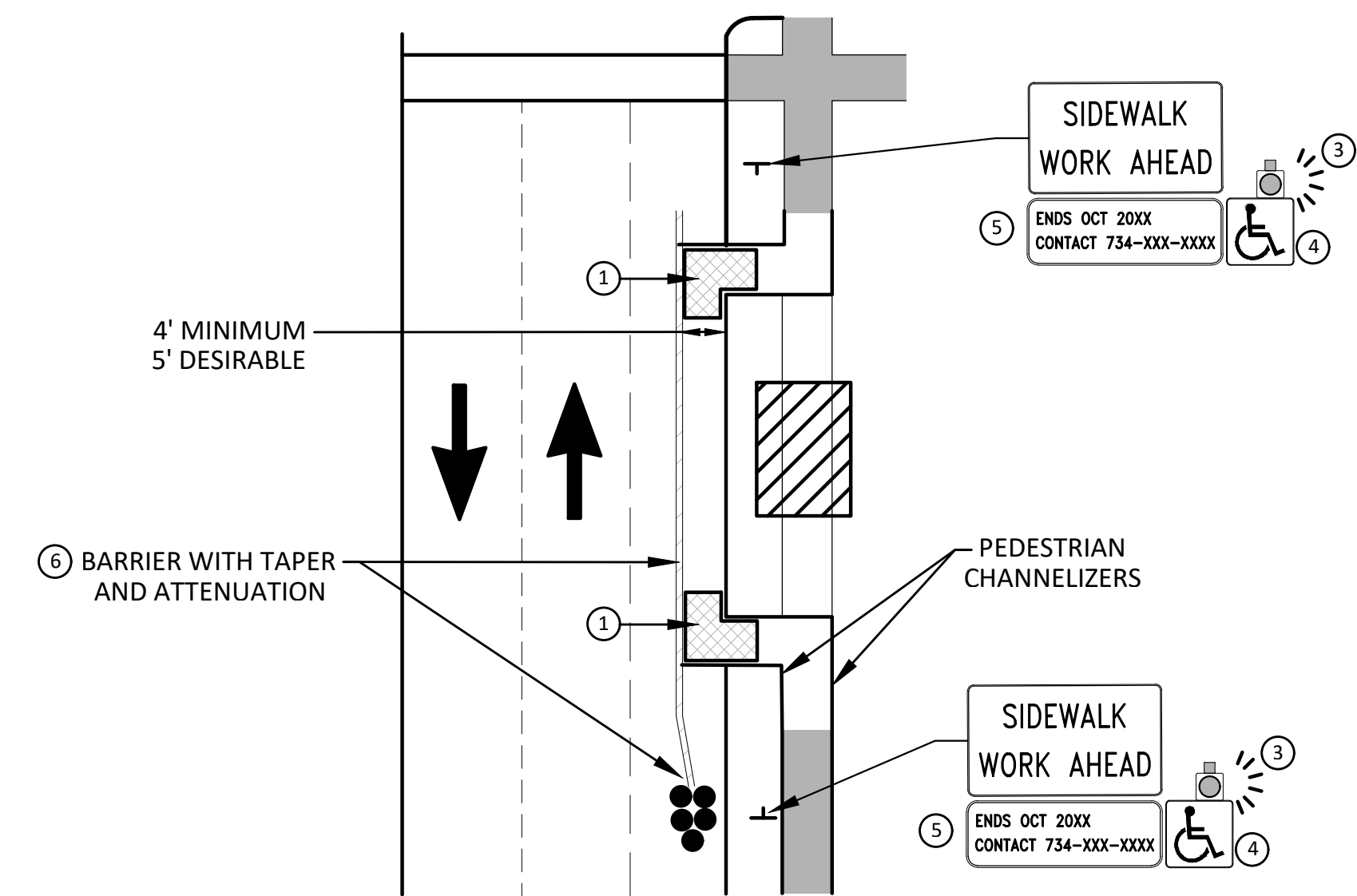


**BYPASS ON ADJACENT AVAILABLE
RIGHT OF WAY**
BYPASS TYPE A

NOTE: MAY ONLY BE USED ON ROADWAY WITH POSTED
SPEED OF 45 MPH OR LESS.



**SIDEWALK BYPASS USING PARKING OR
SHOULDER ON LOW SPEED ROADWAY**
BYPASS TYPE B



**SIDEWALK BYPASS USING
SHOULDER OR PARKING LANE ON
HIGH SPEED ROADWAY**
BYPASS TYPE C

GENERAL NOTES

WHEN CLOSING OR RELOCATING CROSSWALKS OR SIDEWALKS, THE CONTRACTOR SHALL PROVIDE DETECTABLE TEMPORARY FACILITIES AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH EXISTING PEDESTRIAN FACILITIES.

TEMPORARY TRAFFIC CONTROL DEVICES FOR PEDESTRIANS ARE SHOWN. OTHER DEVICES MAY BE NECESSARY TO CONTROL VEHICULAR TRAFFIC. STAGE WORK, AS NECESSARY, TO PROVIDE AN ALTERNATE PEDESTRIAN ROUTE (APR) AT ALL TIMES. FOR ROADWAYS WITH NO AVAILABLE DETOURS, MAINTAIN ONE OPEN SIDEWALK AT ALL TIMES.

PROVIDE A SMOOTH, CONTINUOUS, HARD SURFACE THROUGH THE LENGTH OF THE APR. COMPACTED GRAVEL, AGGREGATE, OR SLAG MATERIALS ARE NOT ALLOWED. PROVIDE A FIRM, STABLE, AND SLIP RESISTANT TEMPORARY WALKWAY SURFACE TO COVER SHORT SEGMENTS OF ROUGH, SOFT, OR UNEVEN GROUND.

THE PEDESTRIAN TRAFFIC SIGNALS CONTROLLING CLOSED CROSSWALKS SHALL BE COVERED OR DEACTIVATED BY THE CITY OF ANN ARBOR. THE CONTRACTOR SHALL SCHEDULE AND COORDINATE THIS WORK WITH THE ENGINEER A MINIMUM OF 72 HOURS (NOT INCLUDING WEEKENDS & HOLIDAYS) PRIOR TO THE BEGINNING OF WORK THAT REQUIRES A SIDEWALK CLOSURE.

POST MOUNTED SIGNS LOCATED ADJACENT TO A SIDEWALK SHALL HAVE A 7 FOOT MINIMUM CLEARANCE FROM THE BOTTOM OF THE SIGN TO THE SIDEWALK SURFACE.

WHEN THE ENGINEER DETERMINES THAT THE CONTRACTOR'S OPERATIONS OR PLACEMENT OF TRAFFIC CONTROL DEVICES HAS CAUSED A SITUATION THAT THE VISIBILITY OF A TRAFFIC CONTROL DEVICE IS REDUCED ENOUGH TO CREATE A HAZARD, THE TRAFFIC CONTROL DEVICES SHALL BE DELINEATED WITH FLAGS OR OTHER ENGINEER-APPROVED DEVICES AT NO ADDITIONAL COST TO THE PROJECT.

MINIMIZE DISRUPTION TO PEDESTRIANS TO THE MAXIMUM EXTENT FEASIBLE BY PROVIDING AN APR IN THE FOLLOWING ORDER OF PREFERENCE:

1. PROVIDE THE APR ON THE SAME SIDE OF THE STREET AS THE DISRUPTED ROUTE UTILIZING BYPASSES.
2. WHERE IT IS NOT FEASIBLE TO PROVIDE A SAME SIDE APR, PROVIDE A DETOUR ON THE OTHER SIDE OF THE STREET.
3. WHERE IT IS NOT FEASIBLE TO PROVIDE AN APR ON THE OTHER SIDE OF THE ROADWAY, PROVIDE AN APR DETOUR WITH TRAILBLAZING SIGNS AS SHOWN ON THE PROJECT PLANS.

SPECIFIC NOTES

1. TEMPORARY CURB RAMPS WITH DETECTABLE WARNINGS.
2. S DEVICE TAPER 25 FEET LONG, RECOMMENDED WHEN THE CLOSED AREA WAS USED AS AN INTERMITTENT TRAFFIC LANE OR BYPASS LANE. STREET PARKING SHALL BE PROHIBITED FOR AT LEAST 50 FEET IN ADVANCE OF THE MID-BLOCK CROSSWALK.
3. AN APPROVED AUDIBLE MESSAGE DEVICE OR TACTILE MESSAGE SHOULD BE PROVIDED FOR SIGHT-IMPAIRED PEDESTRIANS.
4. THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL BE DISPLAYED WHEN ANY WALKWAY THROUGH A WORK ZONE HAS BEEN DETERMINED TO BE TPAR COMPLIANT. THE SYMBOL OF ACCESSIBILITY SHALL NOT BE DISPLAYED IF PERSONS WITH DISABILITIES SHOULD NOT USE THE PRIMARY TEMPORARY PEDESTRIAN DETOUR. THE REASON FOR THE NON-COMPLIANCE SHALL BE POSTED AND AN ALTERNATE ROUTE SHALL BE POSTED WHEN THE PRIMARY TEMPORARY PEDESTRIAN DETOUR IS NON-COMPLIANT TO TPAR STANDARDS.
5. TYPICAL SIGN MESSAGE FOR A TEMPORARY PEDESTRIAN DETOUR SHALL INCLUDE INFORMATION SUCH AS THE DURATION OF THE WALKWAY RESTRICTIONS (BEGINNING AND/OR END DATES) AND A PROJECT CONTACT NUMBER FOR 24 / 7 QUESTIONS OR REPORTING HAZARDS.
6. SEE MMUTCD FOR GUIDANCE ON PLACEMENT AND USAGE OF BARRIER.

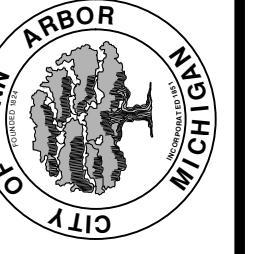
LEGEND

- SIGN
- EXISTING PEDESTRIAN SURFACE
- WORK AREA
- PEDESTRIAN CHANNELIZATION DEVICE
- BARRIER
- SIDEWALK BARRICADE
- DIRECTION OF TRAFFIC
- TRAFFIC CONTROL DEVICE



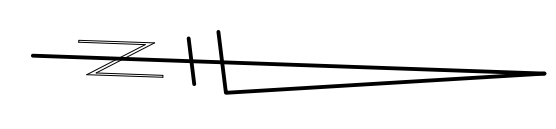
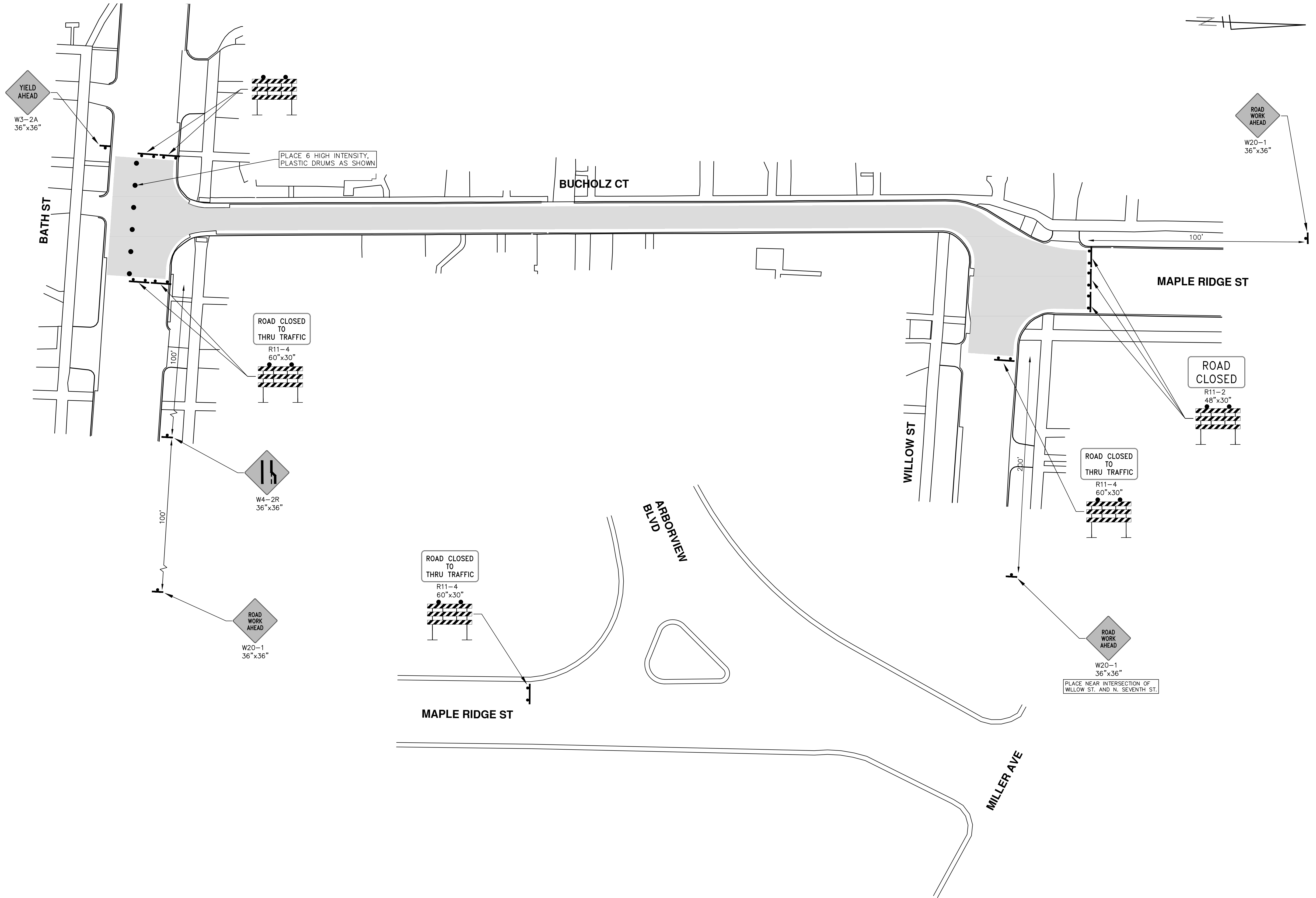
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CEC	CC/DF/AB	DRAWN
3-15-19	3-1-19	DATE
DO	ADDENDUM #1	REV.
00	OUT FOR BID	DESCRIPTION

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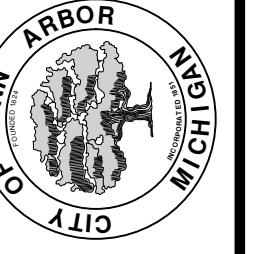
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2019 MISC UTILITY PROJECTS
ALTERNATE PEDESTRIAN ROUTE (APR) BYPASS
SCALE: N.T.S.
DRAWING No. 2018025-12
SHEET No.

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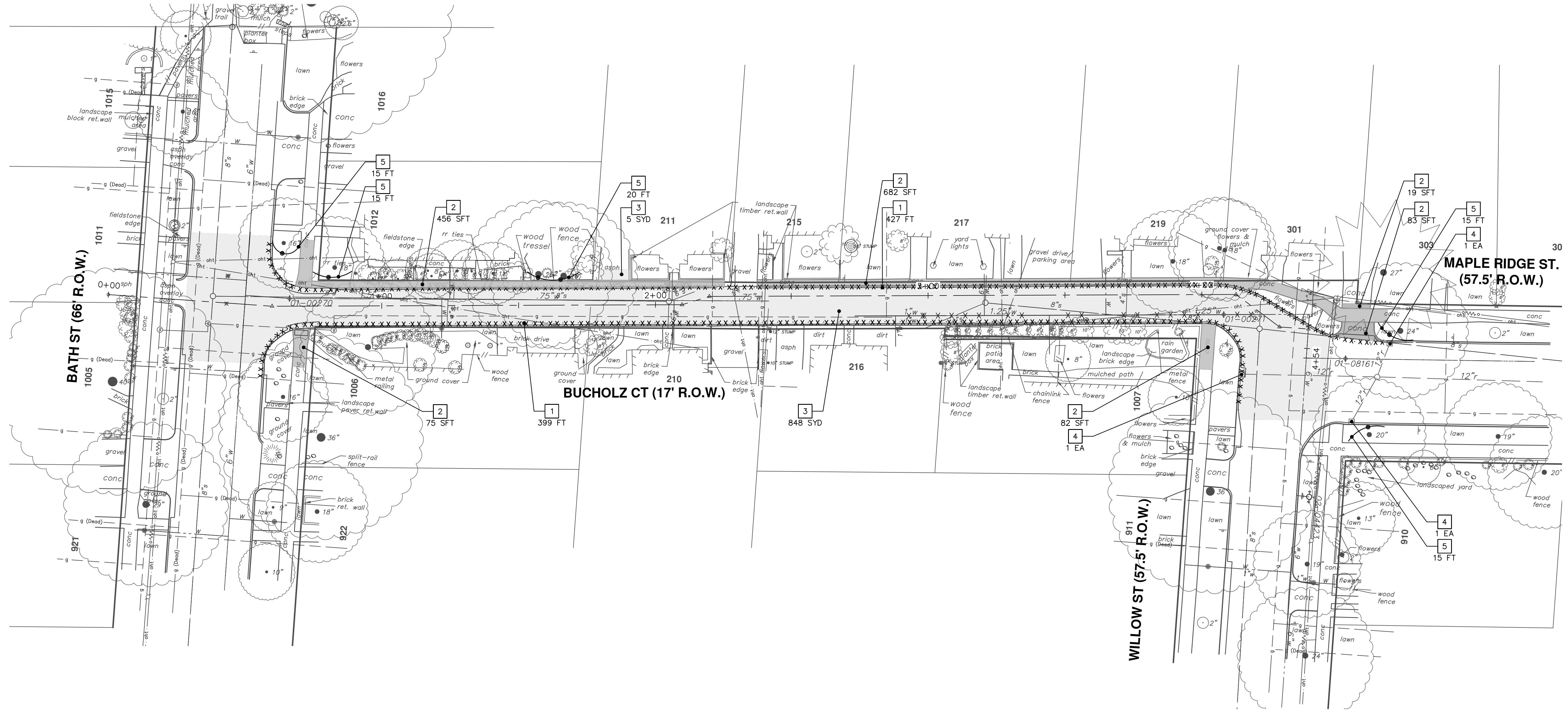
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2019 MISC UTILITY PROJECTS
BUCHOLZ CT
MAINTENANCE OF TRAFFIC

SCALE PLAN: 1" = 20'
DRAWING No. 2018025-13



REMOVAL KEY	
KEY	DESCRIPTION
1	REMOVE CONCRETE CURB OR CURB & GUTTER, ANY TYPE
2	REMOVE CONCRETE SIDEWALK, RAMP AND DRIVES, ANY THICKNESS
3	PAVT, REM *
4	INLET FILTER
5	PROTECTIVE FENCING
6	TREE REMOVAL, 8" AND LARGER
7	DR STRUCTURE, REM

*SAWCUT FULL DEPTH AT REMOVAL LIMITS

CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING

2019 MISC UTILITY PROJECTS

BUCHOLZ CT

REMOVALS

SCALE PLAN: 1" = 20'

DRAWING No. **2018025-14**

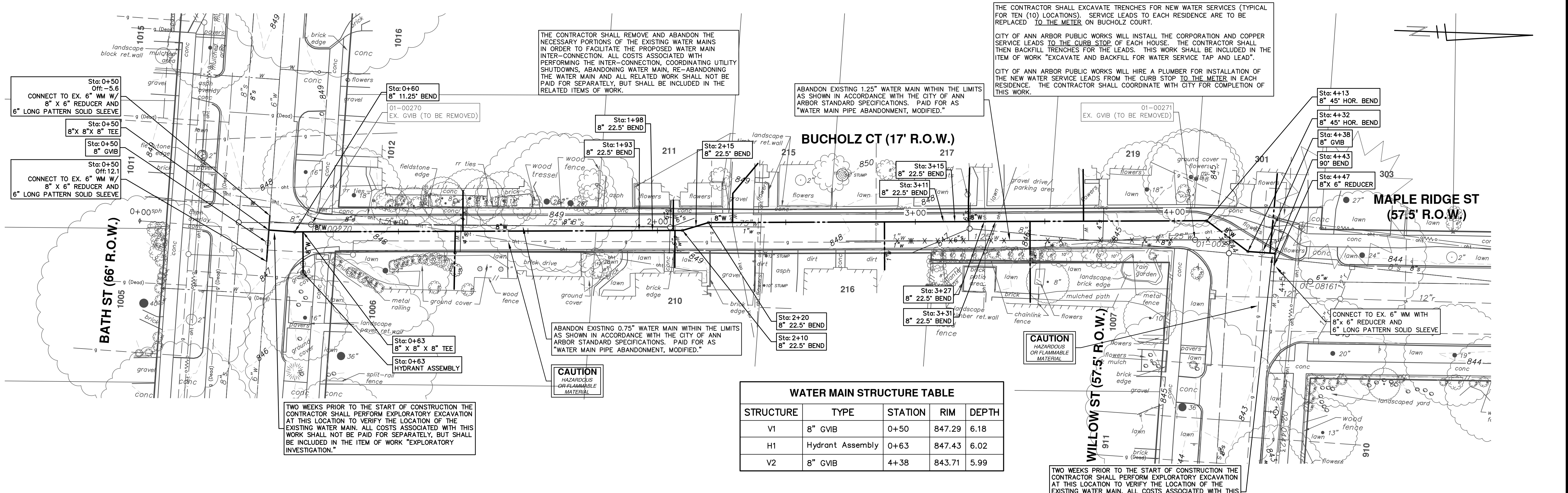
SHEET No. **14 OF 31**

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	DESCRIPTION	DATE		

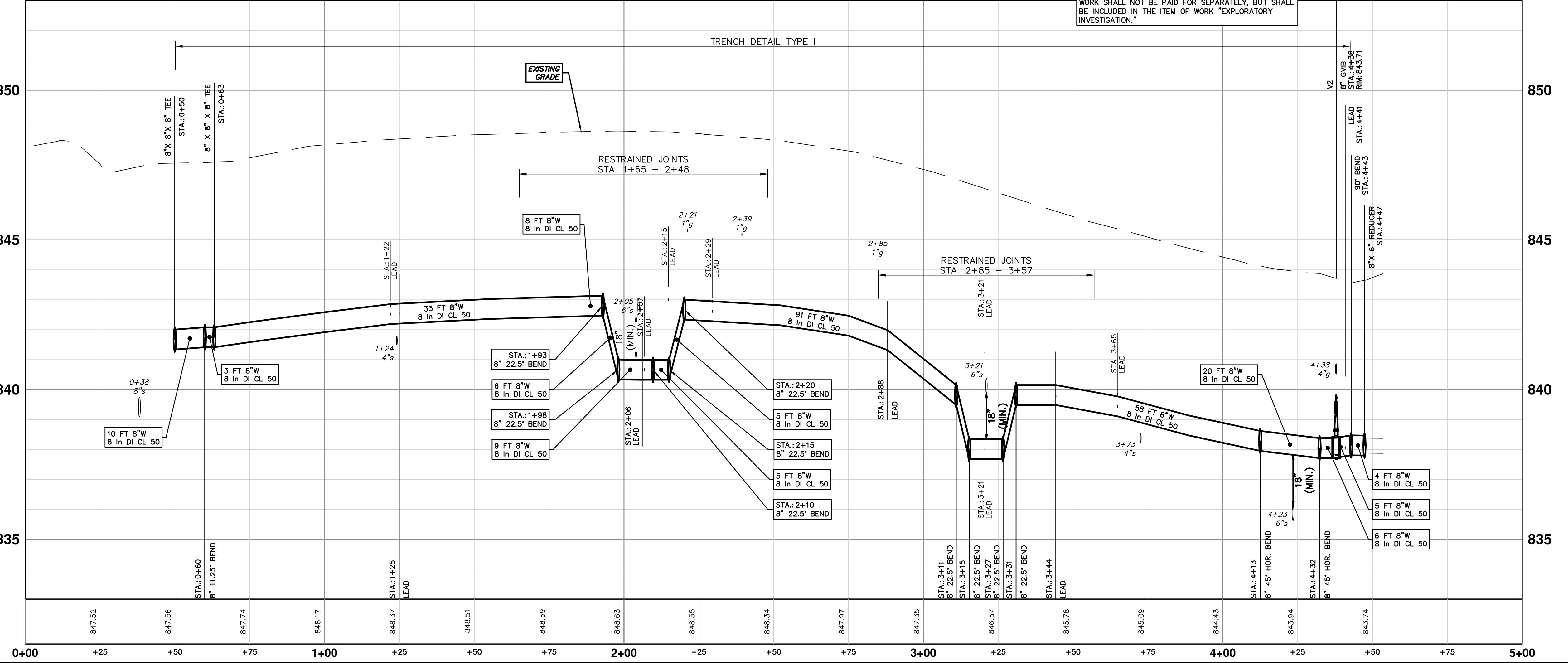
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CITY OF ANN ARBOR



WATER MAIN STRUCTURE TABLE

STRUCTURE	TYPE	STATION	RIM	DEPTH
V1	8" GVB	0+50	847.29	6.18
H1	Hydrant Assembly	0+63	847.43	6.02
V2	8" GVB	4+38	843.71	5.99





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00	3-15-19	CEC
00	3-1-19	CC/DF/KB
00	3-1-19	DRAWN
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2019 MISC UTILITY PROJECTS

BUCHOLZ CT

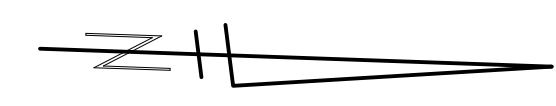
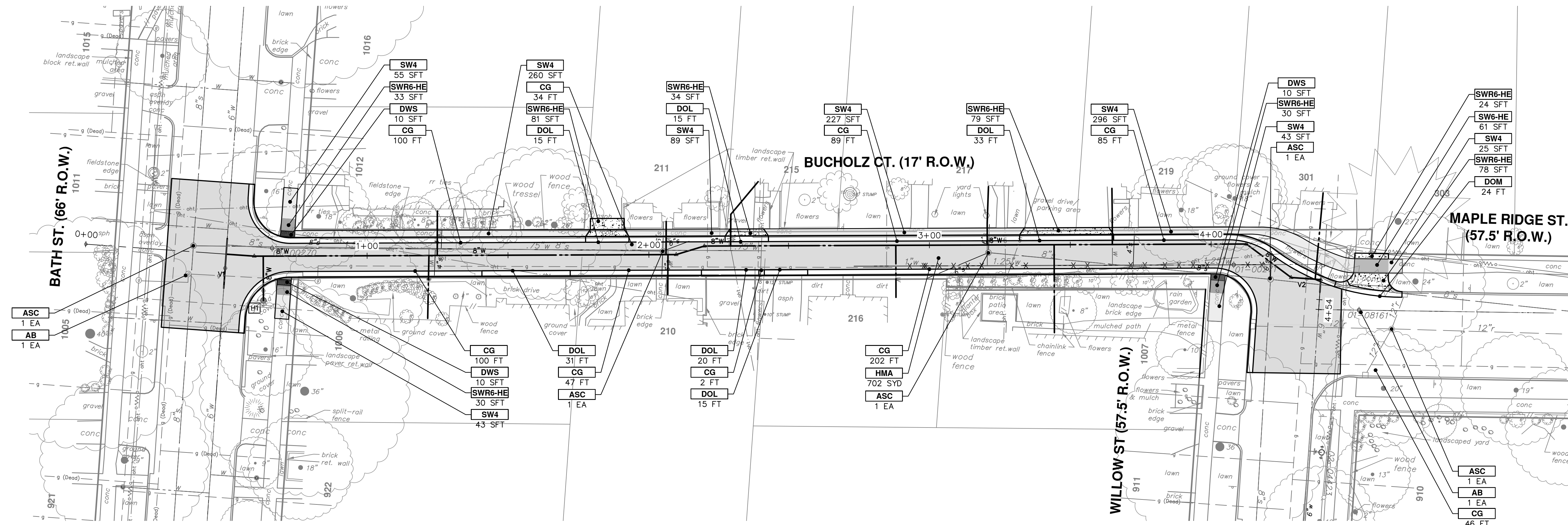
WATER MAIN - STA. 0+50 - STA. 4+43

SCALE PLAN: 1" = 20'

PROFILE: 1" = 2'

DRAWING NO. **2018025-15**

SHEET NO. **15 OF 31**



CONSTRUCTION KEY	
KEY	DESCRIPTION
HMA	SURFACE AREA FOR HMA
CG	CONCRETE CURB OR CURB & GUTTER, ANY TYPE
SW4	4" CONCRETE SIDEWALK
SW6	6" CONCRETE SIDEWALK
SW6-HE	6" CONCRETE SIDEWALK - HIGH EARLY
SWR6	6" CONCRETE RAMP
SWR6-HE	6" CONCRETE RAMP, DRIVE APPROACH- HIGH EARLY
SW-RW1	INTEGRAL SIDEWALK RETAINING WALL, 6" TO 18"
DOM	CONCRETE TYPE M DRIVE OPENING- HIGH EARLY
DOL	CONCRETE TYPE L DRIVE OPENING- HIGH EARLY
DWS	DETECTABLE WARNING, CAST IN PLACE
ASC	ADJUST STRUCTURE COVER
AB	ADJUST MONUMENT BOX OR GATE VALVE BOX



REV.	DESCRIPTION	DATE	DRAWN	CHECKED
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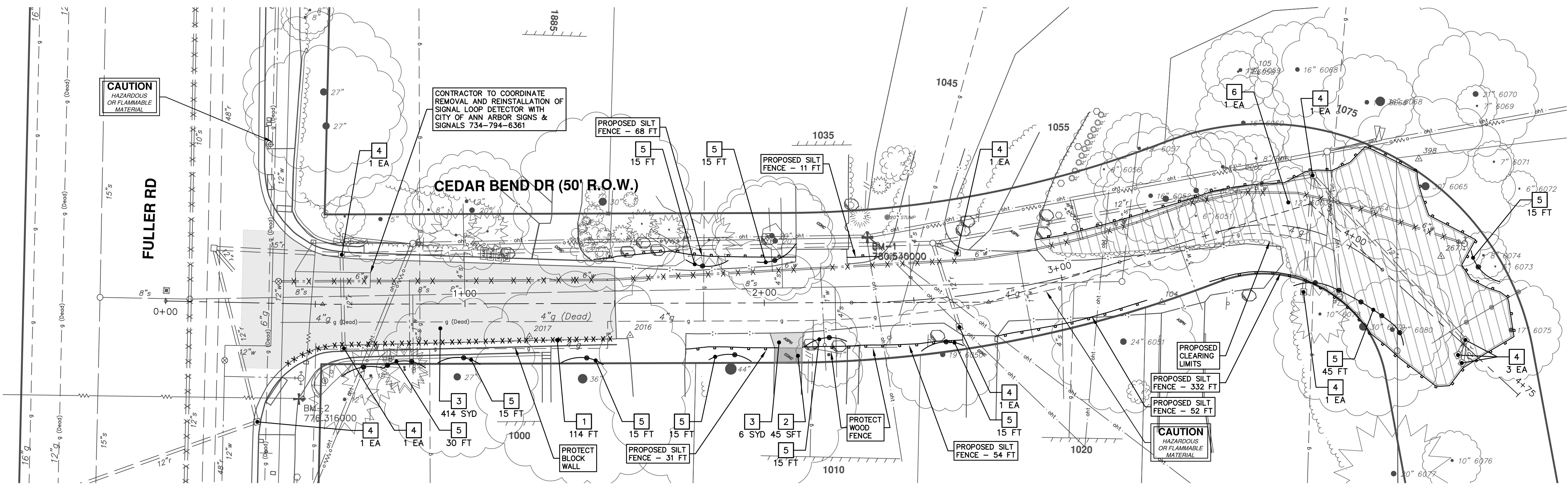
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CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING
2019 MISC UTILITY PROJECTS
BUCHOLZ CT
ROAD

SCALE PLAN: 1" = 20'
DRAWING No. 2018025-16
SHEET No.

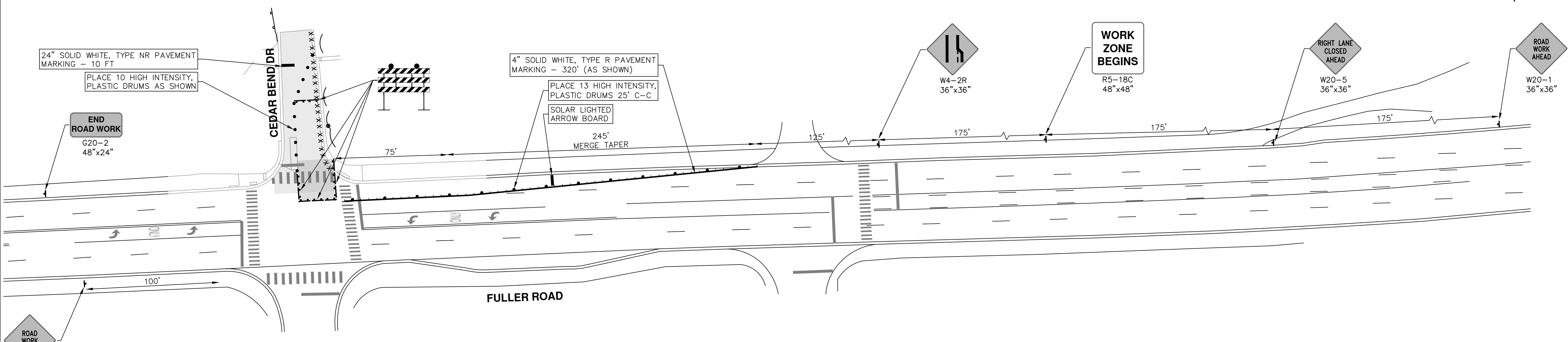
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SCALE: 1" = 20'

REMOVAL KEY	
KEY	DESCRIPTION
1	REMOVE CONCRETE CURB OR CURB & GUTTER, ANY TYPE
2	REMOVE CONCRETE SIDEWALK, RAMP AND DRIVES, ANY THICKNESS
3	PAVT, REM *
4	INLET FILTER
5	PROTECTIVE FENCING
6	TREE REMOVAL, 8" AND LARGER
7	DR STRUCTURE, REM

*SAWCUT FULL DEPTH AT REMOVAL LIMITS



SCALE: 1" = 40'

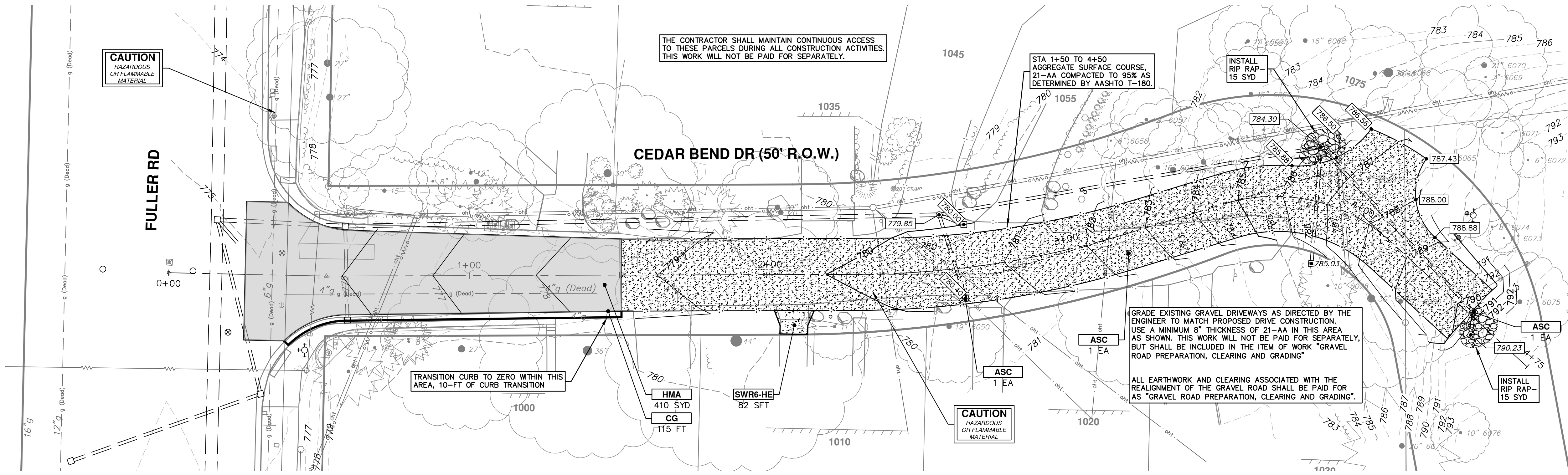
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2019 MISC UTILITY PROJECTS
CEDAR BEND DRIVE
REMOVALS AND MAINTENANCE OF TRAFFIC

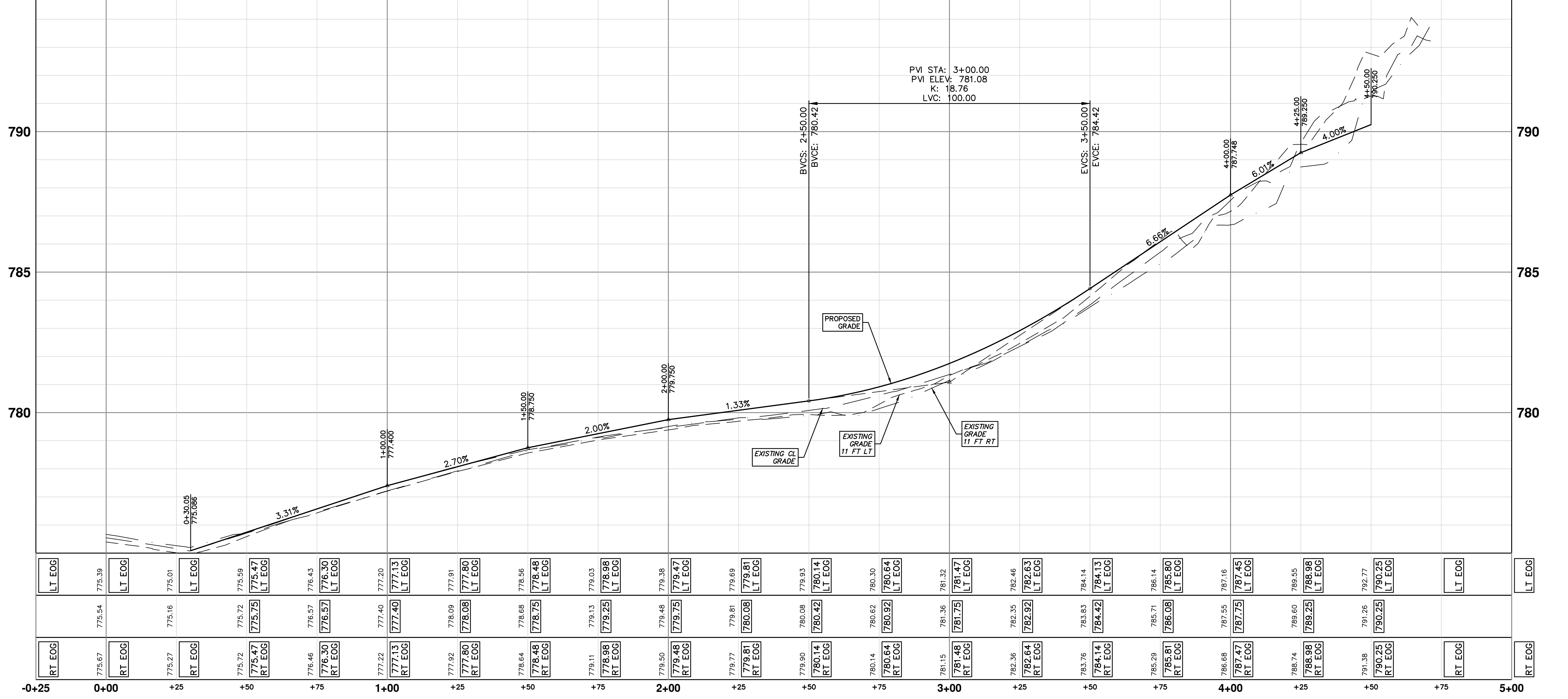
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SCALE PLAN: SEE ABOVE
DRAWING No. 2018025-17
SHEET No. 17 OF 31



CONSTRUCTION KEY	
KEY	DESCRIPTION
HMA	SURFACE AREA FOR HMA
CG	CONCRETE CURB OR CURB & GUTTER, ANY TYPE
SW4	4" CONCRETE SIDEWALK
SW6	6" CONCRETE SIDEWALK
SW6-HE	6" CONCRETE SIDEWALK - HIGH EARLY
SWR6	6" CONCRETE RAMP
SWR6-HE	6" CONCRETE RAMP, DRIVE APPROACH- HIGH EARLY
SW-RW1	INTEGRAL SIDEWALK RETAINING WALL, 6" TO 18"
DOM	CONCRETE TYPE M DRIVE OPENING- HIGH EARLY
DOL	CONCRETE TYPE L DRIVE OPENING- HIGH EARLY
DWS	DETECTABLE WARNING, CAST IN PLACE
ASC	ADJUST STRUCTURE COVER
AB	ADJUST MONUMENT BOX OR GATE VALVE BOX



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2019 MISC UTILITY PROJECTS

CEDAR BEND DRIVE ROAD

SCALE PLAN: 1" = 20'
PROFILE: 1" = 2'

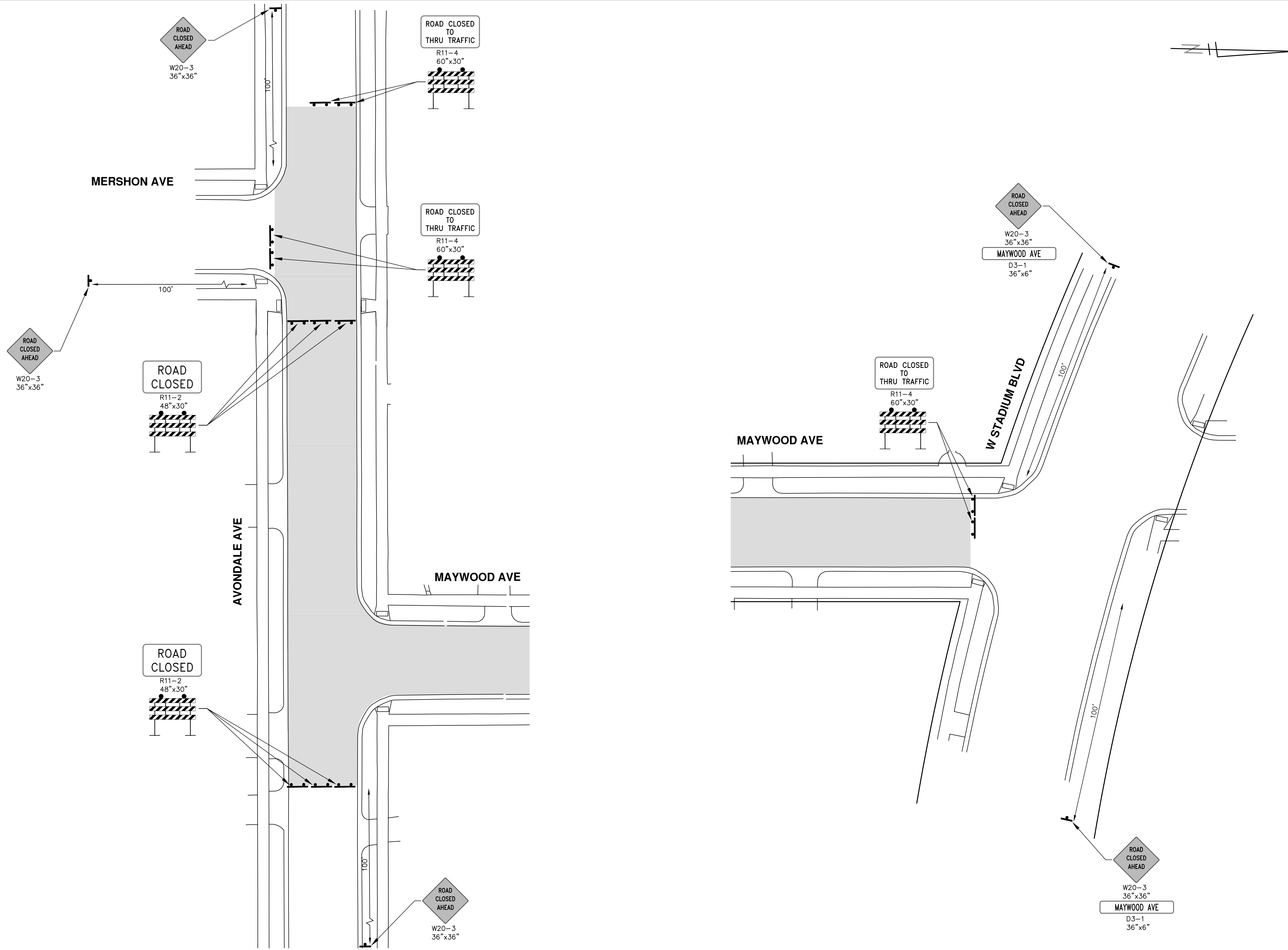
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SHEET NO. 19 OF 31

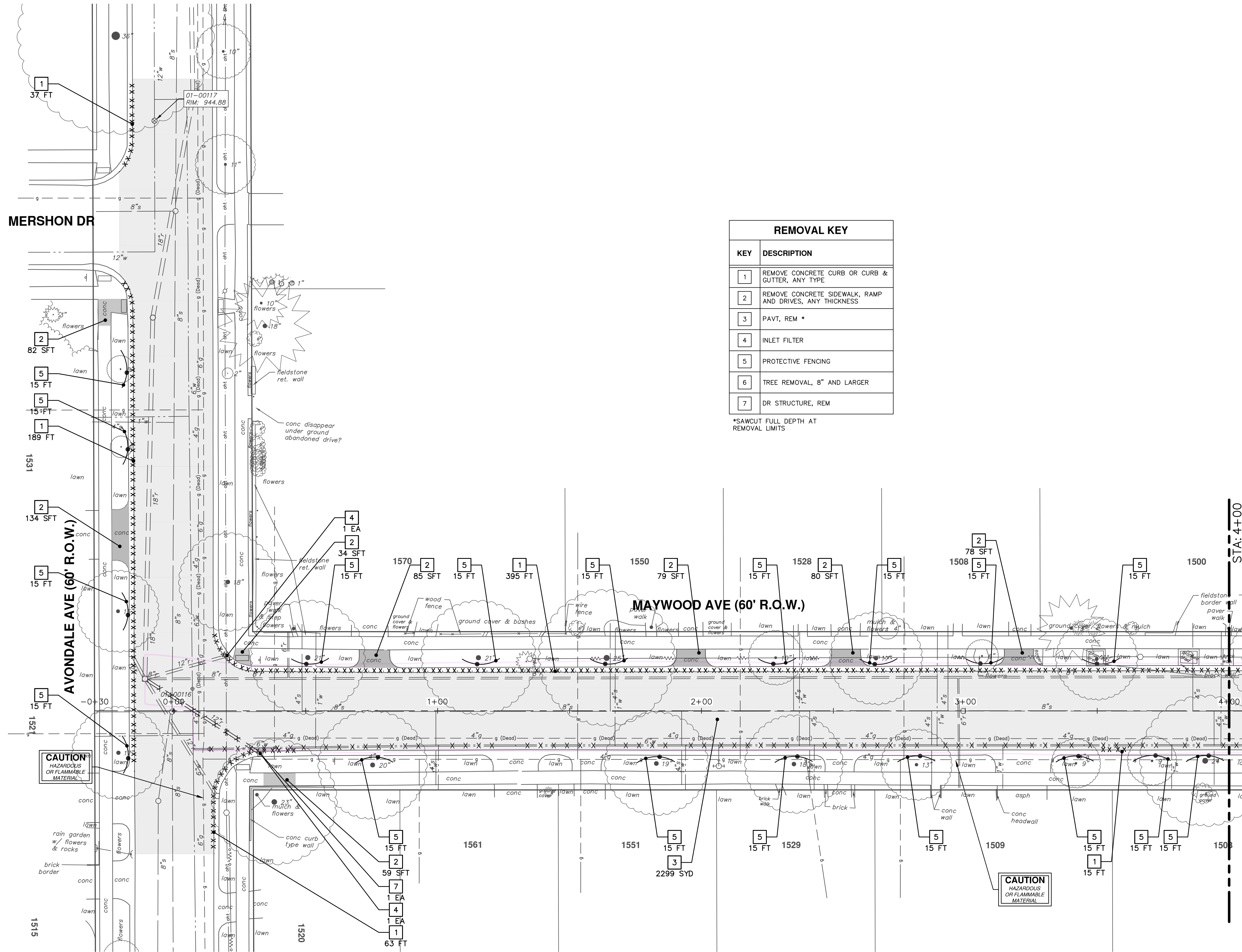
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00	3-1-19	TH
00	3-1-19	TH

R:\2018025 Misc Utility 2019\Plan Production\2018025 Maywood Mtrf.dwg Dwg Created: 27-Feb-19 -- _g2 standard bw.stb -- Plot Date: 14-Mar-19



 CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING 2019 MISC UTILITY PROJECTS MAYWOOD AVENUE MAINTENANCE OF TRAFFIC		SHEET No. 20 OF 31
SCALE: 1" = 20' 	DRAWING No. 2018025-20	CITY OF ANN ARBOR PUBLIC SERVICES 301 EAST HURON STREET ANN ARBOR, MI 48106-6647 www.a2gov.org
REV.	DATE	DESCRIPTION
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00	3-1-19	CHECKED
00	3-1-19	CC/DF/AB
00	3-1-19	CEC
00	3-1-19	TH
00	3-1-19	TH



CAUTION
HAZARDOUS
OR FLAMMABLE
MATERIAL

CAUTION
HAZARDOUS
OR FLAMMABLE
MATERIAL

CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING

2019 MISC UTILITY PROJECTS

MAYWOOD AVENUE

REMOVALS - STA. 0+00 - STA. 8+00

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Know what's below.
Call before you dig.

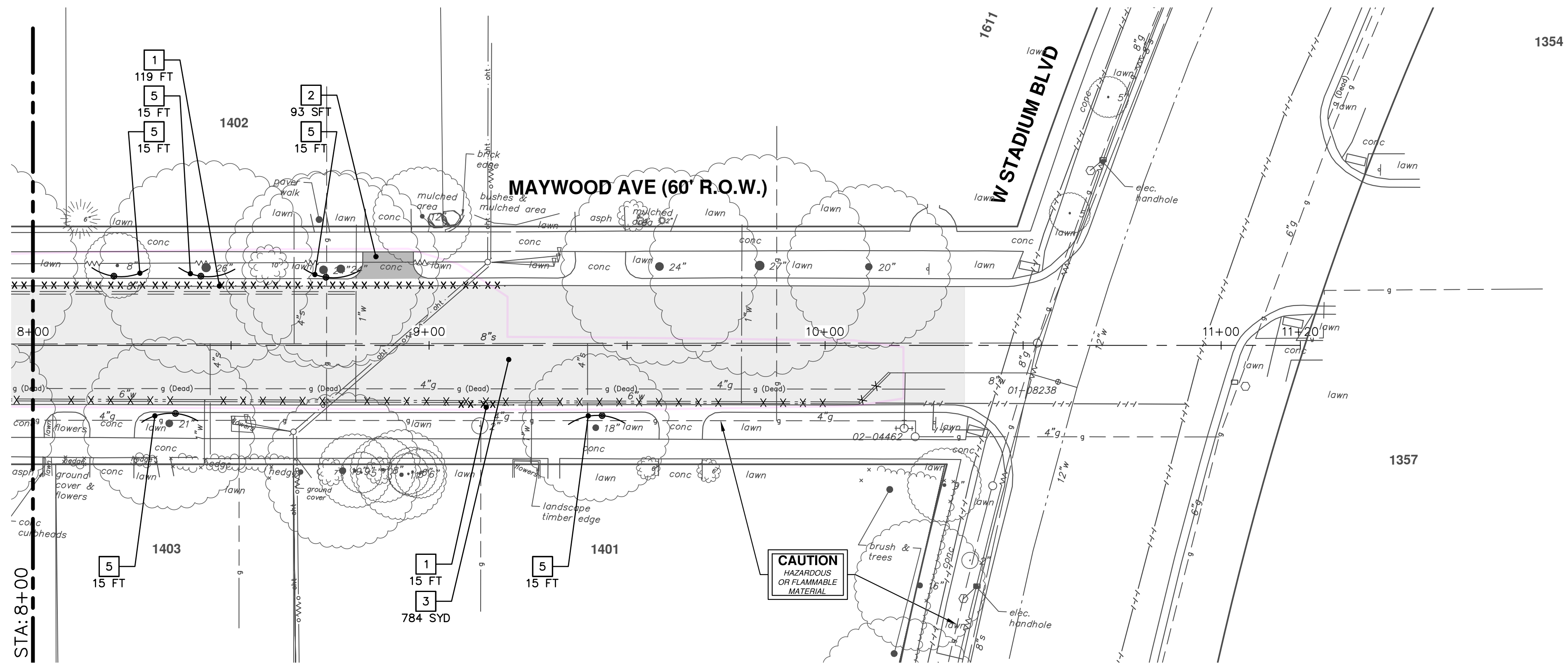
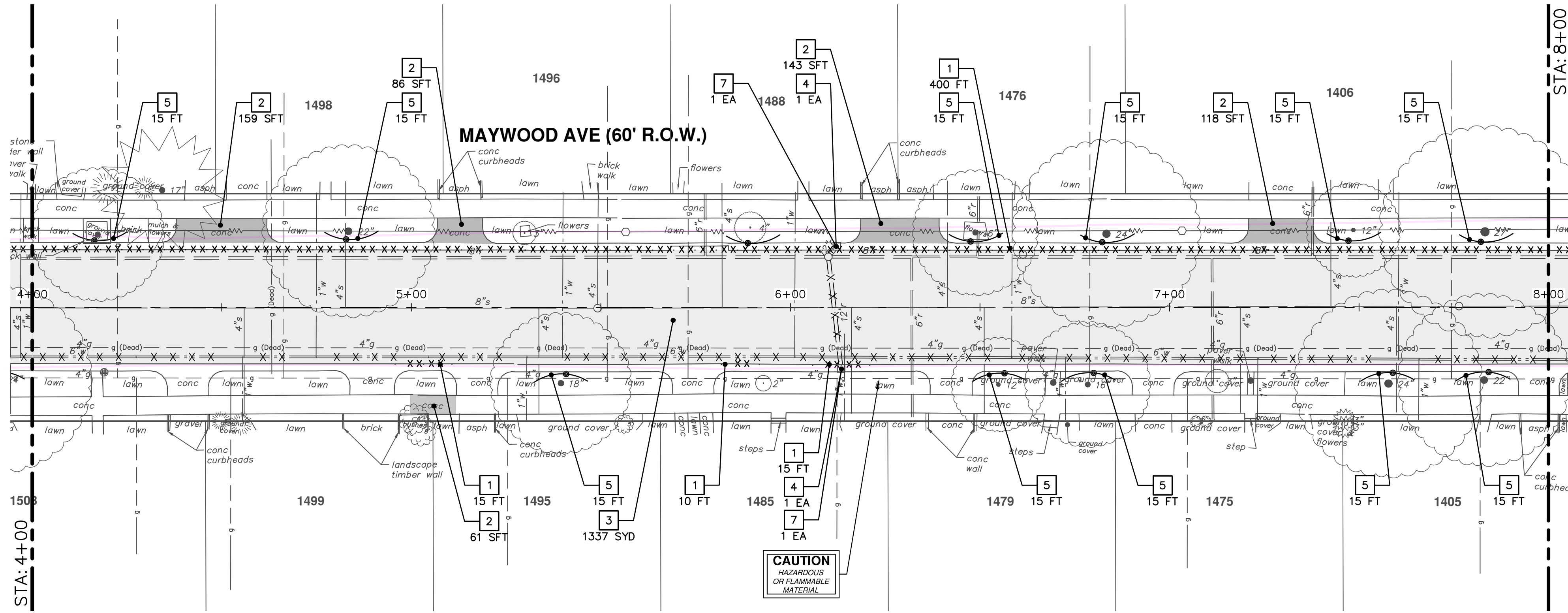
00 ADDENDUM #1
3-15-19
00 OUT FOR BID
3-1-19
DATE
DRAWN
CHECKED

DESCRIPTION

SCALE: 1" = 20'

DRAWING No.
2018025-21

SHEET No.
21 OF 31



REMOVAL KEY	
KEY	DESCRIPTION
1	REMOVE CONCRETE CURB OR CURB & GUTTER, ANY TYPE
2	REMOVE CONCRETE SIDEWALK, RAMP AND DRIVES, ANY THICKNESS
3	PAVT, REM *
4	INLET FILTER
5	PROTECTIVE FENCING
6	TREE REMOVAL, 8" AND LARGER
7	DR STRUCTURE, REM

*SAWCUT FULL DEPTH AT REMOVAL LIMITS

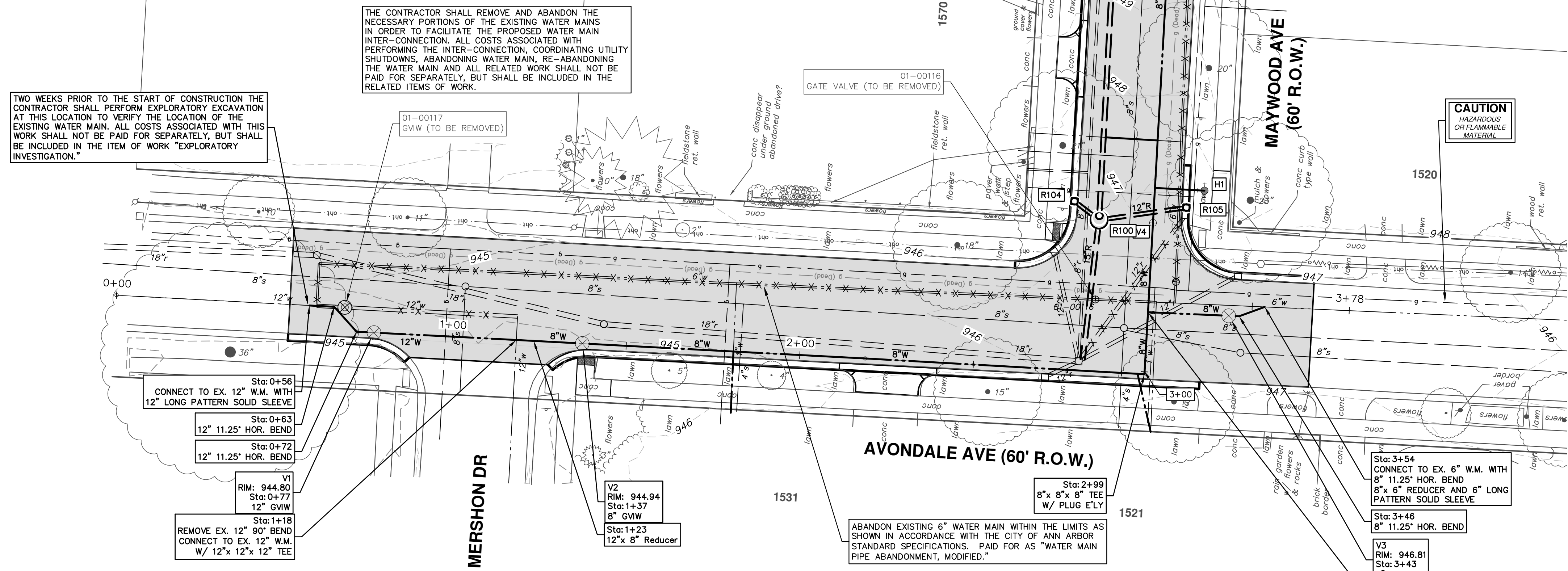


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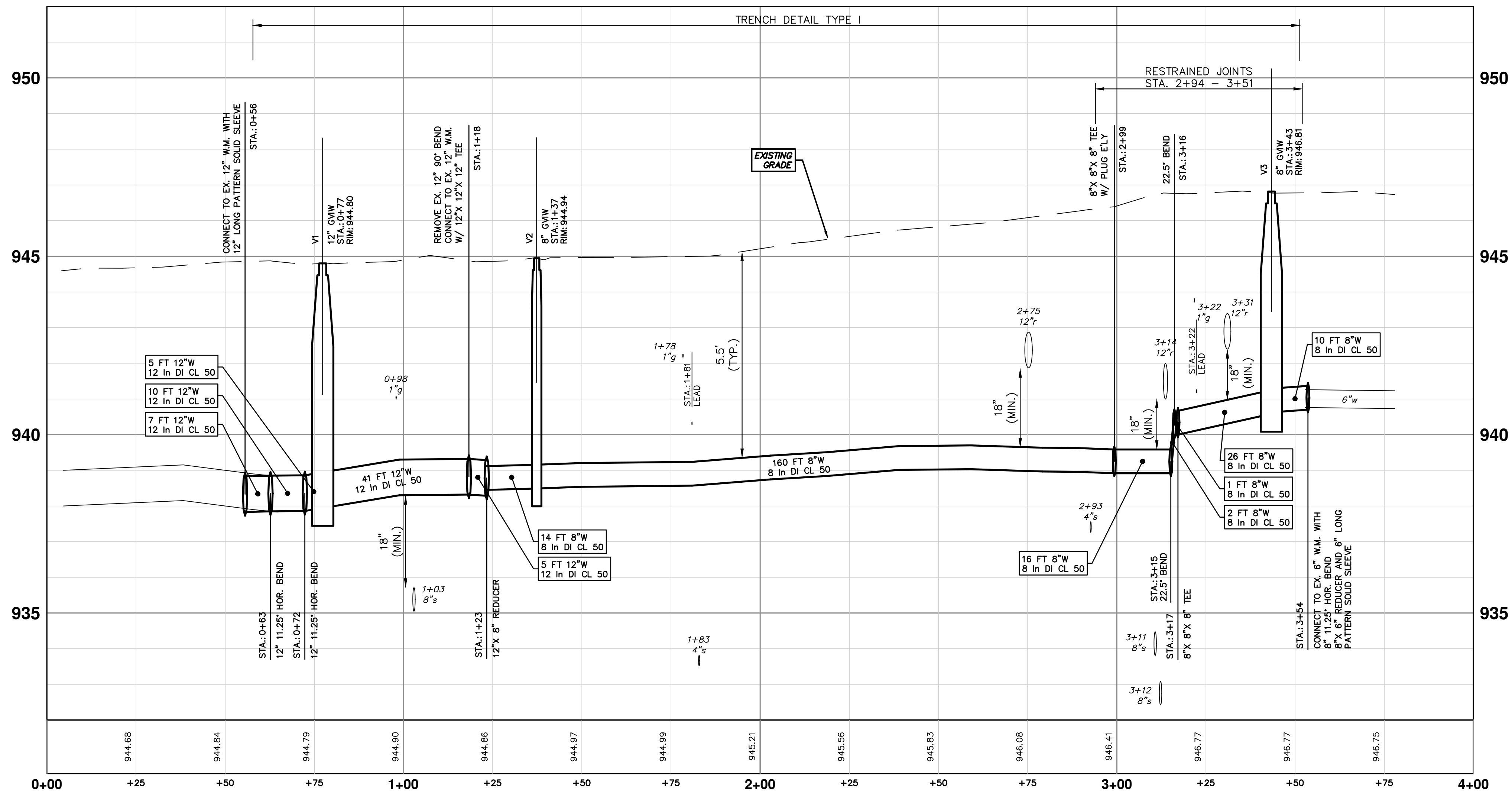


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2019 MISC UTILITY PROJECTS
MAYWOOD AVENUE
REMOVALS - STA. 8+00 - P.O.E.

SHEET No.
DRAWING No.
2018025-22



STRUCTURE	TYPE	STATION	RIM	DEPTH
V1	12" GVIW	0+77	944.80	6.86
V2	8" GVIW	1+37	944.94	6.45
V3	8" GVIW	3+43	946.81	6.23



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DATE: 3-1-19
DRAWN: CC/DF/KBL
CHECKED: TH
TH: 3-15-19
CEC: CEC

ADDENDUM #1
OUT FOR BID

DESCRIPTION: DRAWN
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MICHIGAN

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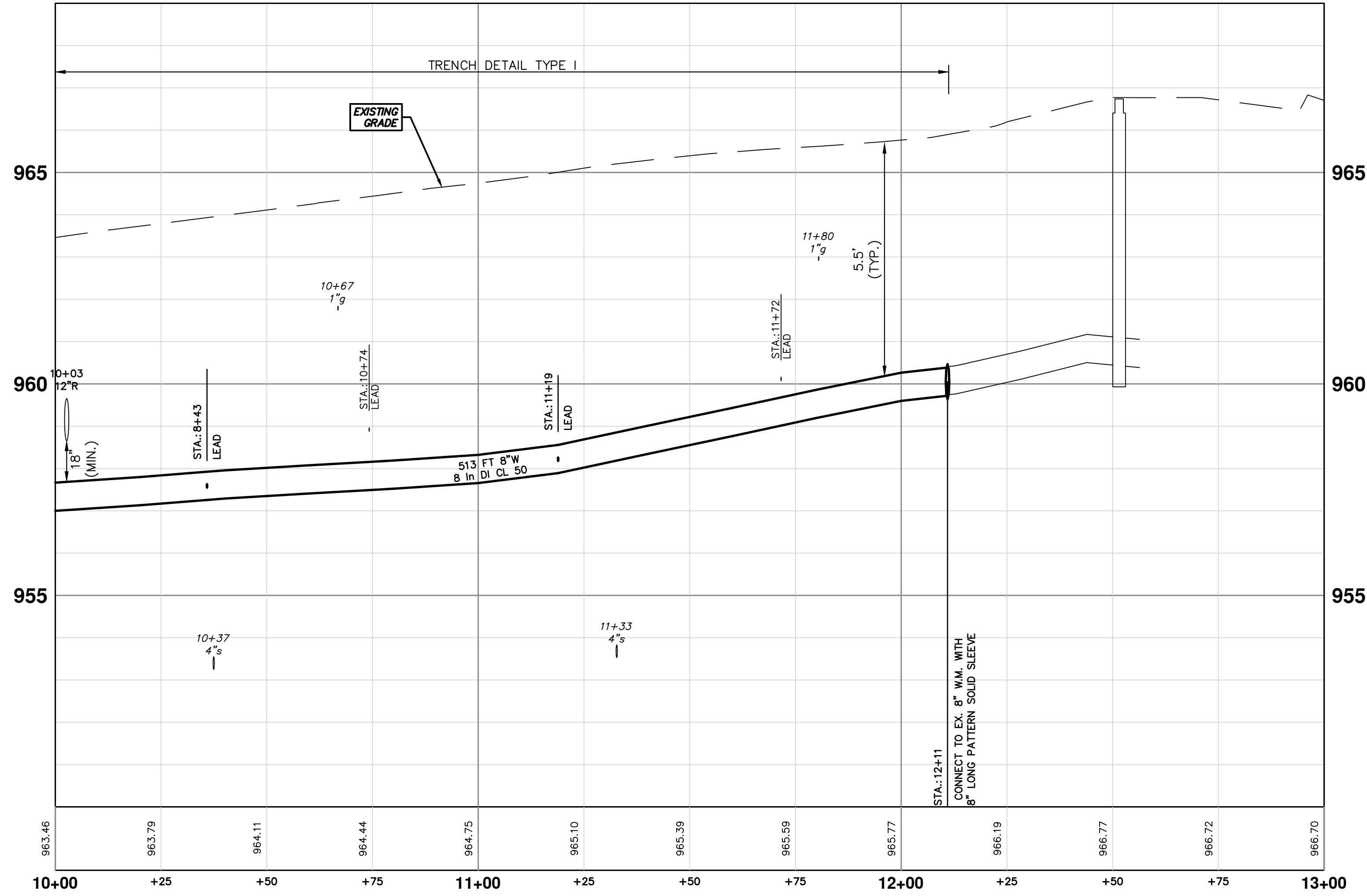
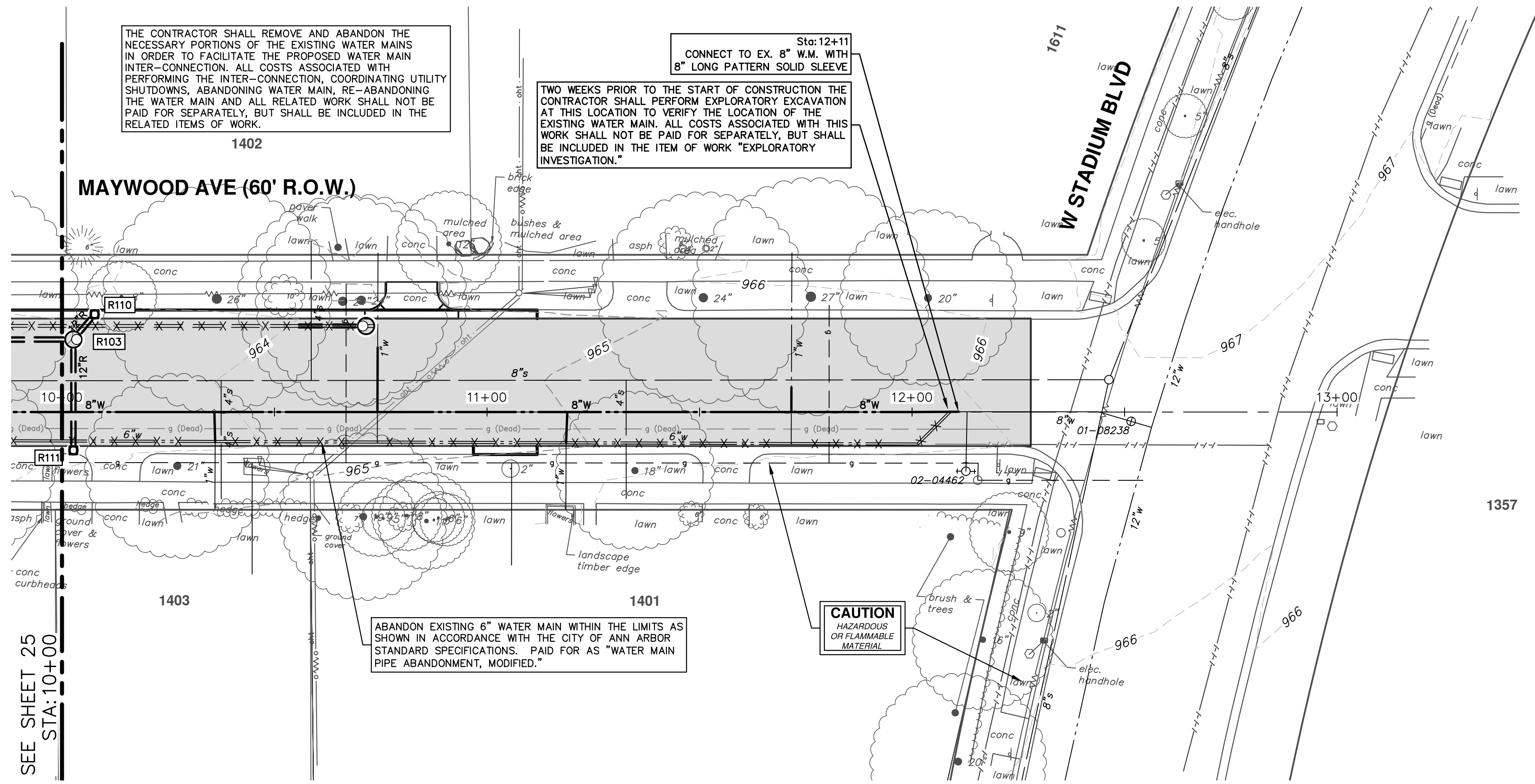
2019 MISC UTILITY PROJECTS

SCALE PLAN: 1" = 20'
PROFILE: 1" = 2'

WATER MAIN - AVONDALE AVE. - STA. 1+00 - STA. 3+50

DRAWING No. 2018025-23

SHEET No. 23 OF 31



THE CONTRACTOR SHALL REMOVE AND ABANDON THE NECESSARY PORTIONS OF THE EXISTING WATER MAINS IN ORDER TO FACILITATE THE PROPOSED WATER MAIN INTER-CONNECTION. ALL COSTS ASSOCIATED WITH PERFORMING THE INTER-CONNECTION, COORDINATING UTILITY SHUTDOWNS, ABANDONING WATER MAIN, RE-ABANDONING THE WATER MAIN AND ALL RELATED WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE RELATED ITEMS OF WORK.

CONNECT TO EX. 8" W.M. WITH 8" LONG PATTERN SOLID SLEEVE

TWO WEEKS PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL PERFORM EXPLORATORY EXCAVATION AT THIS LOCATION TO VERIFY THE LOCATION OF THE EXISTING WATER MAIN. ALL COSTS ASSOCIATED WITH THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "EXPLORATORY INVESTIGATION."

ABANDON EXISTING 6" WATER MAIN WITHIN THE LIMITS AS SHOWN IN ACCORDANCE WITH THE CITY OF ANN ARBOR STANDARD SPECIFICATIONS. PAID FOR AS "WATER MAIN PIPE ABANDONMENT, MODIFIED."

CAUTION
HAZARDOUS
OR FLAMMABLE
MATERIAL



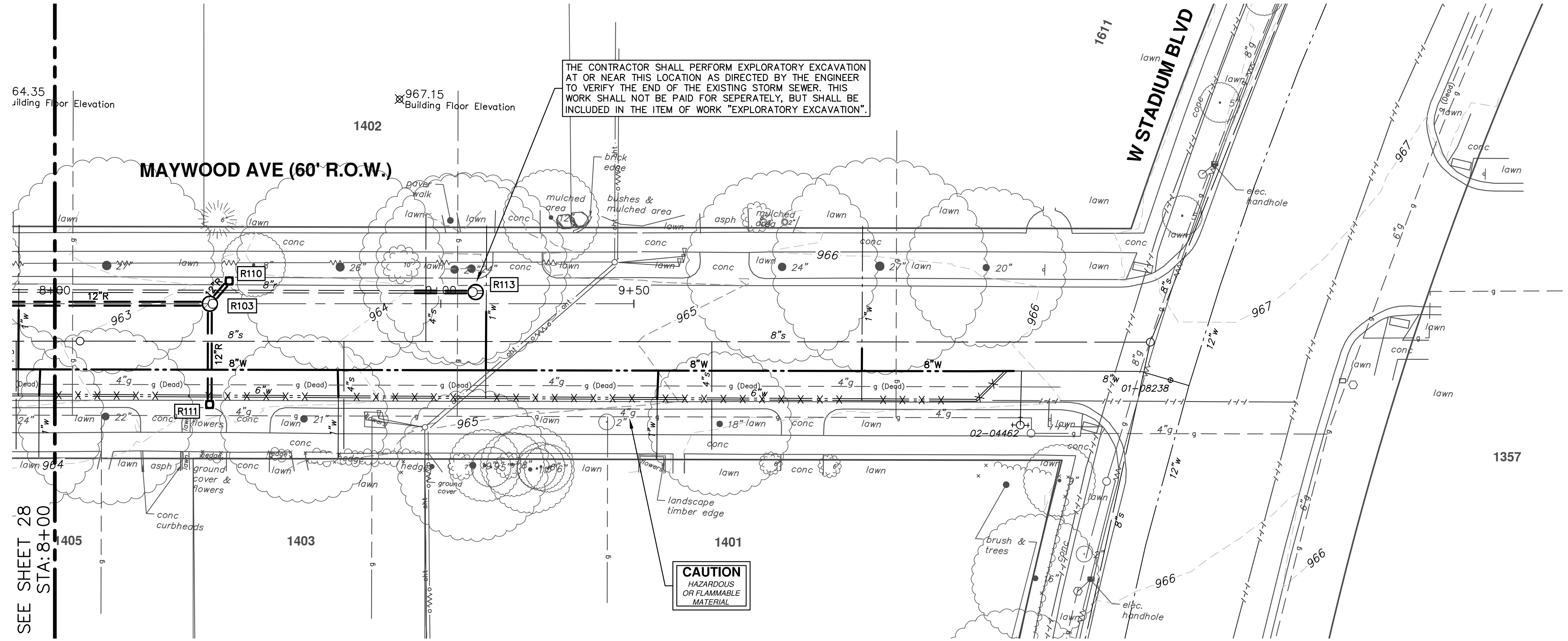
REV.	DATE	DESCRIPTION
00	3-15-19	CEC
00	3-1-19	CC/DF/AB

CITY OF ANN ARBOR
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www.a2gov.org



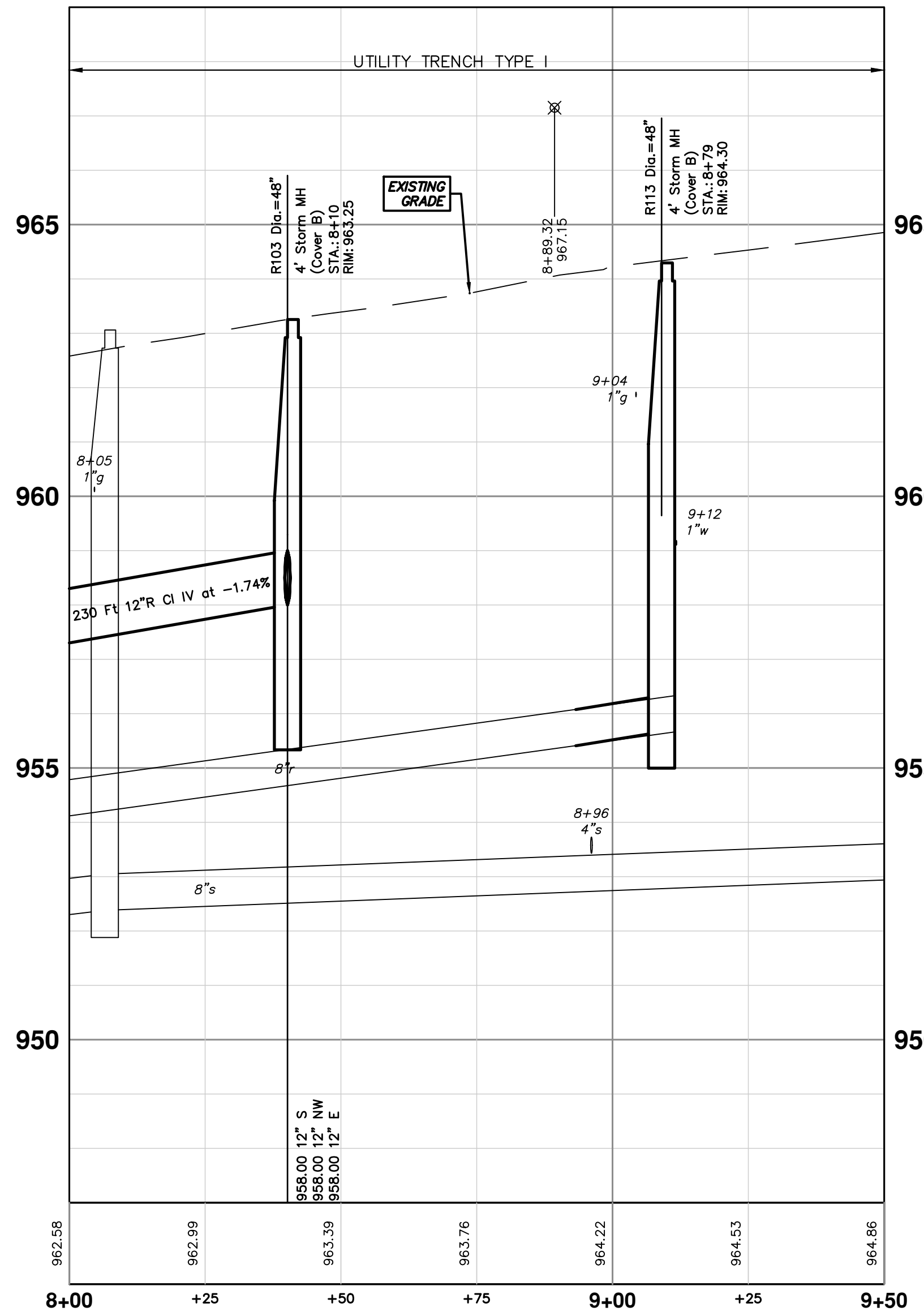
CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING
2019 MISC UTILITY PROJECTS
MAYWOOD AVENUE
WATER MAIN - STA. 10+00 - STA. 12+11

SHEET No. 26 OF 31
SCALE PLAN: 1" = 20'
PROFILE: 1" = 2'
DRAWING No. 2018025-26



THE CONTRACTOR SHALL PERFORM EXPLORATORY EXCAVATION AT OR NEAR THIS LOCATION AS DIRECTED BY THE ENGINEER TO VERIFY THE END OF THE EXISTING STORM SEWER. THIS WORK SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "EXPLORATORY EXCAVATION".

CAUTION
HAZARDOUS
OR FLAMMABLE
MATERIAL



STORM STRUCTURE TABLE					
STRUCTURE	UTILITY STATION	TYPE	TOP OF CASTING ELEVATION	SIZE DIRECTION INVERT ELEV.	PIPE
R103	8+10 -10.1' LT	4' Storm MH (Cover B)	963.25	12"S 958.00 12"NW 958.00 12"E 958.00	230 LF OF 12" @ 1.74% 8 LF OF 12" @ 3.23% 26 LF OF 12" @ 3.83%
R110	8+15 -16.0' LT	2' Inlet (Cover K)	963.34	12"SE 958.25	8 LF OF 12" AT 3.23%
R111	8+10 16.0' RT	2' Inlet (Cover K)	963.70	12"W 959.00	26 LF OF 12" AT 3.83%
R113	8+79 -13.2' LT	4' Storm MH (Cover B)	964.30	8"S 955.66	16 LF OF 8" AT 1.61%

CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING

2019 MISC UTILITY PROJECTS

MAYWOOD AVENUE

STORM SEWER - STA. 8+00 - STA. 9+04

811
Know what's below.
Call before you dig.

REV.	DATE	DESCRIPTION
00	3-15-19	CC/DF/AB
00	3-1-19	DRAWN

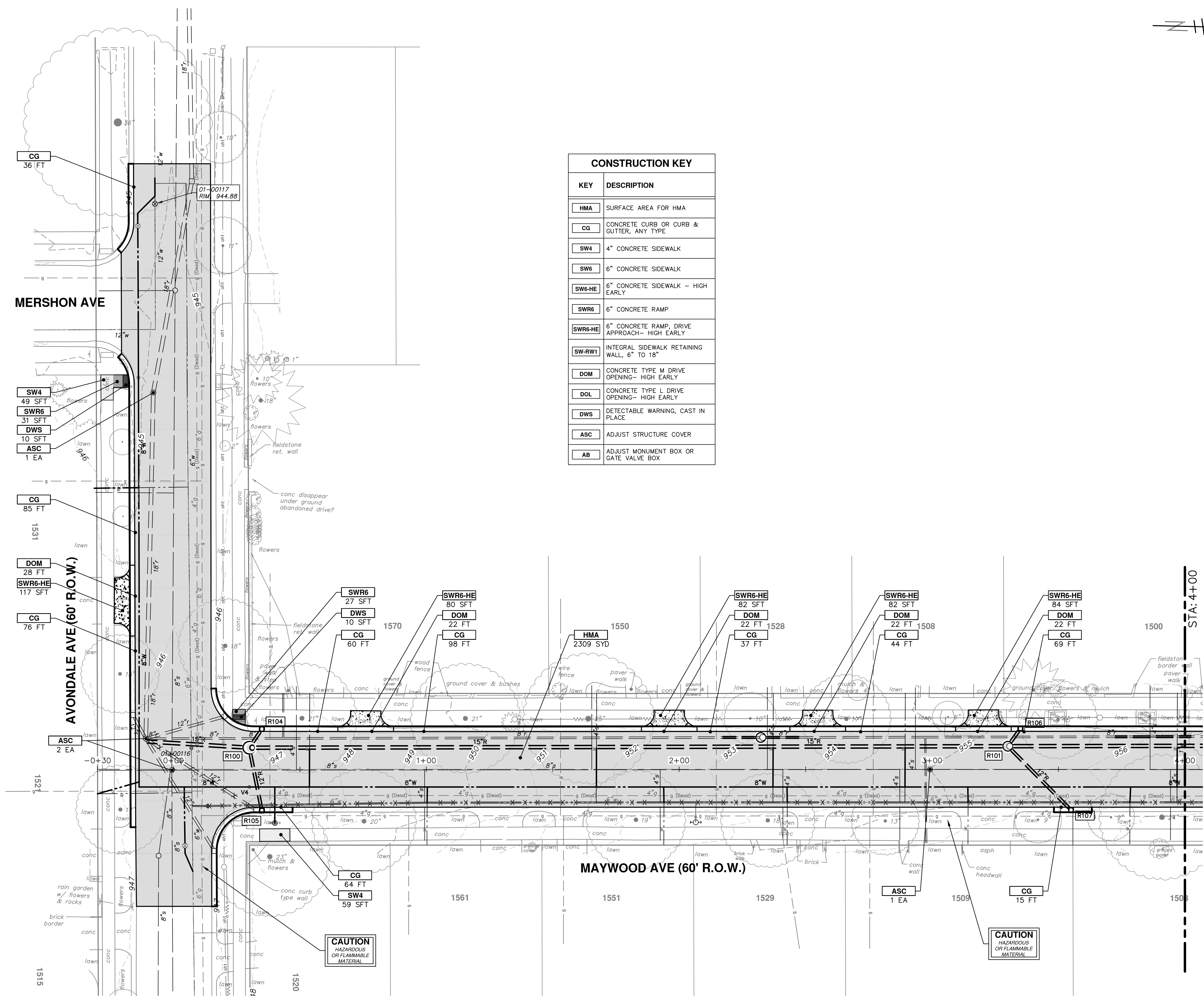
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SCALE PLAN: 1" = 20'
PROFILE: 1" = 2'

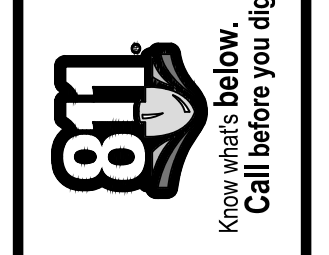
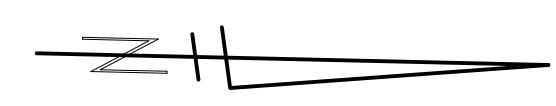
DRAWING No. **2018025-29**

SHEET No. **29 OF 31**

R:\2018025 Misc Utility 2019\Plan Production\2018025 Maywood Prd.dwg Dwg Created: 27-Feb-19 - _c2 standard bw.stb - Plot Date: 14-Mar-19

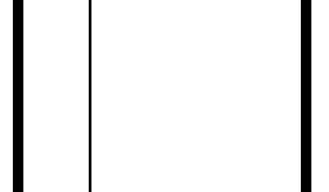


CONSTRUCTION KEY	
KEY	DESCRIPTION
HMA	SURFACE AREA FOR HMA
CG	CONCRETE CURB OR CURB & GUTTER, ANY TYPE
SW4	4" CONCRETE SIDEWALK
SW6	6" CONCRETE SIDEWALK
SW6-HE	6" CONCRETE SIDEWALK - HIGH EARLY
SWR6	6" CONCRETE RAMP
SWR6-HE	6" CONCRETE RAMP, DRIVE APPROACH- HIGH EARLY
SW-RW1	INTEGRAL SIDEWALK RETAINING WALL, 6" TO 18"
DOM	CONCRETE TYPE M DRIVE OPENING- HIGH EARLY
DOL	CONCRETE TYPE L DRIVE OPENING- HIGH EARLY
DWS	DETECTABLE WARNING, CAST IN PLACE
ASC	ADJUST STRUCTURE COVER
AB	ADJUST MONUMENT BOX OR GATE VALVE BOX



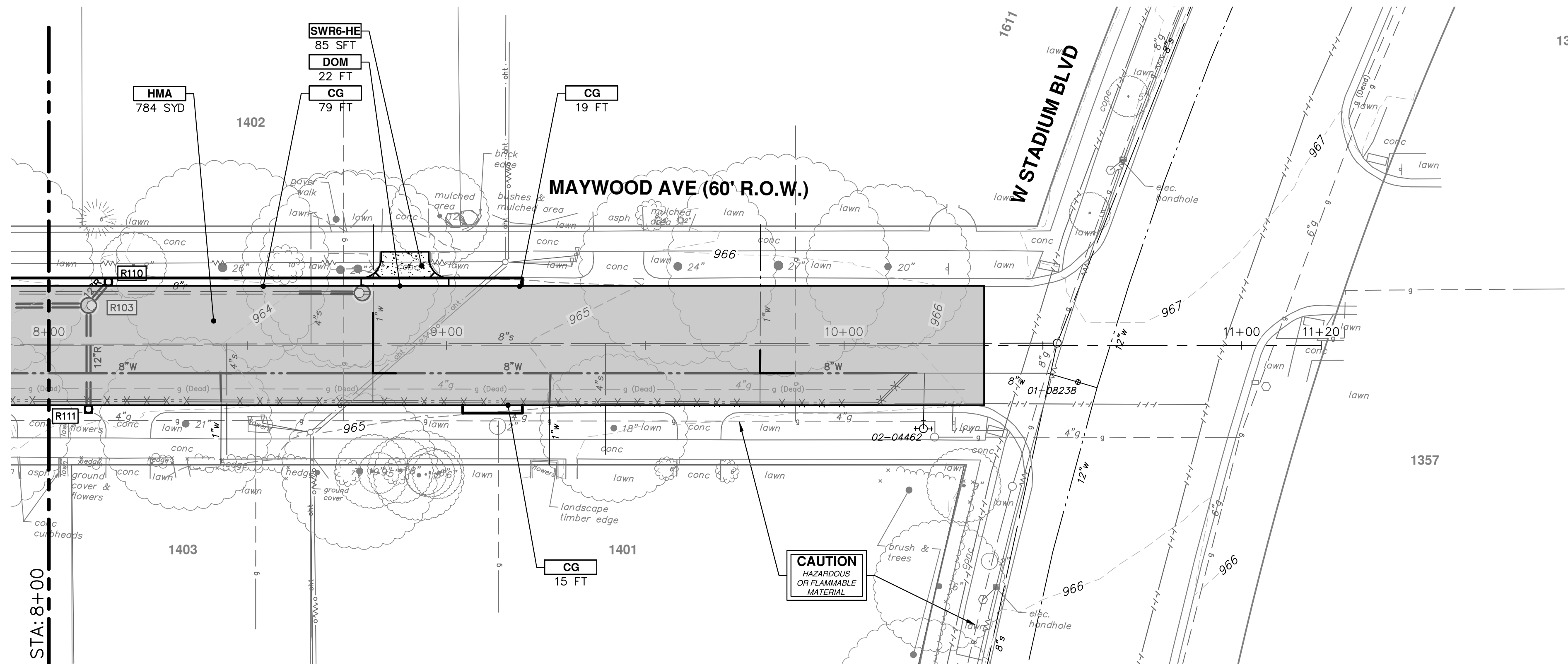
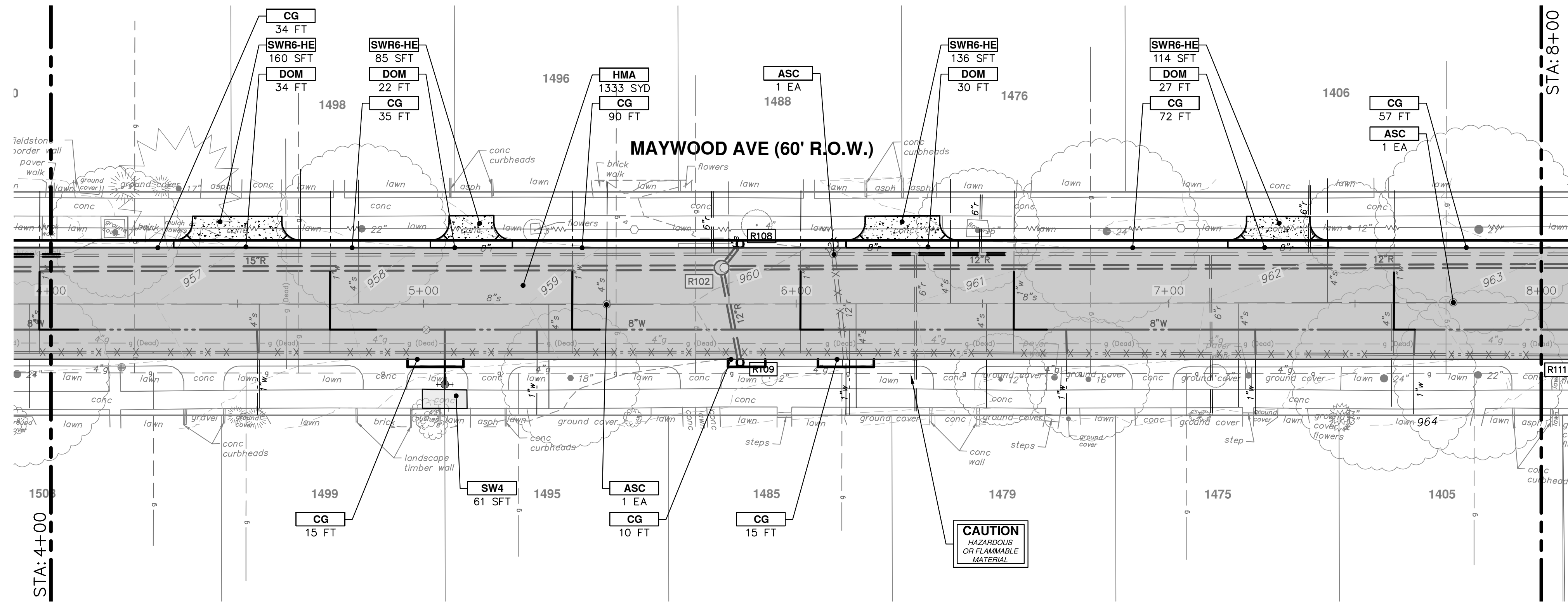
REV.	DATE	DESCRIPTION
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		DRAWN
		CHECKED

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 ANN ARBOR 734.754.4110
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CITY OF ANN ARBOR - PUBLIC SERVICES - ENGINEERING
 2019 MISC UTILITY PROJECTS
 MAYWOOD AVENUE
 ROAD - STA. 0+00 - 8+00

SHEET No. 30 OF 31
 SCALE: 1" = 20'
 DRAWING No. 2018025-30



CONSTRUCTION KEY	
KEY	DESCRIPTION
HMA	SURFACE AREA FOR HMA
CG	CONCRETE CURB OR CURB & GUTTER, ANY TYPE
SW4	4" CONCRETE SIDEWALK
SW6	6" CONCRETE SIDEWALK
SW6-HE	6" CONCRETE SIDEWALK - HIGH EARLY
SWR6	6" CONCRETE RAMP
SWR6-HE	6" CONCRETE RAMP, DRIVE APPROACH - HIGH EARLY
SW-RW1	INTEGRAL SIDEWALK RETAINING WALL, 6" TO 18"
DOM	CONCRETE TYPE M DRIVE OPENING - HIGH EARLY
DOL	CONCRETE TYPE L DRIVE OPENING - HIGH EARLY
DWS	DETECTABLE WARNING, CAST IN PLACE
ASC	ADJUST STRUCTURE COVER
AB	ADJUST MONUMENT BOX OR GATE VALVE BOX



REV.	DATE	DESCRIPTION
00	3-15-19	CC/DF/AB
00	3-1-19	DRAWN

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2019 MISC UTILITY PROJECTS
MAYWOOD AVENUE
ROAD - STA. 8+00 - P.O.E.