

WHITE LAKE TOWNSHIP TOWNSHIP BOARD

REPORT OF THE COMMUNITY DEVELOPMENT DEPARTMENT

TO: Township Board

FROM: Justin Quagliata, Staff Planner

DATE: February 12, 2024

RE: Triangle Trail Construction Bid Award

In January one bid was received from Fonson Company, Inc. for the construction of the Township Triangle Trail. The bid is separated into two project areas: the base bid consisting of pathways along Elizabeth Lake Road and Teggerdine Road, and an alternate bid consisting of a pathway along Highland Road. The base bid value is \$385,775.00 and the alternate bid value is \$219,640.50. The total bid for both options is \$605,415.50, which is approximately 11% over the DLZ construction cost estimate.

Fonson constructed the roundabouts on Elizabeth Lake Road at Teggerdine Road and Oxbow Lake Road. The roundabouts project was completed on time and the work was satisfactory to the Road Commission for Oakland County (RCOC). If the Township Board desires to move forward with this project, it has the option to award the base bid or award the base bid and the alternate bid. DLZ recommended approving an 8% contingency for the project to accommodate changes that may arise during construction.

The Triangle Trail is a high-priority project for the Township as the pathway will provide connectivity to Stanley Park and eventually the new Civic Center. **Staff recommends the Township Board award a contract to Fonson Company, Inc. for the base bid and alternate bid totaling \$605,415.50 plus an 8% contingency.**

Attachments

1. DLZ Recommendation Letter dated February 7, 2024.
2. Triangle Trail Bid Tabulation.
3. Triangle Trail Plans.



INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

February 7, 2024

Mr. Rik Kowall
Supervisor
Charter Township of White Lake
7525 Highland Road
White Lake, MI 48383

RE: Township Triangle Trail

Dear Mr. Kowall

White Lake Township received bids on January 30, 2024, for the Township Triangle Trail Project for pathway installations along portions of Elizabeth Lake Road, Teggerdine Road, and Highland Road. Please find attached the tabulation of bids opened on January 30, 2024.

The project was advertised by the Township starting on January 4th, 2024 on bidnetdirect.com (formerly MITN). The advertisement resulted in only one bid on the project despite having over 35 plan holders. The bid was submitted by Fonson Company, Inc. The bid was separated into two project areas, the base bid area consisting of pathways along Elizabeth Lake Road and Teggerdine Roads; and an “alternate” project area that consists of a pathway along Highland Road. The base bid value was \$385,775.00, and the alternate bid value was \$219,640.50. The bid has been examined and found to be in order.

An engineers estimate of construction costs was put together prior to bidding this project and DLZ estimated the total construction cost for both base bid and the alternate section would be \$497,281, it should be noted however that the DLZ estimate did not include a few of the items that were on the final bid form and those items total approximately \$60,000 of the Fonson Company bid. The total of The Fonson Company, Inc. bid for both options is \$605,415.50. This is approximately \$48,000 above the adjusted DLZ estimate or 11% over the estimated construction costs.

Fonson Company, Inc. was the contractor that constructed the Elizabeth Lake Road and Teggerdine Road Roundabout in 2023 including the existing sidewalk that this project will connect to. DLZ contacted the Oakland County Road Commission as a reference for Fonson Company, Inc. as of the writing of this letter we have not received a response from the Road Commission, but our understanding is that the roundabout project was completed on time and the work was satisfactory.



INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

Township Triangle Trail
Recommendation
Page 2 of 2

There are many options for the Township to consider. As only one bid was received, the Township could reject the bid, and try and rebid the project at a later date and hope to solicit more interest upon rebidding. There is no guarantee this would be successful. If the Township desires to move forward with the project at the current bid price, the Township has the option to award the base bid work along Elizabeth Lake Road and Teggerdine Roads; or award the base bid work as well as the “alternate” project area that consists of a pathway along Highland Road.

The relatively small quantity of work on this project likely plays into the difference between the DLZ estimate and the bid value, and the continuing inflation on construction costs make rebidding to try and achieve a better price risky. DLZ understands this project is a priority for the Township to help provide connectivity to Stanley Park and eventually the new Township Civic Center, therefore DLZ recommends the Township award a contract to Fonson Company, Inc. of Brighton, Michigan for the base bid and alternate work for a value of \$605,415.50. We recommend the Township consider approving an 8% contingency for the project to accommodate small changes to the project scope as they may arise during construction. The contract documents include provisions for a bid hold period of 60 days to accommodate Township Meetings and Approval procedures.

Please feel free to call me if you have any questions on this information.

Sincerely,

Michael Leuffgen, P.E.
Department Manager

CC: Sean O’Neil, Director, Community Development Department, White Lake Township

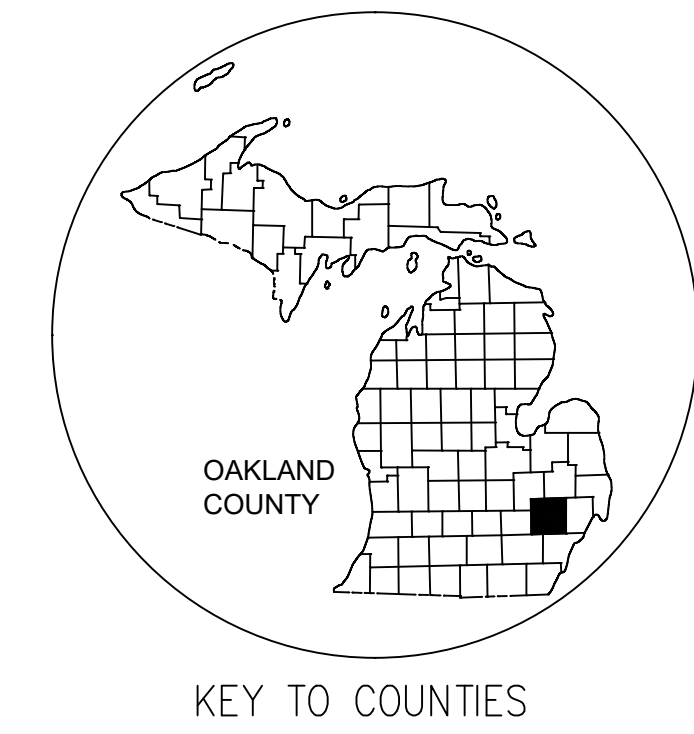
Attachments: Bid Tab

Elizabeth Lake Road Section				Fonson	
Item	Description	Unit	QNTY	Unit Price	Amount
1	Curb and Gutter, Rem	LF	16	\$ 20.00	\$ 320.00
2	Curb, Rem	FT	2	\$ 10.00	\$ 20.00
3	Culv, End, Rem Less than 24 inch	EA	1	\$ 125.00	\$ 125.00
4	Tree, Rem, 6 inch to 18 inch	EA	6	\$ 725.00	\$ 4,350.00
5	Misc Obstruction, Rem	CYD	4	\$ 150.00	\$ 600.00
6	Barricade, Temp	EA	2	\$ 90.00	\$ 180.00
7	Sign, Type III, Rem	EA	1	\$ 25.00	\$ 25.00
8	Clearing	AC	0.13	\$ 14,000.00	\$ 1,820.00
9	Sewer, Cl A, 12 inch, TR DET A	FT	25	\$ 65.00	\$ 1,625.00
10	Culv, Cl F, CSP, 12 inch	FT	20	\$ 55.00	\$ 1,100.00
11	Curb Ramp Opening, Conc	FT	16	\$ 44.50	\$ 712.00
12	Dr Structure, 24 inch Dia	EA	1	\$ 1,200.00	\$ 1,200.00
13	Dr Structure, Cover Type B	EA	1	\$ 640.00	\$ 640.00
14	Culv End Section, 12 Inch	EA	1	\$ 650.00	\$ 650.00
15	Shared Use Path, HMA	TONS	111	\$ 210.00	\$ 23,310.00
16	Shared Use Path, Aggregate, LM	CYD	61	\$ 200.00	\$ 12,200.00
17	Erosion Control, Silt Fence	FT	750	\$ 3.50	\$ 2,625.00
18	Excavation	CYD	180	\$ 60.00	\$ 10,800.00
19	Restoration	LS	1	\$ 10,700.00	\$ 10,700.00
Teggerdine Section					
Item	Description	Unit	QNTY	Unit Price	Amount
20	Masonry and Conc Structure, Rem	YDS	2	\$ 265.00	\$ 530.00
21	HMA Surface, Rem	SYD	9	\$ 40.00	\$ 360.00
22	Stump, Rem, 19 inch to 36 inch	EA	1	\$ 500.00	\$ 500.00
23	Stump, Rem, 6 inch to 18 inch	EA	3	\$ 250.00	\$ 750.00
24	Tree, Rem, 6 inch to 18 inch	EA	14	\$ 725.00	\$ 10,150.00
25	Curb and Gutter, Rem	LF	12	\$ 20.00	\$ 240.00
26	Sidewalk, Conc, 4 inch	SFT	9871	\$ 11.00	\$ 108,581.00
27	Erosion Control, Inlet Protection, Fabric Drop	EA	2	\$ 125.00	\$ 250.00
28	Post, Flexible, Delineator	EA	3	\$ 100.00	\$ 300.00
29	Curb Ramp, Conc, 6 inch	SFT	324	\$ 17.00	\$ 5,508.00
30	Detectable Warning Surface	FT	40	\$ 80.00	\$ 3,200.00
31	Sewer, CLIV, 18 inch, TR DET A	FT	165	\$ 90.00	\$ 14,850.00
32	Culv, End Sect, Conc 18 inch	EA	1	\$ 900.00	\$ 900.00
33	Culv End Sec 18, Grate	EA	1	\$ 275.00	\$ 275.00
34	Riprap, Plain	SYD	3	\$ 325.00	\$ 975.00
35	Erosion Control, Silt Fence	FT	2300	\$ 3.50	\$ 8,050.00
36	Dr Structure, 60 inch dia	EA	1	\$ 4,250.00	\$ 4,250.00
37	Dr Structure, Cover B	EA	1	\$ 640.00	\$ 640.00
38	Dr Structure, 48 inch dia	EA	2	\$ 2,400.00	\$ 4,800.00
39	Dr Structure, Cover type E	EA	2	\$ 465.00	\$ 930.00
40	Sewer, CLIV, 12 inch, TR DET A	FT	10	\$ 75.00	\$ 750.00
41	Curb Ramp Opening, Conc	LF	12	\$ 44.50	\$ 534.00
42	Excavation, Earth	CYD	320	\$ 60.00	\$ 19,200.00
43	Restoration	LS	1	\$ 37,500.00	\$ 37,500.00
44	Traffic Control and Signage	LS	1	\$ 32,750.00	\$ 32,750.00
45	Mobilization	LS	1	\$ 38,500.00	\$ 38,500.00
46	Permit Allowance	LS	1	\$ 5,000.00	\$ 5,000.00
47	SESC Permit Allowance	LS	1	\$ 5,000.00	\$ 5,000.00
48	Testing Allowance	LS	1	\$ 7,500.00	\$ 7,500.00
Total Base Bid Price					\$ 385,775.00

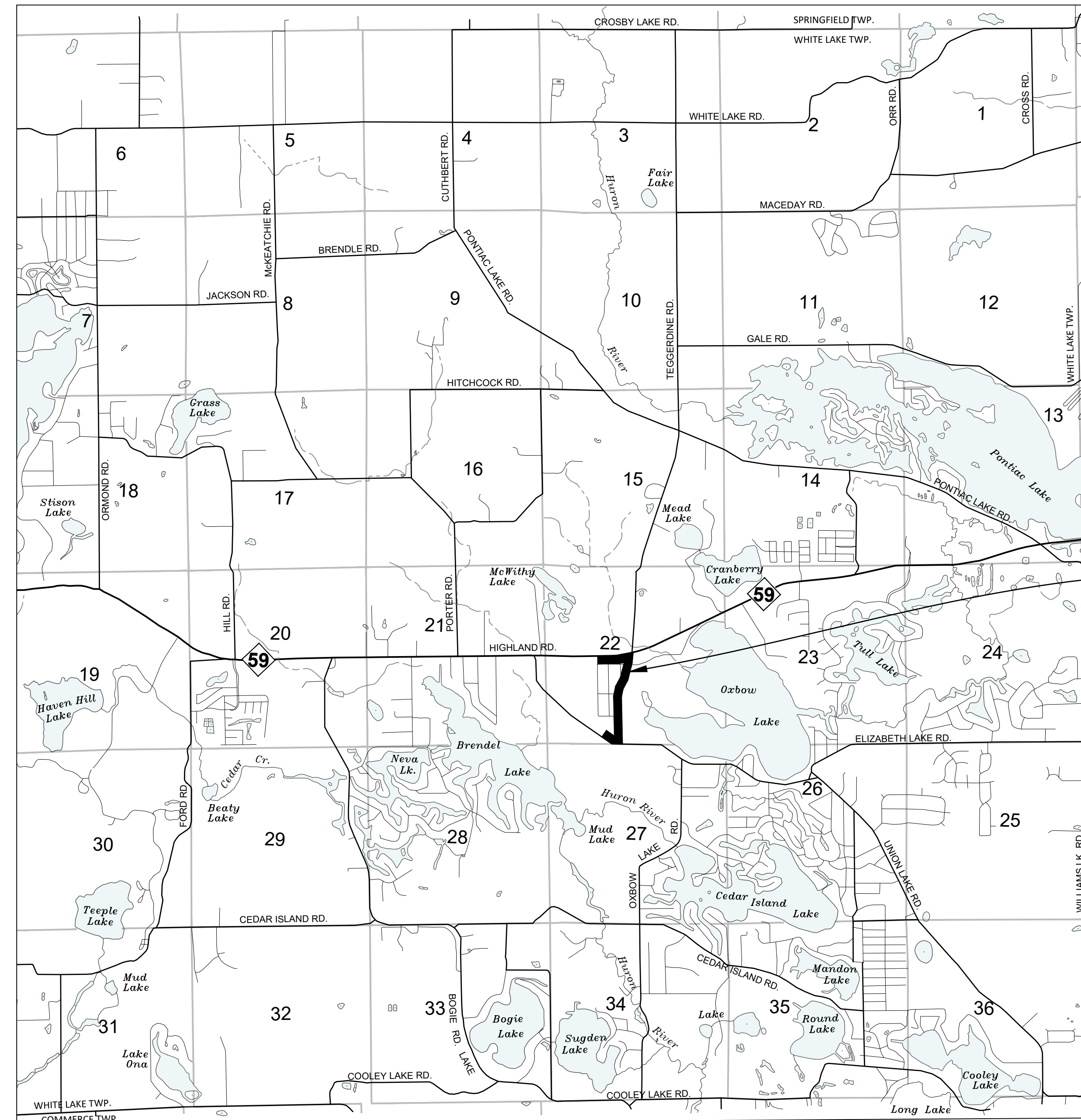
Alternate Bid: M-59 Sections				Fonson	
Item	Description	Unit	QNTY	Unit Price	Amount
1A	Mobilization	LS	1	\$ 21,950.00	\$ 21,950.00
2A	Sign Type III Salvage	EA	2	\$ 50.00	\$ 100.00
3A	HMA Surface, Rem	SYD	932	\$ 10.00	\$ 9,320.00
4A	Curb, Rem	LF	219	\$ 10.00	\$ 2,190.00
5A	Post, Rem	EA	2	\$ 55.00	\$ 110.00
6A	Erosion Control, Inlet Filter, Fabric Drop	EA	6	\$ 125.00	\$ 750.00
7A	Hydrant, Adj	EA	1	\$ 1,030.00	\$ 1,030.00
8A	Drainage Structure, Adj	EA	4	\$ 325.00	\$ 1,300.00
9A	Erosion Control, Silt Fence	FT	1026	\$ 3.50	\$ 3,591.00
10A	Dr Structure, 12 Inch	EA	1	\$ 1,300.00	\$ 1,300.00
11A	Sewer, CI F, 12 Inch	LF	12	\$ 60.00	\$ 720.00
12A	Culvert End Section, 12 Inch	EA	1	\$ 260.00	\$ 260.00
13A	Curb Ramp Opening	LF	53	\$ 44.50	\$ 2,358.50
14A	Curb, Type F-2	FT	244	\$ 54.00	\$ 13,176.00
15A	HMA Approach, HMA	TONS	61	\$ 210.00	\$ 12,810.00
16A	HMA Approach, Aggregate Base, 10 Inch	SYD	153	\$ 60.00	\$ 9,180.00
17A	Shared Use Path, HMA	TONS	155	\$ 210.00	\$ 32,550.00
18A	Shared Use Path, Aggregate, LM	CYD	124	\$ 190.00	\$ 23,560.00
19A	Shared Use Path, Grading	LF	896	\$ 35.00	\$ 31,360.00
20A	Restoration	LS	1	\$ 20,200.00	\$ 20,200.00
21A	Traffic Control and Signage	LS	1	\$ 14,325.00	\$ 14,325.00
22A	Permit Allowance	LS	1	\$ 5,000.00	\$ 5,000.00
23A	SESC Permit Allowance	LS	1	\$ 5,000.00	\$ 5,000.00
24A	Testing Allowance	LS	1	\$ 7,500.00	\$ 7,500.00
Total Alternate Bid Price					\$ 219,640.50

CHARTER TOWNSHIP OF WHITE LAKE

PLANS FOR TRIANGLE PATHWAY



SHEET INDEX	
Sheet Number	Sheet Title
COVER	COVER SHEET
G-001	PROJECT NOTES
V-101	EXISTING CONDITIONS (HIGHLAND RD)
V-102	EXISTING CONDITIONS (TEGGERDINE RD)
V-103	EXISTING CONDITIONS (ELIZABETH LAKE RD)
CD-201	REMOVAL PLAN (HIGHLAND RD)
CD-202	REMOVAL PLAN (TEGGERDINE RD)
CD-203	REMOVAL PLAN (ELIZABETH LAKE RD)
C-301	LAYOUT PLAN (HIGHLAND RD)
C-302	LAYOUT PLAN (TEGGERDINE RD)
C-303	LAYOUT PLAN (ELIZABETH LAKE RD)
C-401	PLAN & PROFILE (HIGHLAND ROAD 0+00-10+14)
C-402	PLAN & PROFILE (TEGGERDINE ROAD 10+14-18+00)
C-403	PLAN & PROFILE (TEGGERDINE ROAD 18+00-26+50)
C-404	PLAN & PROFILE (TEGGERDINE ROAD 26+50-32+98)
C-405	PLAN & PROFILE (ELIZABETH LAKE ROAD)
C-406	CROSS SECTIONS
C-501	SITE DETAILS
C-502	SITE DETAILS
1 of 1	WHITE LAKE TOWNSHIP STORM SEWER STANDARD DETAILS



LOCATION MAP
SCALE = 1" = 2,500'

WHITE LAKE CHARTER TOWNSHIP BOARD OF TRUSTEES

7525 Highland Road, White Lake, Michigan 48383 (248) 698-3300

RIK KOWALL	SUPERVISOR
ANTHONY NOBLE	CLERK
MIKE ROMAN	TREASURER
SCOTT RUGGLES	TRUSTEE
MICHAEL POWELL	TRUSTEE
ANDREA C. VOORHEIS	TRUSTEE
LIZ FESSLER SMITH	TRUSTEE

PROJECT
LOCATION

REQUIRED PERMITS FOR THIS PROJECT:	
MDOT	
PERMIT No.:	ISSUED:
ROAD COMMISSION FOR OAKLAND COUNTY	
PERMIT No.:	ISSUED:
OCWRC SOIL EROSION	
PERMIT No.:	ISSUED:

GENERAL NOTES

THE CONTRACTOR SHALL CALL "MISS DIG" (1-800-482-7171) THREE WORKING DAYS, EXCEPT SATURDAY, SUNDAY, AND HOLIDAYS PRIOR TO COMMENCEMENT OF ANY WORK.

ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS DERIVED FROM ACTUAL MEASUREMENTS AND AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE THE EXACT LOCATION NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THE AREA.

THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE CHARTER TOWNSHIP OF WHITE LAKE CODE OF ORDINANCES.



INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

PROJECT DESCRIPTION:
PROPOSED PATHWAY & SIDEWALK

PREPARED UNDER THE SUPERVISION OF

YADONG DONG, P.E. 6201068280
REGISTERED PROFESSIONAL ENGINEER REGISTRATION NO.

DLZ
ORGANIZATION



SOIL EROSION AND SEDIMENTATION CONTROL NOTES AND MAINTENANCE NOTES

- This Project shall be constructed in compliance with Part 91 of Act 451 of 1994 as amended, the Soil Erosion and Sedimentation Control Act and the Oakland County Water Resource Soil Erosion and Sedimentation Control requirements
- All erosion and sedimentation control work shall conform to the standards and specifications of the Oakland County Water Resource Commission.
- Erosion and any sedimentations from work on this site shall be contained on the site and not allowed to collect on any off site areas or in Waterways. Waterways include both natural and man made open ditches, streams, storm drains, lakes and ponds.
- Staging of the work will be done by the Contractor as directed in these plans and as required to ensure progressive stabilization and maintenance of disturbed earth change.
- The Contractor shall be responsible for installation and maintenance of soil erosion and sedimentation control devices.
- The Contractor shall implement and maintain the soil erosion control measures as shown on the plans before and at all times during construction of this project. Any modifications or additions to soil erosion control measures due to construction or changed conditions shall be compiled with as required or directed by the Office of the Oakland County Water Resource Commission.
- If any of SESC measures on the site are deemed inadequate or ineffective, the Oakland County Water Resource Commission has the right to require additional SESC measures at the expense of the Contractor.
- The Soil Erosion and Sedimentation Control Measures shall be maintained weekly and after every storm event by the Contractor.
- Install Inlet Filter on all permanent catch basins per detail.
 - A Inlet filters shall be inspected weekly under normal conditions, within 24 hours of a rainfall and daily during a prolonged rain event.
 - B Buildup of sediment and debris shall be removed promptly.
 - C If fabric decomposes or becomes ineffective prior to the end of expected usable life and the barrier is still required, the silt fence shall be replaced promptly.
- All stockpiled soils shall be maintained in such a way as to prevent erosion from leaving the site. If the stockpile will be on site for more than 30 days, then the stockpile must be seeded. Silt fence must be installed around the perimeter of the stockpile. Immediately after seeding, mulch all seeded areas with unweathered small grain straw, spread uniformly at the rate of 1 to 2 tons per acre or 100 pounds (2-3 bales) per 1000 square feet. This mulch should be anchored with disc type mulch anchoring tool or other means as approved by the Oakland County Water Resource Commission. Mulch matting may be used in lieu of loose mulch.
- If any dewatering is needed, it shall be discharged through a filter bag over a well vegetated area. The pump must discharge at a non-erosive velocity. If necessary, an approved energy dissipater may be used.
- All dirt tracked onto roadways shall be removed immediately.
- Streets and or parking areas will be scraped on a daily basis and swept at a minimum of once per week by the contractor.
- During dry periods, all disturbed areas shall be watered for dust control.
- Permanent soil erosion control measures for all slopes, channels, ditches, or any disturbed land area shall be completed within 5 calendar days after final grading or the final earth change has been completed. When it is not possible to permanently stabilize a disturbed area after earth change activity ceases, temporary soil erosion control measures shall be implemented immediately. All temporary soil erosion control shall be maintained until permanent soil erosion control measures are implemented. All permanent soil erosion control measures will be implemented and established before a certificate of compliance is issued.
- Final grade, establish vegetation, and/or landscape all disturbed areas not built or paved upon.
- Remove all temporary soil erosion control devices after permanent stabilization is established.

GENERAL NOTES

General:

- Contractor to notify Engineer immediately of discrepancies or of missing information.
- Utility locations are depicted from records provided by the respective utility company. Locations, sizes and depths shall be field verified by the contractor.
- Drives shall be accessible at all times unless prior arrangements have been made with the respective property owner(s).
- The contractor shall coordinate all service interruptions with the residents a minimum of 48 hours prior to the interruptions. Contractor is responsible for all notifications.
- All signs within project limits shall be salvaged and reinstalled incidental to the contract.
- All sidewalk curb ramps at intersections shall have ADA 2' wide Fiberglass detectable warning surfaces. Refer to MDOT detail R-28 and the MDOT Prequalified Products List.
- Contractor shall notify local businesses that will be directly impacted by closures.
- Concrete & composite pavement repairs shall be in accordance with MDOT Standard Detail R-44. Joint types shall match the adjacent joints. If edge of pavement repair is not at an existing joint, a tied joint (Trg) type shall be used.

Restoration:

- Replace all disturbed curb ramps.
- Restore all disturbed landscape.

Permits Required:

- MDOT Michigan Department of Transportation
- Oakland County Road Commission work in Right-of-Way
- Oakland County Road Commission Soil Erosion and Sediment Control permit

LEGEND

EXISTING	
	WATER MAIN
	SANITARY SEWER
	STORM SEWER
	GAS MAIN
	UNDERGROUND ELECTRIC
	UNDERGROUND CABLE
	UNDERGROUND TELEPHONE/CONDUIT
	UNDERGROUND FIBER OPTIC
	SLUDGE LINE
	FORCE MAIN
	BITUMINOUS PAVEMENT
	CONCRETE PAVEMENT
	GRAVEL DRIVE/SHOULDER
	FLAGPOLE
	LIGHT POLE
	GUY ANCHOR
	GUY POLE
	UTILITY POLE
	TELEPHONE MANHOLE
	U/G TELEPHONE BOX
	U/G CABLE TV BOX
	U/G ELECTRIC BOX
	GAS METER
	ELECTRIC METER
	ELECTRIC MANHOLE
	ELECTRIC OUTLET
	MAILBOX
	SIGN
	POST
	CONCRETE FILLED POST
	GUARD POST
	WATER SERVICE - SHUT OFF
	GATE VALVE IN WELL
	SPRINKLER VALVE
	SPRINKLER HEAD
	FIRE HYDRANT
	FIRE HYDRANT VALVE
	STORM MANHOLE
	CATCH BASIN
	SANITARY MANHOLE
	CLEAN OUT
	FOUND IRON/RE-ROD/PIPE
	FOUND MONUMENT
	ELEVATION TAKEN HERE
	ELECTRIC MARKER
	GAS MARKER
	CONSUMERS ENERGY GAS MARKER
	CONSUMERS ENERGY GAS TEST STATION
	GAS LINE TEST STATION
	GAS VALVE
	GAS MANHOLE
	GAS LIGHT
	GAS STATION FILL PIPE
	AIR FILL TANK
	MONITORING WELL
	DECIDUOUS TREE WIDRIPLINE
	CONIFEROUS TREE WIDRIPLINE
	BUSH

Know what's below
Call before you dig
MISS DIG System, Inc.
1-800-482-7171 www.missdig.net

811 3 FULL WORKING DAYS BEFORE YOU DIG CALL

INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

WARNING
UTILITY LOCATIONS ARE NOT CONFIRMED. THOSE SHOWN ARE BASED ON RECORDS. NOTIFY UTILITY OWNERS OR PLANS PRIOR TO BEGINNING WORK. THE CONTRACTOR SHALL HAVE WORK AREA STAKED AND HE SHALL PROTECT OR HAVE RELOCATED, AS NOTED ON THESE PLANS. THE CONTRACTOR SHALL NOT INTERFERE WITH CONSTRUCTION.

Township of White Lake
7525 Highland Rd,
White Lake, Michigan 48383

White Lake, Michigan

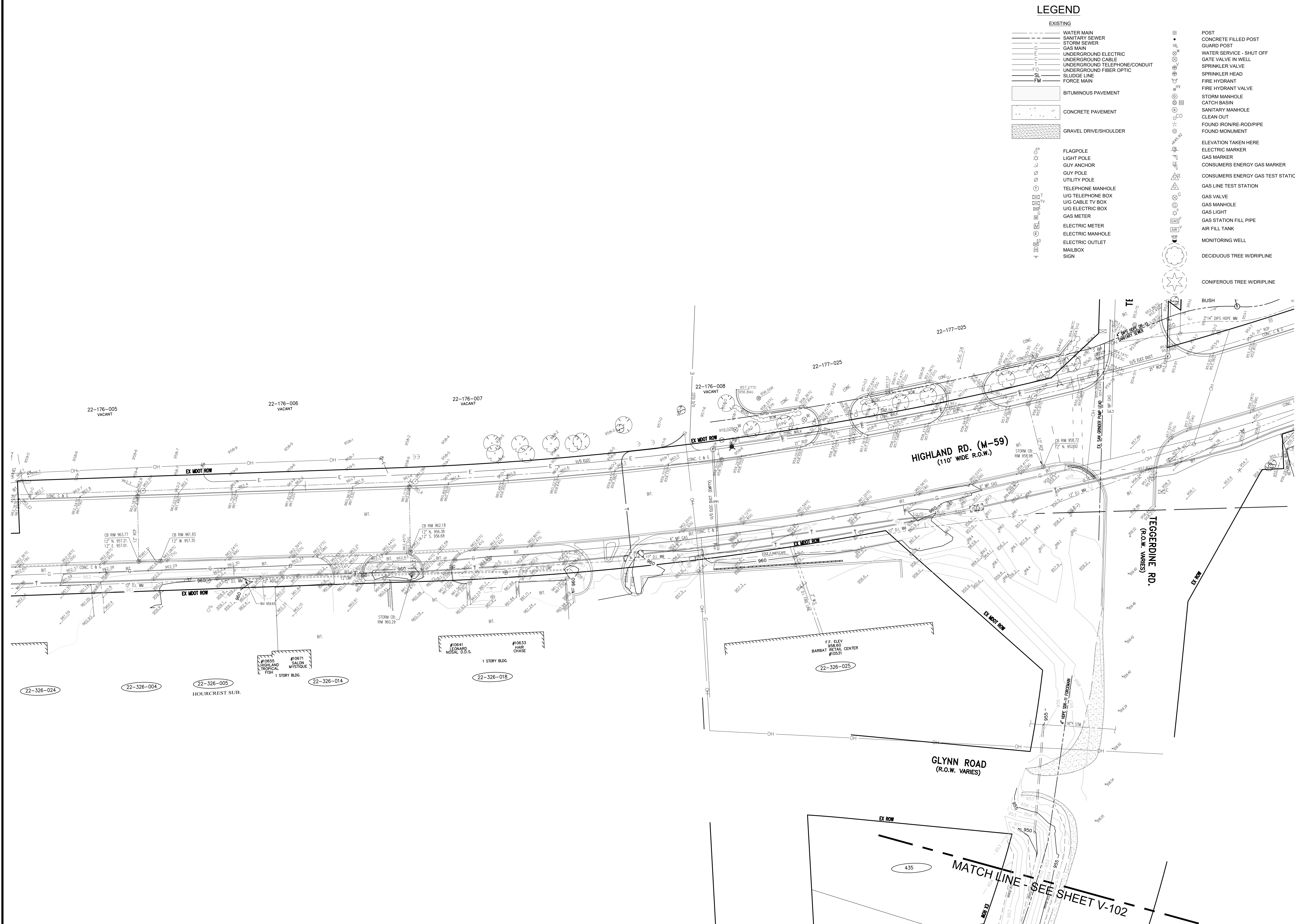
PROJECT NOTES
Triangle Pathway

ARCHITECTURE • ENGINEERING • PLANNING
SURVEYING • CONSTRUCTION SERVICES

MARK	ISSUED FOR	DATE
	MDOT REVIEW	2-22-22
	PER RCOC	6-17-22
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DRAWN BY: DLZ DESIGN BY: - CHECKED BY: -		
DLZ JOB NUMBER: 2145-7329-00		
SHEET NO. G-001		

PLOT DATE: 6/17/2022 5:01:12 PM SHEET DATE: 2/27/2022 8:51:17 AM
 X:\Projects\2021\2145\732900 White Lake Township\02_Condition\000 (Sheet Final)\2145732900 General Notes.dwg DANIEL KWIG

2145-7329-00 2D sheet (V-101) of 1 sheet (V-101 to V-104) for project 2145-7329-00, 732900, White Lake, Michigan, 2022, 3:52:22 PM. SHEET DATE: 6/17/2022 3:52:22 PM. SHEET NAME: 4/29/2022 3:52:22 PM. RLOT DATE: 6/17/2022 3:52:22 PM.



LEGEND

EXISTING	
---	WATER MAIN
---	SANITARY SEWER
---	STORM SEWER
---	GAS MAIN
---	UNDERGROUND ELECTRIC
---	UNDERGROUND CABLE
---	UNDERGROUND TELEPHONE/CONDUIT
---	UNDERGROUND FIBER OPTIC
---	SLUDGE LINE
---	FORCE MAIN
---	FM
▨	BITUMINOUS PAVEMENT
▨	CONCRETE PAVEMENT
▨	GRAVEL DRIVE/SHOULDER
⊙	FLAGPOLE
⊙	LIGHT POLE
⊙	GUY ANCHOR
⊙	GUY POLE
⊙	UTILITY POLE
⊙	TELEPHONE MANHOLE
⊙	U/G TELEPHONE BOX
⊙	U/G CABLE TV BOX
⊙	U/G ELECTRIC BOX
⊙	GAS METER
⊙	ELECTRIC METER
⊙	ELECTRIC MANHOLE
⊙	ELECTRIC OUTLET
⊙	MAILBOX
⊙	SIGN
⊙	POST
⊙	CONCRETE FILLED POST
⊙	GUARD POST
⊙	WATER SERVICE - SHUT OFF
⊙	GATE VALVE IN WELL
⊙	SPRINKLER VALVE
⊙	SPRINKLER HEAD
⊙	FIRE HYDRANT
⊙	FIRE HYDRANT VALVE
⊙	STORM MANHOLE
⊙	CATCH BASIN
⊙	SANITARY MANHOLE
⊙	CLEAN OUT
⊙	FOUND IRON/RE-ROD/PIPE
⊙	FOUND MONUMENT
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⊙	CONSUMERS ENERGY GAS MARKER
⊙	CONSUMERS ENERGY GAS TEST STATION
⊙	GAS LINE TEST STATION
⊙	GAS VALVE
⊙	GAS MANHOLE
⊙	GAS LIGHT
⊙	GAS STATION FILL PIPE
⊙	AIR FILL TANK
⊙	MONITORING WELL
⊙	DECIDUOUS TREE WIDRIPLINE
⊙	CONIFEROUS TREE WIDRIPLINE

811 Know what's below
Call before you dig
3 FULL WORKING DAYS BEFORE YOU DIG CALL
MISS DIG System, Inc.
1-800-482-7171 www.missdig.net

WARNING

UTILITY LOCATIONS ARE NOT CONFIRMED. THOSE SHOWN ARE THE PROPERTY OF THE UTILITY OWNERS OR PLANS PRIOR TO BEGINNING WORK. THE CONTRACTOR SHALL VERIFY ALL UTILITIES PRIOR TO WORK. NO HAVE WORK AREA STAKED AND HE SHALL PROTECT OR HAVE RELOCATED, AS NOTED HEREON, ALL UTILITIES THAT INTERFERE WITH CONSTRUCTION.

Township of White Lake
7525 Highland Rd,
White Lake, Michigan 48383

ARCHITECTURE • ENGINEERING • PLANNING
SURVEYING • CONSTRUCTION SERVICES

INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

SCALE: 0 40' 80'

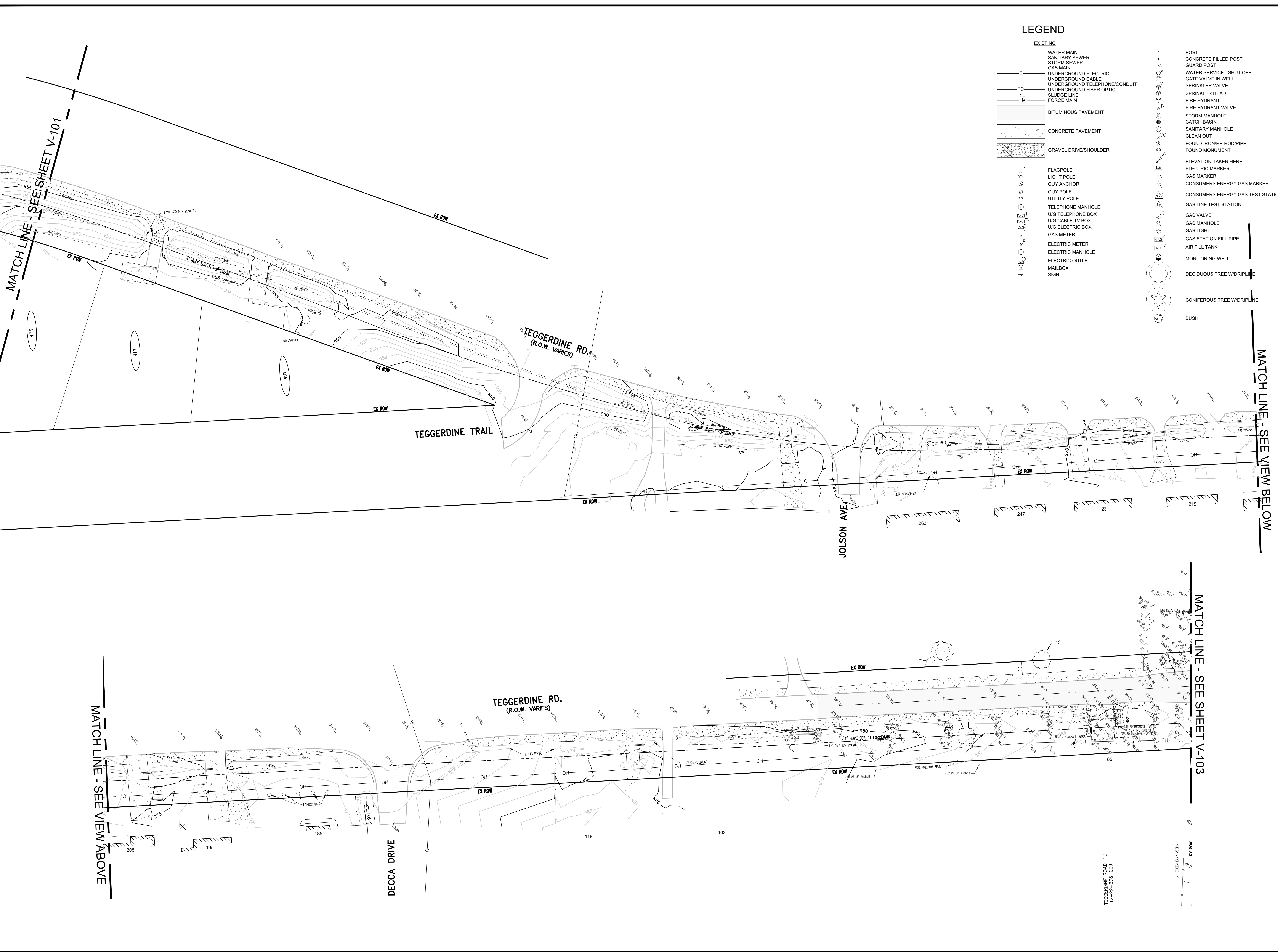
MARK	ISSUED FOR	DATE
-	MDOT REVIEW	2-22-22
-	PER RCOC	6-17-22
-	-	-
-	-	-
-	-	-
-	-	-

DRAWN BY: DLZ
DESIGN BY: -
CHECKED BY: -

DLZ JOB NUMBER: 2145-7329-00

SHEET NO. **V-101**

R:\Projects\2021\1453\12300\White Lake\Terrain\12_Survey\12300_Survey.dwg
 SHEET DATE: 6/17/2022 3:52:22 PM
 DRAWN BY: DANIEL KWIG
 SHEET NO.: 12-22-2176-009
 TEGGERDINE ROAD PD
 12-22-2176-009
 MATCH LINE - SEE SHEET V-101
 MATCH LINE - SEE SHEET V-103
 MATCH LINE - SEE VIEW ABOVE
 MATCH LINE - SEE VIEW BELOW
 TOWN OF WHITE LAKE
 7525 HIGHLAND RD,
 WHITE LAKE, MICHIGAN 49383
 EXISTING CONDITIONS (TEGGERDINE RD)
 TRIANGLE PATHWAY
 WHITE LAKE, MICHIGAN
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 WARNING

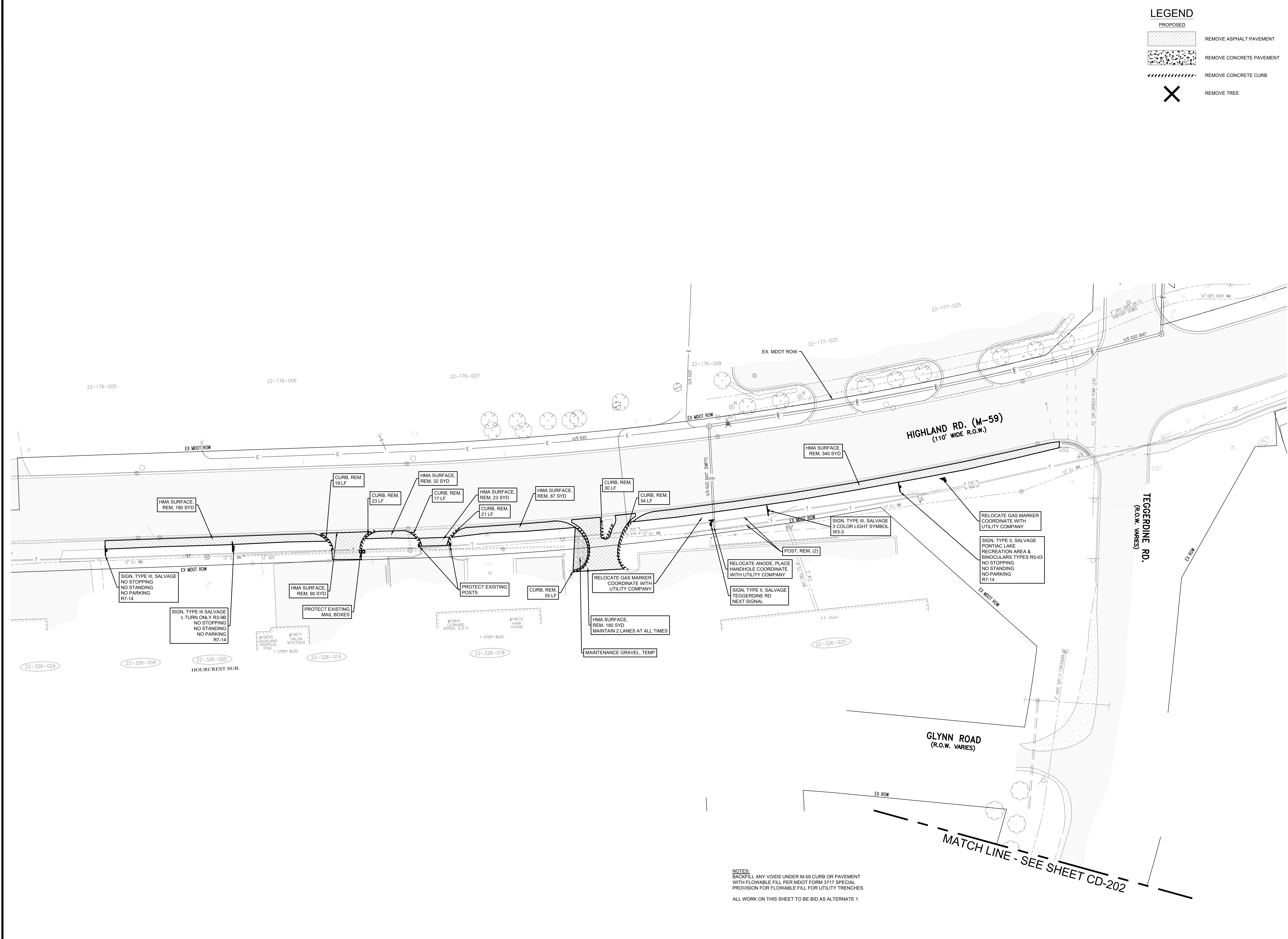


- ### LEGEND
- EXISTING**
- WATER MAIN
 - SANITARY SEWER
 - STORM SEWER
 - GAS MAIN
 - UNDERGROUND ELECTRIC
 - UNDERGROUND CABLE
 - UNDERGROUND TELEPHONE/CONDUIT
 - UNDERGROUND FIBER OPTIC
 - SLUDGE LINE
 - FORCE MAIN
 - FM
 - BITUMINOUS PAVEMENT
 - CONCRETE PAVEMENT
 - GRAVEL DRIVE/SHOULDER
 - FLAGPOLE
 - LIGHT POLE
 - GUY ANCHOR
 - UTILITY POLE
 - TELEPHONE MANHOLE
 - U/G TELEPHONE BOX
 - U/G CABLE TV BOX
 - U/G ELECTRIC BOX
 - GAS METER
 - ELECTRIC METER
 - ELECTRIC MANHOLE
 - ELECTRIC OUTLET
 - MAILBOX
 - SIGN
 - POST
 - CONCRETE FILLED POST
 - GUARD POST
 - WATER SERVICE - SHUT OFF
 - GATE VALVE IN WELL
 - SPRINKLER VALVE
 - SPRINKLER HEAD
 - FIRE HYDRANT
 - FIRE HYDRANT VALVE
 - STORM MANHOLE
 - CATCH BASIN
 - SANITARY MANHOLE
 - CLEAN OUT
 - FOUND IRON/RE-ROD/PIPE
 - FOUND MONUMENT
 - ELEVATION TAKEN HERE
 - ELECTRIC MARKER
 - GAS MARKER
 - CONSUMERS ENERGY GAS MARKER
 - CONSUMERS ENERGY GAS TEST STATION
 - GAS LINE TEST STATION
 - GAS VALVE
 - GAS MANHOLE
 - GAS LIGHT
 - GAS STATION FILL PIPE
 - AIR FILL TANK
 - MONITORING WELL
 - DECIDUOUS TREE WIDRIPLINE
 - CONIFEROUS TREE WIDRIPLINE
 - BUSH

	<p style="text-align: center;">811 3 FULL WORKING DAYS BEFORE YOU DIG CALL MISS DIG SYSTEM, INC. 1-800-482-7171 www.missdig.net</p>																														
<p>Township of White Lake 7525 Highland Rd, White Lake, Michigan 49383</p>	<p>EXISTING CONDITIONS (TEGGERDINE RD) Triangle Pathway White Lake, Michigan</p>																														
<p>SCALE 0 40' 80'</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>MARK</th> <th>ISSUED FOR</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>MDOT REVIEW</td> <td></td> <td>2-22-22</td> </tr> <tr> <td>PER RCOC</td> <td></td> <td>6-17-22</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	MARK	ISSUED FOR	DATE	MDOT REVIEW		2-22-22	PER RCOC		6-17-22																					
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<p>DLZ JOB NUMBER: 2145-7329-00</p>																															
<p>SHEET NO. V-102</p>																															

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 Layout = Highway

PLT DATE: 6/17/2022 5:19:53 PM SHE DATE: 4/29/2022 3:03:13 PM
 DANIEL KWIG



NOTES:
 BACKFILL ANY VOIDS UNDER M-59 CURB OR PAVEMENT WITH FLOWABLE FILL PER MDOT FORM 3717 SPECIAL PROVISION FOR FLOWABLE FILL FOR UTILITY TRENCHES.
 ALL WORK ON THIS SHEET TO BE BID AS ALTERNATE 1.

LEGEND

PROPOSED

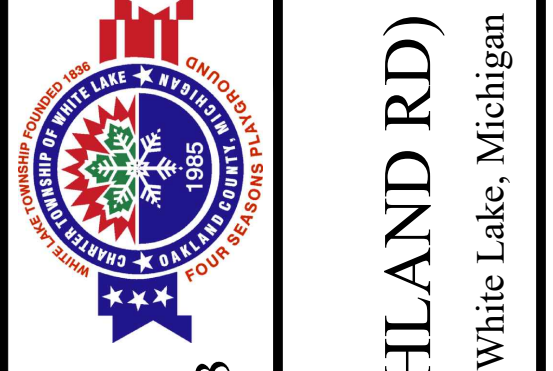
- [Hatched Box] REMOVE ASPHALT PAVEMENT
- [Dotted Box] REMOVE CONCRETE PAVEMENT
- [Dashed Line] REMOVE CONCRETE CURB
- [X Symbol] REMOVE TREE

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Township of White Lake
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REMOVAL PLAN (HIGHLAND RD)
 Triangle Pathway
 White Lake, Michigan

North arrow pointing up with 'DLZ' logo.

Scale bar: 0, 40', 80'

SCALE

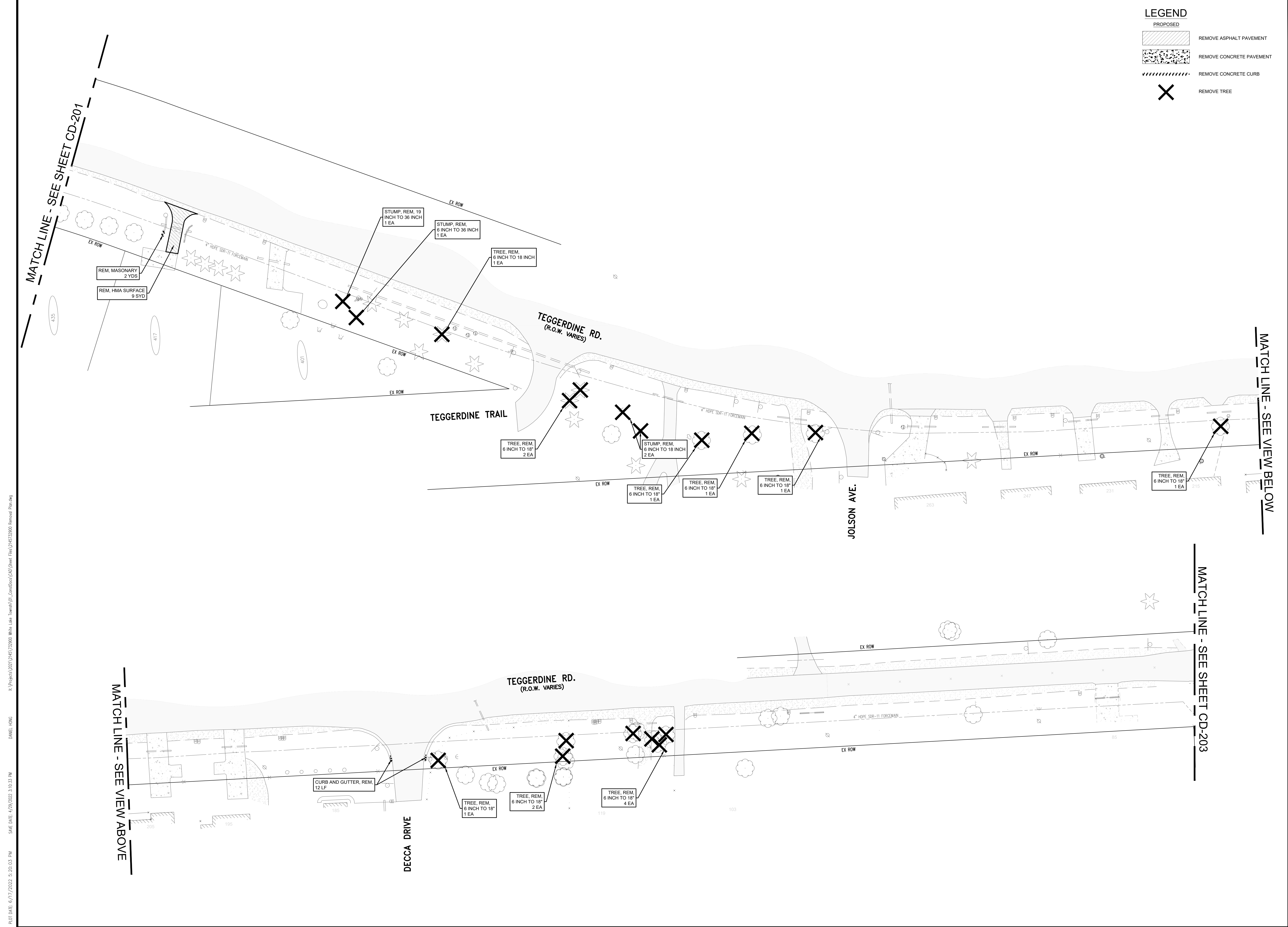
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	PER RCOO	6-17-22

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 DESIGN BY: -
 CHECKED BY: -

DLZ JOB NUMBER: 2145-7329-00

SHEET NO.
CD-201

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 layout = Teggerdine



RLOT DATE: 6/17/2022 2:00:03 PM
 SHEET DATE: 4/29/2022 3:10:13 PM
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 Michigan State University

Township of White Lake
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REMOVAL PLAN (TEGGERDINE RD)
 Triangle Pathway
 White Lake, Michigan

N
 [DLZ Logo]
 0 40' 80'
 SCALE

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-	PER RCOC	6-17-22
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DLZ JOB NUMBER: 2145-7329-00

SHEET NO.
CD-202

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 Layout = Elizabeth Lk

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 DANIEL KWIG

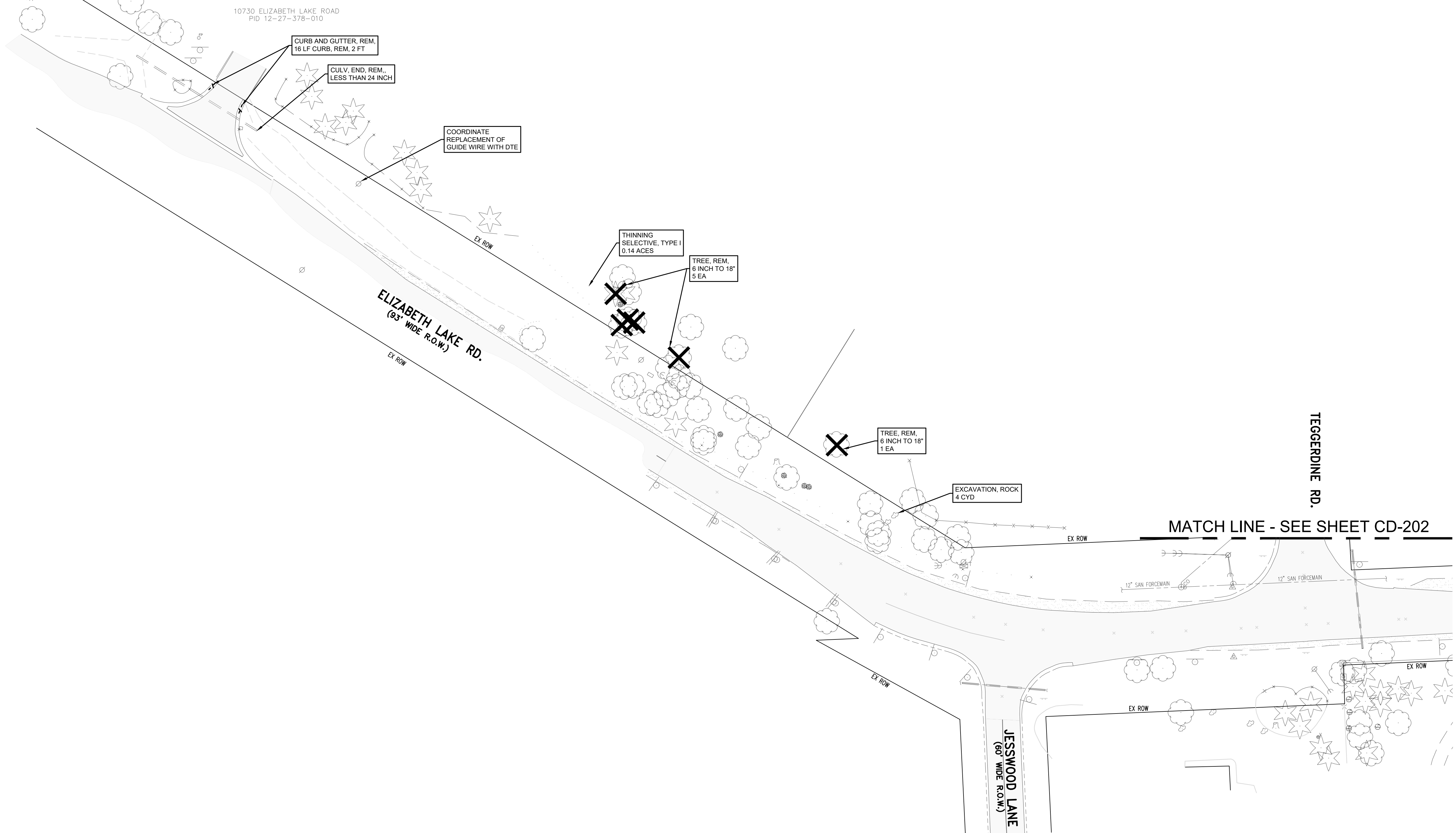
PEDESTRIAN TYPE II BARRICADE, TEMP 2 EA
 SIGN, TYPE III, REM.
 THINNING SELECTIVE, TYPE I 0.13 ACES
 10730 ELIZABETH LAKE ROAD
 PID: 12-27-376-010
 CURB AND GUTTER, REM. 16 LF CURB, REM. 2 FT
 CULV. END, REM. LESS THAN 24 INCH
 COORDINATE REPLACEMENT OF GUIDE WIRE WITH DTE

THINNING SELECTIVE, TYPE I 0.14 ACES
 TREE, REM. 6 INCH TO 18" 6 EA

TREE, REM. 6 INCH TO 18" 1 EA

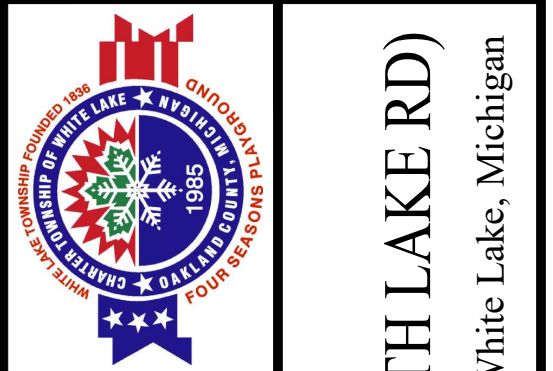
EXCAVATION, ROCK 4 CYD

LEGEND
 PROPOSED
 REMOVE ASPHALT PAVEMENT
 REMOVE CONCRETE PAVEMENT
 REMOVE CONCRETE CURB
 REMOVE TREE

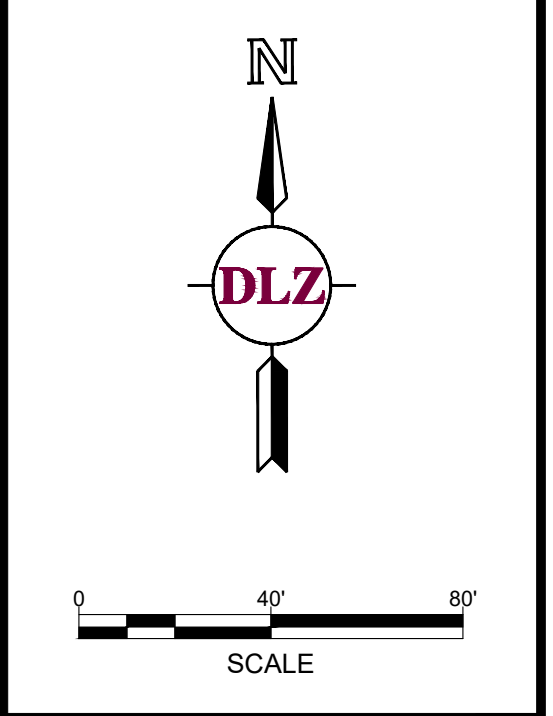


MATCH LINE - SEE SHEET CD-202

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Township of White Lake
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REMOVAL PLAN (ELIZABETH LAKE RD)
 Triangle Pathway
 White Lake, Michigan



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 DESIGN BY: -
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DLZ JOB NUMBER: 2145-7329-00

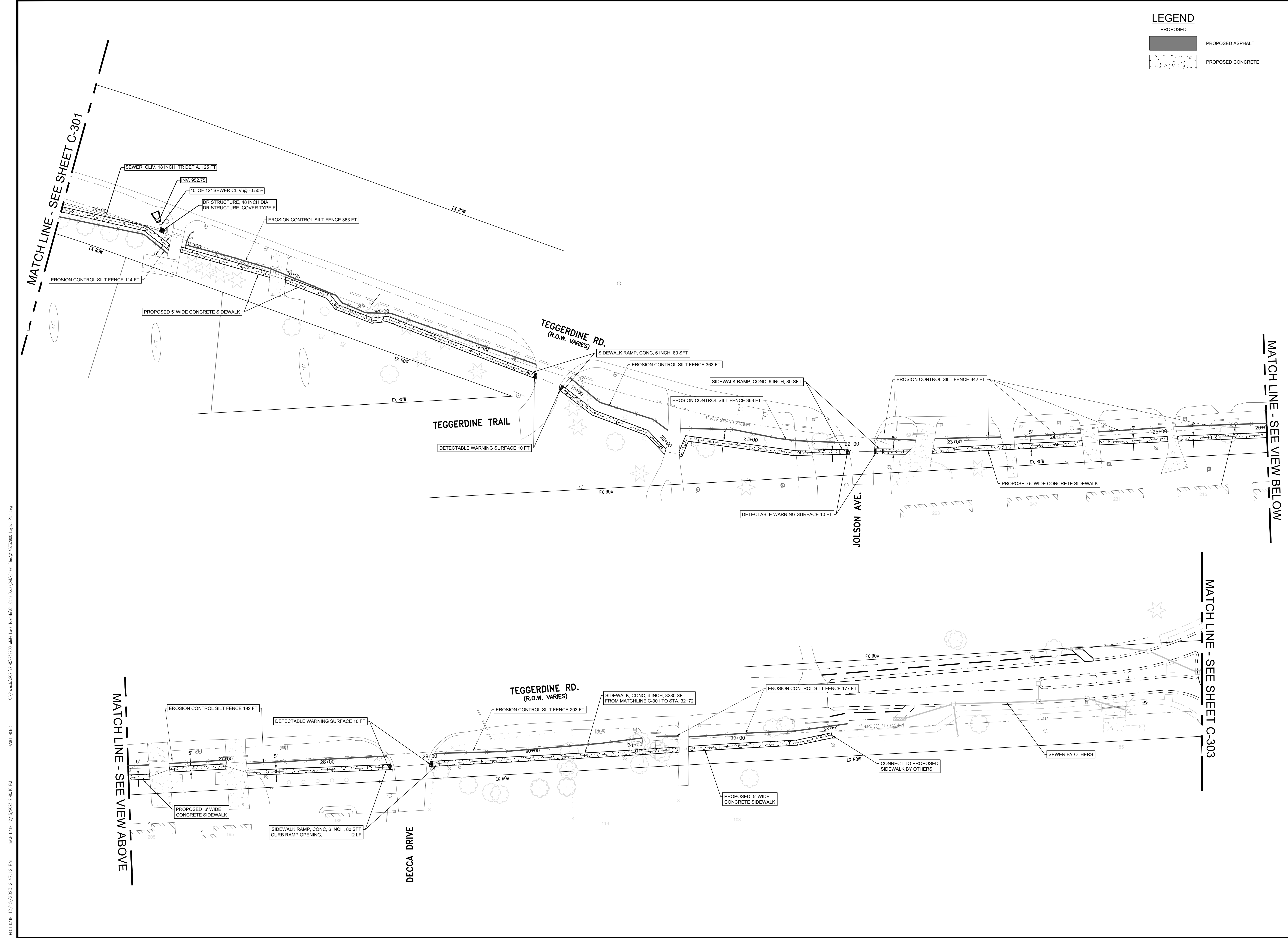
SHEET NO.
CD-203

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 DAMEL.KING
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LAYOUT PLAN (TEGGERDINE RD)
 Triangle Pathway
 White Lake, Michigan

SCALE
 0 40' 80'
 N
 DLZ

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-	PER RCOC	6-17-22
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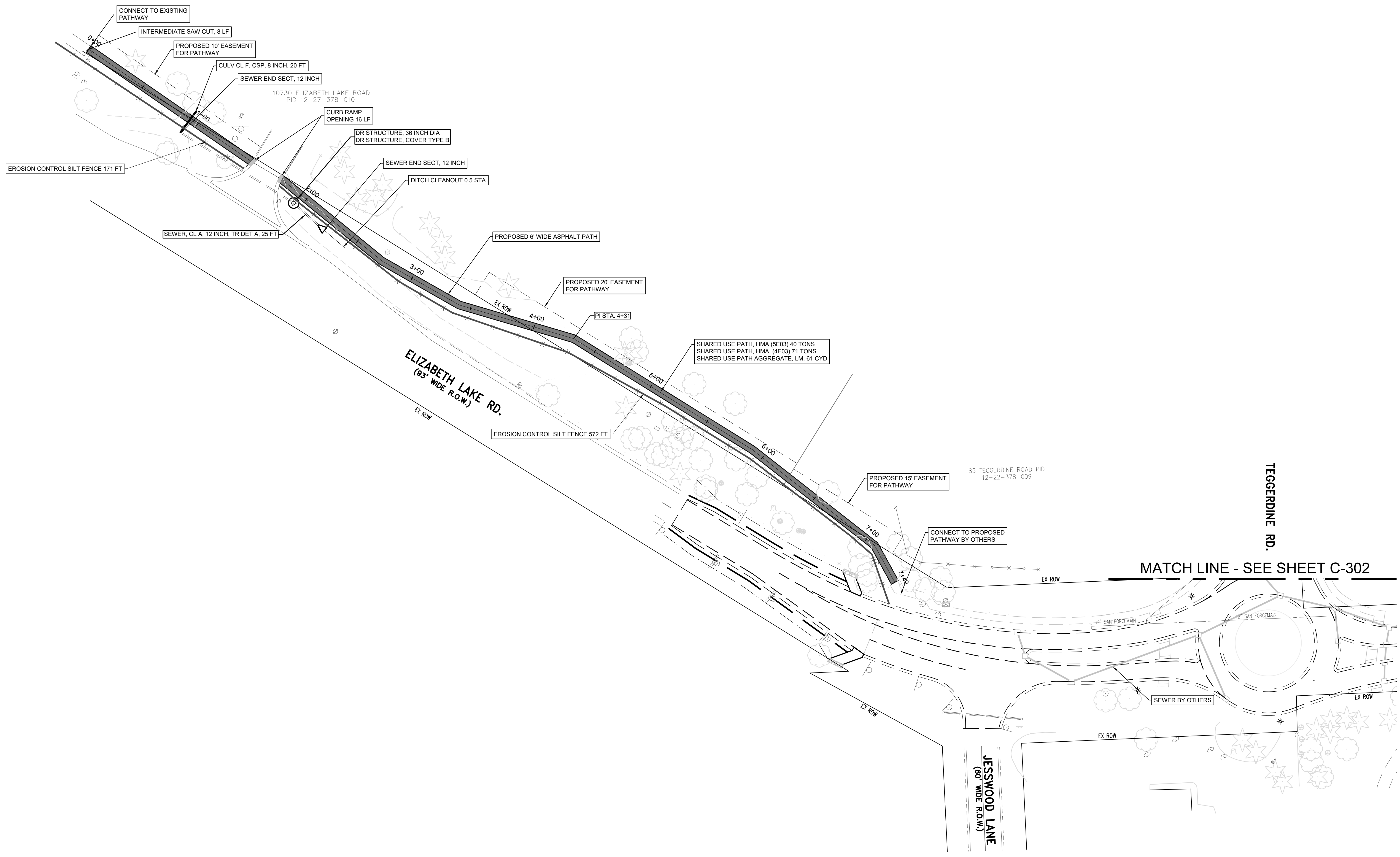
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DLZ JOB NUMBER: 2145-7329-00

SHEET NO.
C-302

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 Layout = Elizabeth Lk

PLT DATE: 12/15/2023 2:42:17 PM SHE DATE: 12/15/2023 2:40:10 PM
 DANIEL KWIG



LEGEND

PROPOSED

PROPOSED ASPHALT

PROPOSED CONCRETE

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Township of White Lake
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LAYOUT PLAN (ELIZABETH LAKE RD)
 Triangle Pathway
 White Lake, Michigan

DLZ

0 40' 80'
 SCALE

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UTILITY OWNERS OR PLANS
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ON THESE SPECIFICATIONS.
THE CONTRACTOR SHALL
INTERFERE WITH
CONSTRUCTION

Township of White Lake
7525 Highland Rd,
White Lake, Michigan 48383

PLAN & PROFILE (HIGHLAND ROAD 0+00-10+14)
Triangle Pathway
White Lake, Michigan

North Arrow

DLZ

Scale: 0 40' 80'

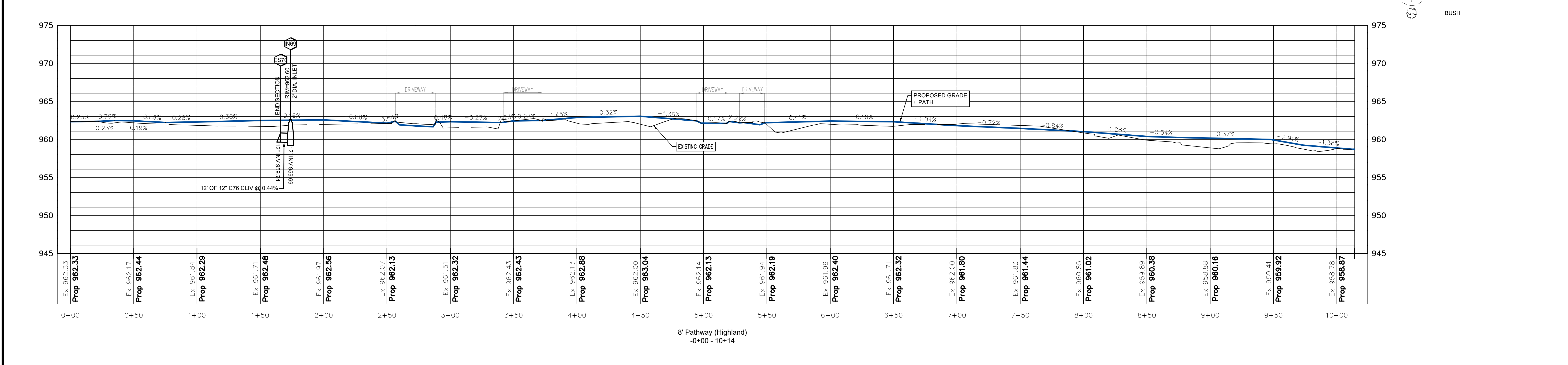
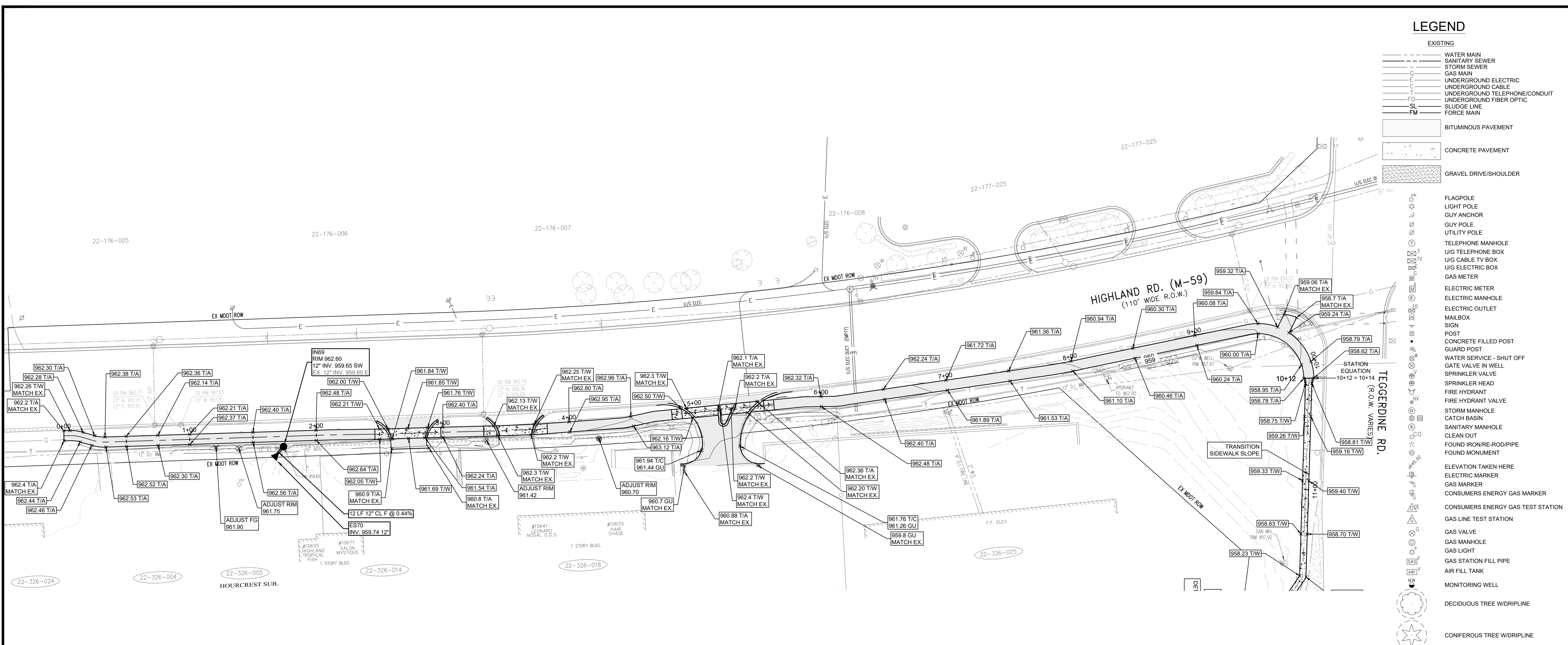
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DLZ JOB NUMBER: 2145-7329-00

SHEET NO.

C-401



LEGEND

EXISTING

- WATER MAIN
- SANITARY SEWER
- STORM SEWER
- GAS MAIN
- UNDERGROUND ELECTRIC
- UNDERGROUND CABLE
- UNDERGROUND TELEPHONE/CONDUIT
- UNDERGROUND FIBER OPTIC
- SLUDGE LINE
- FORCE MAIN

BITUMINOUS PAVEMENT

CONCRETE PAVEMENT

GRAVEL DRIVE/SHOULDER

- FLAGPOLE
- LIGHT POLE
- GUY ANCHOR
- GUY POLE
- UTILITY POLE
- TELEPHONE MANHOLE
- U/G TELEPHONE BOX
- U/G CABLE TV BOX
- U/G ELECTRIC BOX
- GAS METER
- ELECTRIC METER
- ELECTRIC MANHOLE
- ELECTRIC OUTLET
- MAILBOX
- SIGN
- POST
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- WATER SERVICE - SHUT OFF
- GATE VALVE IN WELL
- SPRINKLER VALVE
- SPRINKLER HEAD
- FIRE HYDRANT
- FIRE HYDRANT VALVE
- STORM MANHOLE
- CATCH BASIN
- SANITARY MANHOLE
- CLEAN OUT
- FOUND IRON/RE-ROD/PIPE
- FOUND MONUMENT
- ELEVATION TAKEN HERE
- ELECTRIC MARKER
- GAS MARKER
- CONSUMERS ENERGY GAS MARKER
- GAS LINE TEST STATION
- GAS VALVE
- GAS MANHOLE
- GAS LIGHT
- GAS STATION FILL PIPE
- AIR FILL TANK
- MONITORING WELL
- DECIDUOUS TREE WIDRIPLINE
- CONIFEROUS TREE WIDRIPLINE
- BUSH

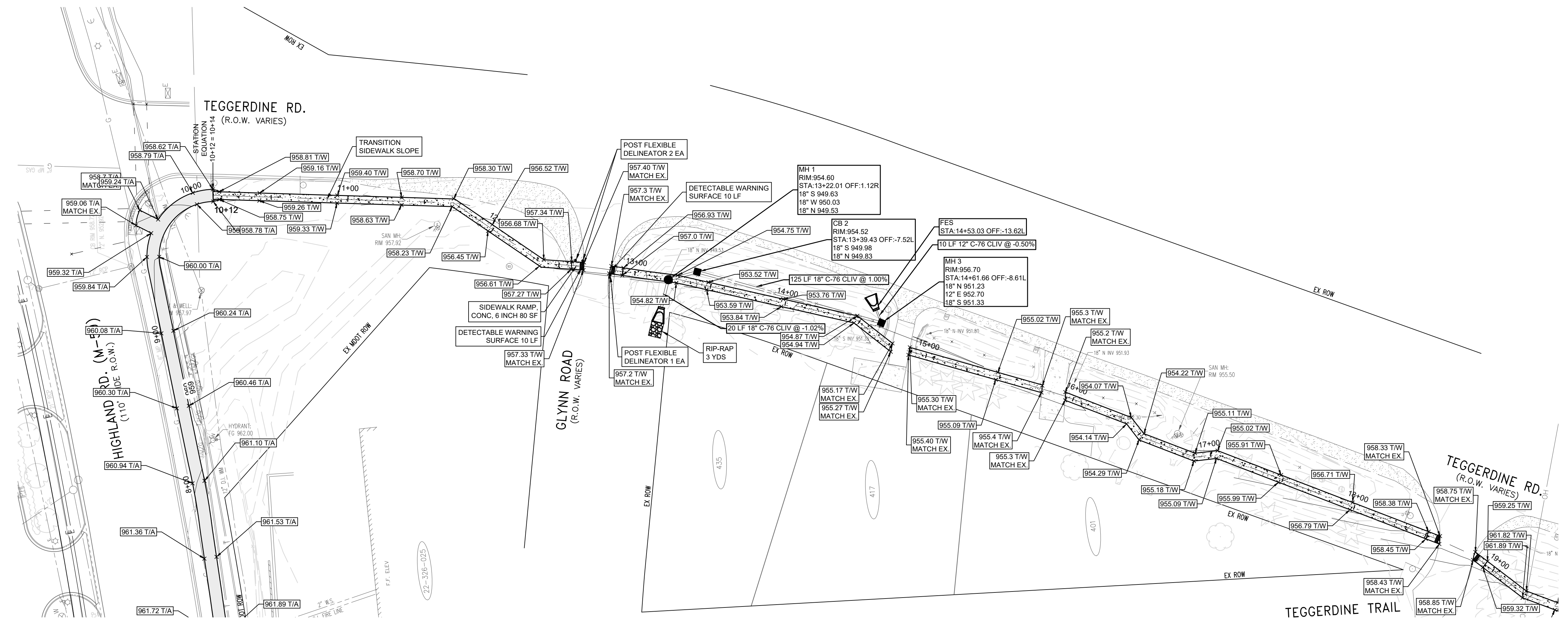
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FILE: 6/17/2022 5:21:23 PM

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 Layout = Teggerdine North

DATE: 6/17/2022 12:21:37 PM SHEET: 6/17/2022 10:45:31 AM



- ### LEGEND
- EXISTING**
- WATER MAIN
 - SANITARY SEWER
 - STORM SEWER
 - GAS MAIN
 - UNDERGROUND ELECTRIC
 - UNDERGROUND TELEPHONE/CONDUIT
 - UNDERGROUND FIBER OPTIC
 - SLUDGE LINE
 - FORCE MAIN
- FM**
- BITUMINOUS PAVEMENT
 - CONCRETE PAVEMENT
 - GRAVEL DRIVE/SHOULDER
- FLAGPOLE
 - LIGHT POLE
 - GUY ANCHOR
 - GUY POLE
 - UTILITY POLE
 - TELEPHONE MANHOLE
 - U/G TELEPHONE BOX
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 - ELECTRIC METER
 - ELECTRIC MANHOLE
 - ELECTRIC OUTLET
 - MAILBOX
 - SIGN
 - POST
 - CONCRETE FILLED POST
 - GUARD POST
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 - SPRINKLER VALVE
 - SPRINKLER HEAD
 - FIRE HYDRANT
 - FIRE HYDRANT VALVE
 - STORM MANHOLE
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 - ELEVATION TAKEN HERE
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 - CONSUMERS ENERGY GAS TEST STATION
 - GAS LINE TEST STATION
 - GAS VALVE
 - GAS MANHOLE
 - GAS LIGHT
 - GAS STATION FILL PIPE
 - AIR FILL TANK
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 - DECIDUOUS TREE WIDRILINE
 - CONIFEROUS TREE WIDRILINE
 - BUSH

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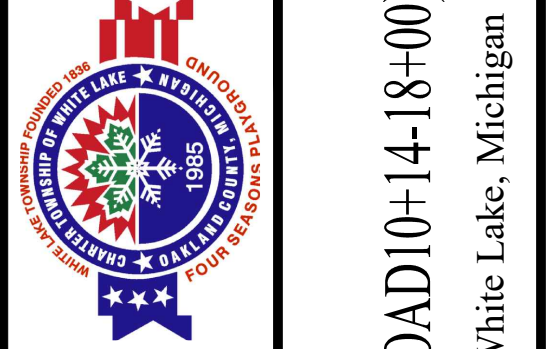
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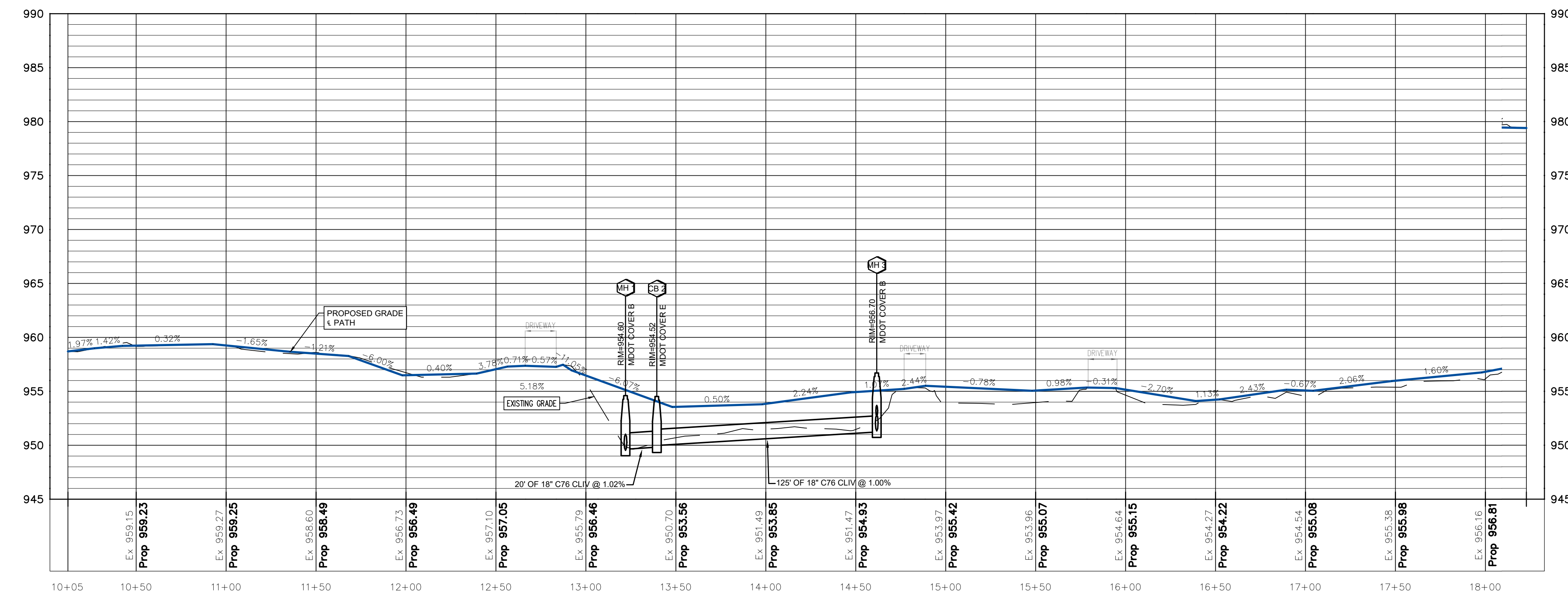
UTILITY LOCATIONS ARE NOT CONFIRMED. THOSE SHOWN ARE BASED ON RECORD DRAWINGS, FIELD SURVEY, AND UTILITY OWNERS OR PLANS. THREE FULL WORKING DAYS PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS AND HE SHALL PROTECT OR HAVE RELOCATED, AS NOTED ON THE SPECIFICATIONS. ALL UTILITIES SHALL BE PROTECTED AND NOT INTERFERE WITH CONSTRUCTION.



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PLAN & PROFILE (TEGGERDINE ROAD) 10+14-18+00
 Triangle Pathway

White Lake, Michigan



North arrow pointing up with 'DLZ' logo.

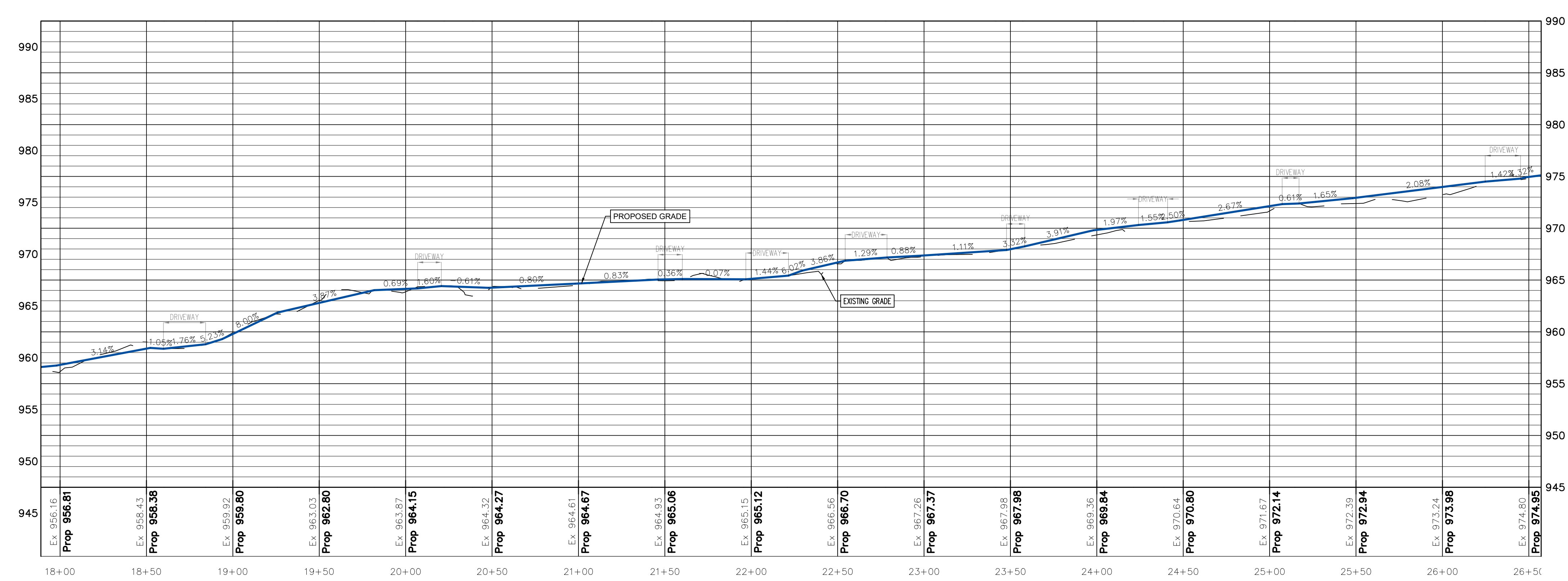
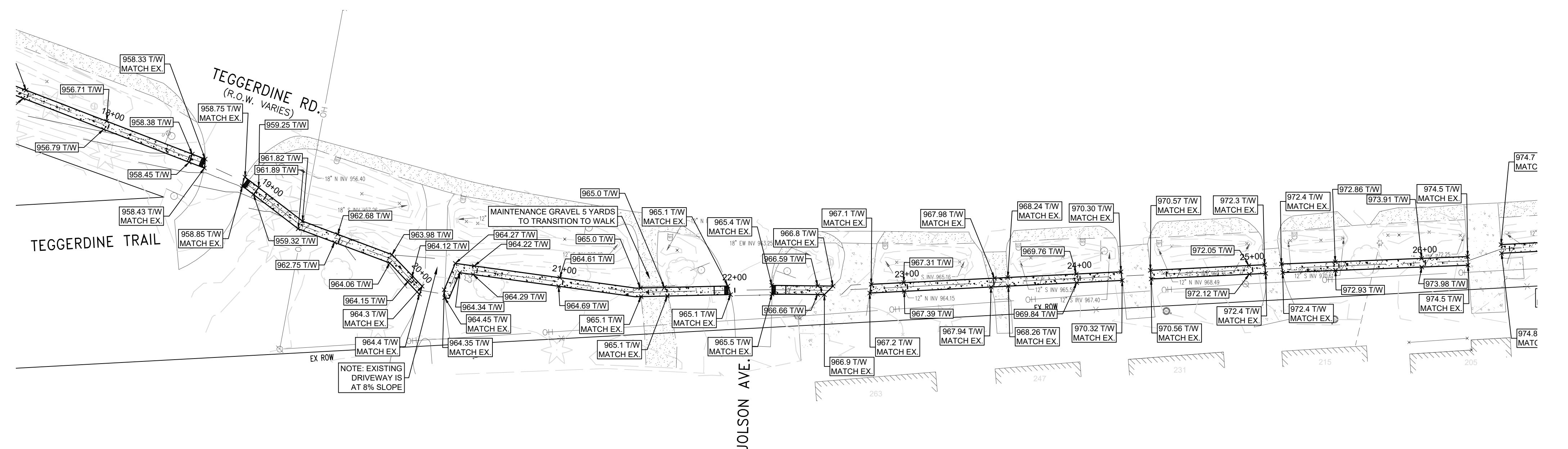
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MARK	ISSUED FOR	DATE
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PER RCOC		6-17-22
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 DESIGN BY: -
 CHECKED BY: -

DLZ JOB NUMBER: 2145-7329-00

SHEET NO. C-402



LEGEND

- EXISTING**
- WATER MAIN
 - SANITARY SEWER
 - STORM SEWER
 - GAS MAIN
 - UNDERGROUND ELECTRIC
 - UNDERGROUND CABLE
 - UNDERGROUND TELEPHONE/CONDUIT
 - UNDERGROUND FIBER OPTIC
 - SLUDGE LINE
 - FORCE MAIN
- BITUMINOUS PAVEMENT**
- CONCRETE PAVEMENT**
- GRAVEL DRIVE/SHOULDER**
- FLAGPOLE
 - LIGHT POLE
 - GUY ANCHOR
 - UTILITY POLE
 - UTILITY POLE
 - TELEPHONE MANHOLE
 - U/G TELEPHONE BOX
 - U/G CABLE TV BOX
 - U/G ELECTRIC BOX
 - GAS METER
 - ELECTRIC METER
 - ELECTRIC MANHOLE
 - ELECTRIC OUTLET
 - MALIBOX
 - POST
 - CONCRETE FILLED POST
 - GUARD POST
 - WATER SERVICE - SHUT OFF
 - GATE VALVE IN WELL
 - SPRINKLER VALVE
 - SPRINKLER HEAD
 - FIRE HYDRANT VALVE
 - FIRE HYDRANT
 - STORM MANHOLE
 - CATCH BASIN
 - SANITARY MANHOLE
 - CLEAN OUT
 - FOUND IRON/RE-ROD/PIPE
 - FOUND MONUMENT
 - ELEVATION TAKEN HERE
 - ELECTRIC MARKER
 - GAS MARKER
 - CONSUMERS ENERGY GAS TEST STATION
 - GAS LINE TEST STATION
 - GAS VALVE
 - GAS MANHOLE
 - GAS LIGHT
 - GAS STATION FILL PIPE
 - AIR FILL TANK
 - MONITORING WELL
 - DECIDUOUS TREE WIDRILINE
 - CONIFEROUS TREE WIDRILINE
 - BUSH

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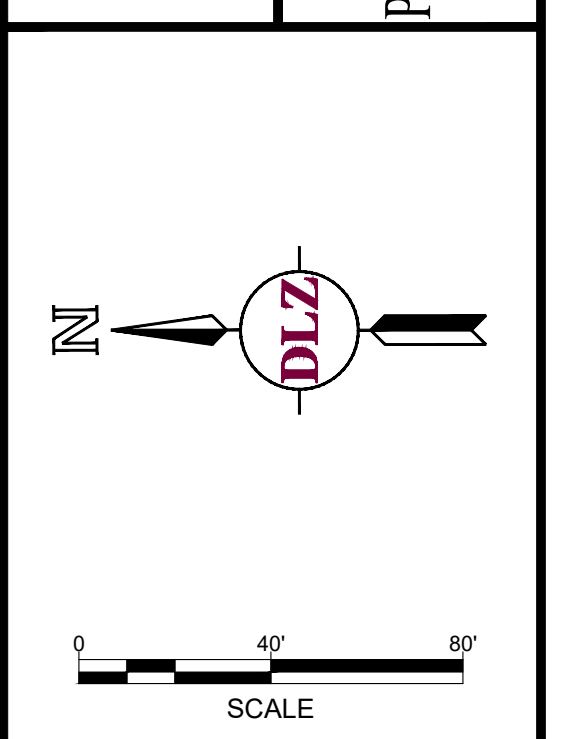
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PLAN & PROFILE (TEGGERDINE ROAD 18+00-26+50)
 Triangle Pathway

White Lake, Michigan



MARK	ISSUED FOR	DATE
-	MDOT REVIEW	2-22-22
-	PER RCOC	6-17-22
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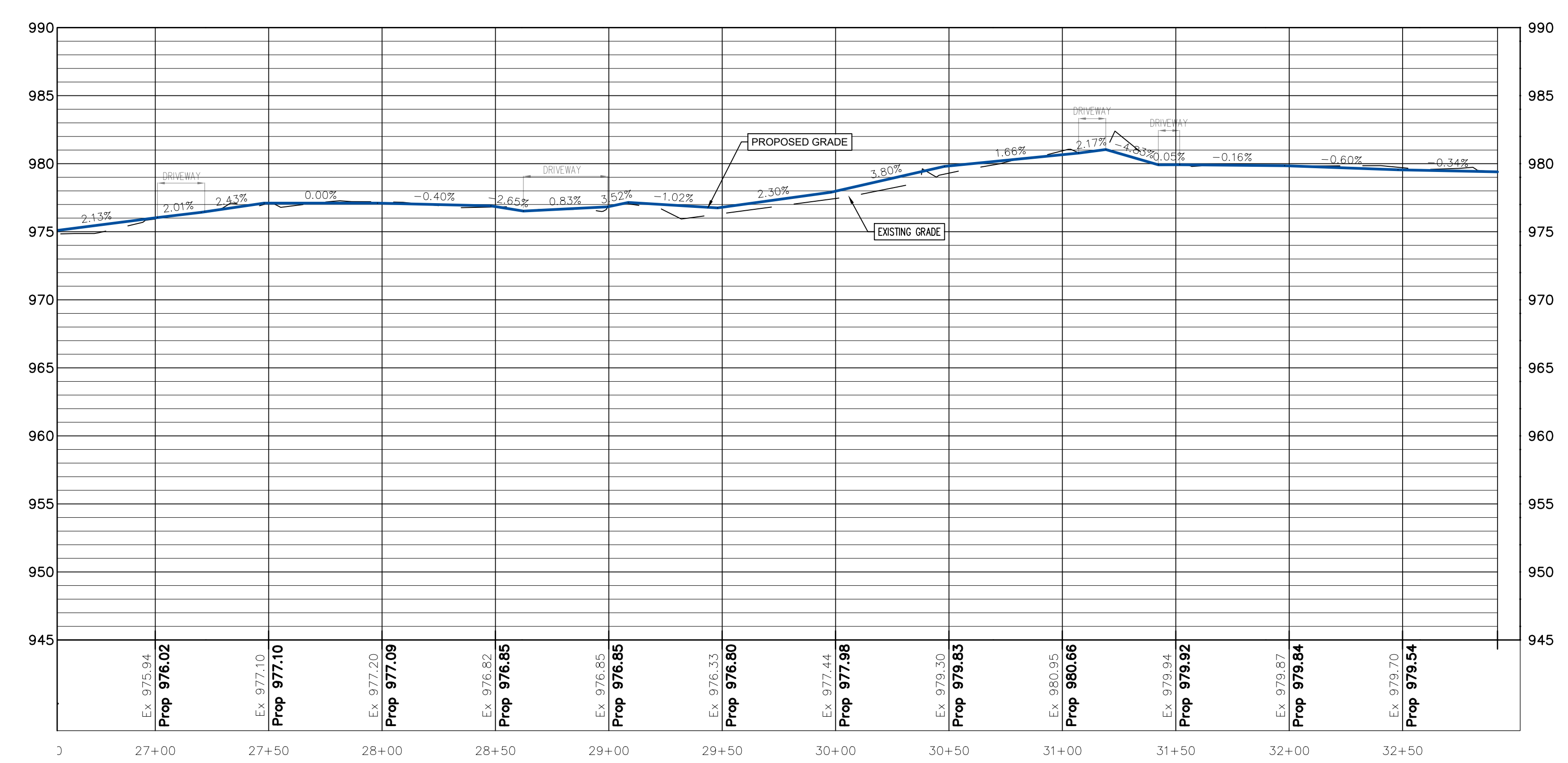
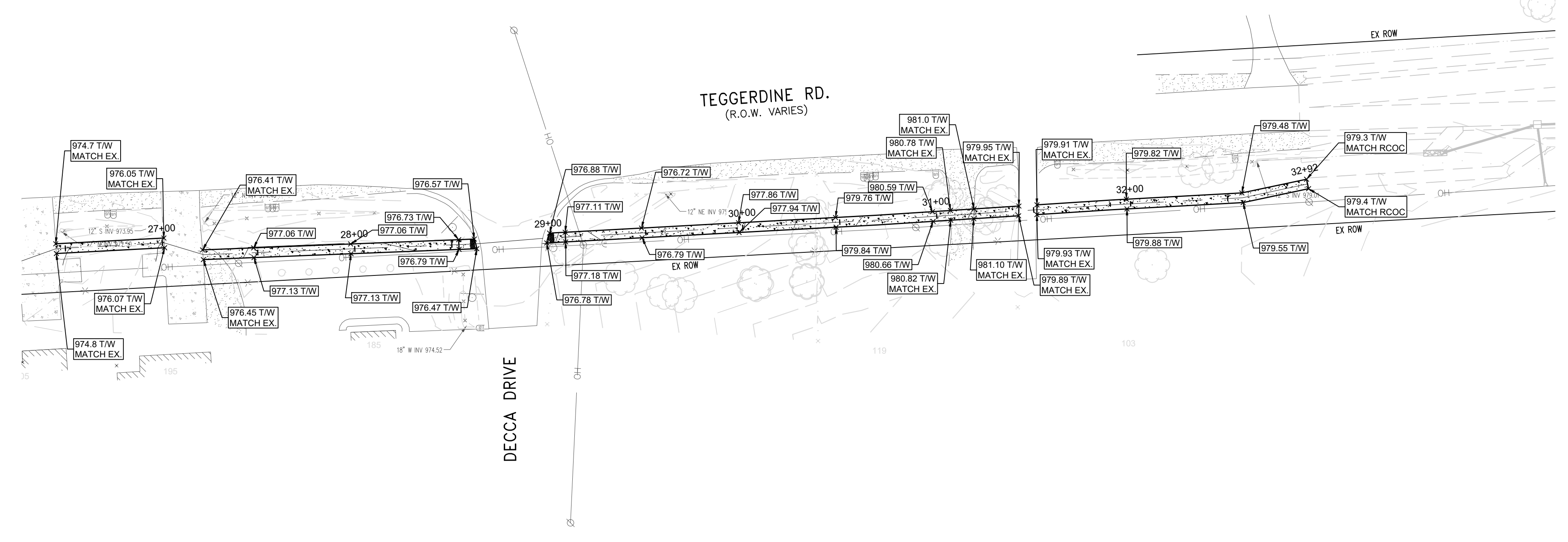
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 Plot Size: 36" x 48"

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 User: Daniel.King
 Date: 6/17/2022 10:46:31 AM
 Plot Date: 6/17/2022 5:21:05 PM
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LEGEND

EXISTING

- WATER MAIN
- SANITARY SEWER
- STORM SEWER
- GAS MAIN
- UNDERGROUND ELECTRIC
- UNDERGROUND CABLE
- UNDERGROUND TELEPHONE/CONDUIT
- UNDERGROUND FIBER OPTIC
- SLUDGE LINE
- FORCE MAIN

BITUMINOUS PAVEMENT

CONCRETE PAVEMENT

GRAVEL DRIVE/SHOULDER

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GAS METER

ELECTRIC METER

ELECTRIC MANHOLE

ELECTRIC OUTLET

MAILBOX

SIGN

POST

CONCRETE FILLED POST

GUARD POST

WATER SERVICE - SHUT OFF

GATE VALVE IN WELL

SPRINKLER VALVE

SPRINKLER HEAD

FIRE HYDRANT

FIRE HYDRANT VALVE

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CONSUMERS ENERGY GAS MARKER

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AIR FILL TANK

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DECIDUOUS TREE WIDRILINE

CONIFEROUS TREE WIDRILINE

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 Triangle Pathway
 White Lake, Michigan

SCALE

MARK	ISSUED FOR	DATE
	MDOT REVIEW	2-22-22
	PER RCOG	6-17-22
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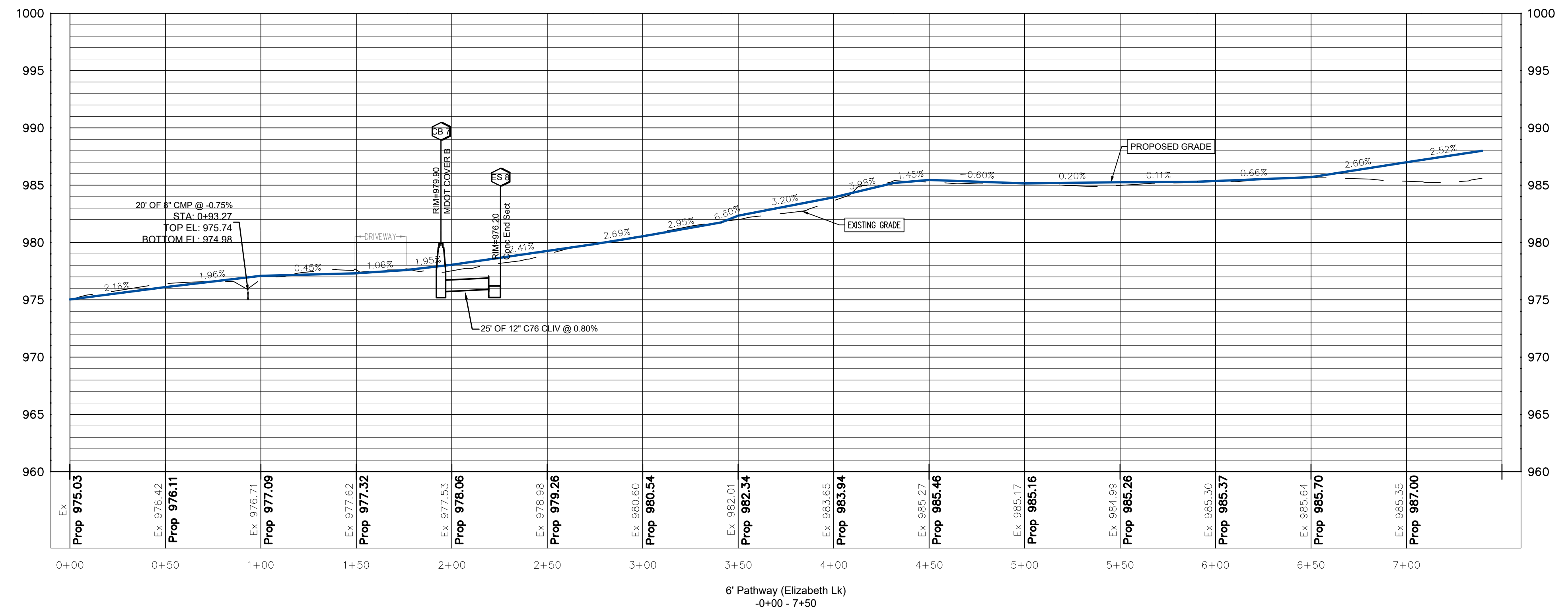
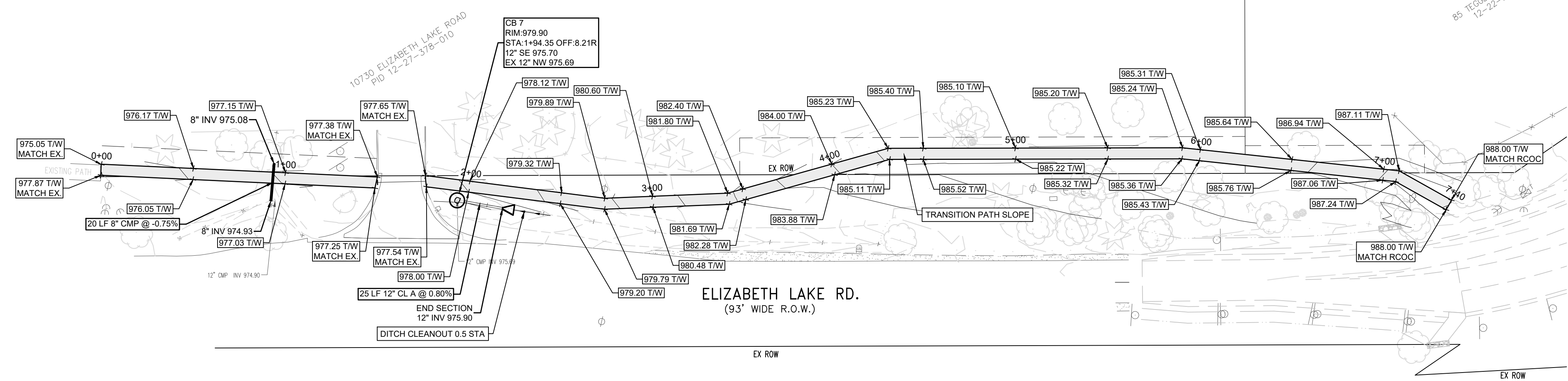
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 DESIGN BY: -
 CHECKED BY: -

DLZ JOB NUMBER: 2145-7329-00

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 RLOT DATE: 6/17/2022 5:21:18 PM



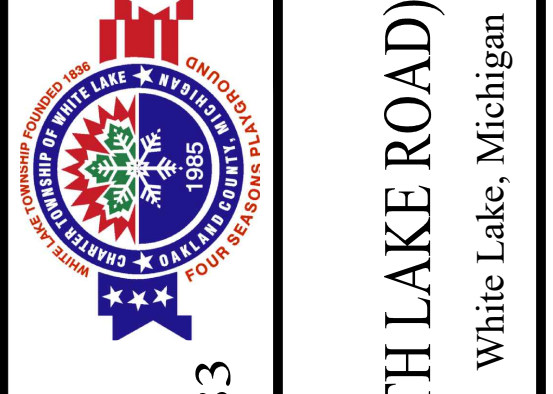
- ### LEGEND
- EXISTING**
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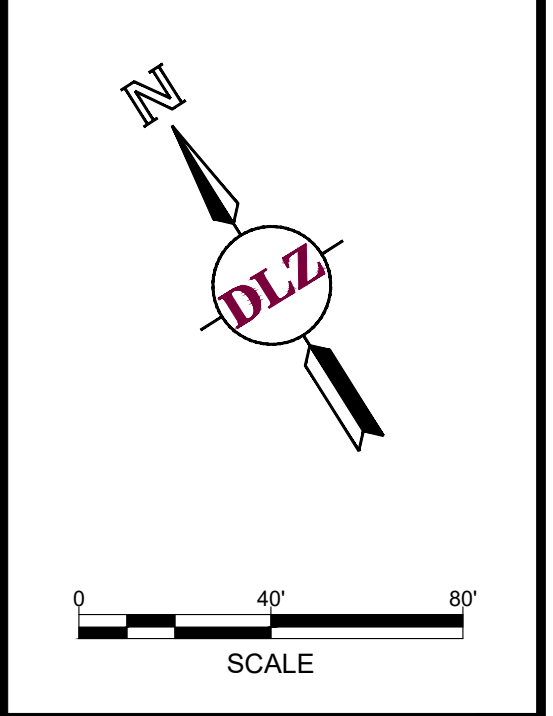
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PLAN & PROFILE (ELIZABETH LAKE ROAD)
 Triangle Pathway
 White Lake, Michigan



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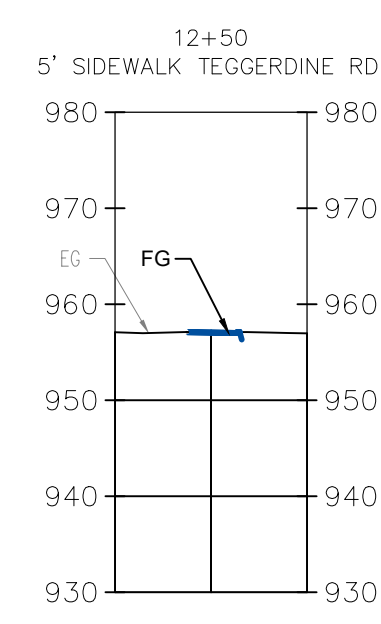
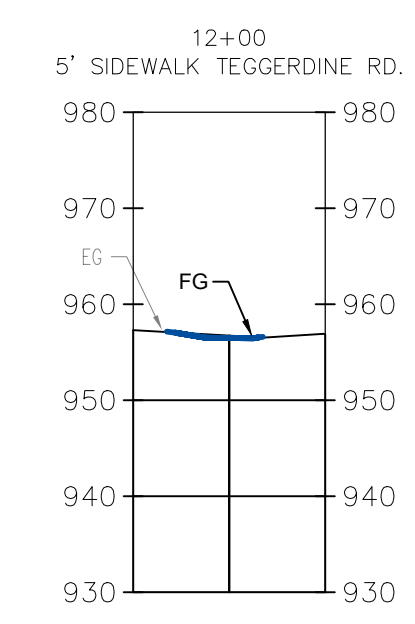
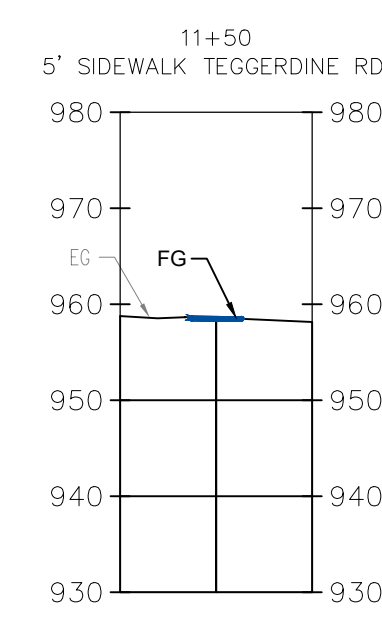
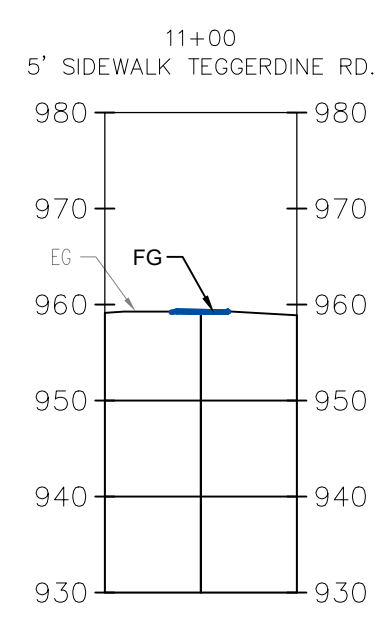
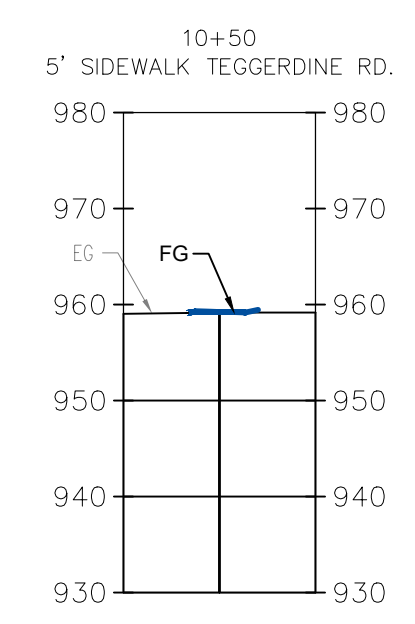
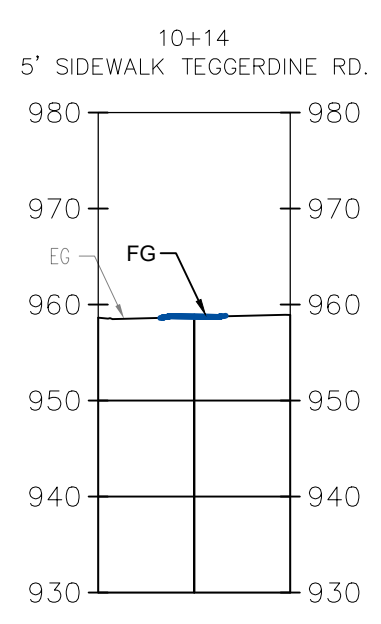
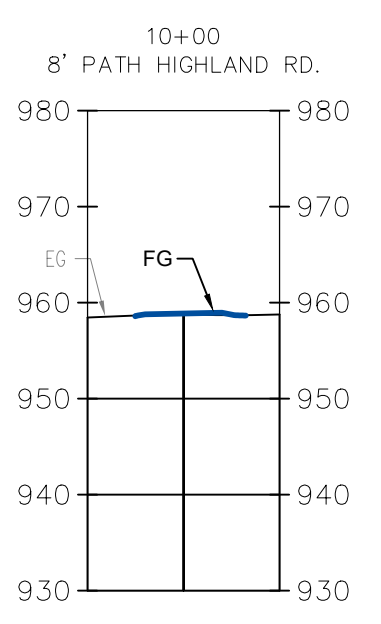
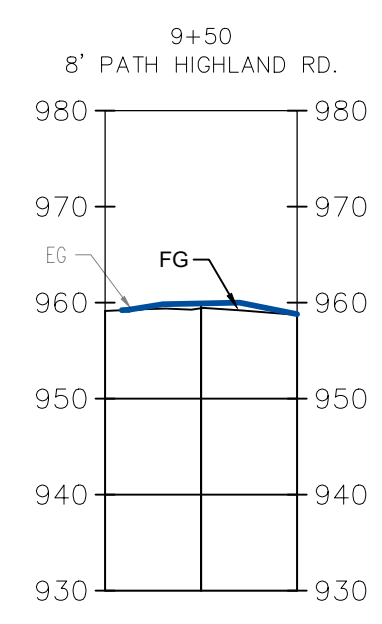
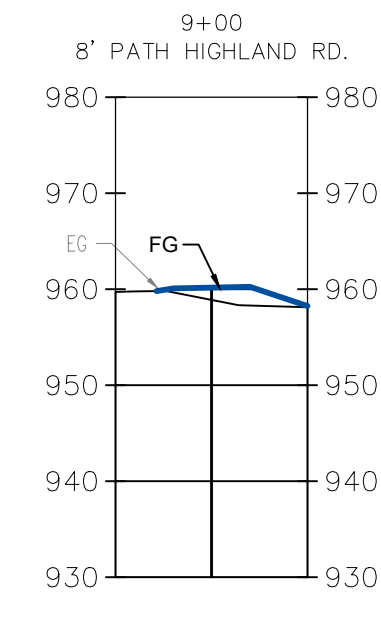
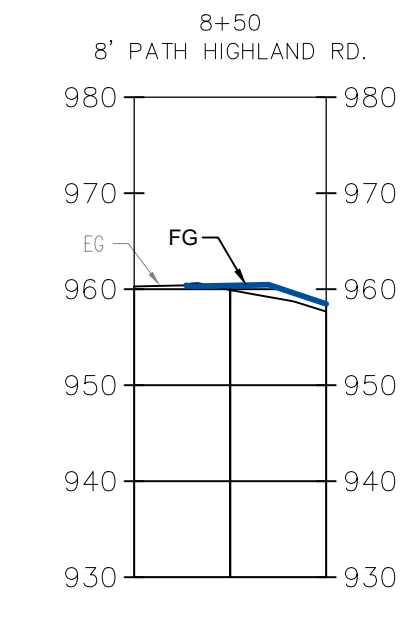
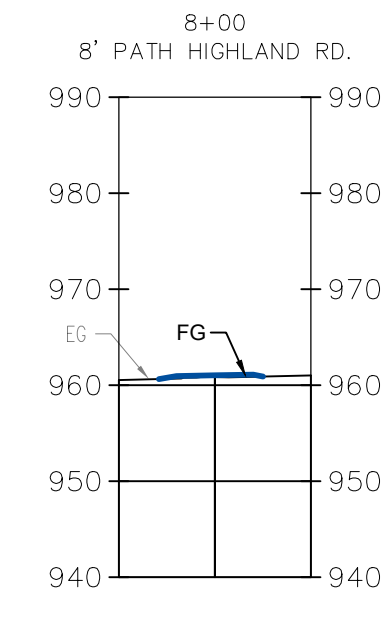
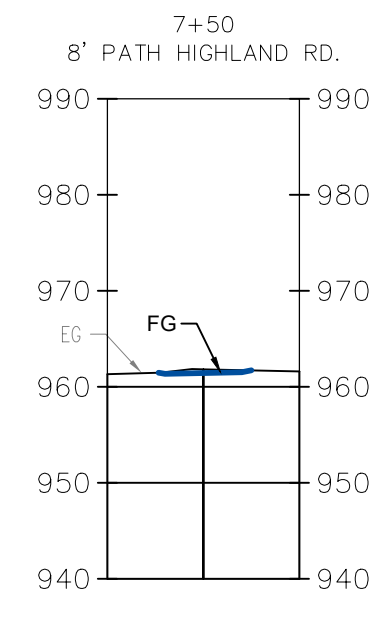
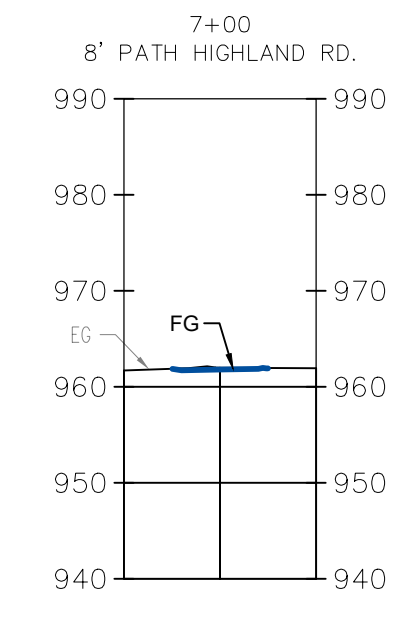
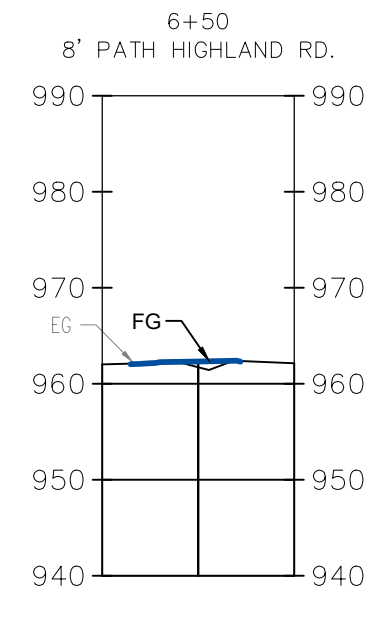
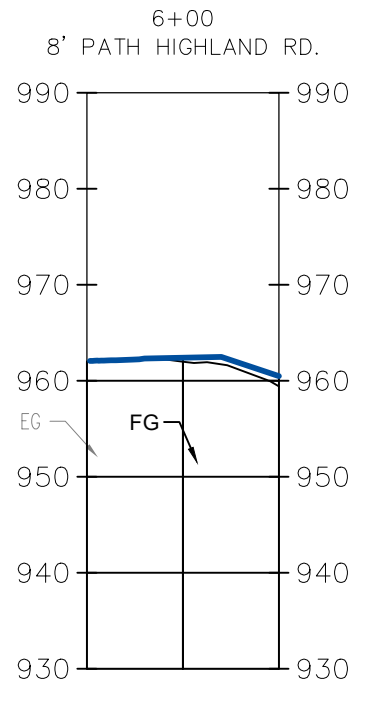
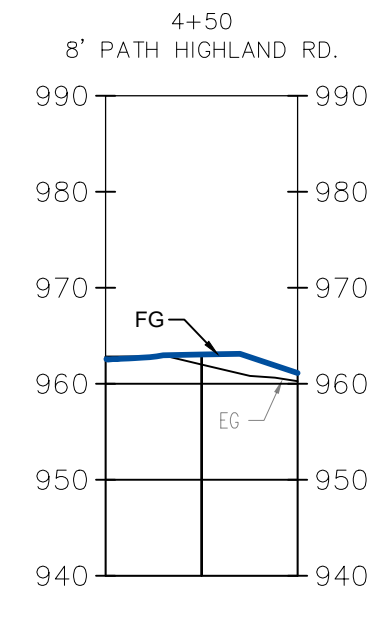
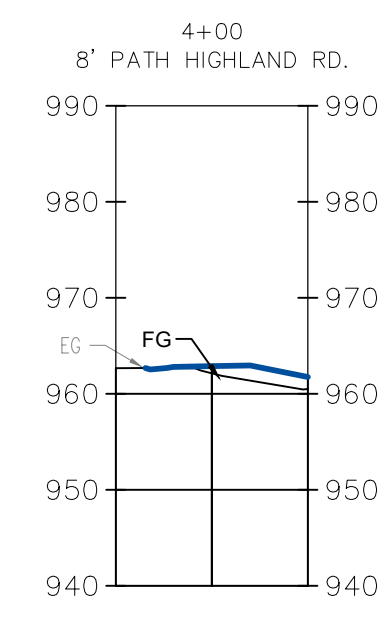
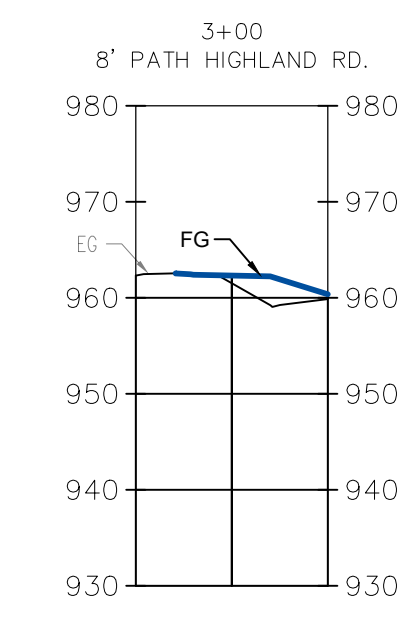
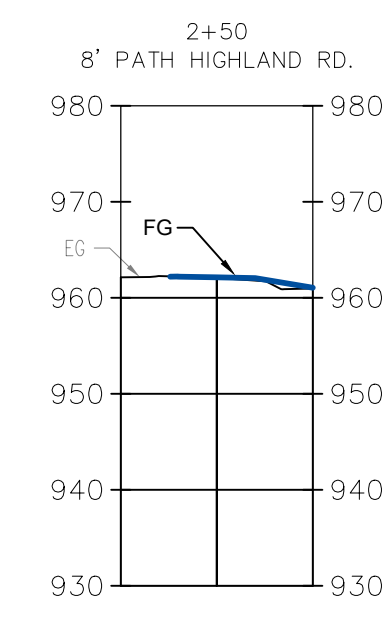
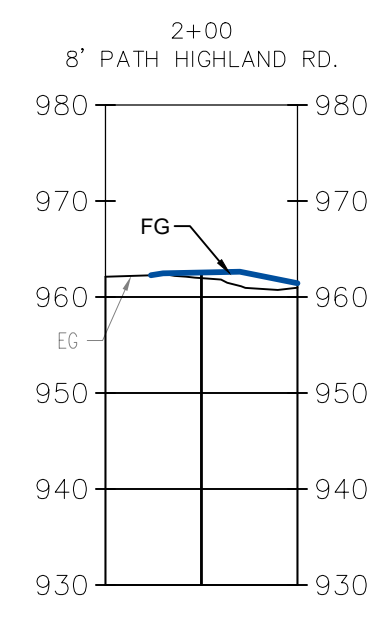
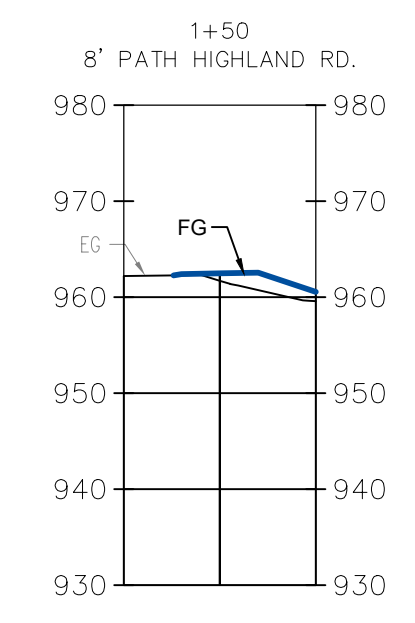
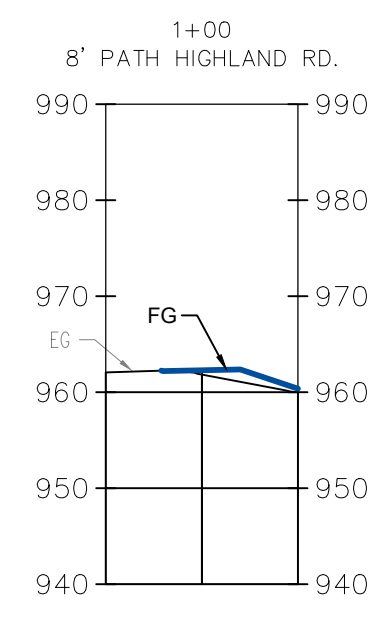
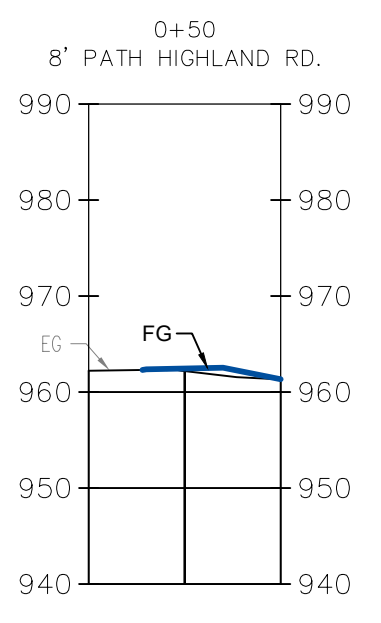
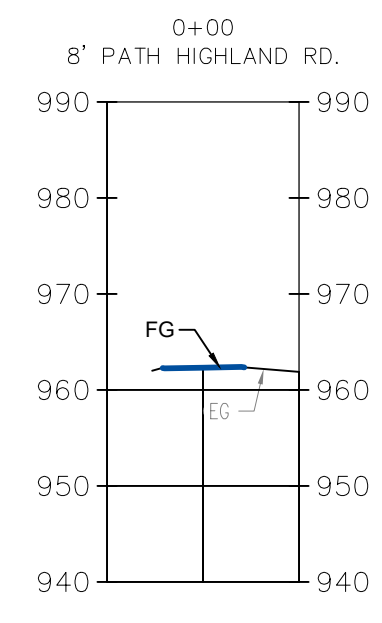
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DANIEL KWIG

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PLOT DATE: 6/17/2022 5:22:25 PM



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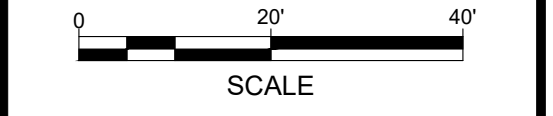
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CROSS SECTIONS
 Triangle Pathway
 White Lake, Michigan

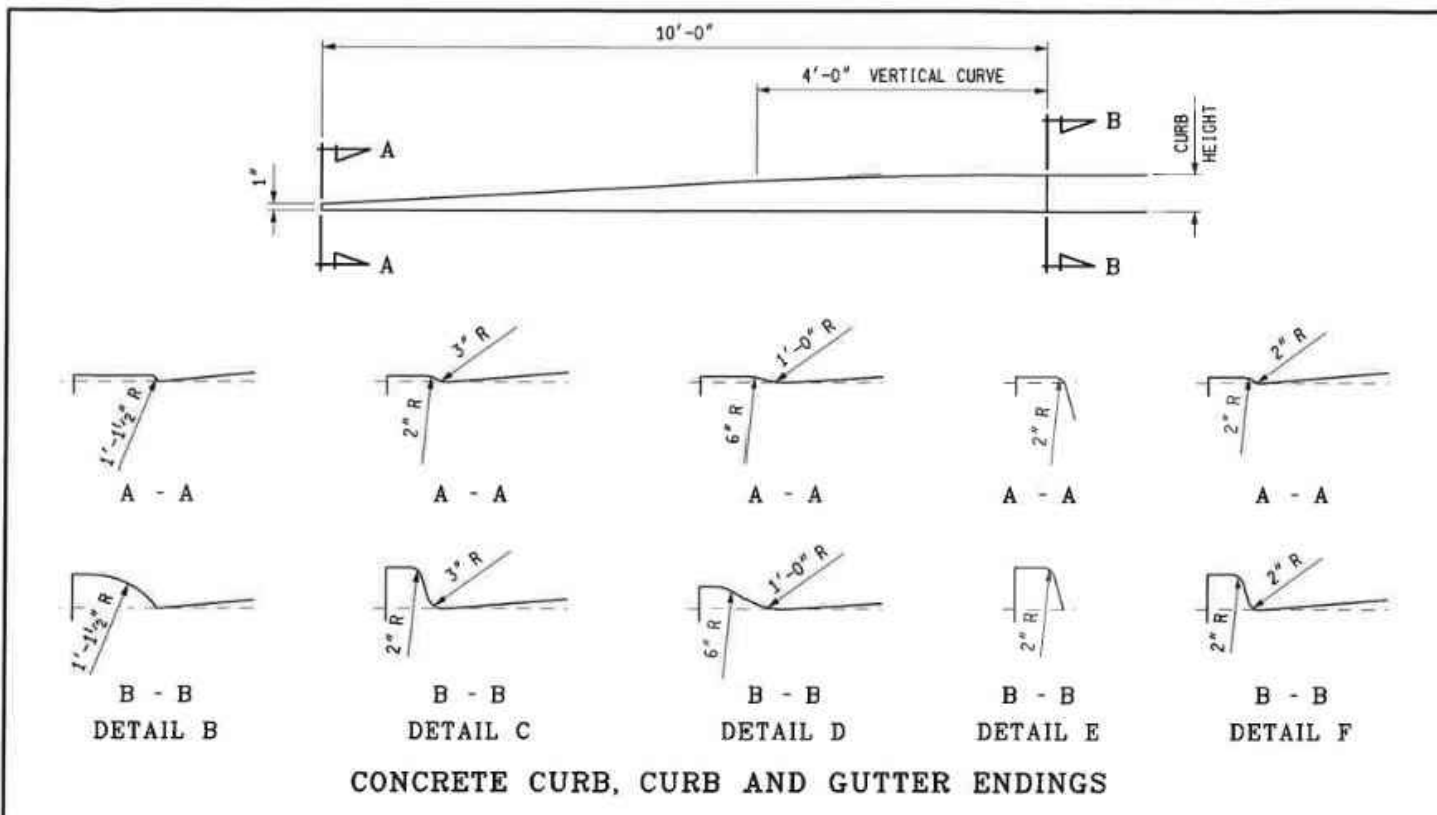


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C-406



NOTES:

CURB AND GUTTER RADI SHALL BE DIMENSIONED TO THE FRONT EDGE OF THE GUTTER PAN OR EDGE OF PAVEMENT.

CONCRETE CURB AND GUTTER ENDINGS WILL BE PAID FOR IN LINEAR FEET OF THE ADJACENT CURB DETAIL.

JOINTS SHALL BE PLACED AT RIGHT ANGLES TO THE EDGE OF CONCRETE CURB AND GUTTER.

JOINTS DETAILED ON THE PLANS SHALL SUPERSEDE THOSE SPECIFIED ON THIS STANDARD PLAN.

BOTTOM SLOPE OF CURB AND GUTTER STRUCTURE MAY BE THE SAME SLOPE AS BOTTOM OF PAVEMENT. BACK OF CURB AND VERTICAL EDGE OF GUTTER PAN MAY HAVE A MAXIMUM 1/2" BATTER TO FACILITATE FORMING.

WHEN CURB AND GUTTER IS CAST INTEGRALLY, SEE CURRENT STANDARD PLAN R-30-SERIES.

ALL JOINTS FOR CURB OR CURB AND GUTTER ARE INCLUDED IN THE PAY ITEM FOR THE CURB OR CURB AND GUTTER.

JOINTS IN CURB OR CURB AND GUTTER NOT TIED TO CONCRETE PAVEMENT ADJACENT TO CONCRETE BASE COURSE: OR ADJACENT TO HMA PAVEMENT:

A. PLACE 1" FIBER JOINT FILLER AT 400' MAXIMUM INTERVALS.

B. PLACE 1" FIBER JOINT FILLER AT SPRING POINTS OF INTERSECTING STREETS.

C. PLACE 1/2" ISOLATION JOINT AT CATCH BASINS PER STANDARD PLAN R-37-SERIES.

D. PLACE CONTRACTION JOINTS AT 40' MAXIMUM INTERVALS.

JOINTS IN CURB OR CURB AND GUTTER TIED TO JOINTED PAVEMENT:

A. PLACE 1" FIBER JOINT FILLER OPPOSITE ALL TRANSVERSE EXPANSION JOINTS IN PAVEMENT.

B. PLACE 1/2" ISOLATION JOINT AT CATCH BASINS PER STANDARD PLAN R-37-SERIES.

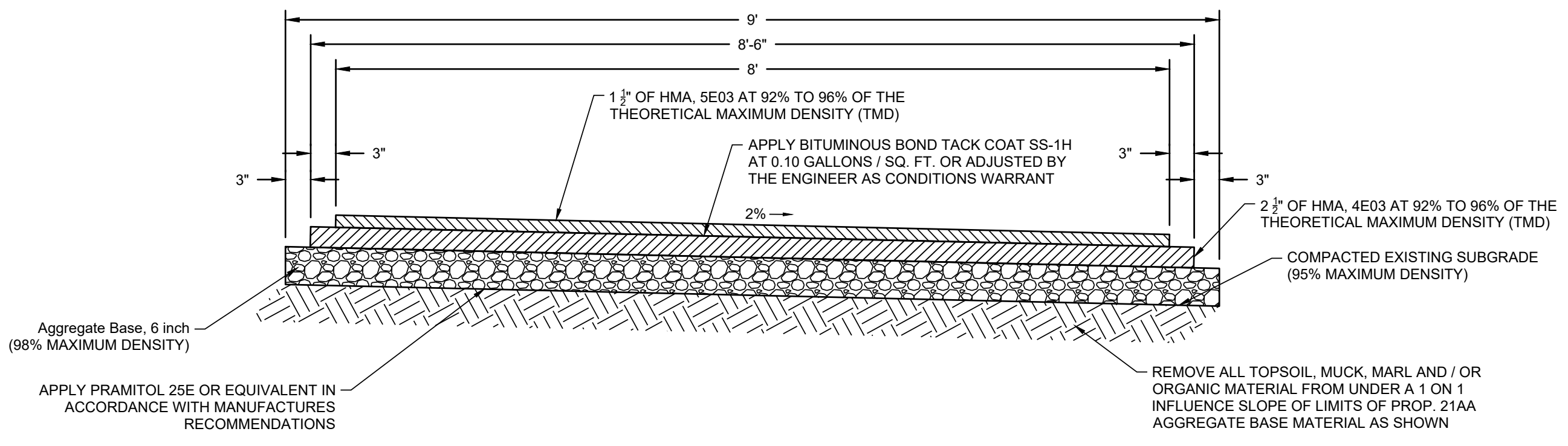
C. PLACE CONTRACTION JOINTS OPPOSITE ALL TRANSVERSE CONTRACTION JOINTS IN PAVEMENT.

D. A SYMBOL (B) JOINT SHALL BE PLACED BETWEEN CURB OR CURB AND GUTTER AND ADJACENT CONCRETE PAVEMENT AS SPECIFIED ON STANDARD PLAN R-43-SERIES.

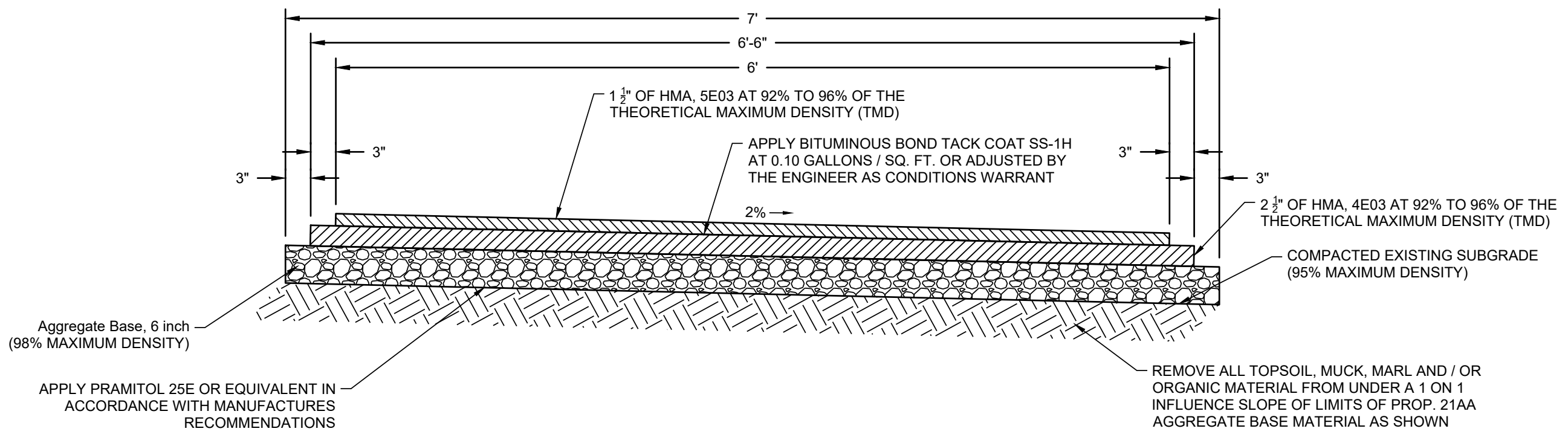
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

CONCRETE CURB AND CONCRETE CURB & GUTTER

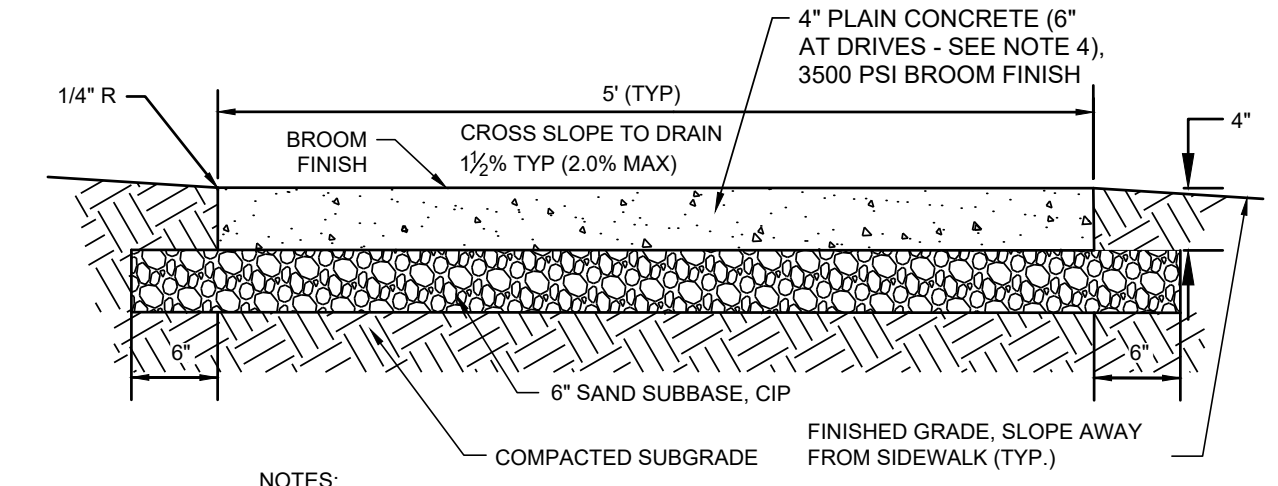
9-30-2014 2-6-2014 R-30-G SHEET 2 OF 2
F.I.R.W.A. APPROVAL PLAN DATE



TYPICAL 8 FT. BITUMINOUS PATHWAY SECTION (HIGHLAND RD.)
NOT TO SCALE
(ALTERNATE BID)



TYPICAL 6 FT. BITUMINOUS PATHWAY SECTION (ELIZABETH LAKE RD.)
NOT TO SCALE



NOTES:

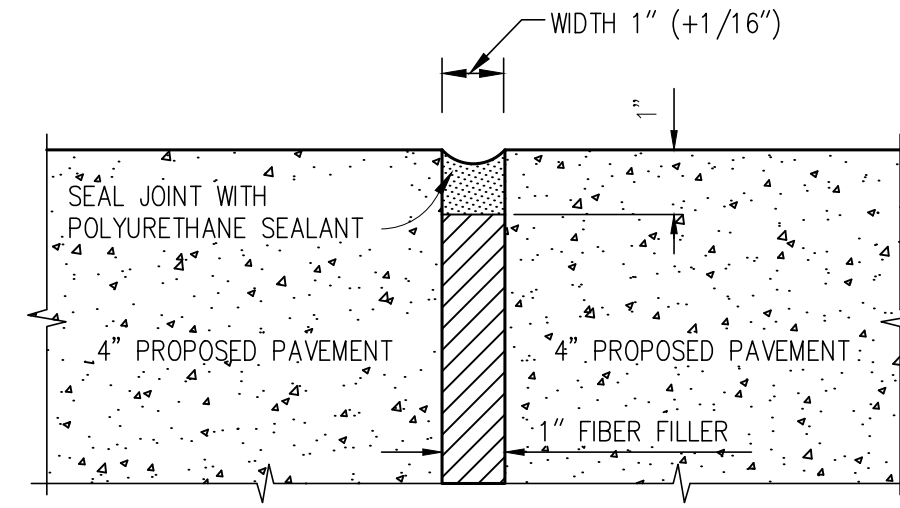
1. EXPANSION JOINTS: 1/2" WIDE, FULL DEPTH, AT 50' INTERVALS TRANSVERSELY, AROUND EMBEDDED ITEMS SUCH AS LIGHT BASES, AND AT ABUTTING STRUCTURES SUCH AS BUILDINGS OR CURBS.

2. CONTRACTION JOINTS: 1/4" WIDE, 1" DEEP, ARRANGE TO FORM PANELS 10' MAX. IN EITHER DIRECTION.

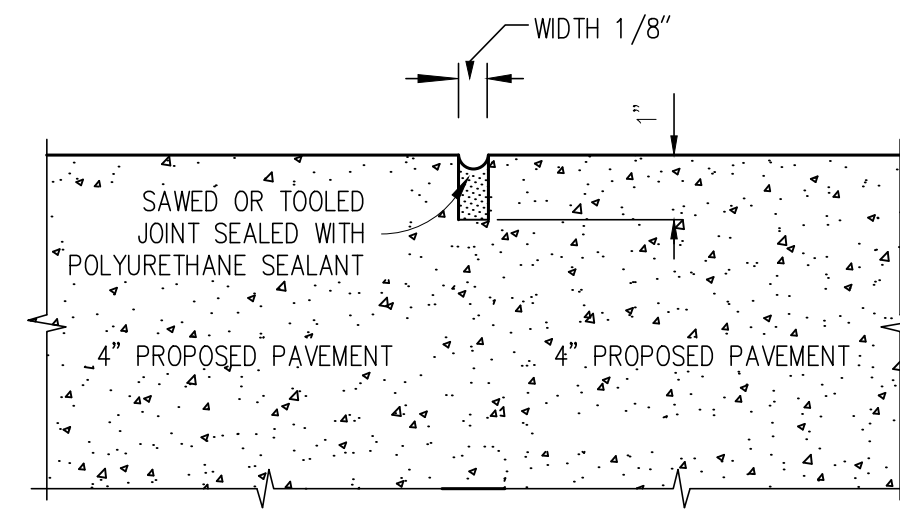
3. CONCRETE: 3500 PSI

4. CONCRETE TO BE 6" THICK PLAIN CONCRETE THROUGH DRIVES AND 1" FLAG EACH SIDE ADJACENT TO DRIVE.

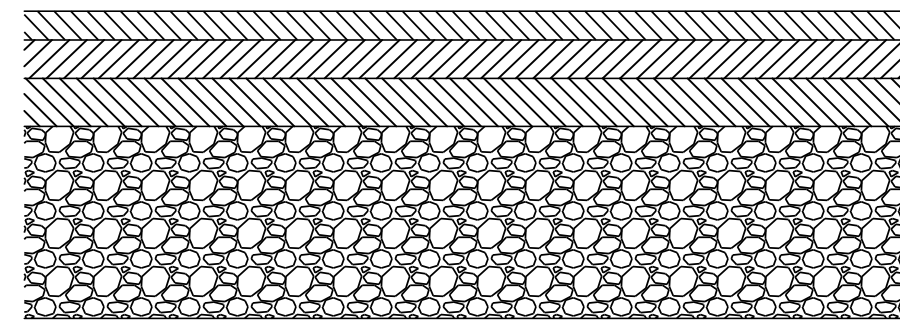
PROPOSED TEGGERDINE ROAD SIDEWALK PAVEMENT SECTION
NOT TO SCALE



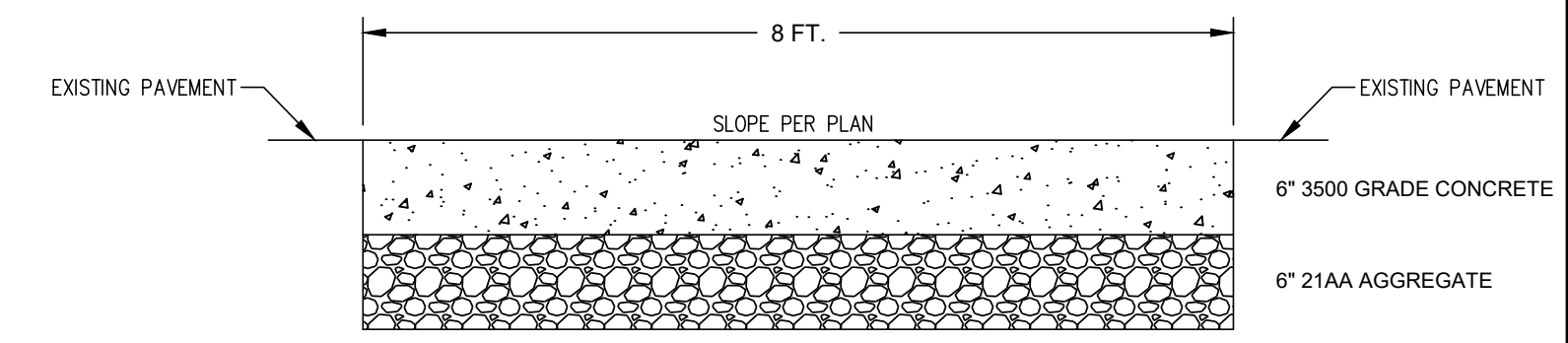
EXPANSION JOINT (EJ)
NOT TO SCALE



CONTROL JOINT (CJ)
NOT TO SCALE



HMA APPROACH SECTION
NOT TO SCALE



WALK THROUGH DRIVE OPENING (M-59)
ALTERNATE BID
NOT TO SCALE

DETAIL B

1" GUTTER PAN WIDTH MAY BE REDUCED WHEN APPROVED BY THE ENGINEER.

DETAIL	DIMENSION	LANE TIES	CONCRETE CYD / LFT	CONCRETE CYD / LFT
B1	9"	AS SHOWN	0.0900	(# 0.0855)
B2	9"	OMITTED	0.0900	(# 0.0855)
B3	10"	AS SHOWN	0.0941	(# 0.0894)

DETAIL C

DETAIL	DIMENSION	LANE TIES	CONCRETE CYD / LFT
C1	1'-4"	AS SHOWN	0.0506
C2	1'-4"	OMITTED	0.0506
C3	2'-0"	AS SHOWN	0.0632
C4	2'-0"	OMITTED	0.0632
C5	2'-4"	AS SHOWN	0.0757
C6	2'-4"	OMITTED	0.0757

DETAIL D

DETAIL	DIMENSION	LANE TIES	CONCRETE CYD / LFT
D1	9"	AS SHOWN	0.0788
D2	9"	OMITTED	0.0788
D3	10"	AS SHOWN	0.0826

DEPARTMENT DIRECTOR: [Signature]

PREPARED BY: [Signature]

DESIGN DIVISION: [Signature]

CHECKED BY: [Signature]

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

CONCRETE CURB AND CONCRETE CURB & GUTTER

9-30-2014 2-6-2014 R-30-G SHEET 1 OF 2
F.I.R.W.A. APPROVAL PLAN DATE

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WARNING

UTILITY LOCATIONS ARE NOT CONFIRMED. THOSE SHOWN ARE BASED ON RECORD DRAWINGS, UTILITY OWNERS OR PLANS. THREE FULL WORKING DAYS PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH AND HE SHALL PROTECT OR HAVE RELOCATED, AS NOTED ON THE PLANS. ANY DAMAGE TO UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL INTERFERE WITH CONSTRUCTION.

White Lake, Michigan

Township of White Lake
7525 Highland Rd,
White Lake, Michigan 48383

SITE DETAILS
Triangle Pathway

DLZ

0 40' 80'
SCALE

MARK	ISSUED FOR	DATE
-	MDOT REVIEW	2-22-22
-	PER RCO	6-17-22
-	-	-
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SHEET NO.
C-501

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 Date: 6/17/2014 4:11:17 PM
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LOCATION OF JOINTS IN CONCRETE SIDEWALK

50'-0" MAXIMUM EXPANSION JOINT SPACING

1/2" EXPANSION JOINT

4" SIDEWALK

BACK OF CURB

VARIABLE

1" EXPANSION JOINT

RIGID STRUCTURE

1/2" EXPANSION JOINT SHALL BE PLACED BETWEEN SIDEWALK AND RIGID STRUCTURE WHEN DIRECTED BY THE ENGINEER. THE JOINT SHALL BE PLACED 1'-0" FROM PROPERTY LINE.

50'-0" MAXIMUM EXPANSION JOINT SPACING

4" SIDEWALK

1/2" EXPANSION JOINT

PROPERTY LINE

1" EXPANSION JOINT

1/2" EXPANSION JOINTS

INsofar AS POSSIBLE, SIDEWALK SHALL BE DIVIDED INTO SQUARE UNIT AREAS BY MEANS OF CUT JOINTS NOT MORE THAN 36 SFT OR LESS THAN 16 SFT.

TYPICAL SIDEWALK JOINT LAYOUTS

SIDEWALK INTERSECTIONS SHALL BE CAST MONOLITHICALLY WITH JOINT LINES PLACED AS NEAR TO PERPENDICULAR AS POSSIBLE WITH SIDEWALK'S EDGE. TO AVOID HARBOR OR POINTED PIECES OF CONCRETE.

WHERE A PERMANENT STRUCTURE IS LOCATED IN SIDEWALK, PLACE EXPANSION MATERIAL AROUND STRUCTURE AND ADJUST JOINT PATTERN TO INTERSECT STRUCTURE AS ILLUSTRATED.

WALK WIDTH AS SPECIFIED ON PLANS

1/2" R (TYP.)

1.5" (2.0% MAXIMUM) TOWARD STREET

SEE NOTES

MDOT

DEPARTMENT DIRECTOR
Kirk J. Stouder

PREPARED BY
DESIGN DIVISION
DRAWN BY: B.L.M.L.
CHECKED BY: W.S.P.

APPROVED BY: *Randy U. Pfeiffer*
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: *Andre A. Van der Werf*
DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR
**DRIVEWAY OPENINGS
& APPROACHES,
AND CONCRETE SIDEWALK**

9-30-2014 7-1-2014 R-29-I SHEET 1 OF 4
T.S.W.A. APPROVAL PLAN DATE

CONCRETE DRIVEWAY OPENING LAYOUT

DRIVEWAY WIDTH

THICKENED CONCRETE SIDEWALK

1/2" EXPANSION JOINT

W = R - d

W = MINIMUM WIDTH OF THICKENED CONCRETE SIDEWALK. (R - d) SHALL NOT BE LESS THAN DRIVEWAY WIDTH.

THE "R" DIMENSION IS SPECIFIED IN THE PUBLICATION "ADMINISTRATIVE RULES REGULATING DRIVEWAYS, BANKS AND PARADES ON OR OVER HIGHWAYS".

0.4 R 0.6 R

R

← DIRECTION OF TRAFFIC

CONCRETE DRIVEWAY OPENING, DETAIL L

SECTION A - A

SECTION B - B

CONTRACTOR OR PLANE OF WEARNESS JOINT

ALIGN DRIVEWAY RETURN TO FIT OPENING IN CURB & GUTTER

FLOW LINE

GUTTER PAN

CONTRACTOR OR PLANE OF WEARNESS JOINT

CONTRACTOR OR PLANE OF WEARNESS JOINT

CONTRACTOR OR PLANE OF WEARNESS JOINT

CONTRACTOR OR PLANE OF WEARNESS JOINT

CONCRETE DRIVEWAY OPENING, DETAIL M

SECTION A - A

SECTION B - B

CONTRACTOR OR PLANE OF WEARNESS JOINT

ALIGN DRIVEWAY RETURN TO FIT OPENING IN CURB & GUTTER

FLOW LINE

GUTTER PAN

CONTRACTOR OR PLANE OF WEARNESS JOINT

CONTRACTOR OR PLANE OF WEARNESS JOINT

CONTRACTOR OR PLANE OF WEARNESS JOINT

CONTRACTOR OR PLANE OF WEARNESS JOINT

1" EXPANSION JOINT (FOR CURB & GUTTER NOT TIED TO CONCRETE PAVEMENT)

1" EXPANSION JOINT (FOR CURB & GUTTER NOT TIED TO CONCRETE PAVEMENT)

REINFORCEMENT AS IN ADJACENT CURB & GUTTER

NOTES:

FOR ROADWAYS WITH CONCRETE PAVEMENTS, LONGITUDINAL LANE TIES WILL BE CONTINUOUS THROUGH THE DRIVEWAY OPENING AND THE SPACING OF THE #5 BARS IN CONCRETE DRIVEWAYS SHALL BE ADJUSTED TO AVOID CONFLICT WITH THE LONGITUDINAL LANE TIES.

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9-30-2014 7-1-2014 R-29-I SHEET 2 OF 4
T.S.W.A. APPROVAL PLAN DATE

HMA DRIVEWAY APPROACH

(TO BE USED WITH DETAIL L)

SIDEWALK ELEVATION

VARIABLE

BACK EDGE OF GUTTER

HMA SURFACE

VARIABLE

DRIVEWAY

THICKENED CONCRETE SIDEWALK

CONCRETE DRIVEWAY APPROACH

(TO BE USED WITH DETAIL L OR M)

SIDEWALK ELEVATION

VARIABLE

BACK EDGE OF GUTTER

CONCRETE DRIVEWAY APPROACH BETWEEN CURB AND SIDEWALK IS 6" THICK UNLESS OTHERWISE SPECIFIED ON THE PLANS.

VARIABLE

DRIVEWAY

THICKENED CONCRETE SIDEWALK

1/2" EXPANSION JOINT

NOTES:

MONOLITHIC CURB IS INCLUDED IN THE CONCRETE DRIVEWAY APPROACH QUANTITY.

REINFORCEMENT IS NOT REQUIRED UNLESS SPECIFIED ON THE PLANS. WHEN REINFORCEMENT IS SPECIFIED, SEE CHART ON THIS SHEET.

THICKENED CONCRETE SIDEWALK

1" TRANSVERSE EXPANSION JOINT

5'-0"

4" CONCRETE SIDEWALK

EXTRA WIDTH TO BE ADDED AT ALLEYS AND COMMERCIAL DRIVEWAYS

PLANE OF WEARNESS JOINT

EXTRA WIDTH TO BE ADDED AT ALLEYS AND COMMERCIAL DRIVEWAYS

1" TRANSVERSE EXPANSION JOINT

4" CONCRETE SIDEWALK

SUBBASE WHEN SPECIFIED ON THE PLANS (4" MIN.)

WHEN CONCRETE DRIVEWAY APPROACH IS SPECIFIED, THE THICKENED CONCRETE SIDEWALK THICKNESS IS EQUAL TO THE THICKNESS OF THE CONCRETE DRIVEWAY APPROACH. WHEN HMA DRIVEWAY APPROACH IS SPECIFIED, THE THICKENED CONCRETE SIDEWALK THICKNESS IS 8" MIN.

REINFORCEMENT FOR CONCRETE DRIVEWAYS		
CONCRETE DRIVEWAY THICKNESS	WIRE SIZE (6" x 6" MESH)	AVERAGE WEIGHT (LBS/100 SFT)
LESS THAN 6"	W1-4	21
6" OR GREATER	W2-3	42

USE WIRE FABRIC REINFORCEMENT SPECIFIED ON STANDARD PLAN R-37-SERIES

INTERMEDIATE DRIVEWAY JOINT DETAILS

ADJUST DRIVEWAY JOINTS AS NEEDED TO ALIGN WITH ANY CONCURING TRANSVERSE PAVEMENT JOINTS.

JOINT LAYOUT IS AS INDICATED OR AS DIRECTED BY THE ENGINEER.

MDOT

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Kirk J. Stouder

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DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR
**DRIVEWAY OPENINGS
& APPROACHES,
AND CONCRETE SIDEWALK**

9-30-2014 7-1-2014 R-29-I SHEET 3 OF 4
T.S.W.A. APPROVAL PLAN DATE

LOW VOLUME COMMERCIAL OR RESIDENTIAL DRIVEWAY SLOPES

APPROXIMATELY 10'

0.5% MAXIMUM SLOPE

2.0% MAXIMUM SLOPE

1.5% MAXIMUM CHANGE IN SLOPE AT 30' INTERVALS (SAG)

0.5% MAXIMUM CHANGE IN SLOPE AT 30' INTERVALS (CREST)

SEE NOTES

COMMERCIAL DRIVEWAY PROFILE FOR MAJOR TRAFFIC GENERATORS

ROADWAY

CURB A

GUTTER

DRIVEWAY APPROACH

SIDEWALK

DRIVEWAY

MAXIMUM GRADE 0.5%

MAXIMUM GRADE 1.5%

MAXIMUM GRADE 0.5%

NOTES:

FOR DRIVEWAY DESIGN REFER ALSO TO "ADMINISTRATIVE RULES REGULATING DRIVEWAYS, BANKS, AND PARADES ON OR OVER HIGHWAYS" AND GEOMETRIC DESIGN C-80-SERIES, COMMERCIAL DRIVEWAYS.

FOR CURB AND GUTTER DETAILS, SEE STANDARD PLAN R-30-SERIES.

TRANSVERSE SIDEWALK SLOPES ARE TYPICALLY 1.5% (2.0% MAXIMUM). IN ORDER TO MEET SITE CONDITIONS, IF THE TRANSVERSE SLOPE IS REQUIRED TO BE LESS THAN 1.5% LONGITUDINAL DRAINAGE MUST BE PROVIDED.

WHEN SETTING GRADES FOR COMMERCIAL DRIVES, THE TYPES OF VEHICLES USING THE DRIVE SHOULD BE CONSIDERED.

MDOT

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9-30-2014 7-1-2014 R-29-I SHEET 4 OF 4
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Michigan Department of Transportation

Township of White Lake
7525 Highland Rd,
White Lake, Michigan 48383

White Lake, Michigan

SITE DETAILS
Triangle Pathway

0 40' 80'

SCALE

MARK	ISSUED FOR	DATE
	MDOT REVIEW	2-22-22
	PER ROC	6-17-22
	-	-
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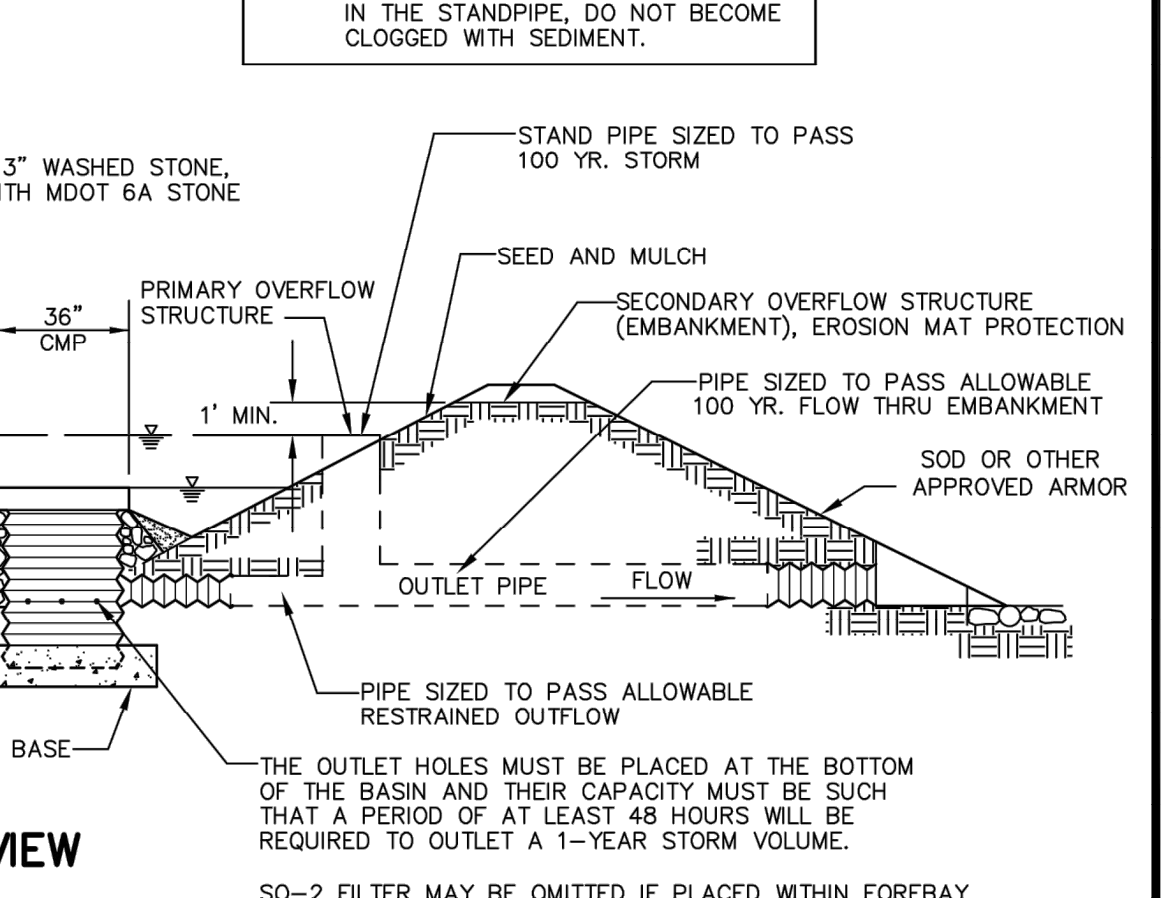
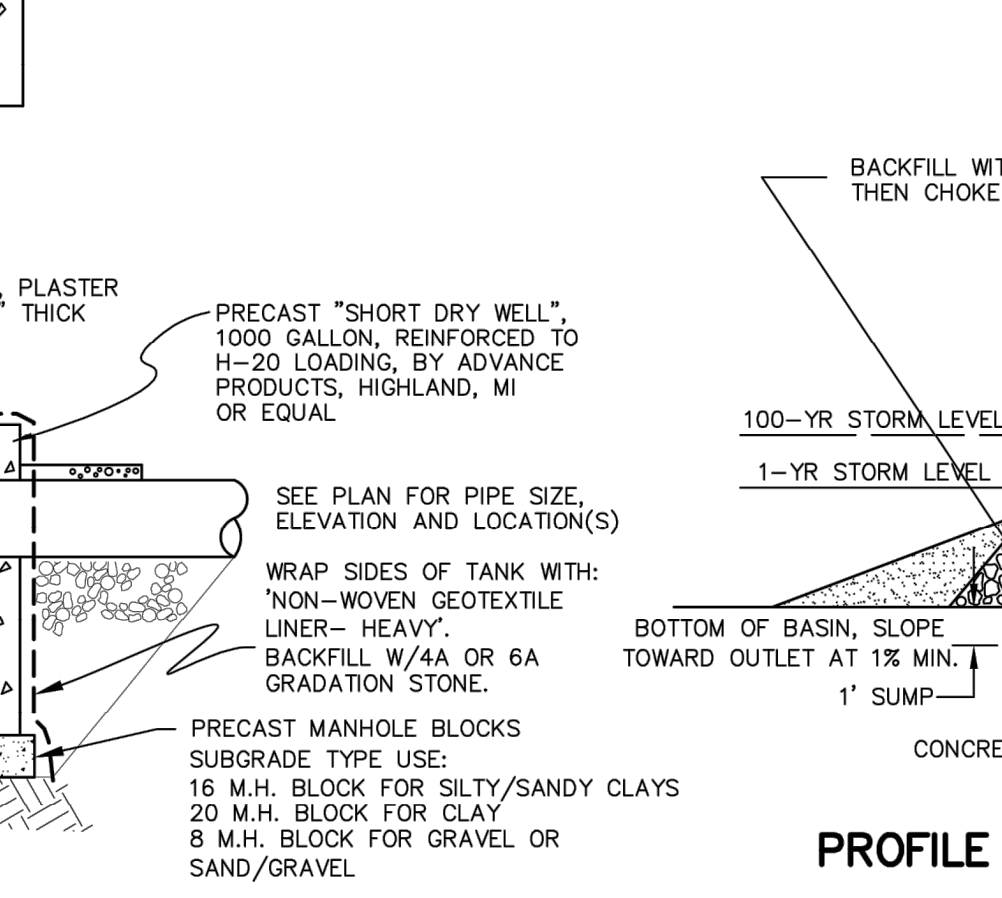
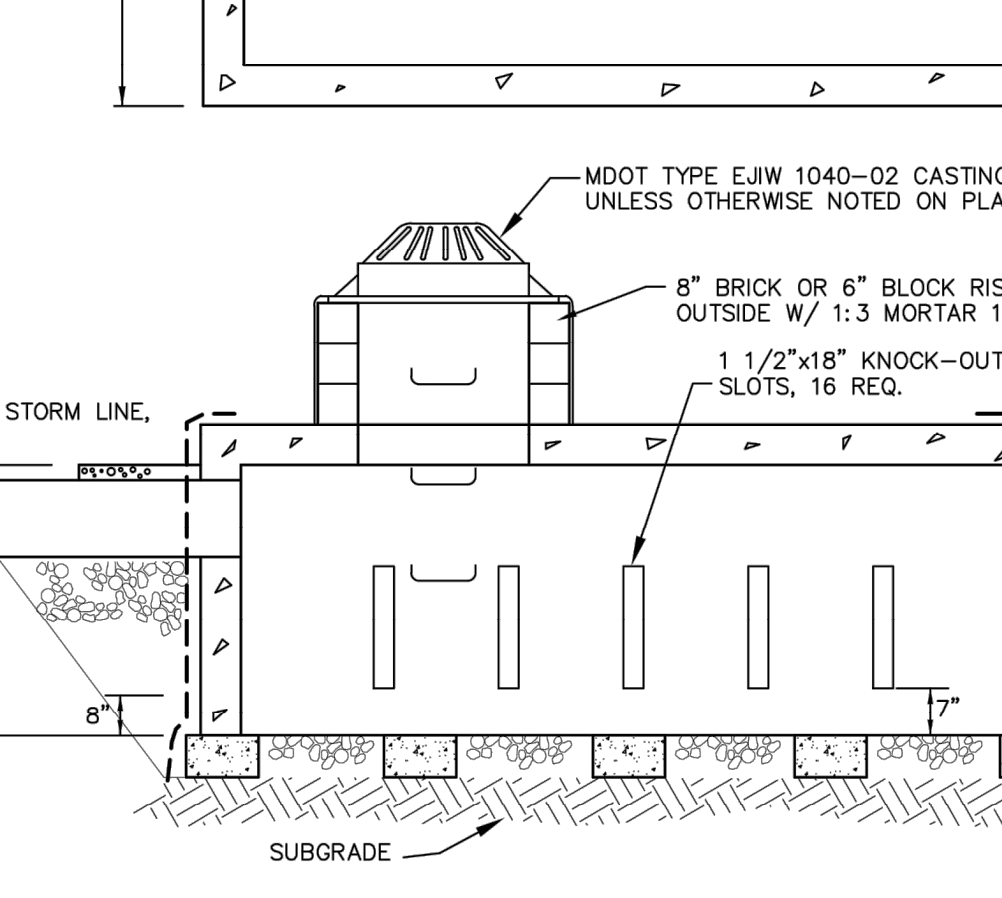
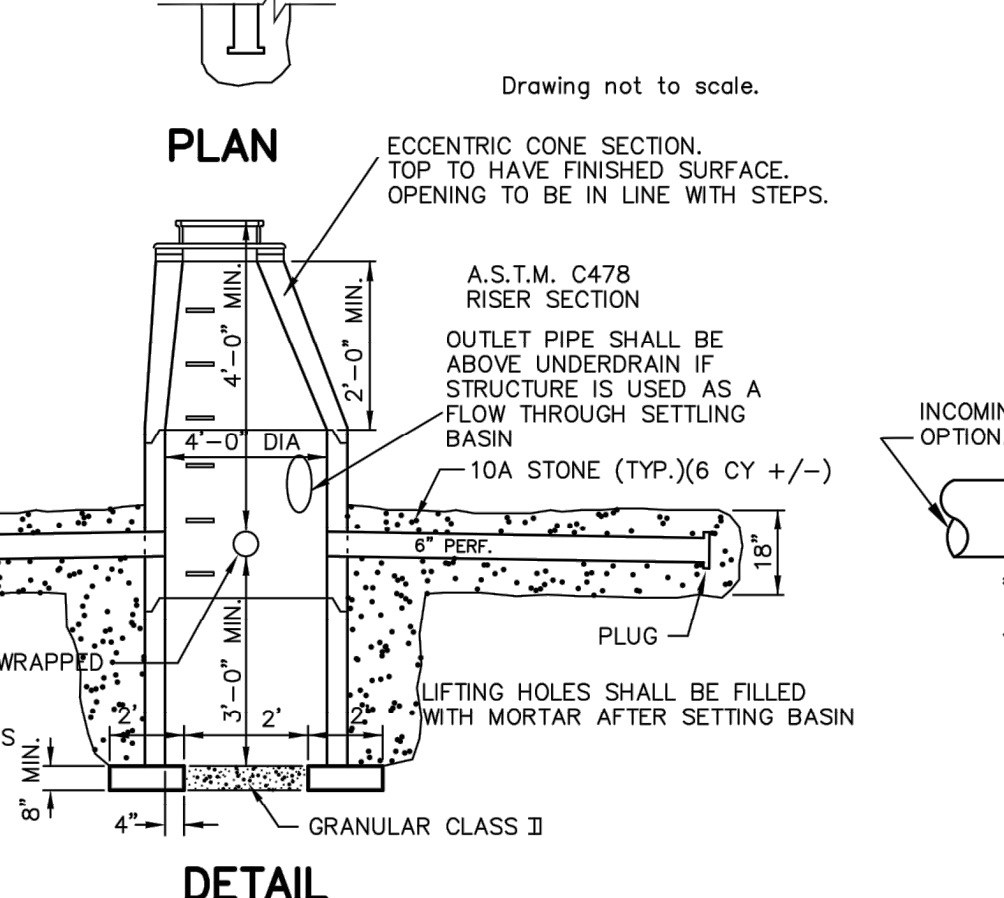
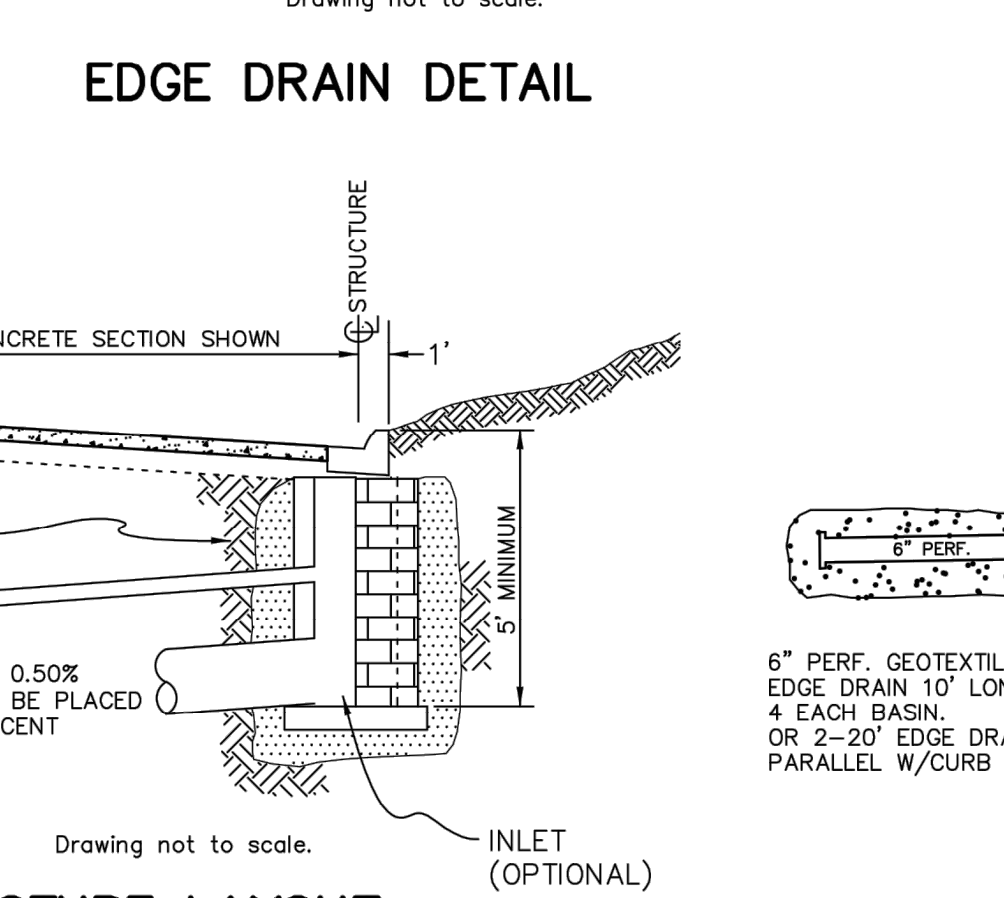
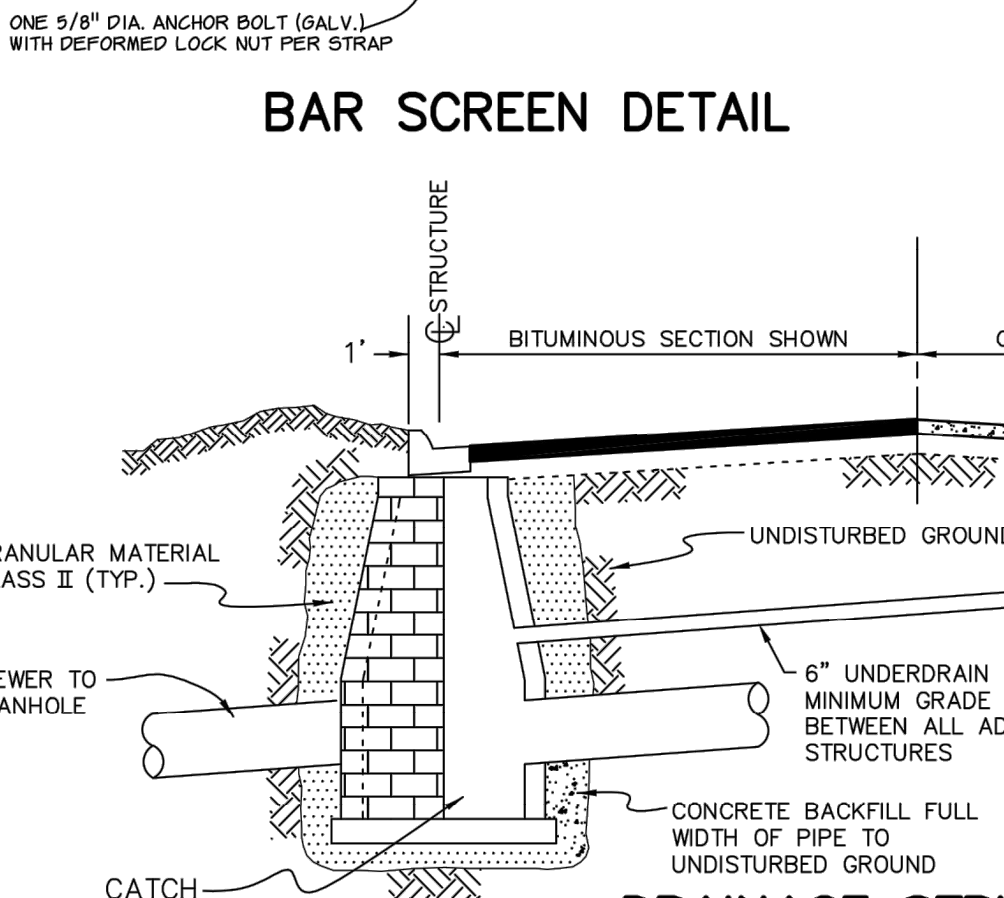
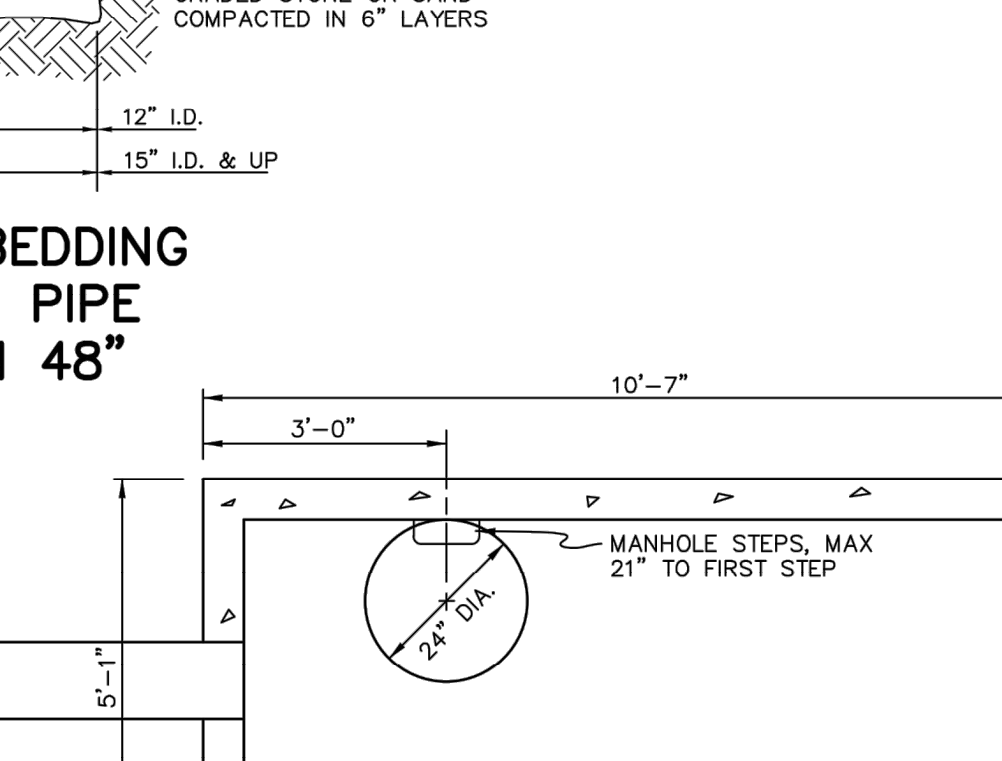
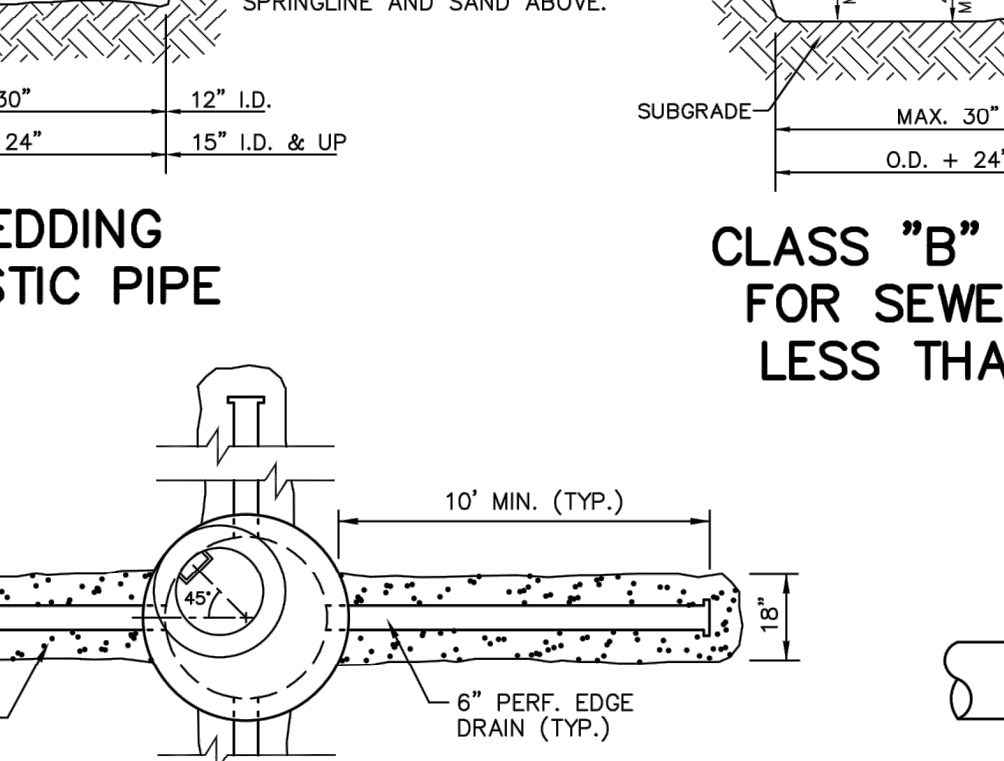
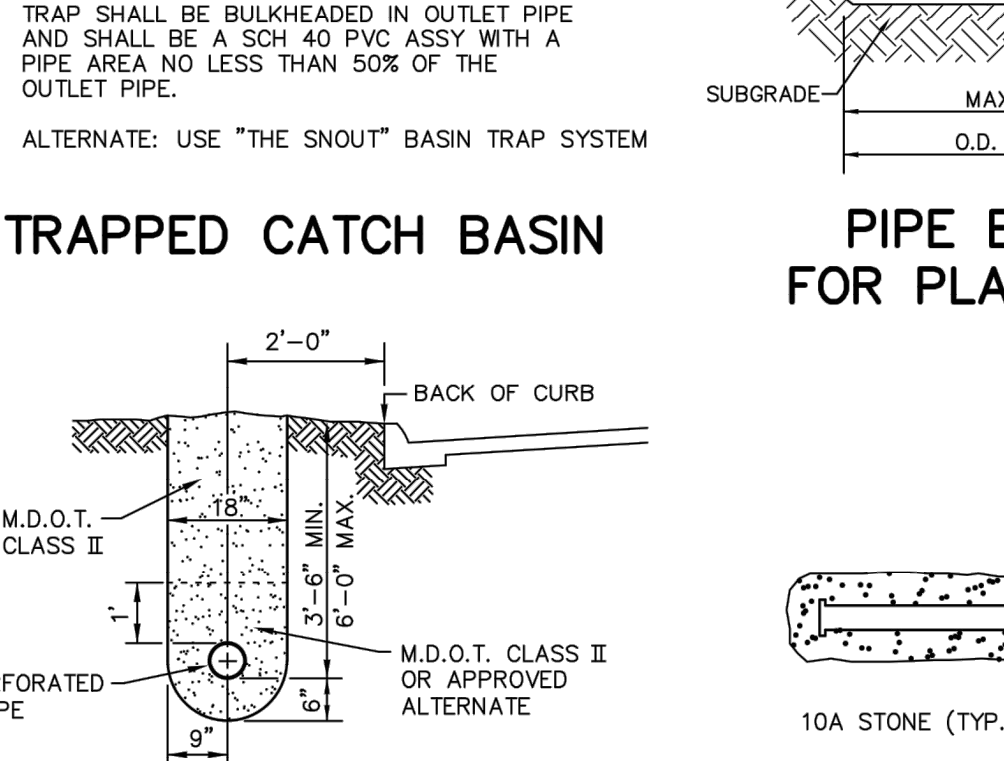
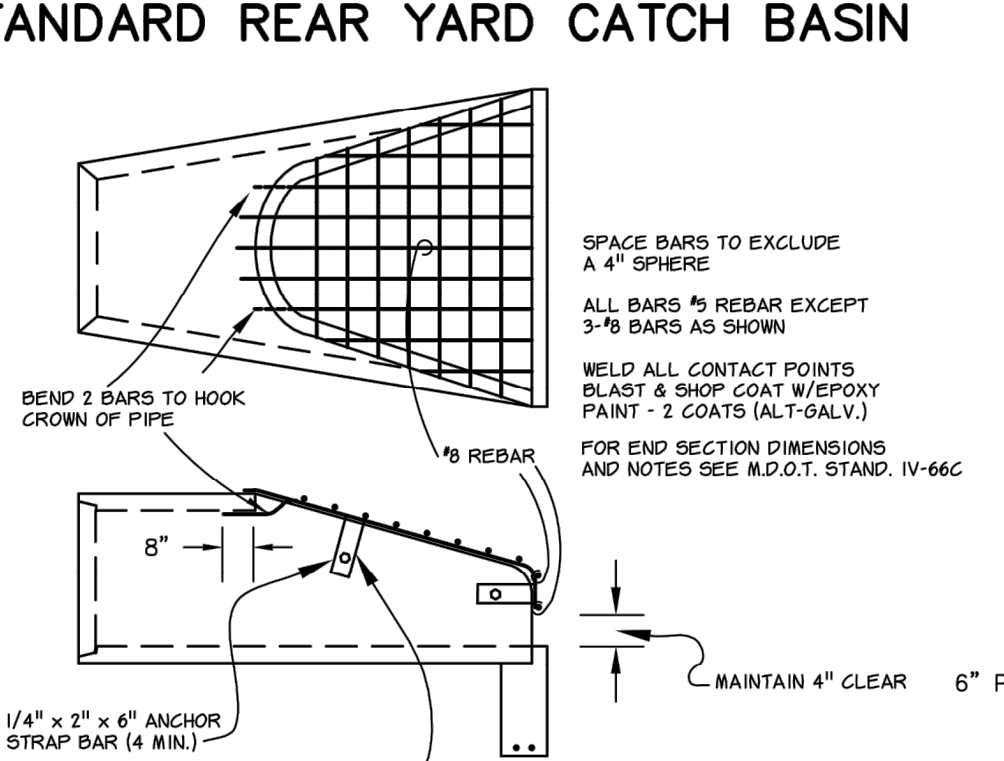
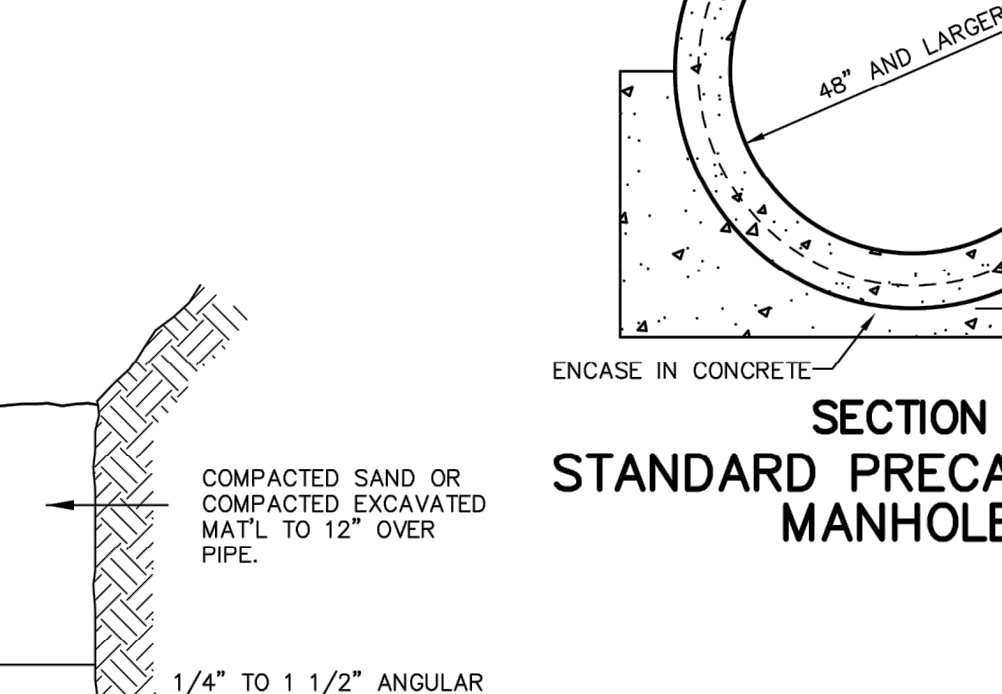
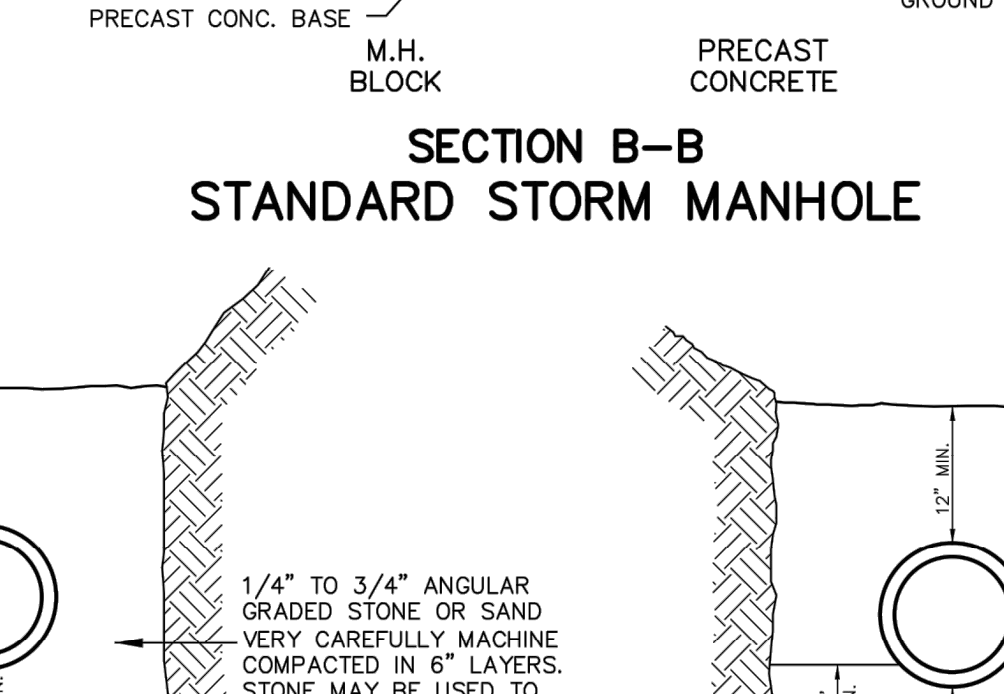
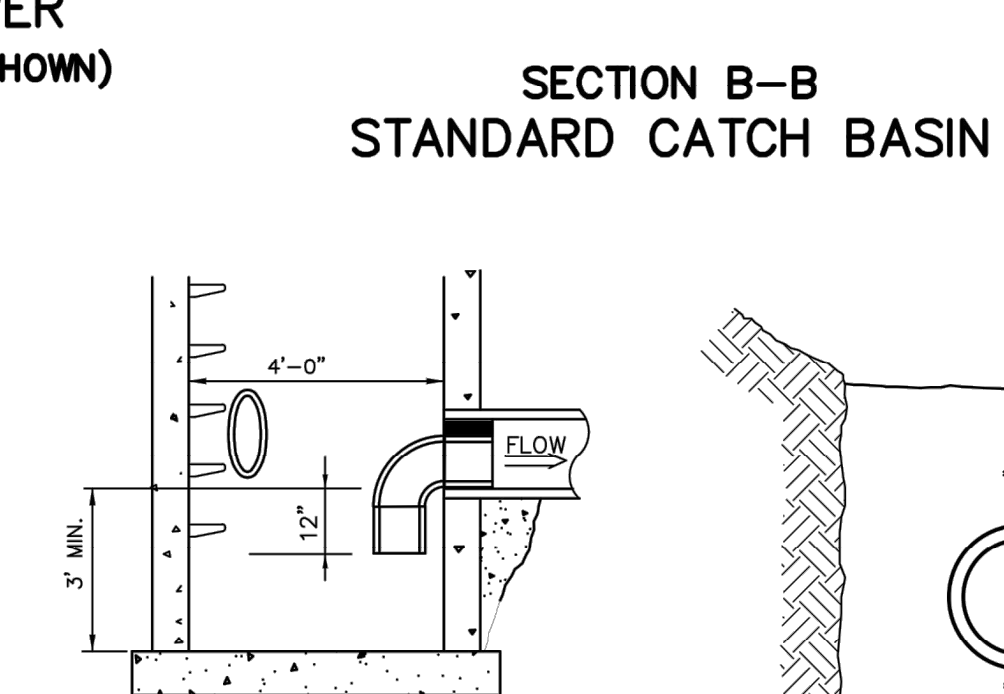
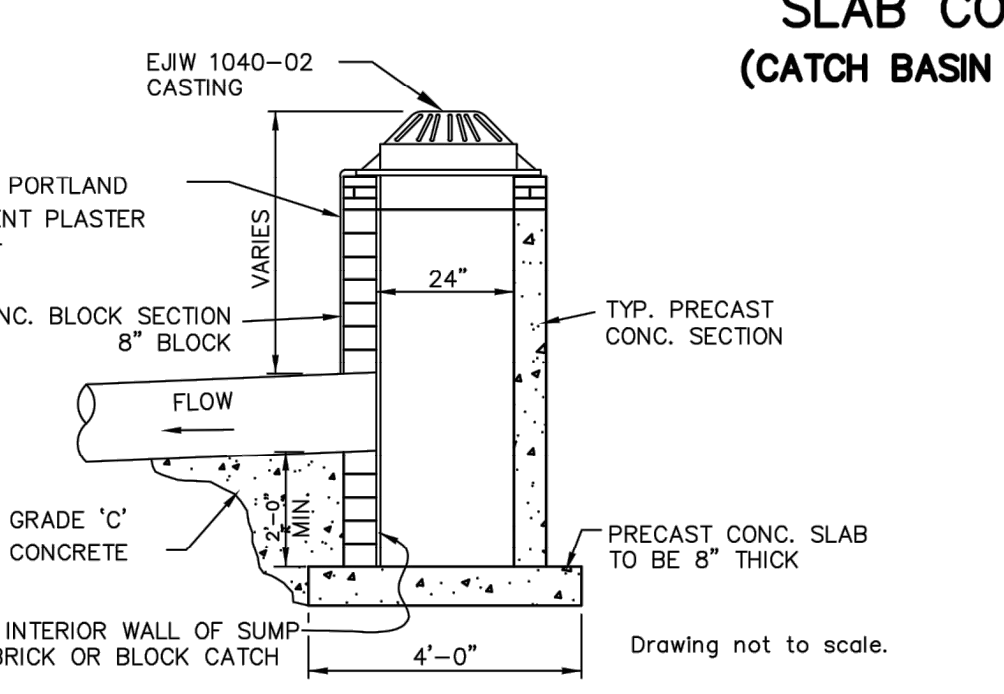
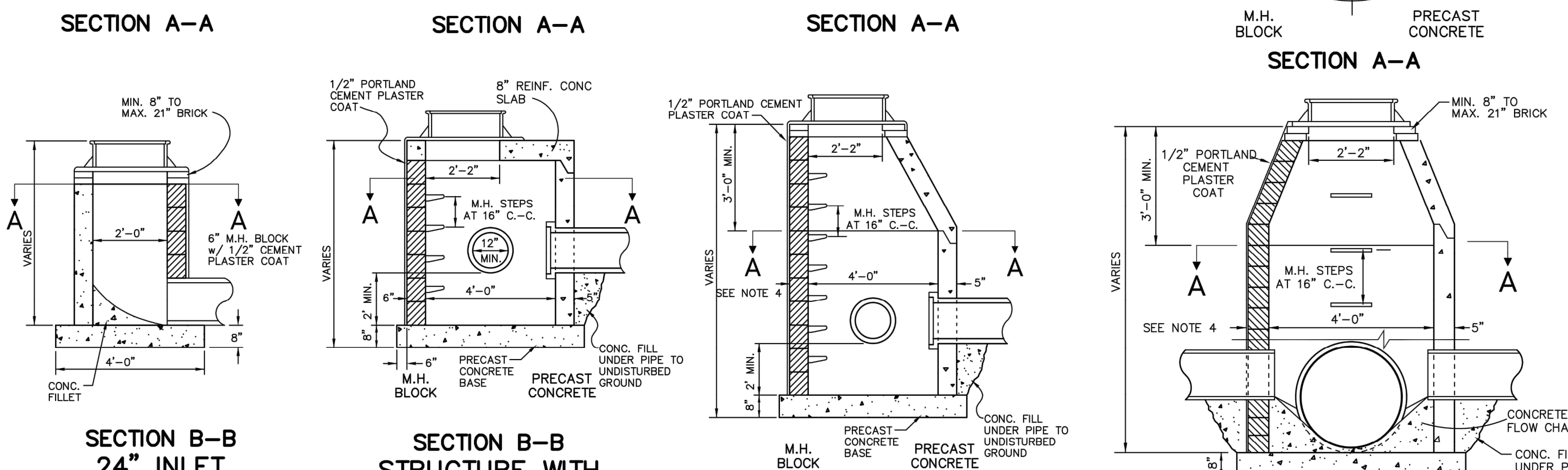
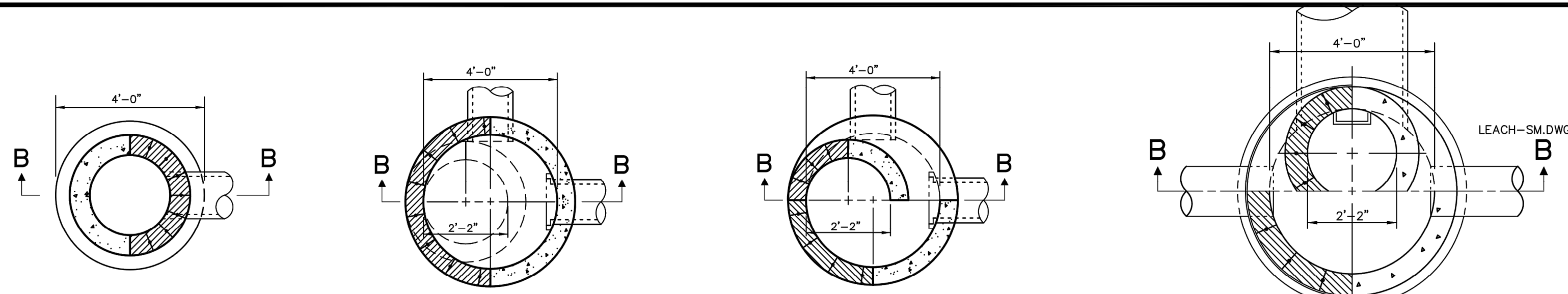
SHEET NO.

C-502

STORM SEWER NOTES

1. PRECAST CONC. RISERS SHALL MEET A.S.T.M. C478
2. DIAMETER OF CONC. BASE: I.D. + 2(WALL) + 8"
3. MANHOLE STEP SPACING SHALL MEET MISHA REQUIREMENTS. NO MORE THAN 21" FROM RIM TO FIRST STEP. MAX. 16" O.C. STEPS SHALL BE CAST POLYPROPYLENE REINFORCED WITH A 1/2" STEEL ROD.
4. WALL THICKNESS OF BLOCK STRUCTURES SHALL BE:
DEPTH THICKNESS
0-8' 8"
8-15' 8"
OVER 15' 12"
5. MINIMUM I.D. OF STRUCTURE FOR: 36" to 42" = 5'-0"
48" to 54" = 6'-0"
LARGER DIAMETER STRUCTURES MAY BE REQUIRED DEPENDING ON PIPING CONFIGURATION.
6. ALL LIFTING HOLES AND VOIDS IN INTERIOR JOINTS SHALL BE FILLED BY MORTAR.
7. THE FINGER DRAIN DETAIL SHALL BE USED AT ALL LOW POINT CATCH BASINS IN PAVEMENT AREAS. THE DETAIL MAY BE OMITTED WITH THE APPROVAL OF THE TOWNSHIP ENGINEER IN AREAS WITH VERY POROUS SOILS AND NO GROUNDWATER PROBLEMS.
8. PRECAST ONE PIECE BASES AND RISERS ARE ACCEPTABLE FOR INLETS, CATCH BASINS AND MANHOLES
9. FRAMES & COVERS WITH INLET CAPACITY (1.0 CFS/90 SQ IN) -TRAFFIC AND PARKING AREAS; MDOT "D" (EJW 5105) 1.9 CFS* -REAR YARD AND DITCH INLETS; (EJW 1040-02) 2.1 CFS* -MANHOLES; MDOT "A" (EJW 1060) -CURB AND GUTTER INLETS; MDOT "K" (EJW 7045) 1.8 CFS* -MOUNTABLE CURB & GUTTER; (EJW 7065) 2.2 CFS* *MAY VARY DUE TO MANUFACTURER CHANGES
10. CONTACT THE TOWNSHIP ENGINEER 48 HOURS PRIOR TO CONSTRUCTION TO SCHEDULE INSPECTION. FULL TIME INSPECTION WILL BE REQUIRED FOR ALL UNDERGROUND STORM SEWER CONSTRUCTION. PHONE (248) 334-9901
11. THE CONTRACTOR SHALL CONTACT MISS DIG 72 HOURS BEFORE CONSTRUCTION AT (800) 482-7171 TO LOCATE EXISTING UNDERGROUND UTILITIES.
12. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL HAVE IN HIS POSSESSION A CURRENT SOIL EROSION CONTROL PERMIT AS ISSUED BY WHITE LAKE TOWNSHIP.
13. A 2' DEEP SUMP SHALL BE USED IN ANY STRUCTURE SUBJECT TO A WATER DROP GREATER THAN 2.0' FROM AN INLET PIPE.
14. ALLOWABLE STORM SEWER PIPE TYPES:
-12" AND UP: RCP ASTM C-76 MIN CLASS 3, MIN CLASS 4 UNDER TRAFFIC AREAS, RUBBER JOINT
-6" TO 15": SCH 40 PVC OR SDR 23.5 PVC WITH RUBBER OR GLUE JOINT
-6" TO 48": SMOOTH BORE CORRUGATED HIGH DENSITY POLYETHYLENE WITH NEOPRENE LINED JOINTS OR BETTER
15. THE MINIMUM PIPE SIZE IN PUBLIC RIGHT-OF-WAY OR EASEMENTS AND FOR PIPES CARRYING OFF-SITE STORM WATER SHALL BE 12"
16. ALL PIPE ENDS NOT WITHIN A STRUCTURE SHALL HAVE A CONCRETE OR METAL FLARE END SECTION (FES) WITH A BAR SCREEN ON PIPES 18" AND LARGER EXCEPT THOSE WITHIN A SECURE FENCED AREA NEED NO BAR SCREEN.
17. ALL DRAINAGE STRUCTURES WITHIN THE ROAD SHALL BE SEALED WITH WRAPPED GEOTEXTILE PER ROAD STANDARDS

PIPE DIA.	"D"	"E"	"F"	S.Y.
12"	5'-0"	6'-6"	3'-0"	4
15"	5'-0"	7'-0"	3'-0"	4
18"	5'-0"	7'-6"	3'-6"	4
21"	5'-6"	8'-0"	4'-0"	5
24"	6'-0"	8'-6"	4'-6"	6
27"	6'-6"	9'-0"	5'-0"	7
30"	7'-0"	9'-6"	5'-6"	8
33"	7'-6"	10'-3"	5'-6"	9
36"	8'-0"	10'-9"	6'-0"	10
42"	9'-0"	11'-9"	6'-6"	12
48"	10'-0"	13'-0"	7'-0"	14



DRAWN: CAD
DESIGN: OA
CHECKED: -

REVISIONS	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE
	FIRST ISSUE		08/16/95	REVISE		10-03-02	REVISE		06-01-07
	ADD SO-1		06-17-96	REVISE		12-17-03	REVISE		04/30/13
	NEW BAR GRATE		11-03-97	SEC REFERENCE		05-17-05			

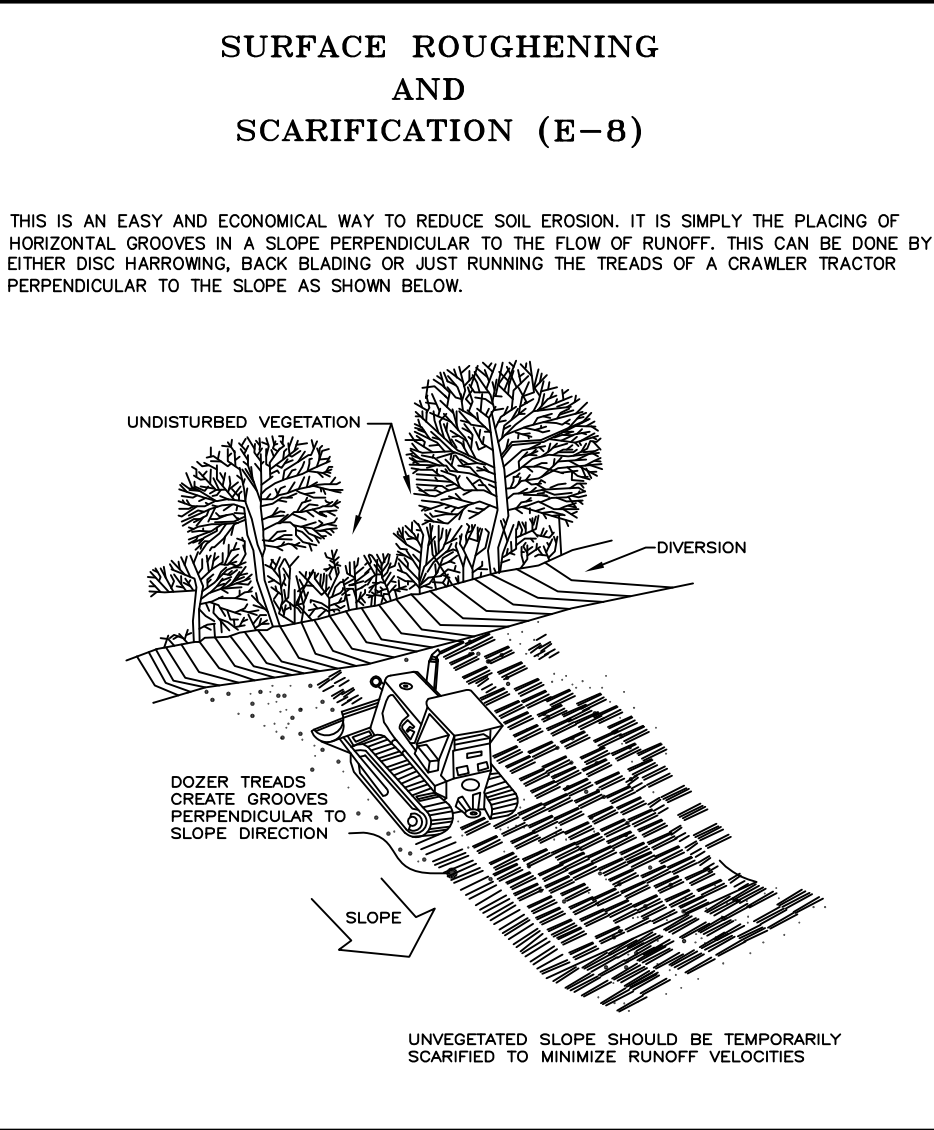
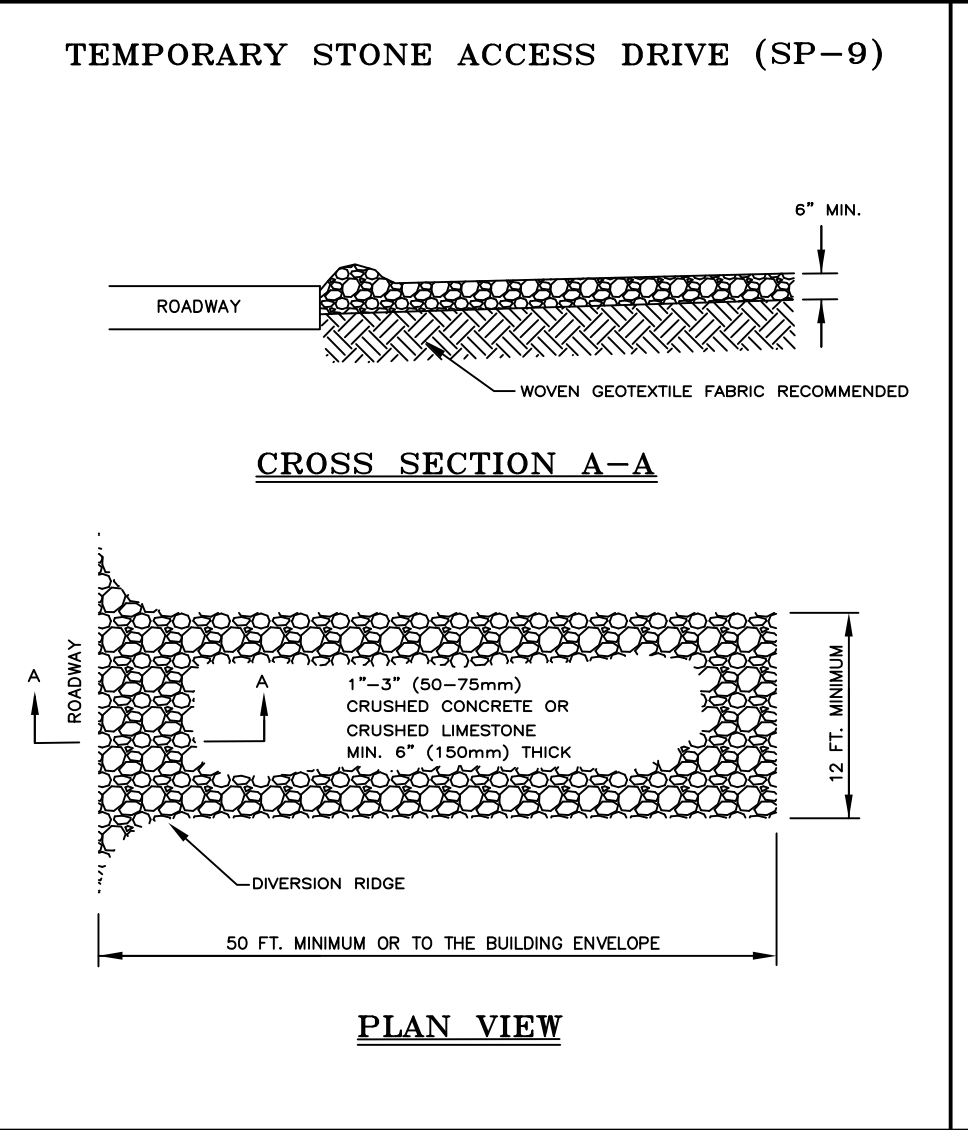
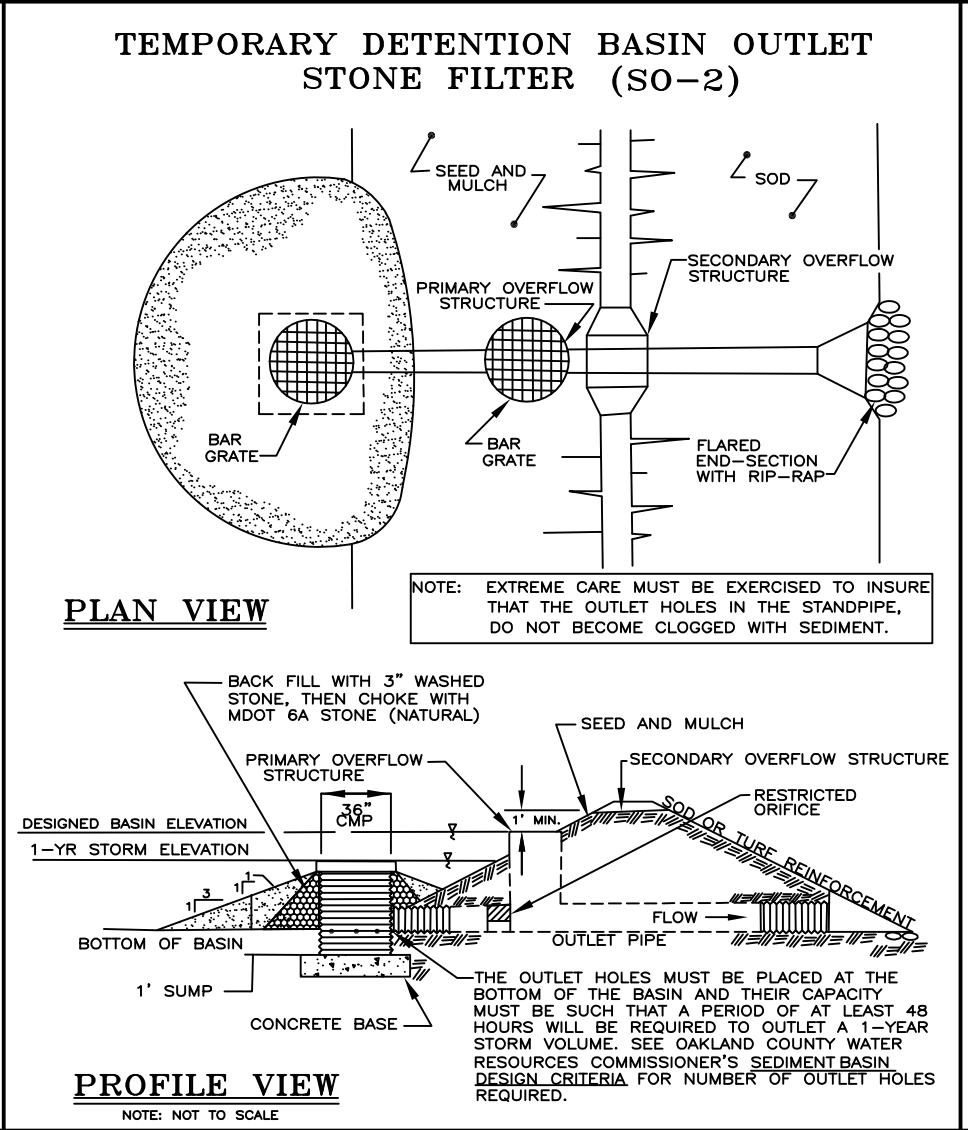
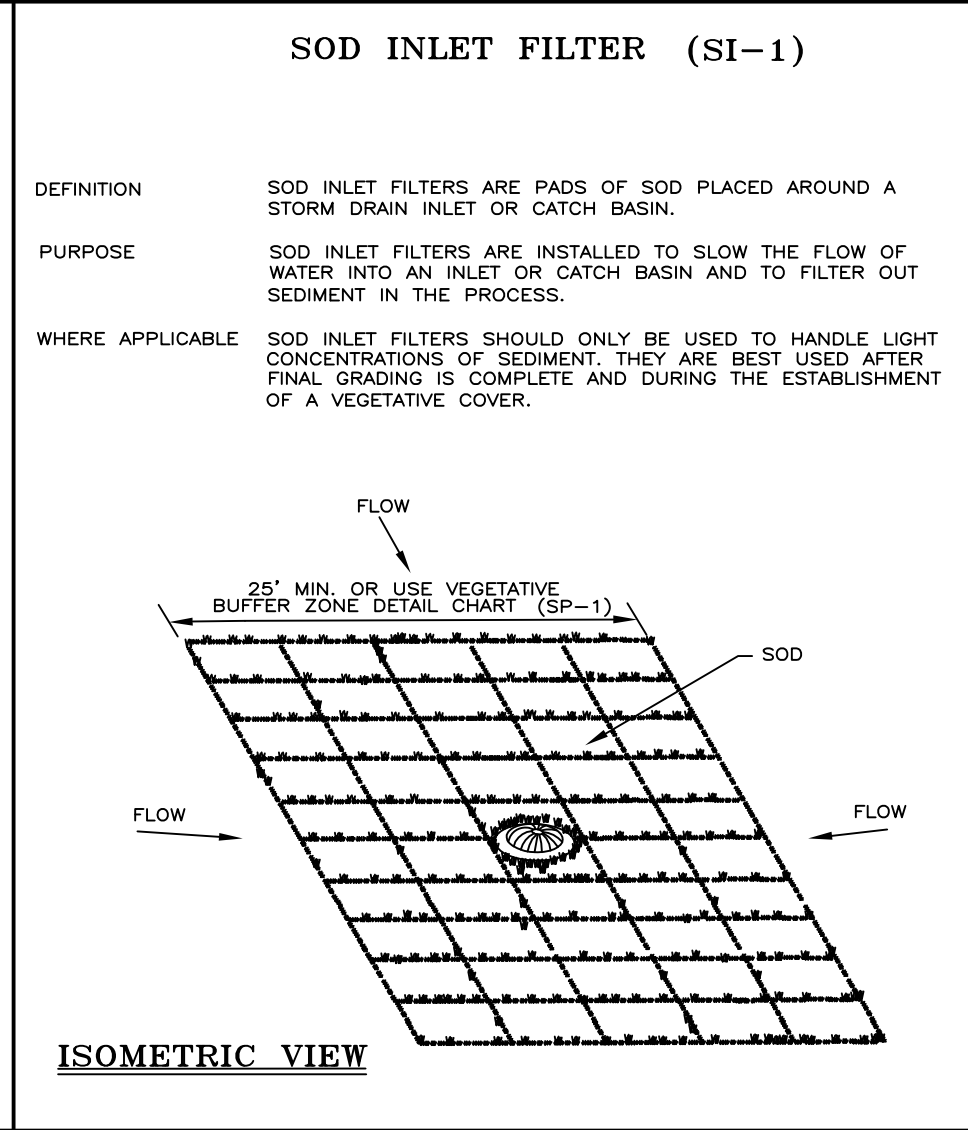
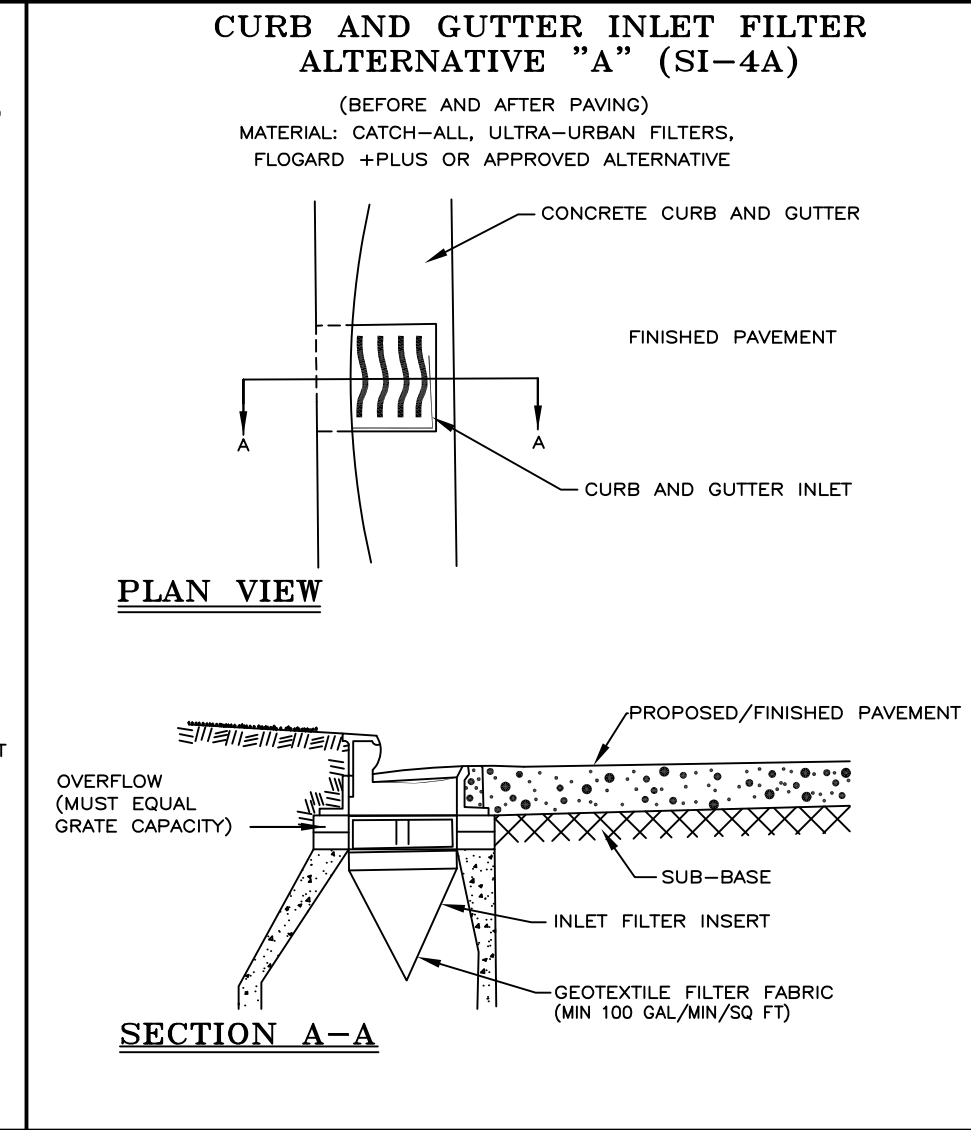
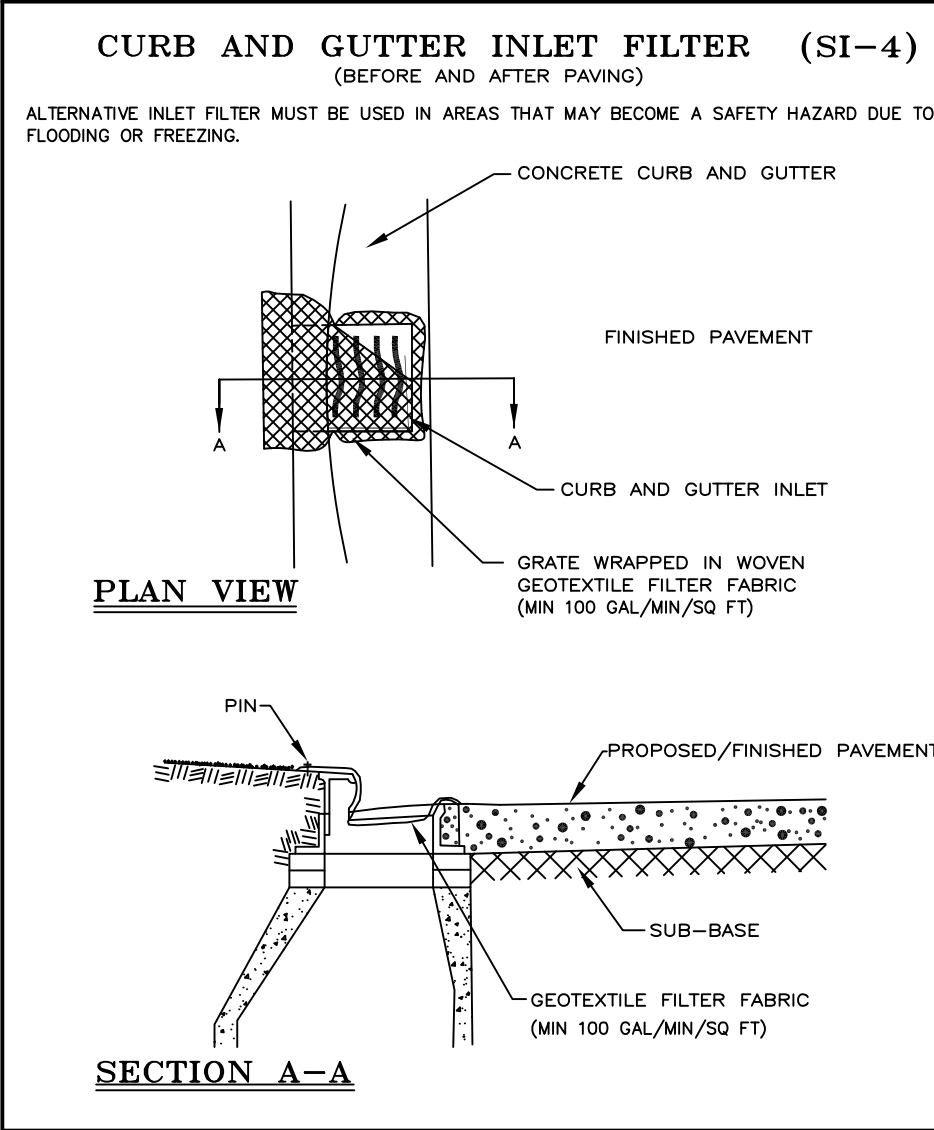
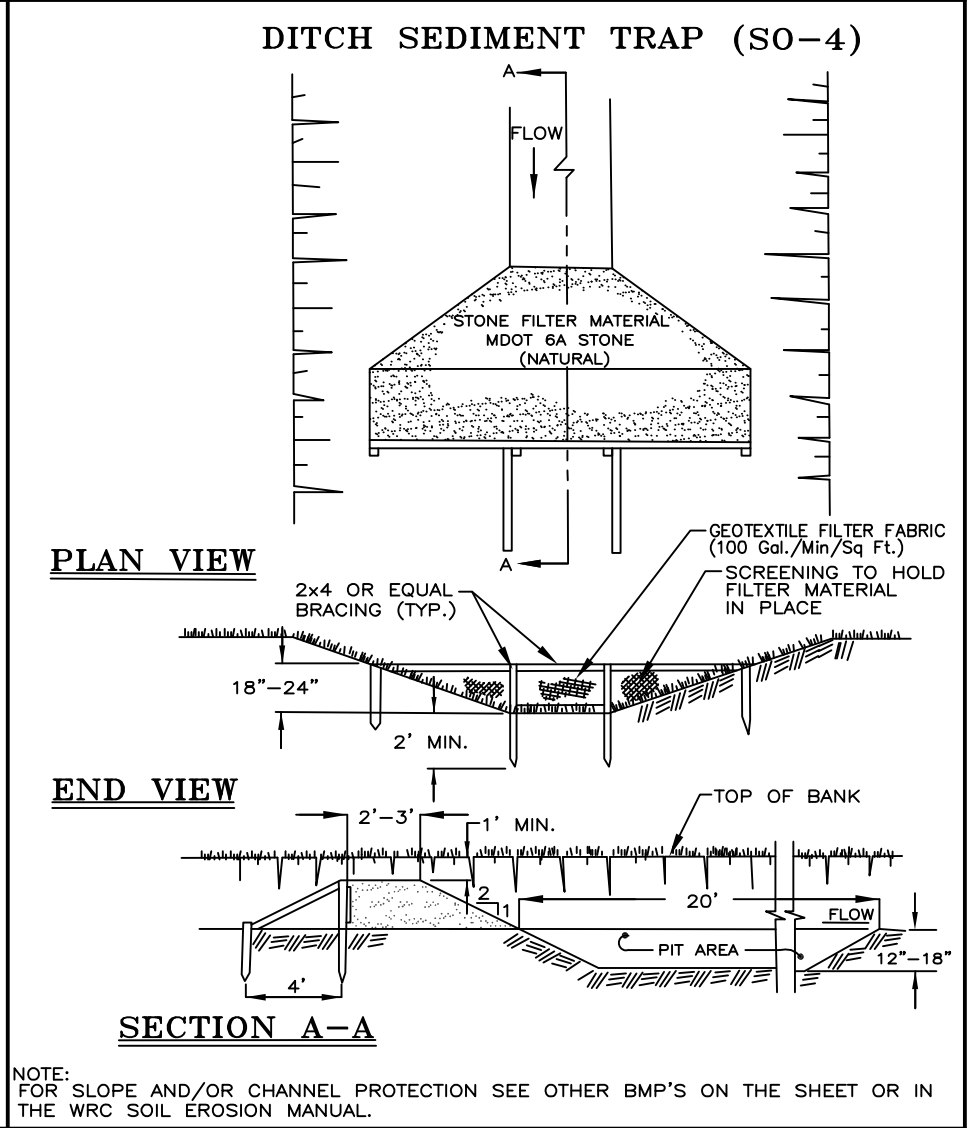
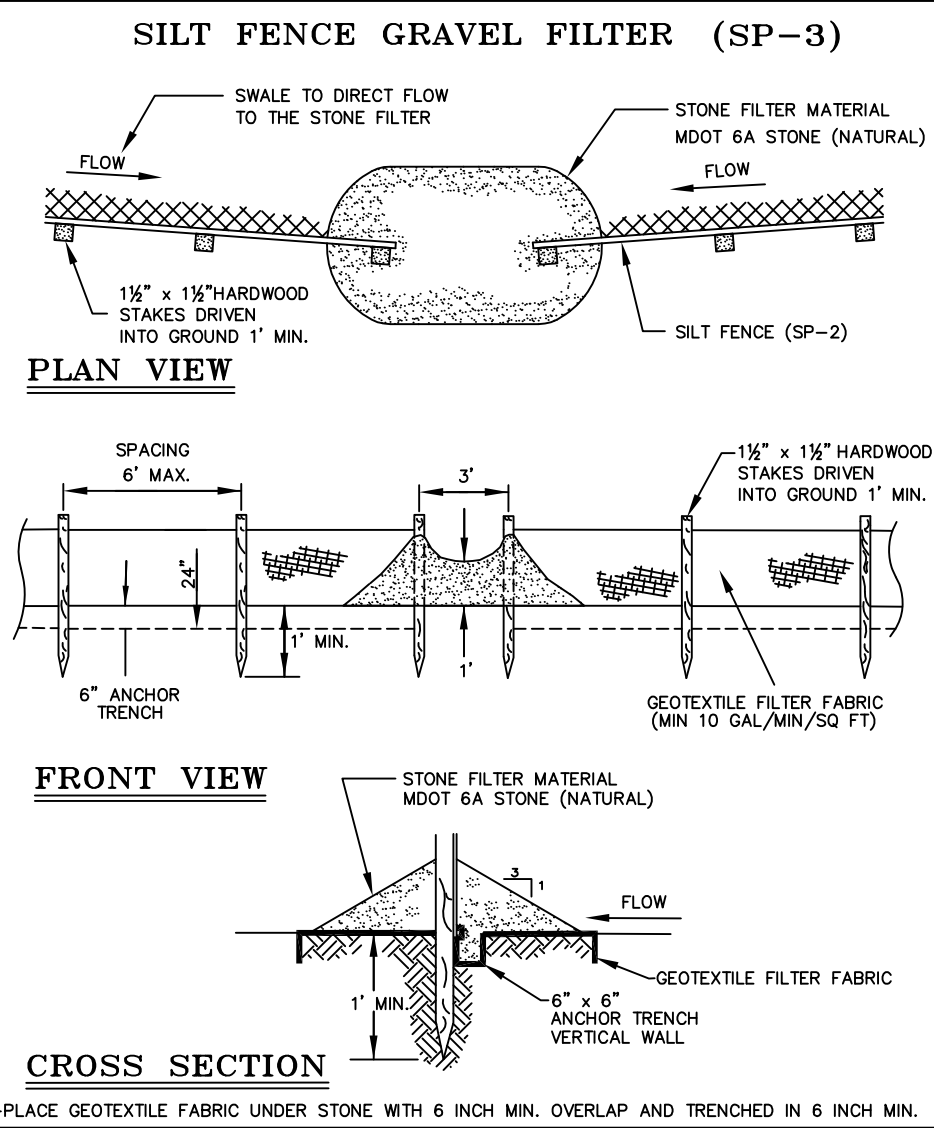
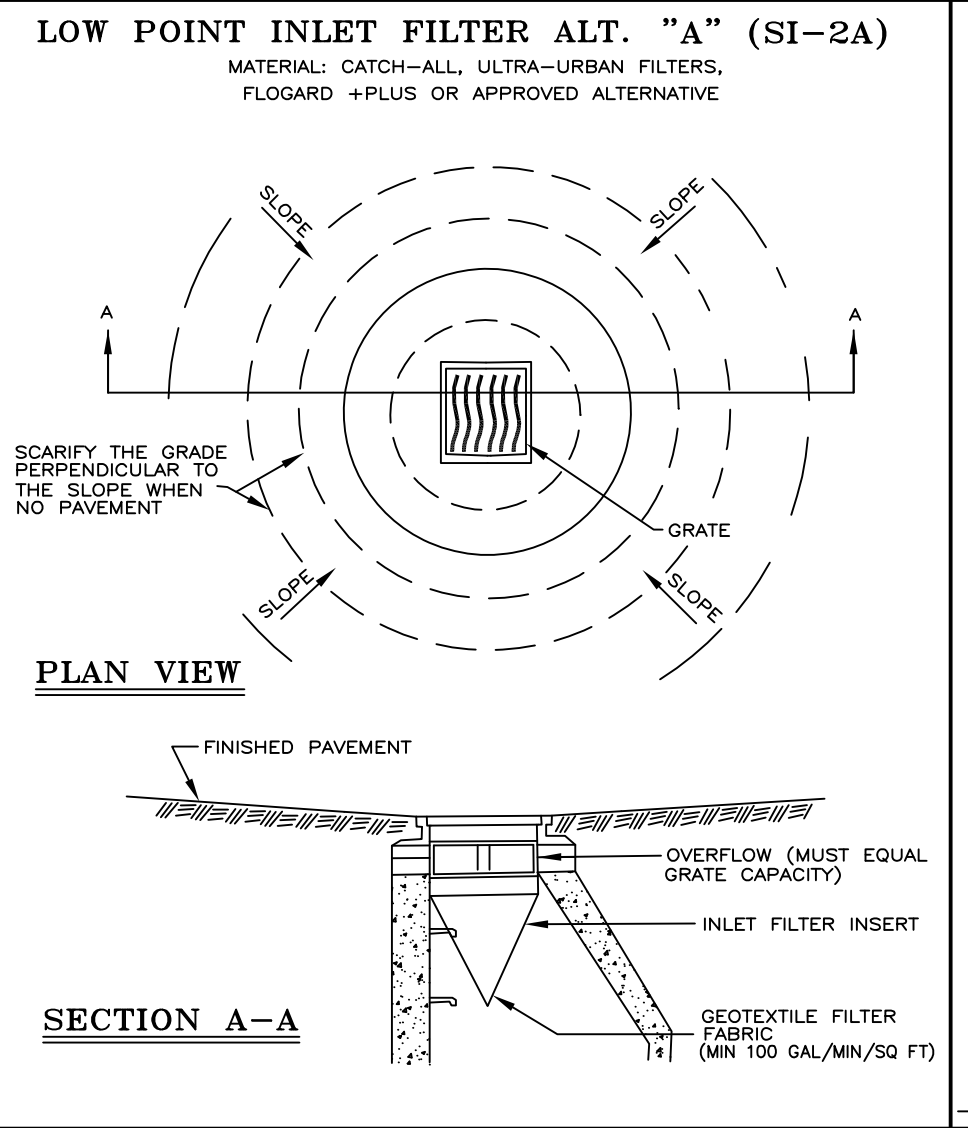
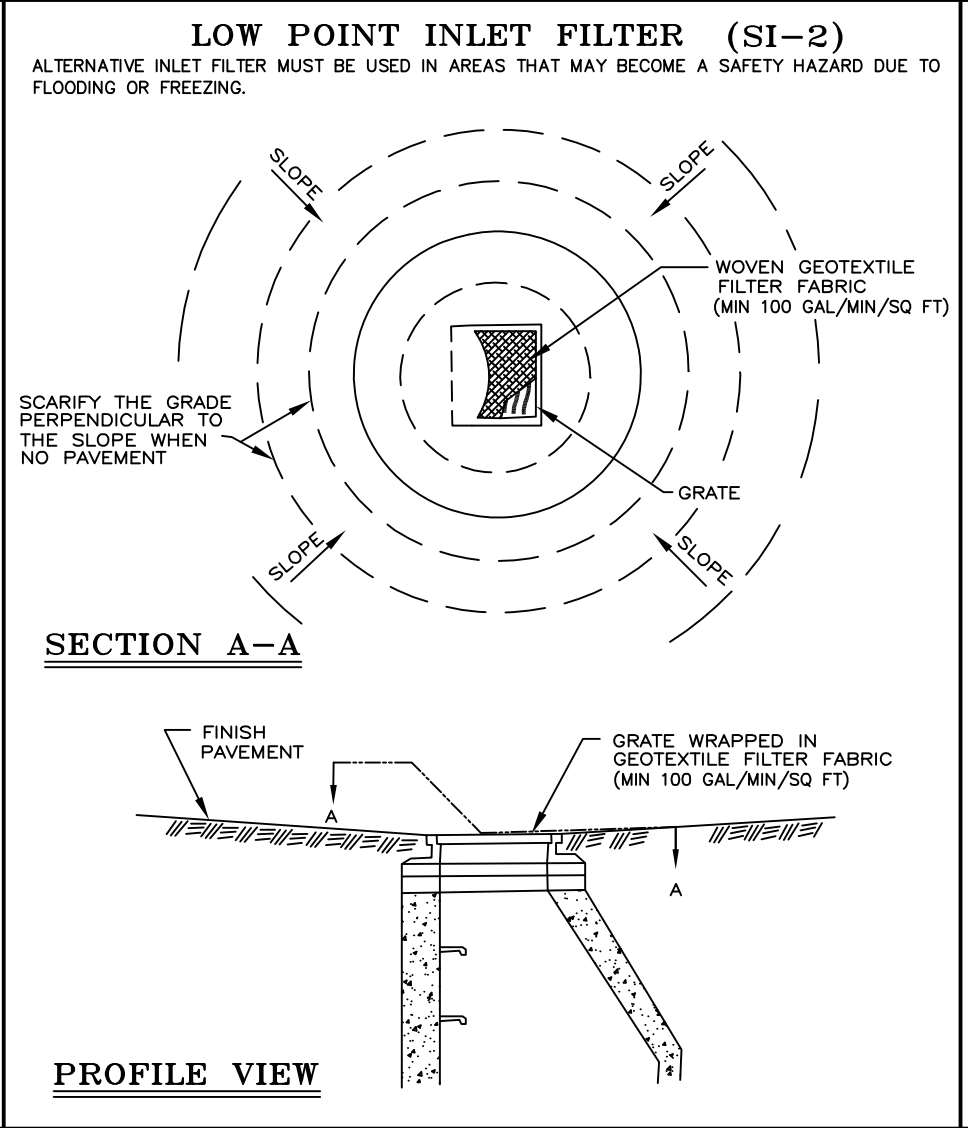
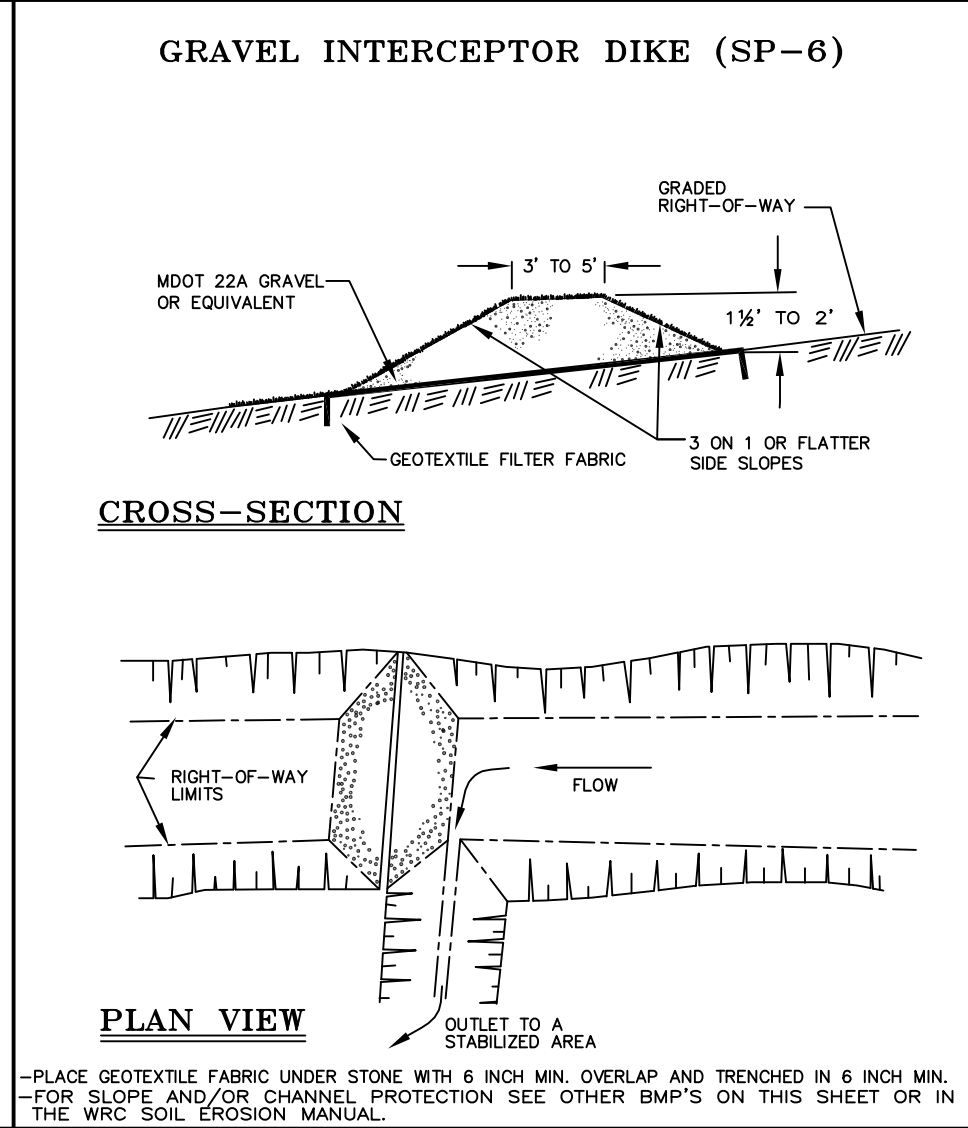
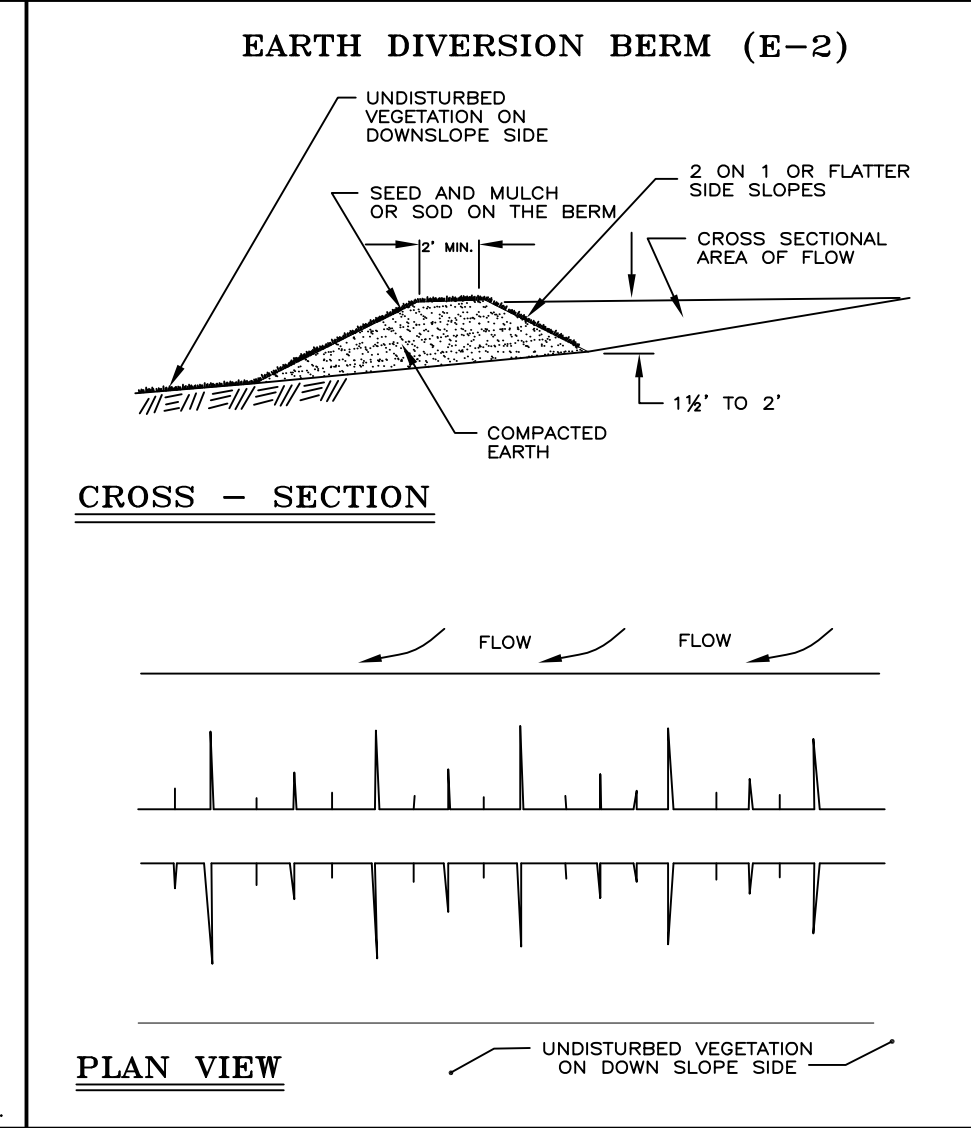
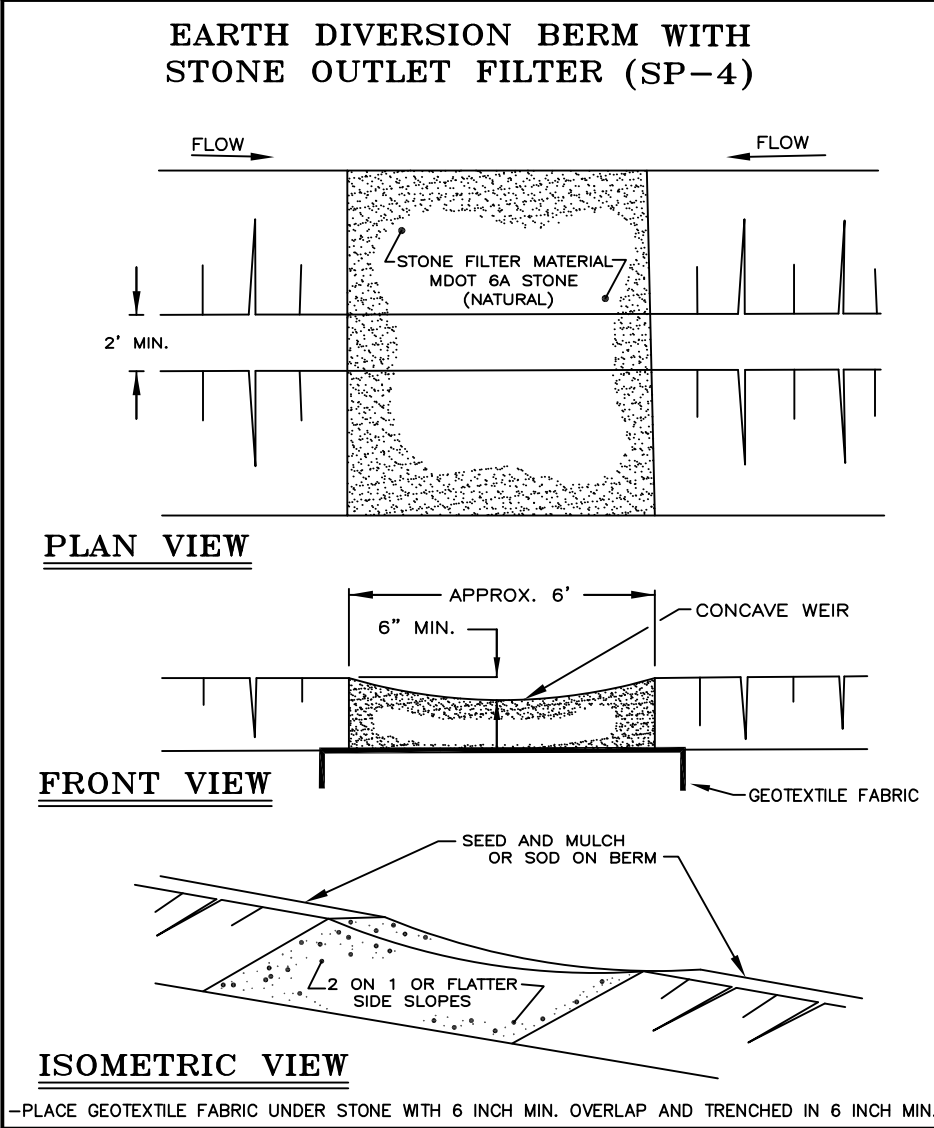
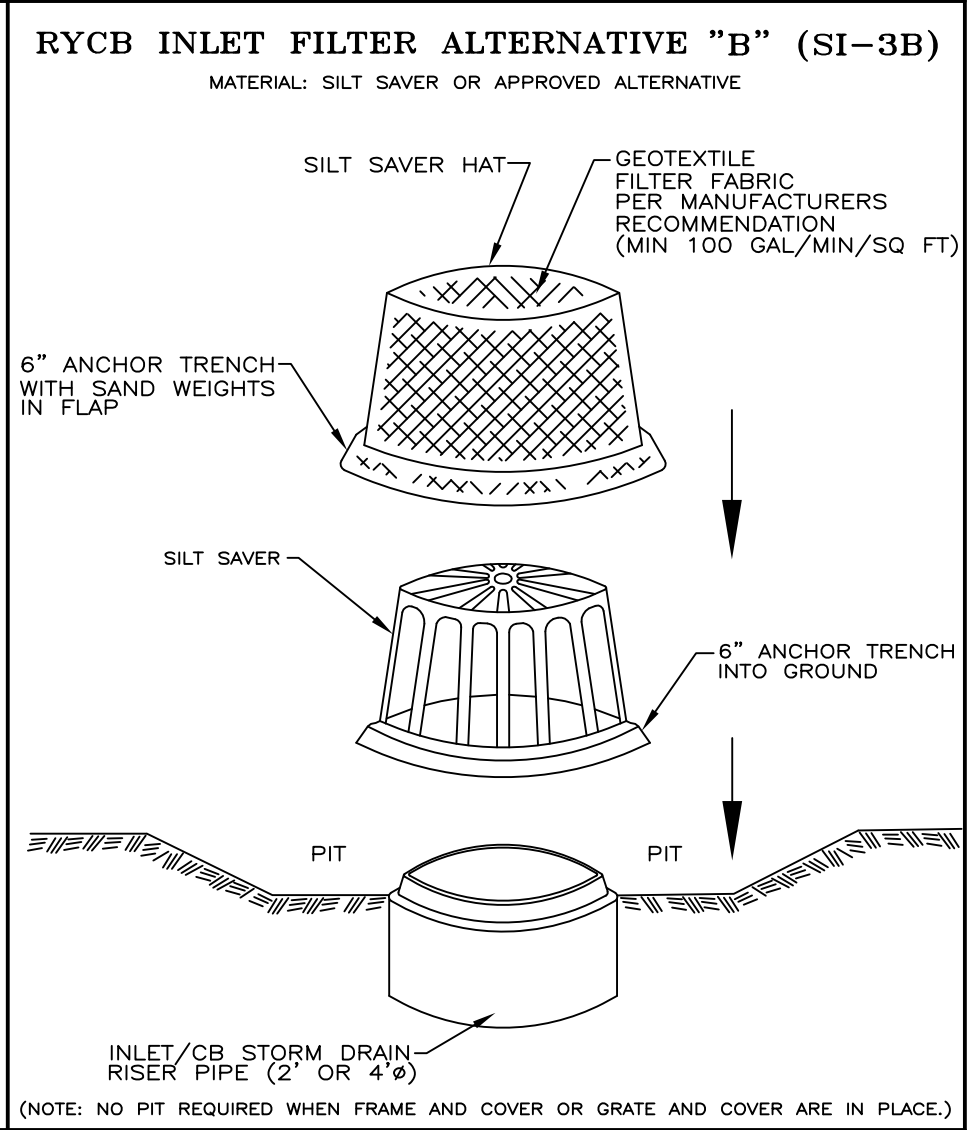
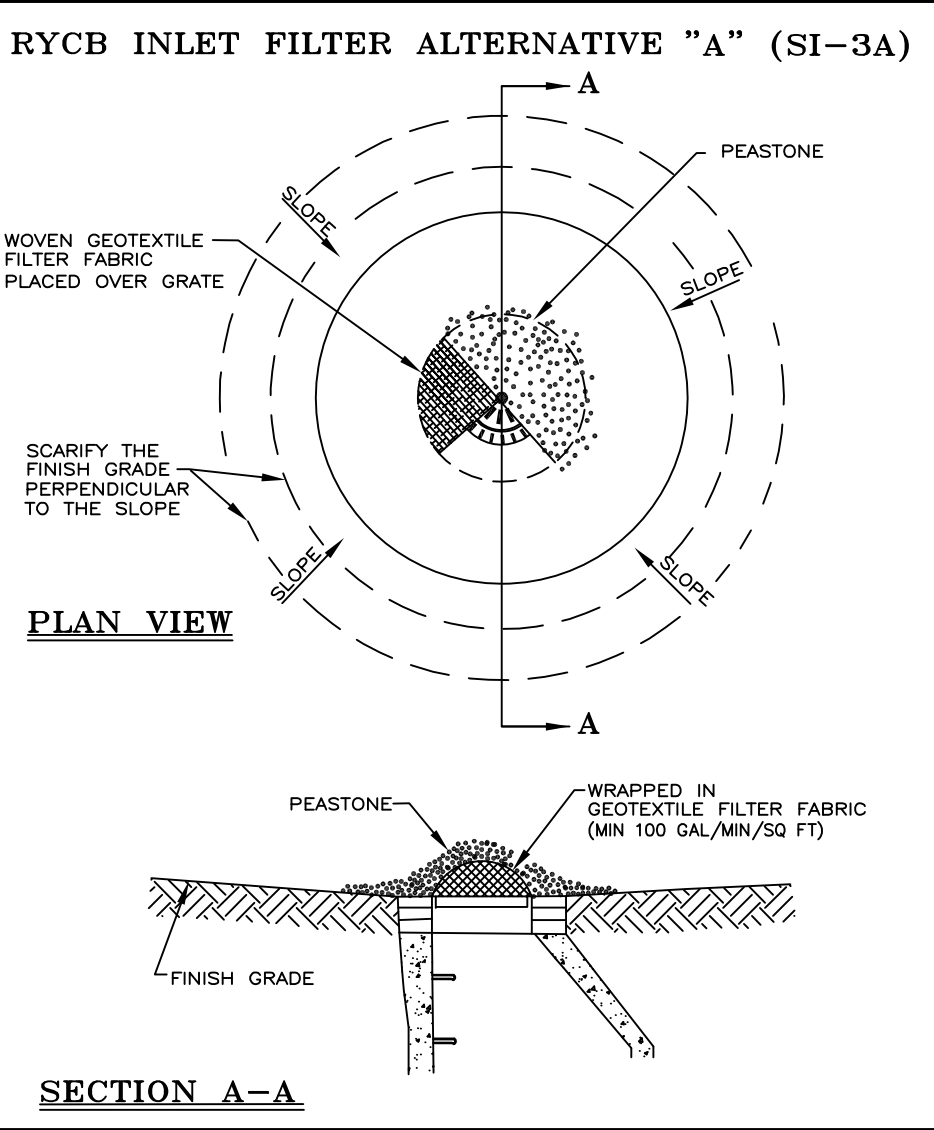
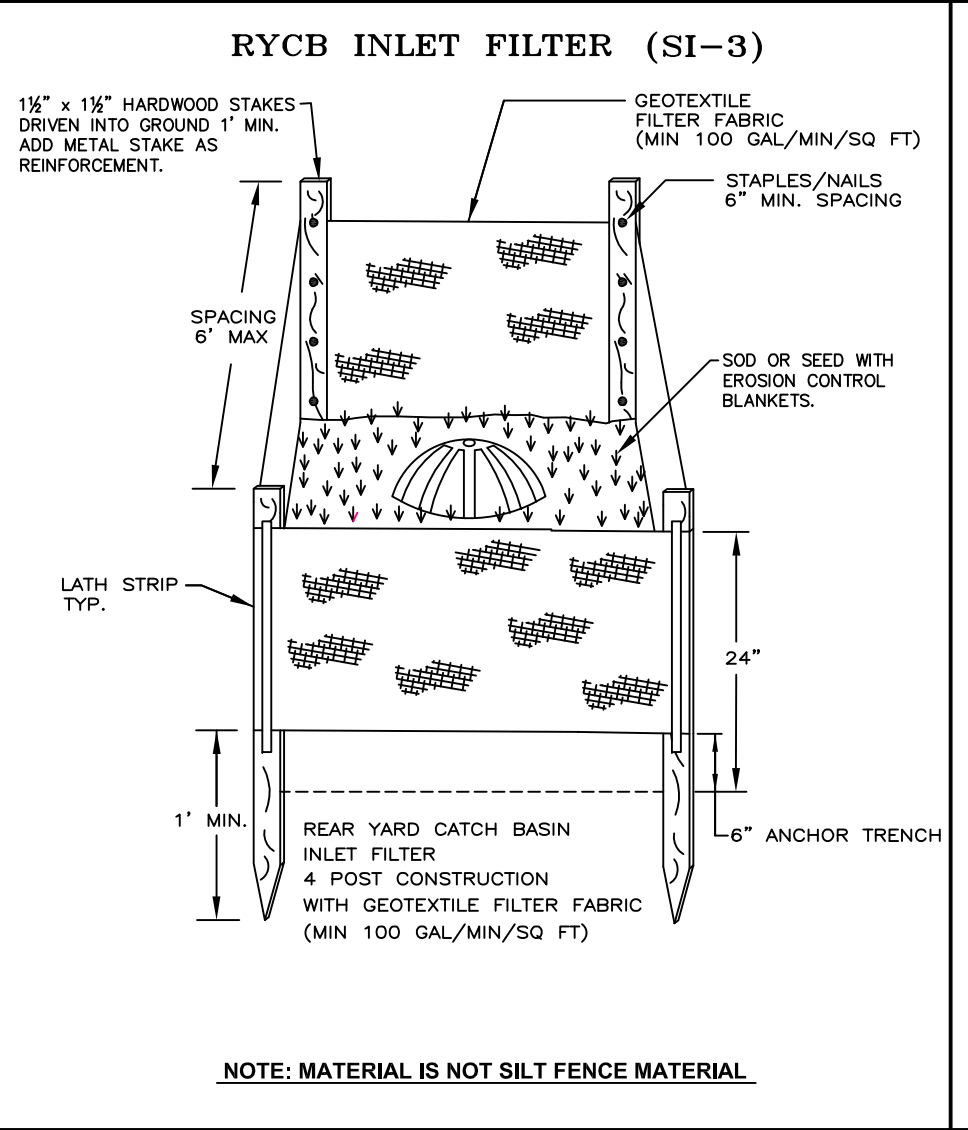
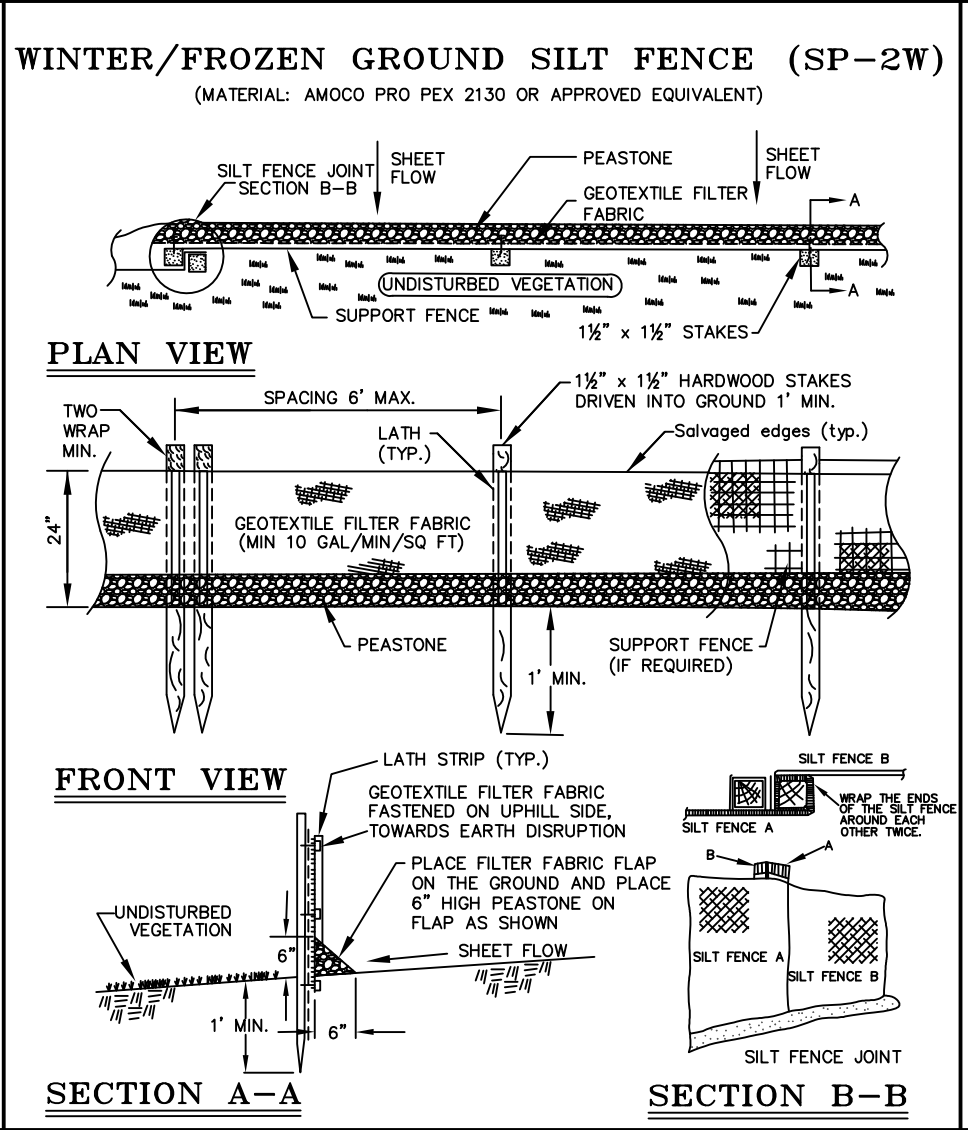
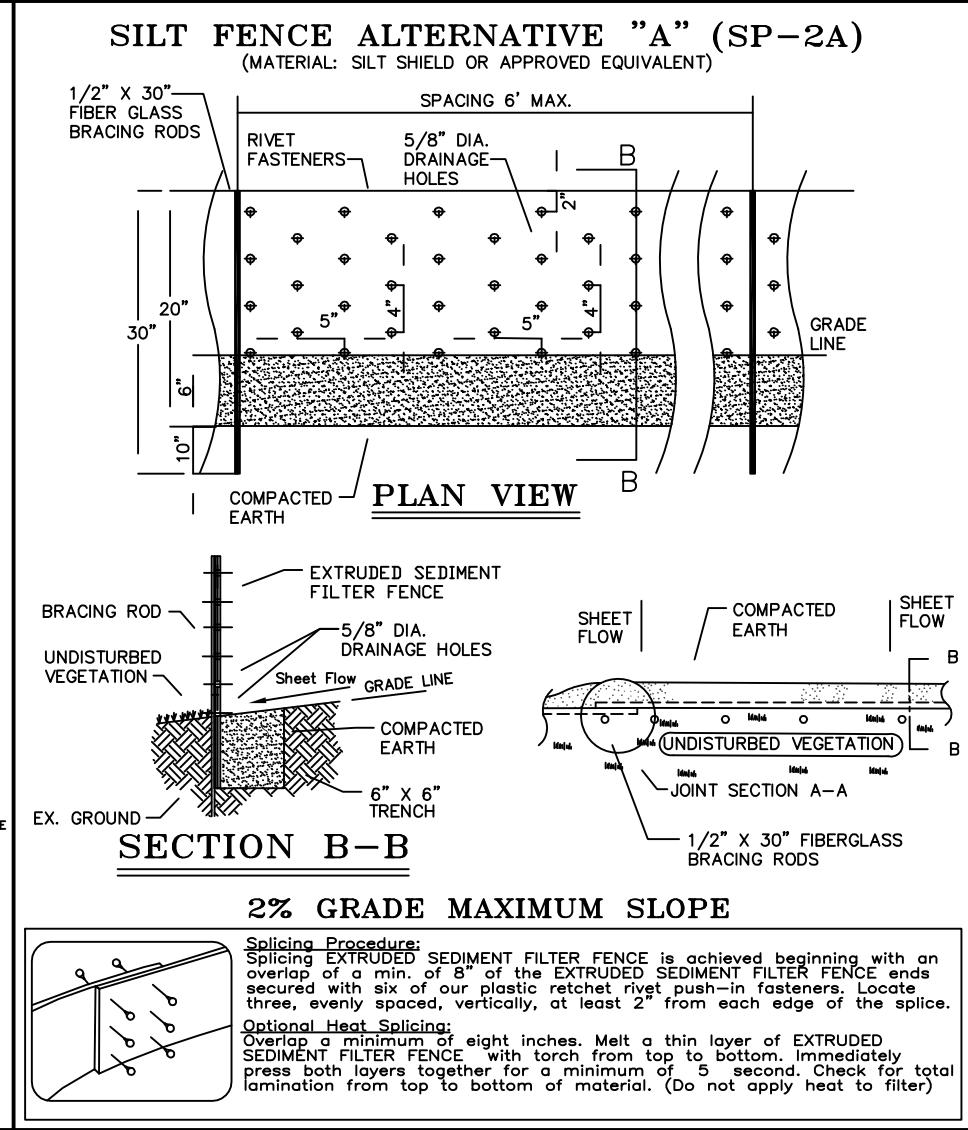
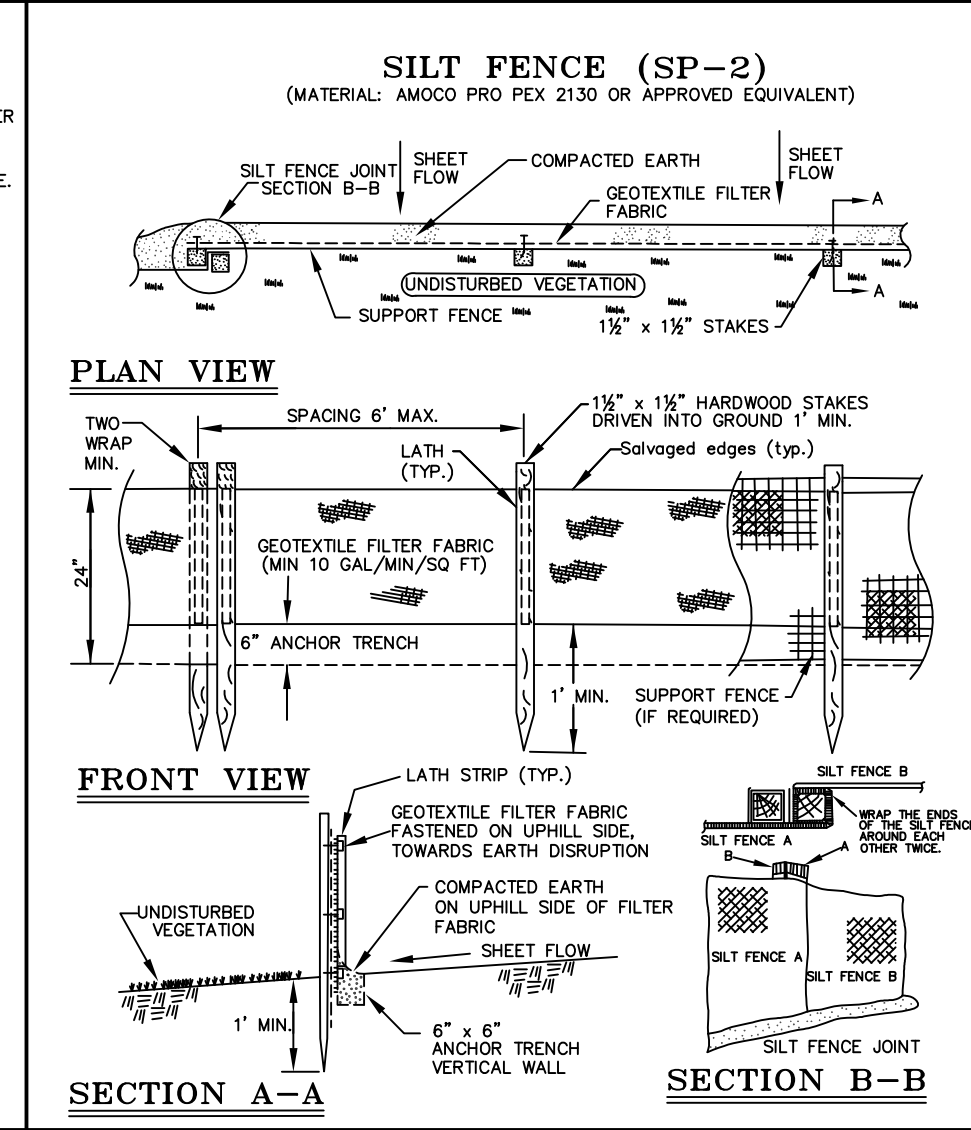
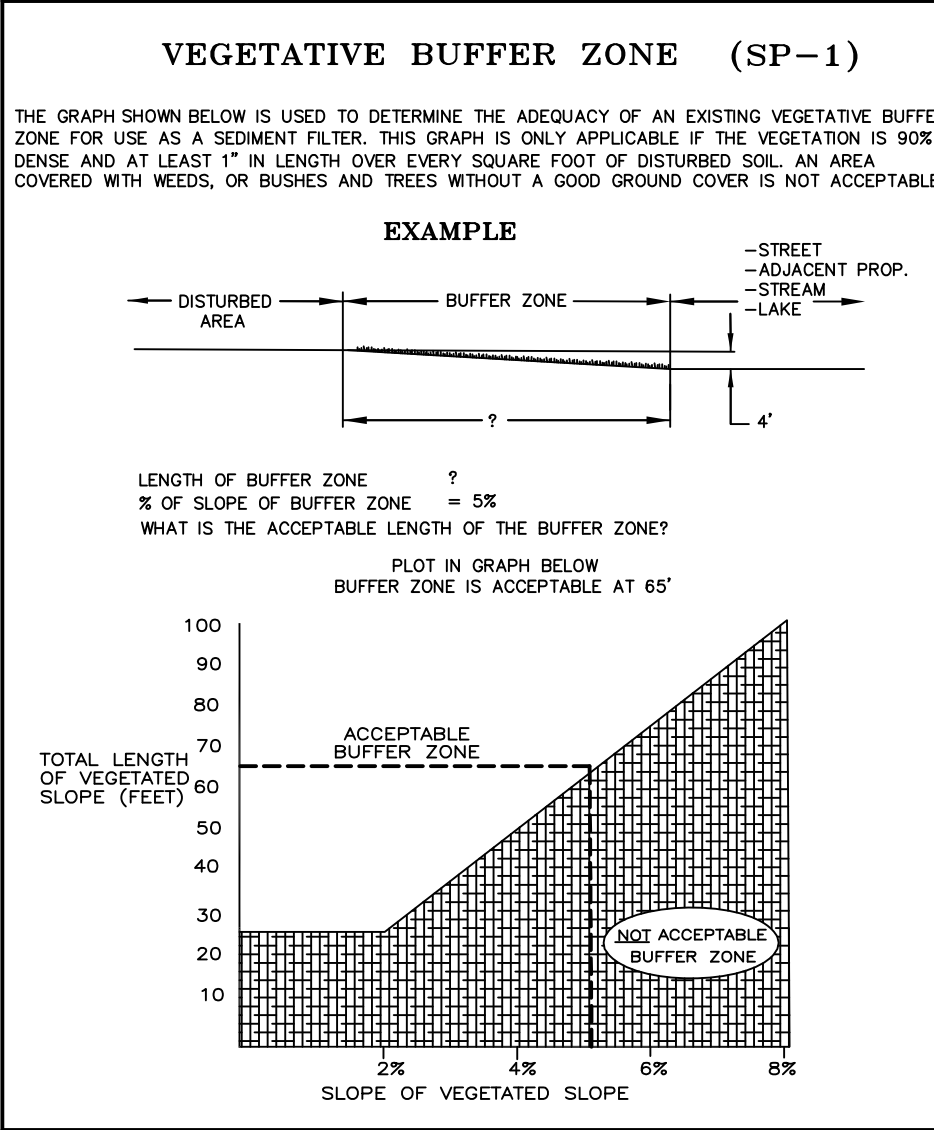
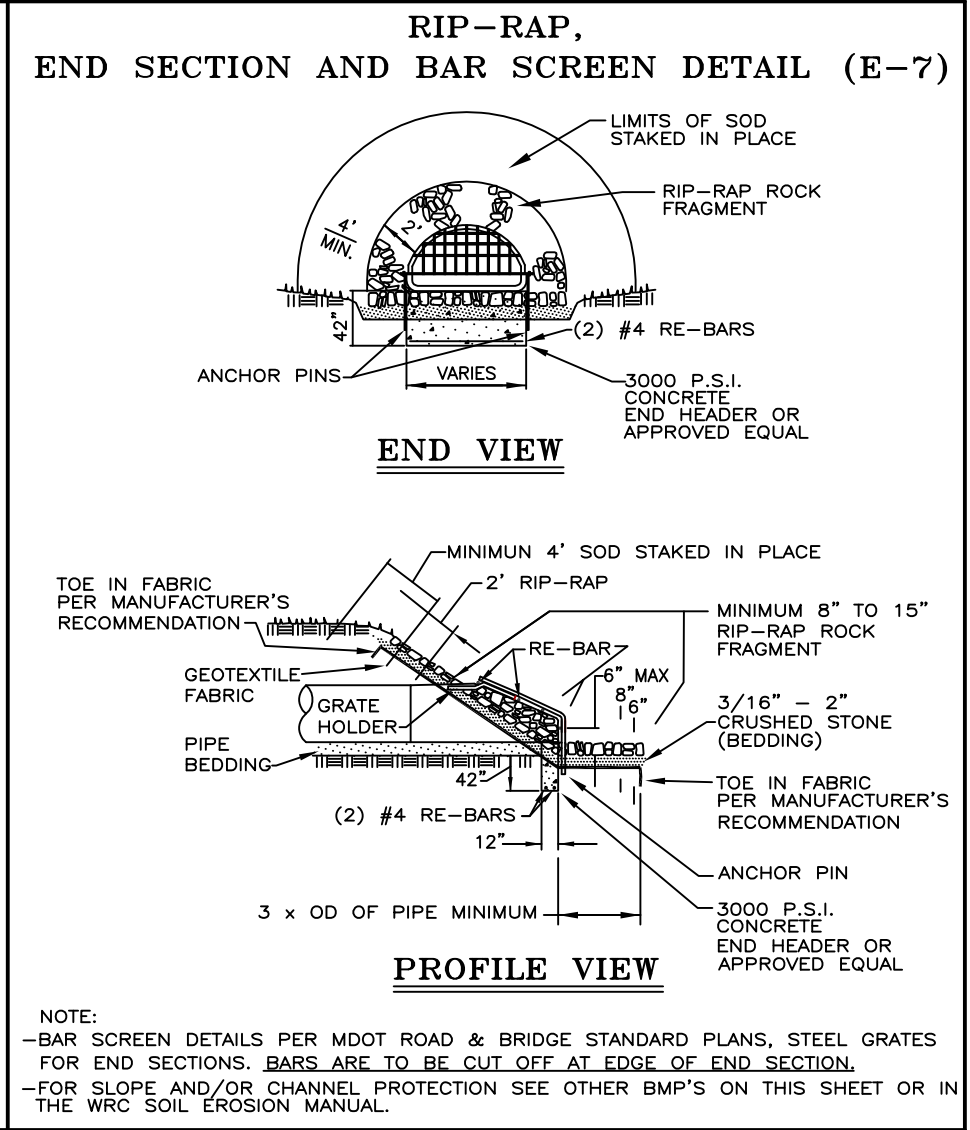
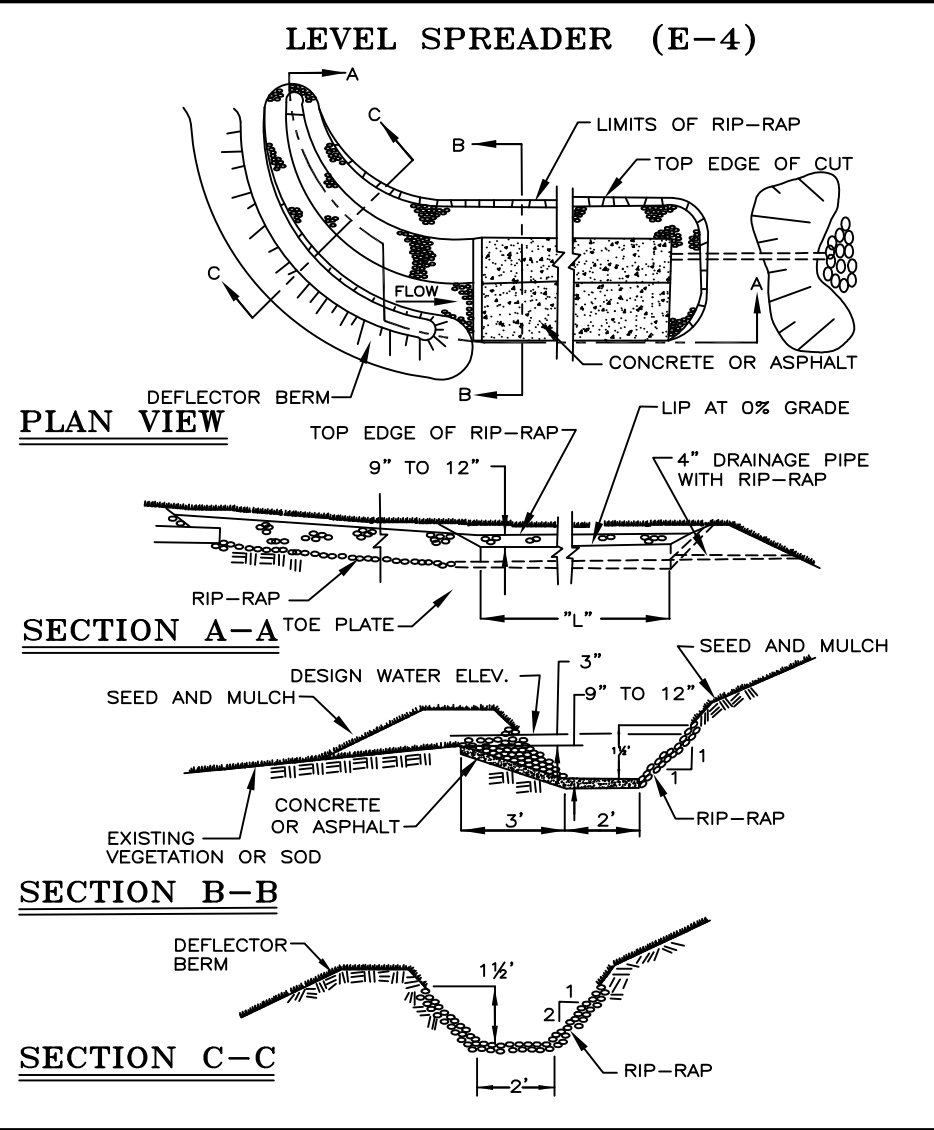
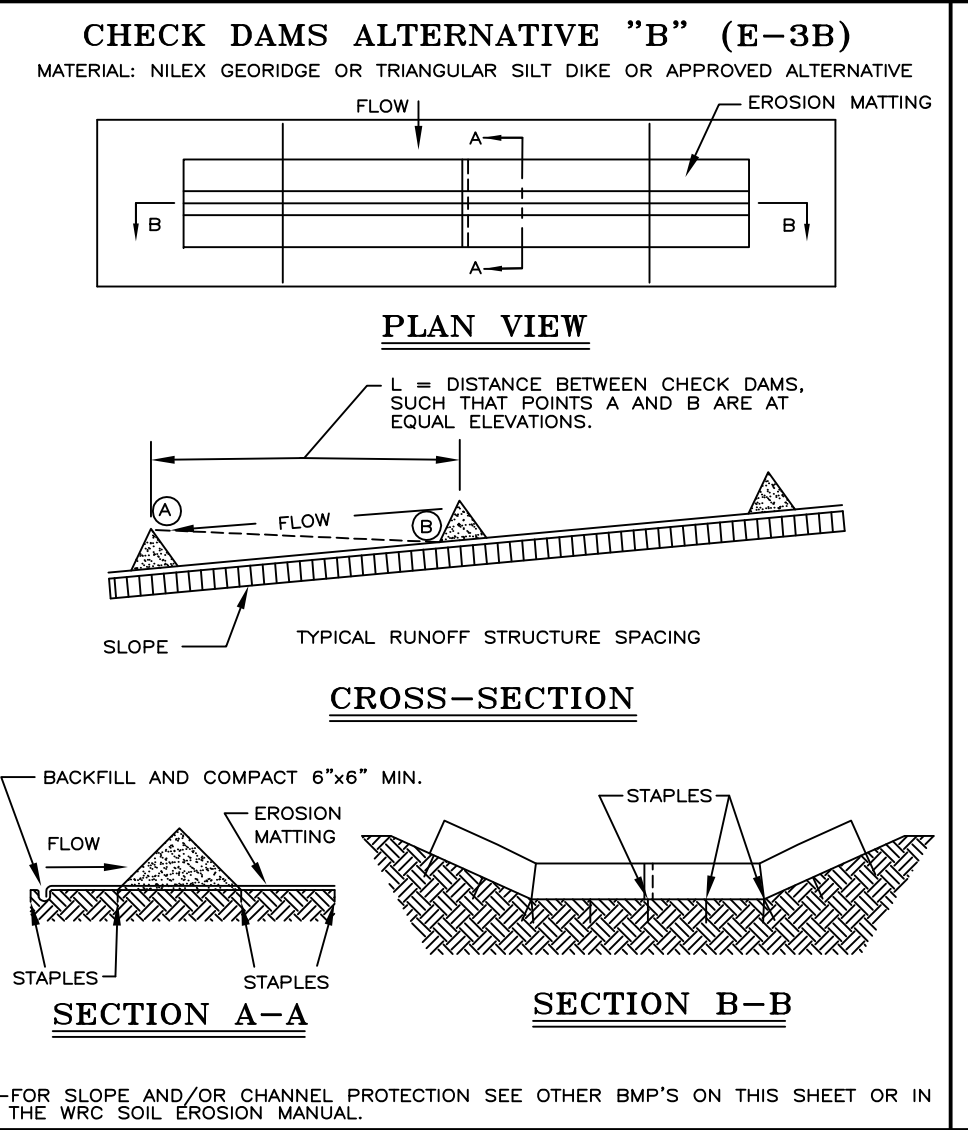
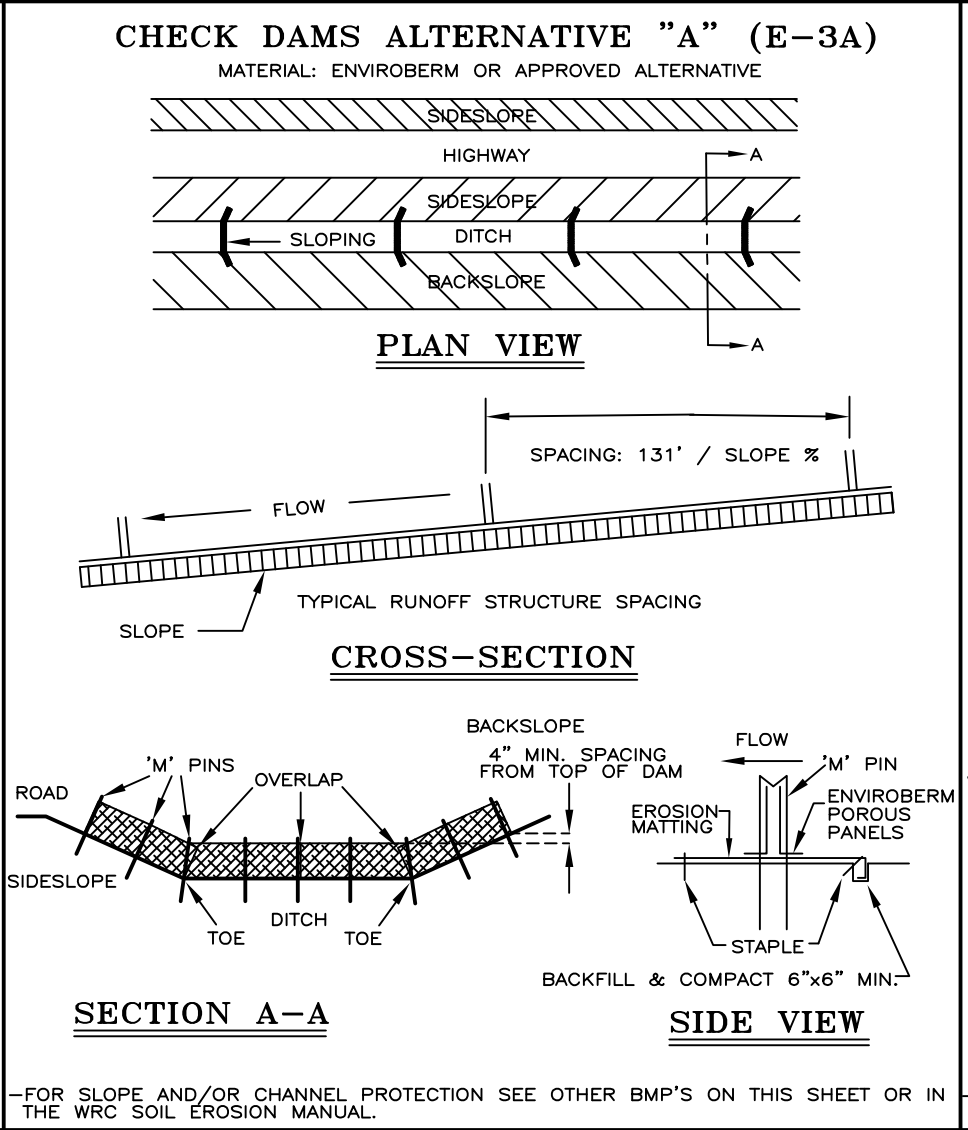
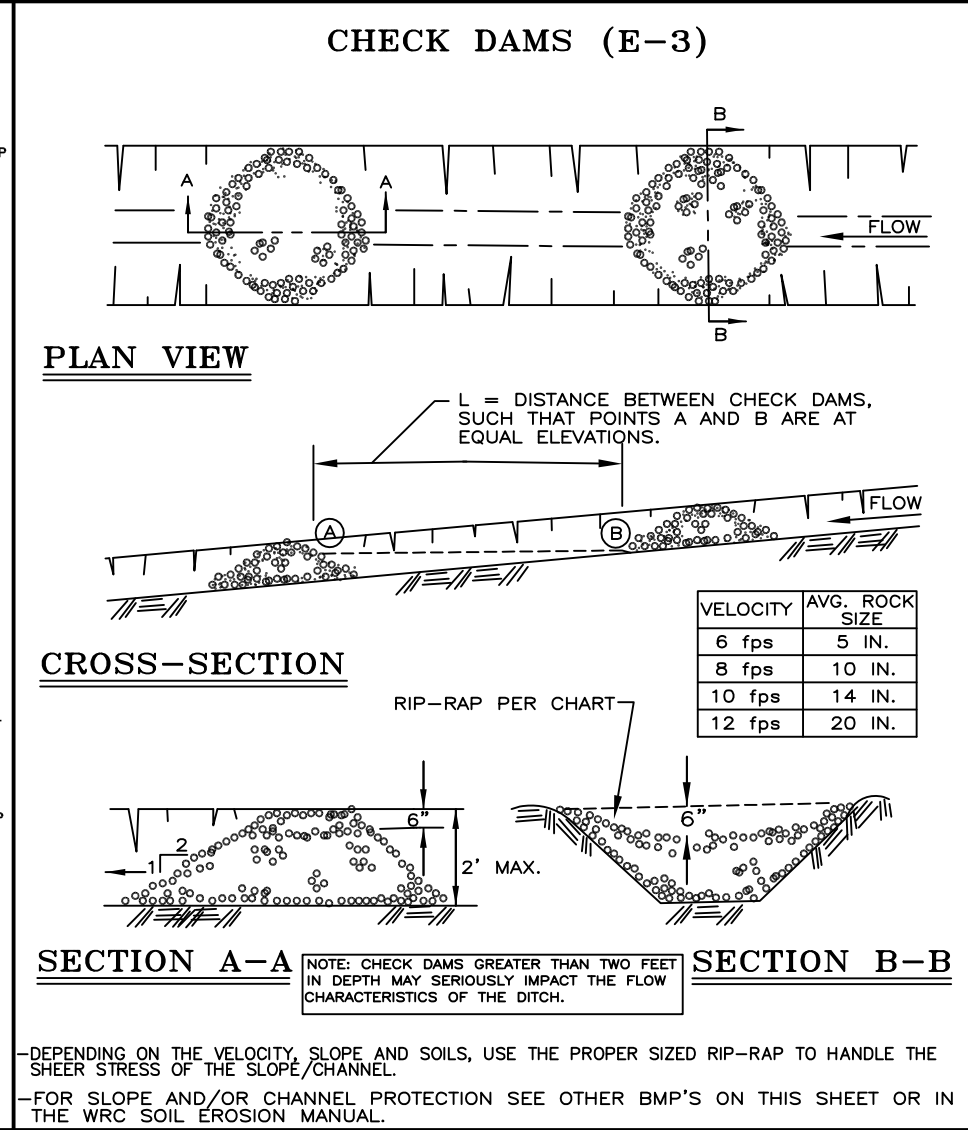
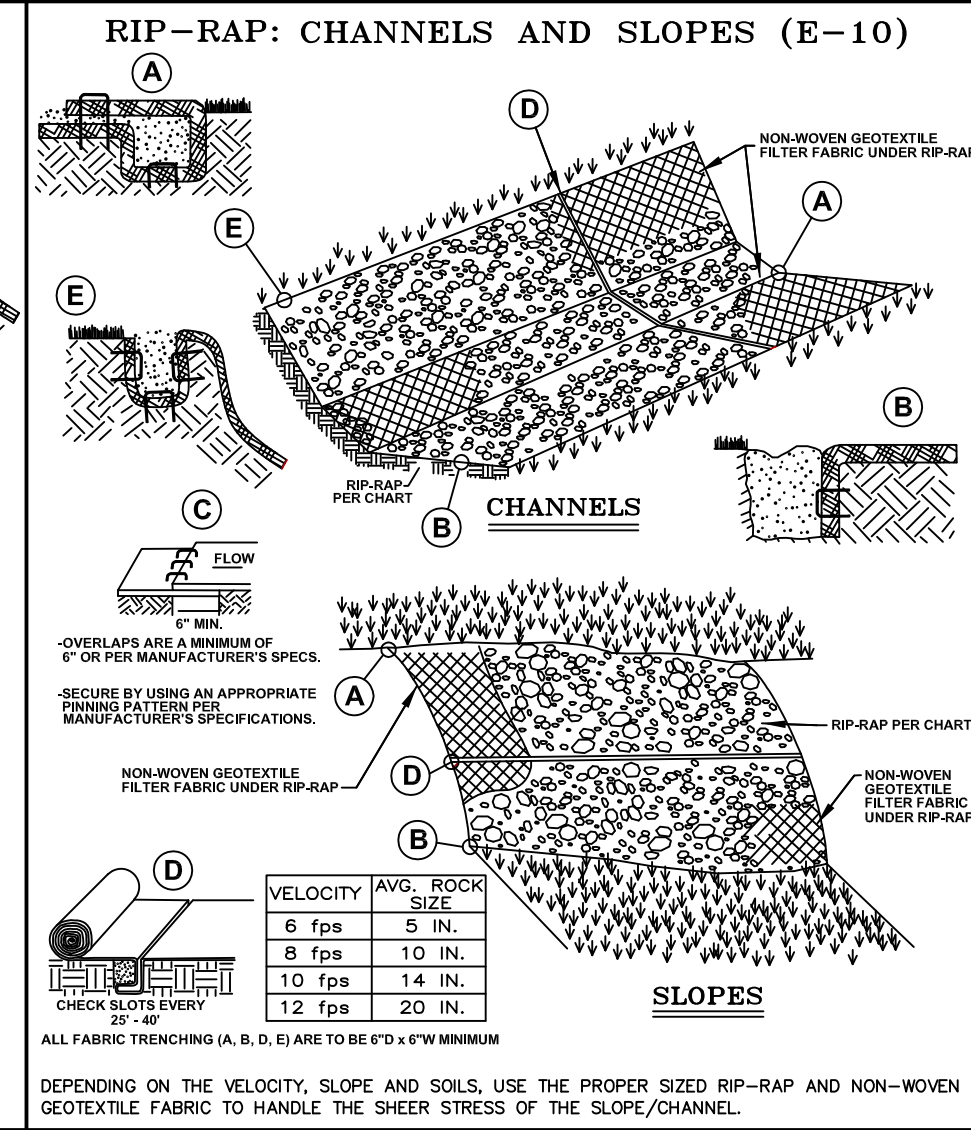
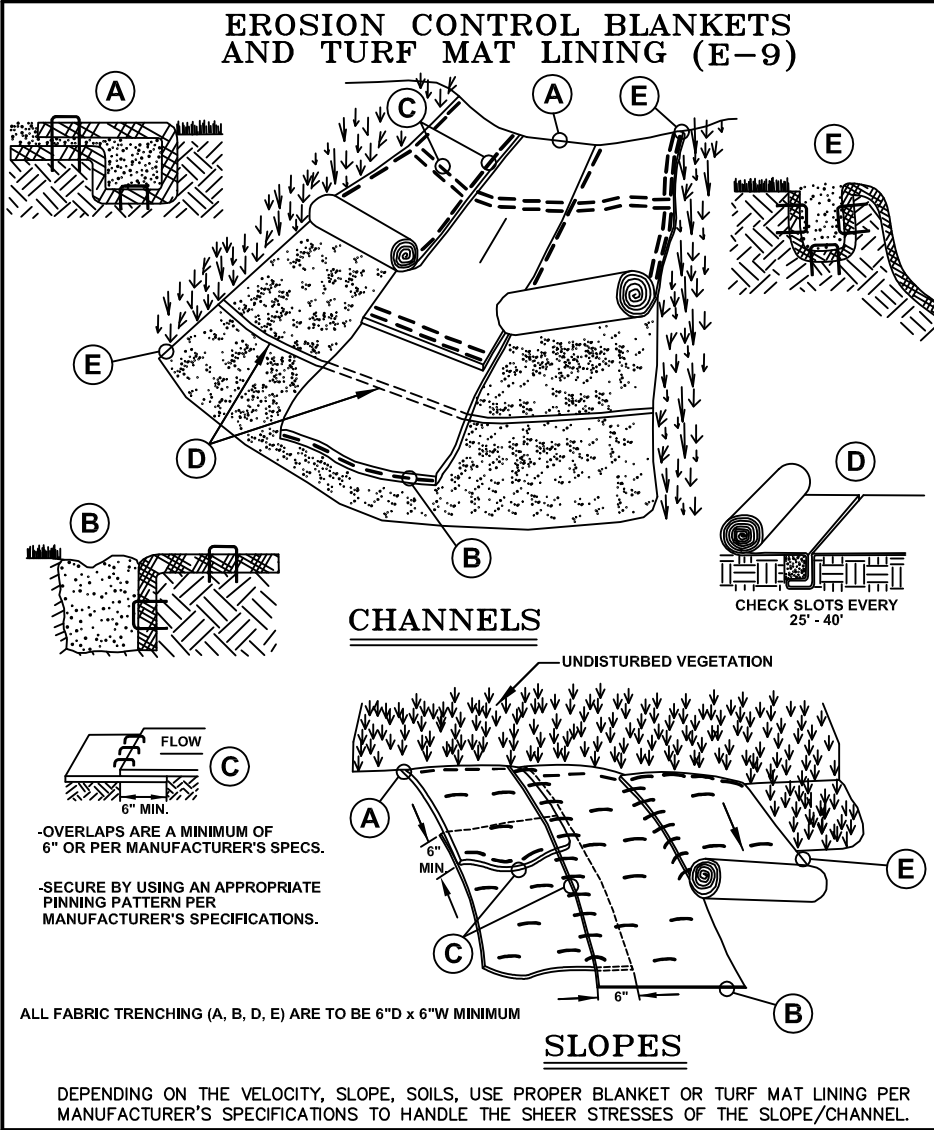
Johnson & Anderson
 4494 Elizabeth Lake Road Waterford, Michigan 48328
 1060 W. Norton Avenue, Suite 7 Muskegon, Michigan 49441
 3910 Lapeer Road Port Huron, Michigan 48060
 tel (248) 681-7800 fax (248) 681-2660 tel (231) 780-3100 fax (231) 780-3115 tel (810) 987-7820 fax (810) 987-7895

White Lake Township
 7525 Highland Road (M-59)
 White Lake, Michigan 48383
 248-698-3300

STORM SEWER STANDARD DETAILS

SCALE: HORIZ. AS NOTED
VERT. -

JOB NO. _____
DATE ISSUED 08/16/95
SHEET NO. _____



NOTE:

WHILE PERFORMING WORK INVOLVING GROUNDS MAINTENANCE AND/OR THE CONSTRUCTION/MAINTENANCE OF ANY INFRASTRUCTURE, INCLUDING ROADS, WATER MAINS, SANITARY SEWERS, STORM DRAINS AND STORM WATER BEST MANAGEMENT PRACTICES (BMPs), CONTRACTORS SHALL MINIMIZE POLLUTION FROM STORM WATER RUNOFF THAT CAN AFFECT WATER QUALITY RELATED TO WORK ACTIVITIES. POLLUTANTS THAT COULD IMPAIR WATER QUALITY MAY INCLUDE FUEL, GREASE AND OIL, NUTRIENTS, BACTERIA AND PATHOGENS, LITTER AND DEBRIS, AND SOIL EROSION AND SEDIMENTATION. APPLICABLE BMPs SHALL BE IMPLEMENTED BY THE CONTRACTOR TO THE MAXIMUM EXTENT PRACTICABLE TO PROTECT WATER QUALITY AND WILDLIFE HABITAT.

SOIL EROSION AND SEDIMENTATION CONTROL DETAILS

REV.	DATE	DESCRIPTION
1	01/10/01	PROPOSED DETAIL REVISED
2	02/08/01	FOR CONSTRUCTION APPROVAL, NAME CHANGES
3	03/28/01	FOR CONSTRUCTION APPROVAL, DETAIL REVISIONS
4	05/01/01	FOR CONSTRUCTION APPROVAL, DETAIL REVISIONS

ORIG. DATE: 01/10/01
 SCALE: NONE
 DESIGNED BY: WRC
 DRAWN BY: Mapping

ONE PUBLIC WORKS DRIVE, BLDG 905 WEST WATERFORD MICHIGAN 48320-1907
 WRC WATER RESOURCES COMMISSIONER
 SHEET NO.: 1 of 1