CHARTER TOWNSHIP OF MERIDIAN
INGHAM COUNTY, MICHIGAN

REQUEST
FOR
PROPOSALS

FOR

CONTRACT 1: HISTORICAL VILLAGE GATEWAY AND RESTROOM

CONTRACT 2: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR

August 2019

WOLVERINE
Engineers & Surveyors, Inc.
312 North Street
Mason, Michigan 48854
Ph: 517-676-9200
Fx: 517-676-9396
http://www.wolveng.com

State or federal funds are being used to assist in construction and relevant State or federal requirements will apply.

THIS PROPOSAL SHALL NOT BE DETACHED FROM THESE SPECIFICATIONS WHEN SUBMITTING BID

BID PROPOSAL

Proposal of_____
(hereinafter called "Bidder")* a corporation, organized and existing under the laws of the State of _____ a partnership, or an individual doing business as _____

To: CHARTER TOWNSHIP OF MERIDIAN
Ingham County, Michigan

Gentlemen:

The Bidder, in compliance with your Advertisement for Bids for the construction of the contract entitled, **CONTRACT 1: HISTORICAL VILLAGE GATEWAY AND RESTROOM, CONTRACT 2: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR** having examined the Drawings, Specifications, related documents, the site of the proposed work and being familiar with all of the conditions surrounding the construction of the proposed project including the soil and other site conditions, availability of materials and supplies, hereby propose to construct the project in accordance with the Contract Documents within the time set forth therein, and at the prices stated herein. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which the Proposal is a part.

Bidder hereby agrees to commence work under this Contract on or before a date to be specified in written "Notice to Proceed" of the Owner and to fully complete the project in accordance with the schedule for completion as outlined in Information for Bidders. Bidder further agrees to pay as liquidated damages, the sum of $500.00 each consecutive calendar day thereafter as hereinafter provided in the Information for Bidders.

Bidder acknowledges receipt of the following addendum:

_____

_____

_____

*Insert corporation, partnership, or individual as applicable.

Bidder agrees to perform all the work described in the Contract Documents, for the following price(s):

CONTRACT 1: Historical Village Gateway and Restroom					
ITEM	**EST. QTY.**	**UNIT**	**DESCRIPTION**	**UNIT PRICE**	**TOTAL**
1	2,680	Sft	4" Concrete Sidewalk		
2	1,166	Ft	8" HDPE Dr-11, Sanitary Sewer (Directional Drill)		
3	3	Ea	Sanitary Sewer Structure, 48" Dia		
4	1	Ea	8" Sanitary Sewer Tap (Connect to MH A)		
5	1	Ea	8" Sanitary Sewer Tap (Connect to EX SAN #5)		
6	1	LS	Foot Bridge removal		
7	8	Ea	Soil Erosion control, Inlet Fabric Drop Protection		
8	925	Ft	Soil Erosion control, Silt Fence		
9	1	Ea	Furnish and Install the Pre-Engineered Restroom Building, foundation, and associated equipment		
10	11	Cyd	6"-12" Rip Rap @ 15" Storm Outlet		
11	150	Cyd	Fill Ex. Drain Area (Topsoil-Seed-Mulch)		
12	150	Cyd	Compacted Class II Granular Material		
13	49	Lft	15" RCP Storm Pipe w/ (2) 15" Flared End Sections		
14	1	LS	Site Prep, Grading, and Demolition		
15	1	LS	Cleanup & Site Restoration		
			TOTAL AMOUNT OF BID – CONTRACT 1		
			Historical Village Gateway and Restroom		
ALTERNATE #1					
16	716	Ft	Alternate #1 – 6" SDR-26 Sanitary Sewer		
17	1	Ea	Sanitary Sewer Structure, 48" Dia		
18	1	Ea	6" Sanitary Sewer Tap (Connect to MH A)		
19	1	Ea	6" Sanitary Sewer Tap (Connect to EX SAN #A3)		
			TOTAL AMOUNT OF ALTERNATE #1		
NOTE: If alternate #1 is selected, replace items #2, #4, and #5 from contract #1 with Alternate items #16, #18, and #19 and add Item #17.					
CONTRACT 2: Central Meridian Regional Trail Connector					
1	500	Cyd	6", 21AA Aggregate Base		
2	250	Cyd	22A Aggregate (Embankment)		
3	650	Tons	HMA 13A (4")		
4	4,200	Sft	12' Wide Boardwalk		
5	1,600	Sft	16' Wide Boardwalk, and (20'x36') Fishing		

			Deck		
6	2,810	Ft	Soil Erosion control, Silt Fence		
7	2	Ea	Furnish and Install Trail Signs and Posts		
8	1	Ea	Furnish and Install Bike Repair Station w/ Air Pump and Vinyl Decals		
9	2	Ea	Furnish and Install Bike Rack		
10	1	LS	Wetland Remediation Area		
11	1	LS	Site Prep, Grading, and Demolition		
12	1	LS	Cleanup & Site Restoration		
13	2050	Lft	Tensar BX1100 Geogrid (Minimum 4m width)		
			TOTAL AMOUNT OF BID - CONTRACT 2		
			Central Meridian Regional Trail Connector		
			Total Amount of Bid – Contract 1 & Contract 2		
			Total Amount of Bid – Contract 1 (w/Alternate #1) & Contract 2		

Bidders shall enter amounts for ALL Bid Items.

The Bidder agrees that the above total Amount of Base Bid, (corrected for any errors in extensions or additions) shall be the basis for determination of award of this contract along with all other requirements and consideration for award as provided under Basis of Award, Information for Bidders. Bidder further agrees that final contract price will be adjusted up or down to reflect actual units constructed, furnished or placed under this Contract. Engineer shall check extensions and addition of all items.

The above prices shall include all labor, materials, removal, overhead, profit, insurance, etc. to cover the finished work of the several kinds called for.

Bidder understands that the Owner reserves the right to reject any, or all bids, and to waive any informalities in the bidding.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of SIXTY (60) calendar days after the scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of bid, bidder will execute the formal contract attached within ten (10) days. The bid security attached in the sum of _____ is to become the property of the Owner in the event the Contract and Bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

IN WITNESS WHEREOF, the Contractor agrees to the foregoing terms this _____day of _____, 20__.

By: _____
Title: _____
P.O. Address: _____
_____
_____
Zip Code
Telephone No: _____

LEGAL STATUS OF BIDDER

The bidder shall fill out the appropriate form and strike out the other two.

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

A partnership, all of the members of which, with addresses, are:

_____ _____
_____ _____
_____ _____
_____ _____

An individual, whose signature is affixed to this proposal.

CONTRACT 1: HISTORIC VILLAGE GATEWAY AND RESTROOM
CONTRACT 2: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR

1990 CENTRAL PARK DR, OKEMOS, 48864 MI

SECTION 15, MERIDIAN TOWNSHIP

INGHAM COUNTY, MICHIGAN

CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR 18-0066

PUBLIC UTILITIES

THE EXISTING UTILITIES LISTED BELOW AND SHOWN REPRESENT THE BEST INFORMATION AVAILABLE AS OBTAINED FROM SERVICE PROVIDER AND FIELD OBSERVATION. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO SATISFY HIMSELF AS TO THEIR ACCURACY OR OF HIS RESPONSIBILITY TO NOTIFY THE PROPER UTILITIES BEFORE COMMENCING WORK. THE FOLLOWING UTILITIES ARE LOCATED IN OR NEAR THE RIGHT OF WAY FOR THIS PROJECT.

NAME AND ADDRESS OF UTILITY	TYPE OF UTILITY
CONSUMERS ENERGY 1155 W. PARNALL RD. JSC 173-3 JACKSON, MI 49201 PH: 517-788-1191 TYLER LAWRENCE	GAS/ POWER
AT&T 337 N. ABBOTT RD. EAST LANSING, MI 48823 PH: 517-862-1882 WILLIE DILLARD, JR.	TELEPHONE LINES
INGHAM COUNTY DRAIN COMMISSION 707 BUHL STREET MASON, MI 48854 PH: 517-676-8395 FAX: 517-543-6446 PAT LINDEMANN	STORM SEWER
MERIDIAN TOWNSHIP 5151 MARSH ROAD OKEMOS, MI 48864 PH: 517-853-4000	SOIL EROSION

OWNERS OF PUBLIC UTILITIES WILL NOT BE REQUIRED TO MOVE POLES OR STRUCTURES THAT ARE NOT WITHIN GRADING OR STRUCTURE LIMITS IN ORDER TO FACILITATE THE OPERATION OF CONSTRUCTION EQUIPMENT, UNLESS IT IS DETERMINED BY THE ENGINEER THAT SUCH LINES OR STRUCTURES CONSTITUTE A HAZARD TO THE PUBLIC OR ARE EXTRA- ORDINARILY DANGEROUS TO THE CONTRACTOR'S OPERATIONS. (SEE SPECIAL PROVISIONS FOR UTILITY COORDINATION)

PARCEL DESCRIPTION:

COM @ THE SW COR SEC 15 - N 0 DEG 34'19E, ON SEC LN 495.07 FT - NE'LY ON CURVE LEFT ON R/W LN CENTRAL PARK DR 18.47 FT HAVING A 340 FT RADIUS AND A CHD OF 18.46 FT BRG N 24 DEG 46'11"E, TO A PT OF REVERSE CURVATURE - NE'LY ON CURVE RT ON R/W 705.69 FT HAVING A 665 FT RADIUS & A CHD OF 673.04 FT BRG N 53 DEG 36'53"E, TO THE POB - N 0 DEG 31'51"E, 53.79 FT - N 16 DEG 28'11"W, 95.26 FT - N 12 DEG 46'09"W 83.31 FT - N 04 DEG 34'10"W, 83.88 FT - N 0 DEG 31'51"E, 93.08 FT - S 89 DEG 28'09"E 831.33 FT - S 0 DEG 23'50"E, 600.76 FT TO N R/W LN - N 70 DEG 35'39"W ON R/W 515.35 FT ON R/W - SWE'LY 294.70 FT ALONG AN ARC OF A 655 FT RADIUS CURVE LEFT TO THE POB SEC 15, T4N,R1W 8.81 AC

OWNER/AGENT CONTACT INFORMATION

OWNER: MERIDIAN TOWNSHIP
AGENT CONTACT: LUANN MAISNER
2100 GAYLORD C SMITH COURT
HASLETT, MI 48840
PH: 517.853.4604
EMAIL: MAISNER@MERIDIAN.MI.US

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STATE OR FEDERAL FUNDS ARE BEING USED TO ASSIST IN CONSTRUCTION AND RELEVANT STATE OR FEDERAL REQUIREMENTS WILL APPLY.

LOCATION MAP

NOT TO SCALE

Sheet List Table

Sheet Number		Sheet Title
C1.0	(#1) + (#2)	COVER
C2.0	(#2)	PATHWAY LAYOUT PLAN
C3.0	(#2)	PATHWAY PLAN AND PROFILE
C4.0	(#2)	PATHWAY & BOARDWALK PLAN & PROFILE
C5.0	(#1)	SANITARY SEWER PLAN AND PROFILE
C5.1	(#1)	SANITARY SEWER PLAN
C6.0	(#2)	BOARDWALK DETAILS
C6.1	(#2)	BOARDWALK DETAILS
C7.0	(#2)	DECK PLAN AND PROFILE
C8.0	(#1)	ENLARGED PLAN (AREA 1)
C9.0	(#2)	SESC PLAN (WEST)
C9.1	(#1)	SESC PLAN (EAST) & NOTES
C9.2	(#1) + (#2)	SESC DETAILS
C10.0	(#1) + (#2)	DETAILS & NOTES
C10.1	(#1) + (#2)	DETAILS & NOTES 2
C11.0	(#1)	RESTROOM PLAN & ELEVATIONS
C12.0	(#2)	WETLAND MITIGATION & RESTORATION

* (#1) : CONTRACT 1
* (#2) : CONTRACT 2

STATE OF MICHIGAN
DONALD BRIAN HECK
ENGINEER
No: 45072
LICENSED PROFESSIONAL ENGINEER

08/20/2019 BID SET

WOLVERINE
Engineers & Surveyors, Inc.
312 North Street
Mason, Michigan 48854
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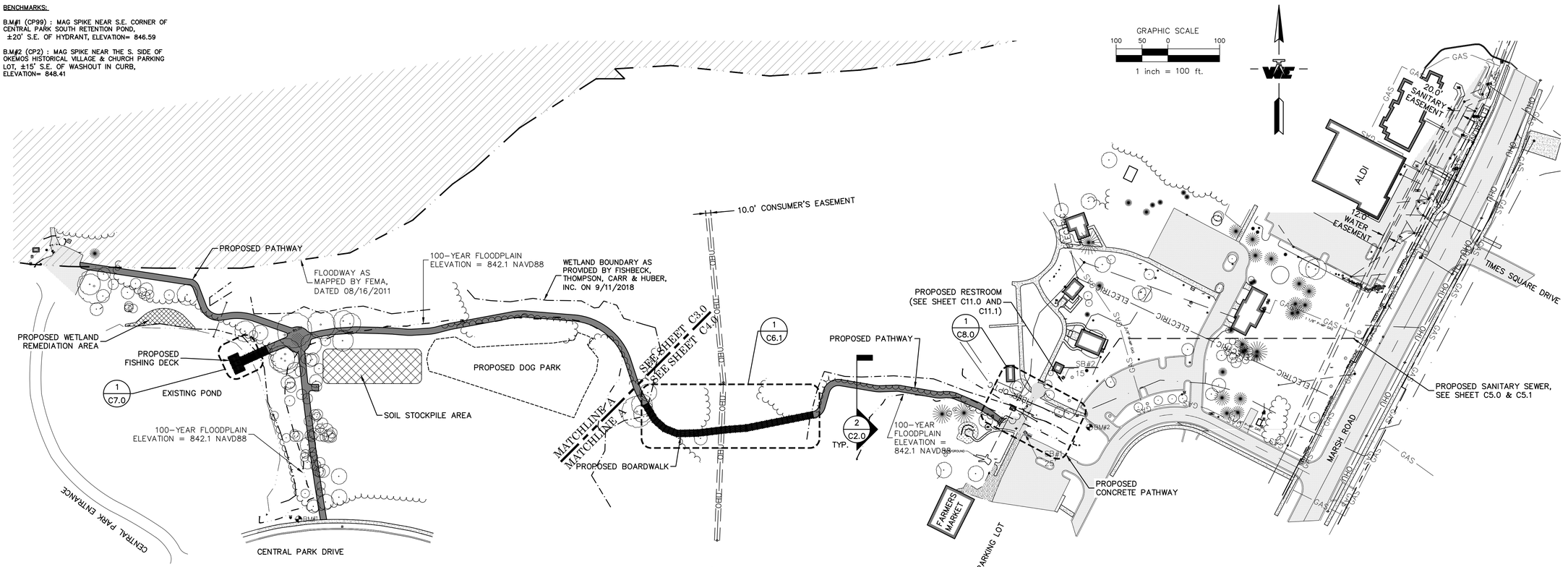
BENCHMARKS:

B.M.#1 (CP99) : MAG SPIKE NEAR S.E. CORNER OF CENTRAL PARK SOUTH RETENTION POND, ±20' S.E. OF HYDRANT, ELEVATION= 846.59

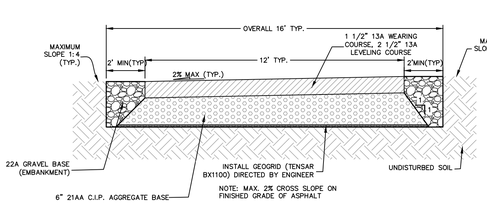
B.M.#2 (CP2) : MAG SPIKE NEAR THE S. SIDE OF OKEMOS HISTORICAL VILLAGE & CHURCH PARKING LOT, ±15' S.E. OF WASHOUT IN CURB, ELEVATION= 848.41



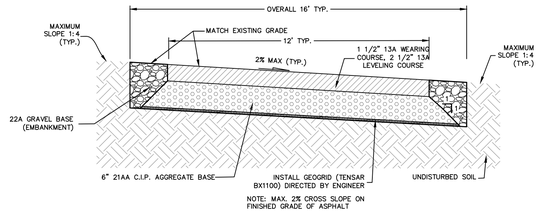
1 C2.0 OVERALL SITE PLAN
SCALE: 1" = 100'

EXISTING LEGEND

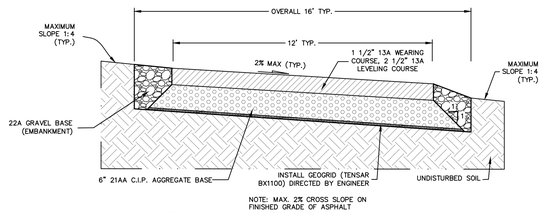
CONTOUR – MJR	SANITARY MANHOLE	LANDSCAPE STONE
CONTOUR – MNR	CLEAN OUT	MAILBOX
SANITARY SEWER	GAS VALVE	DECIDUOUS TREE
STORM SEWER	PUMP	EVERGREEN TREE
WATER MAIN	STORM MANHOLE	SHRUB
OVERHEAD UTILITIES	STORM CATCH BASIN	SOIL BORING
CURB	STORM END SECTION	BENCHMARK
EASEMENT	HYDRANT	ELECTRICAL RISER
WETLAND BOUNDARY	WATER MAIN VALVE	ELECTRICAL PANEL
SURFACE WATER	SERVICE VALVE	ELECTRIC METER
TREE LINE	WATER MANHOLE	ELECTRIC OUTLET
STRUCTURE	WELL	GAS METER
ASPHALT	LIGHT POLE	AIR CONDITIONER
CONCRETE	LAWN LIGHT	UTILITY FLAG
GRAVEL	UTILITY POLE	POST
BRICK	GUY POLE	STREET SIGN
LANDSCAPING	GUY WIRE	SIGN
	TRANSFORMER	
	IRRIGATION BOX	
	TELEPHONE RISER	



PATHWAY CROSS SECTION AT LOW SLOPE AREAS (TYP.)
NO SCALE

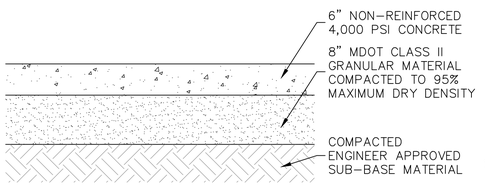


PATHWAY SECTION LESS THAN 6% CROSS SLOPE (TYP.)
NO SCALE

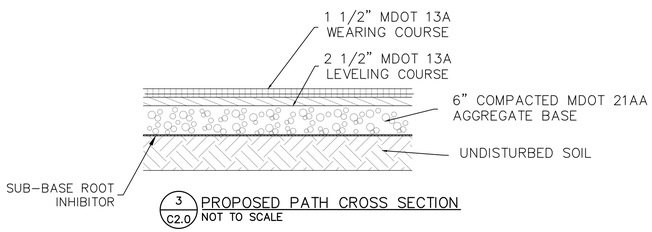


PATHWAY SECTION GREATER THAN 6% CROSS SLOPE (TYP.)
NO SCALE

2 C2.0 TYPICAL ASPHALT PAVEMENT CROSS SECTIONS
NOT TO SCALE



4 C2.0 PROPOSED CONCRETE CROSS SECTION
NOT TO SCALE



3 C2.0 PROPOSED PATH CROSS SECTION
NOT TO SCALE

Know what's below. Call before you dig.

!!! CAUTION !!!

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REVISION	DATE	DRAWN	DESCRIPTION
1	04/29/19	JAL	GENERAL UPDATES
2	06/25/19	JAL	GENERAL UPDATES

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PROJECT: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

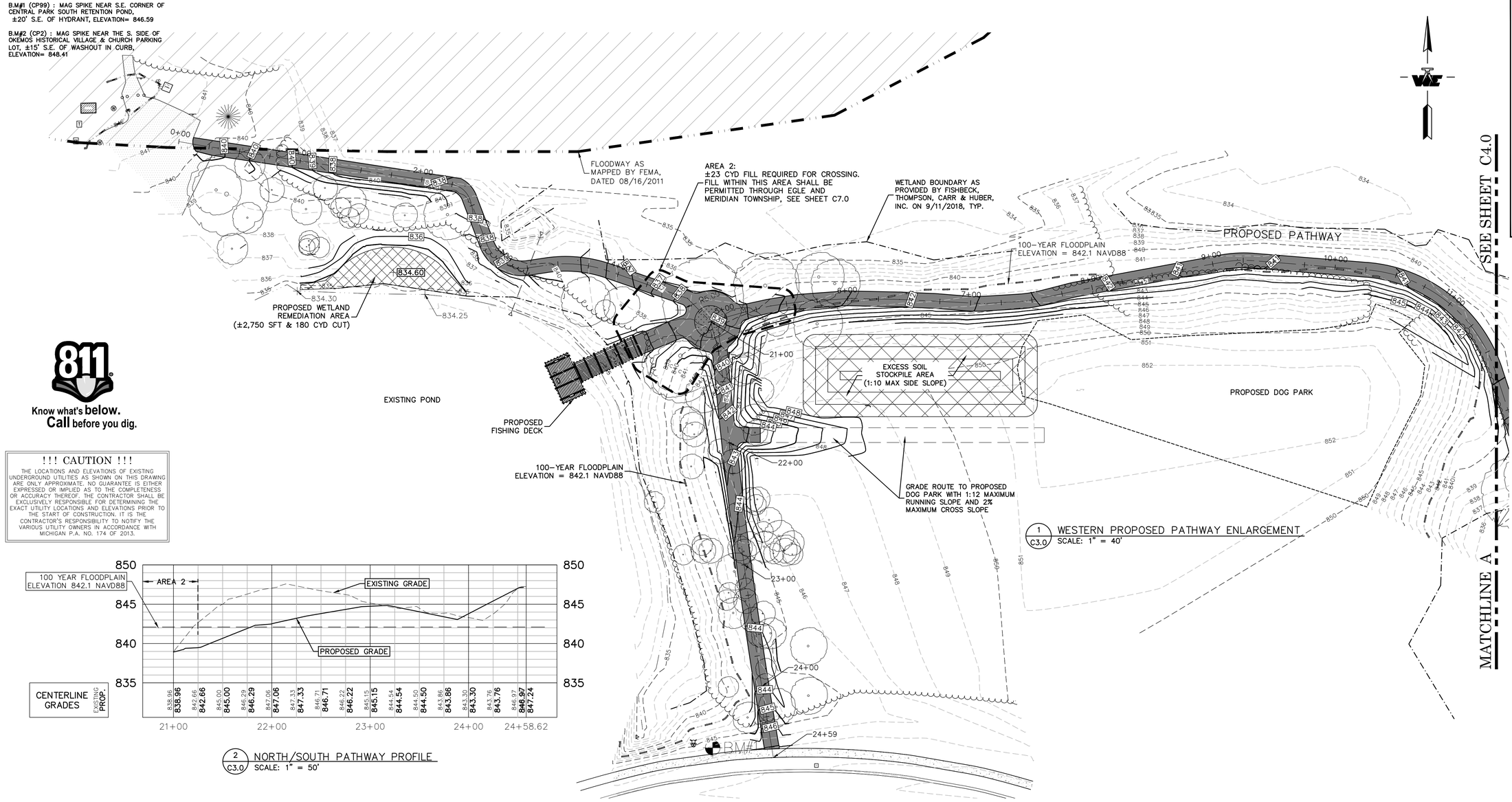
SHEET TITLE: PATHWAY LAYOUT PLAN

APPROVED	DBH
CHECKED	DBH
DRAWN	HTK
JOB NO.	18-0066
DATE	4/18/2019
SCALE	AS NOTED
SHEET NO.	C2.0

BENCHMARKS:

B.M#1 (CP99) : MAG SPIKE NEAR S.E. CORNER OF CENTRAL PARK SOUTH RETENTION POND, ±20' S.E. OF HYDRANT, ELEVATION= 846.59

B.M#2 (CP2) : MAG SPIKE NEAR THE S. SIDE OF OKEMOS HISTORICAL VILLAGE & CHURCH PARKING LOT, ±15' S.E. OF WASHOUT IN CURB, ELEVATION= 848.41



1 C3.0 WESTERN PROPOSED PATHWAY ENLARGEMENT
SCALE: 1" = 40'

Know what's **below.** **Call** before you dig.

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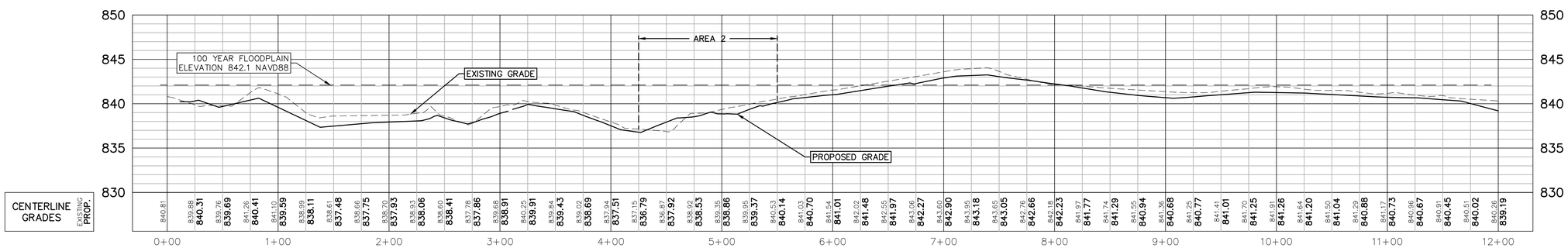
2 C3.0 NORTH/SOUTH PATHWAY PROFILE
SCALE: 1" = 50'



3 C3.0 EAST/WEST PATHWAY PROFILE
SCALE: 1" = 50'

REVISION	DATE	DRAWN	DESCRIPTION
1	04/29/19	JAL	REVISE GRADING
2	05/20/19	JAL	REVISE GRADING & WALK LAYOUT
3	06/05/19	JAL	ADD ADDITIONAL NOTES TO DOG PARK AREA
4	06/25/19	JAL	UPDATE WETLAND AREA & GRADING

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PROJECT: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

SHEET TITLE: PATHWAY PLAN AND PROFILE

APPROVED	DBH
CHECKED	DBH
DRAWN	HTK
JOB NO.	18-0066
DATE	3/18/2019
SCALE	AS NOTED
SHEET NO.	C3.0

BENCHMARKS:

B.M#1 (CP99) : MAG SPIKE NEAR S.E. CORNER OF CENTRAL PARK SOUTH RETENTION POND, ±20' S.E. OF HYDRANT, ELEVATION= 846.59

B.M#2 (CP2) : MAG SPIKE NEAR THE S. SIDE OF OKEMOS HISTORICAL VILLAGE & CHURCH PARKING LOT, ±15' S.E. OF WASHOUT IN CURB, ELEVATION= 848.41

EXISTING LEGEND

CONTOUR – MJR
CONTOUR – MNR
SANITARY SEWER
STORM SEWER
WATER MAIN
OVERHEAD UTILITIES
CURB
EASEMENT
WETLAND BOUNDARY
SURFACE WATER
TREE LINE
STRUCTURE
ASPHALT
CONCRETE
GRAVEL
BRICK
LANDSCAPING

SANITARY MANHOLE
CLEAN OUT
GAS VALVE
PUMP
STORM MANHOLE
STORM CATCH BASIN
STORM END SECTION
HYDRANT
WATER MAIN VALVE
SERVICE VALVE
WATER MANHOLE
WELL
LIGHT POLE
LAWN LIGHT
UTILITY POLE
GUY POLE
GUY WIRE
TRANSFORMER
IRRIGATION BOX
TELEPHONE RISER

LANDSCAPE STONE
MAILBOX
DECIDUOUS TREE
EVERGREEN TREE
SHRUB
SOIL BORING
BENCHMARK
ELECTRICAL RISER
ELECTRICAL PANEL
ELECTRIC METER
ELECTRIC OUTLET
GAS METER
AIR CONDITIONER
UTILITY FLAG
POST
STREET SIGN
SIGN

GRAPHIC SCALE
40 20 0 40
1 inch = 40 ft.

MATCHLINE A SEE SHEET C3.0

WETLAND BOUNDARY AS PROVIDED BY FISHBECK, THOMPSON, CARR & HUBER, INC. ON 9/11/2018, TYP.

INSTALL PATHWAY
INSTALL BOARDWALK
INSTALL PATHWAY
INSTALL BOARDWALK

100 YEAR FLOODPLAIN ELEV: 842.10

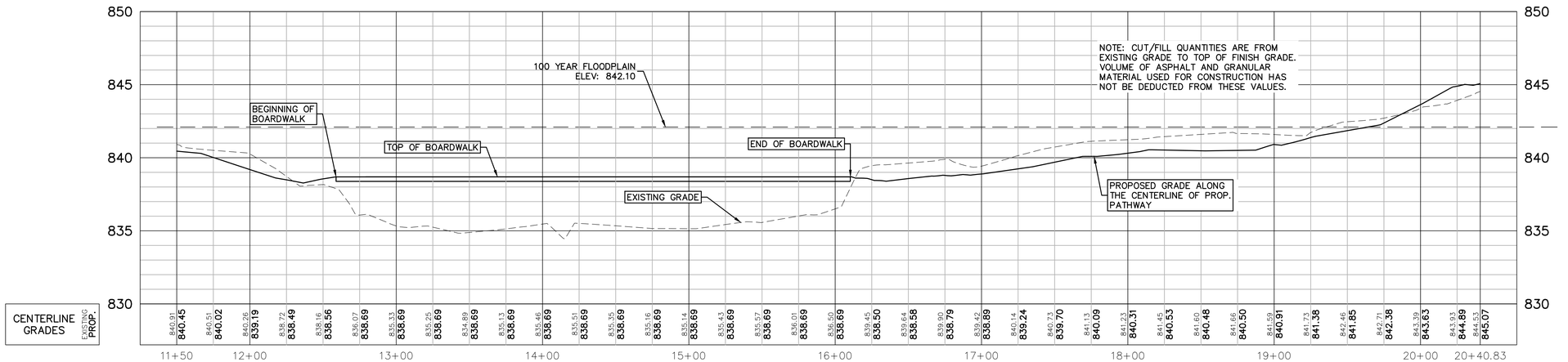
PLAYGROUND

RECYCLING BIN LOCATION, TO BE PROVIDED AND INSTALLED BY OWNER. LOCATION MAY BE MODIFIED BASED ON NEED

SB#1 25'
SB#2 15'
BM#2

AREA 1: ±267 TOTAL CYD OF FILL REQUIRED FOR CROSSING. ±63 CYD OF THIS FILL WILL BE BELOW THE 842.1 FLOODPLAIN ELEVATION. FILL WITHIN THIS AREA SHALL BE PERMITTED THROUGH EGLE AND MERIDIAN TOWNSHIP, SEE SHEET C8.0

1 C4.0 ENLARGED PLAN (EAST)
SCALE: 1" = 40'



2 C4.0 PATHWAY PROFILE (EAST)
SCALE: 1" = 40'

GRADING NOTES:

1. NO FILL IS PERMITTED WITHIN THE 100-YEAR FLOODPLAIN ASIDE FROM "AREA 1" AND "AREA 2" DENOTED ON THE PLANS. THESE AREAS SHALL BE PERMITTED THROUGH EGLE PRIOR TO COMPLETING ANY GRADING ACTIVITIES.
2. ALL PATHWAYS WILL BE GRADED WITH A CROSS SLOPE MINIMUM OF 1% AND A MAXIMUM OF 2% DIRECTED TOWARD LOWEST ADJACENT GRADE.
3. NO FINAL GRADE SHALL BE CONSTRUCTED TO IMPEDE DRAINAGE OR RESULT IN PONDING IN PATHWAY OR OTHER AREAS INTENDED FOR PUBLIC USE.
4. MERIDIAN TOWNSHIP MINMUM 1:1 COMPENSATION REQUIRED FOR ALL FILL IN THE FLOODPLAIN
5. MERIDIAN TOWNSHIP MINMUM 2:1 COMPENSATION REQUIRED FOR ALL FILL IN WETLAND AREAS

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REVISION	DATE	DRAWN	DESCRIPTION
1	04/29/19	JAL	UPDATE GRADING
2	05/20/19	JAL	UPDATE GRADING
3	07/24/19	JAL	ADD RECYCLE BIN LOCATION PER DNR COMMENTS

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PROJECT: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

SHEET TITLE: PATHWAY & BOARDWALK PLAN & PROFILE

APPROVED: DBH
CHECKED: DBH
DRAWN: HTK
JOB NO.: 18-0066
DATE: 11/12/18
SCALE: 1" = 40'
SHEET NO.: C4.0

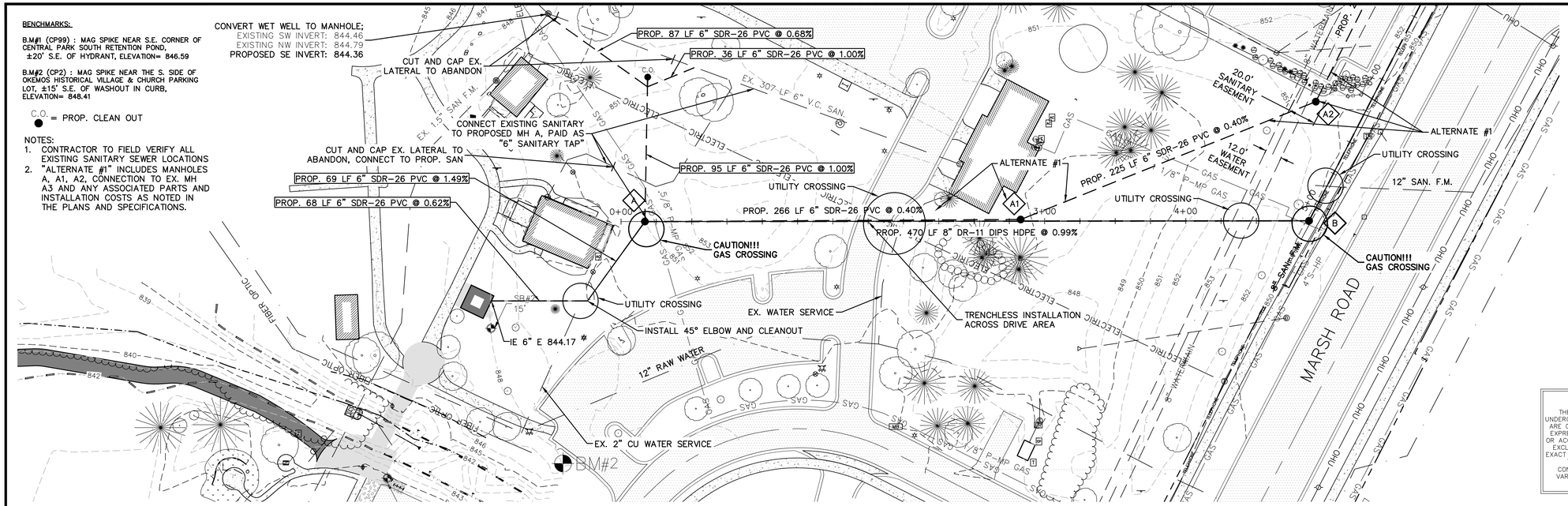
BENCHMARKS:

B.M.#1 (CP99) : MAG SPIKE NEAR S.E. CORNER OF CENTRAL PARK SOUTH RETENTION POND, ±20' S.E. OF HYDRANT, ELEVATION= 846.59

B.M.#2 (CP2) : MAG SPIKE NEAR THE S. SIDE OF OKEMOS HISTORICAL VILLAGE & CHURCH PARKING LOT, ±15' S.E. OF WASHOUT IN CURB, ELEVATION= 848.41

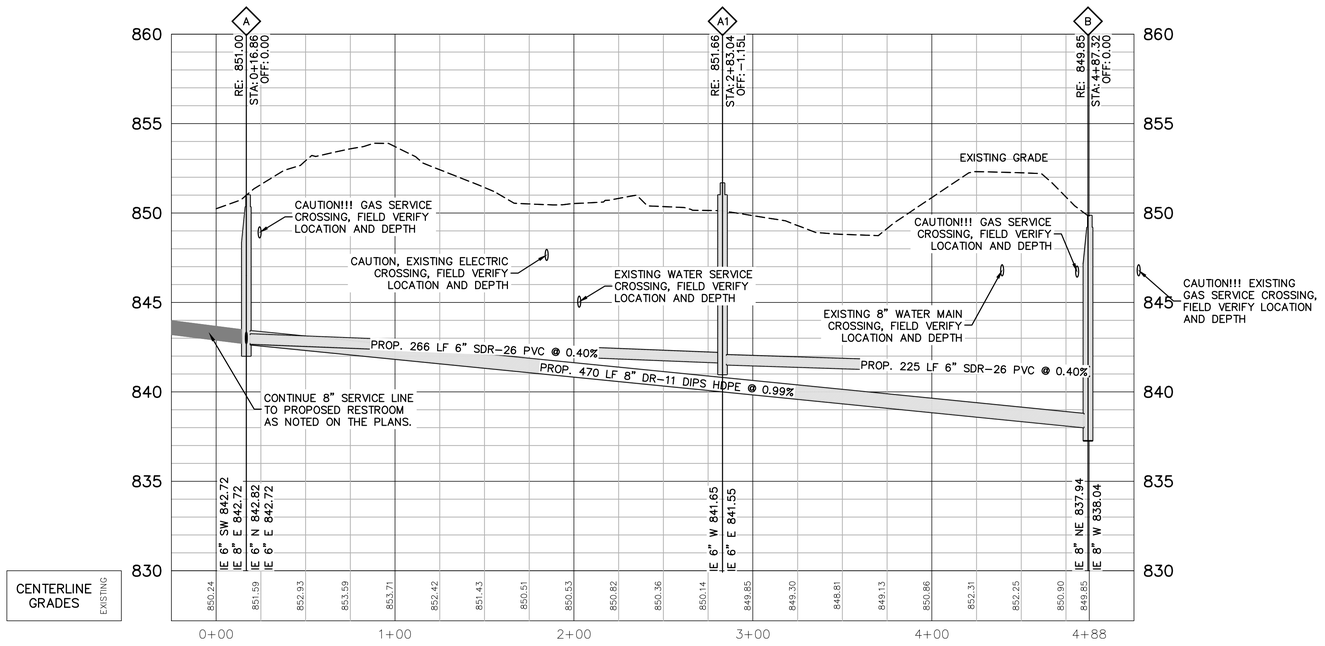
C.O. = PROP. CLEAN OUT

NOTES:
1. CONTRACTOR TO FIELD VERIFY ALL EXISTING SANITARY SEWER LOCATIONS
2. "ALTERNATE #1" INCLUDES MANHOLES A, A1, A2, CONNECTION TO EX. MH A3 AND ANY ASSOCIATED PARTS AND INSTALLATION COSTS AS NOTED IN THE PLANS AND SPECIFICATIONS.



1 C5.0 SANITARY SEWER PLAN
SCALE: 1" = 40'

NOTE: ALL TRENCHED 6" SANITARY SEWER MAY BE SDR-35.



2 C5.0 SANITARY SEWER PROFILE
SCALE: HORIZ: 1" = 40'
VERT: 1" = 4'

REVISION	DATE	DRAWN	DESCRIPTION
1	05/20/19	JAL	SPLIT PROFILE TO SHEET C5.1, EXPAND SITE INFO & UTILITIES
2	06/24/19	JAL	ADD ALTERNATE #1 & PROVIDE ADDITIONAL EX. SAN. CONNECTION
3	07/25/19	JAL	EDIT TRENCHED SANITARY PIPE AND RESTROOM BUILDING

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WOLVERINE
Engineers & Surveyors, Inc.
312 North Street
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Ph: 517.676.9200
Fx: 517.676.9396
http://www.wolveng.com

PROJECT: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

SHEET TITLE: SANITARY SEWER PLAN AND PROFILE

APPROVED: DBH
CHECKED: DBH
DRAWN: HTK
JOB NO.: 18-0066
DATE: 6/24/2019
SCALE: 1" =40'
SHEET NO.: C5.0

BENCHMARKS:

B.M.#1 (CP99) : MAG SPIKE NEAR S.E. CORNER OF CENTRAL PARK SOUTH RETENTION POND, ±20' S.E. OF HYDRANT, ELEVATION= 846.59

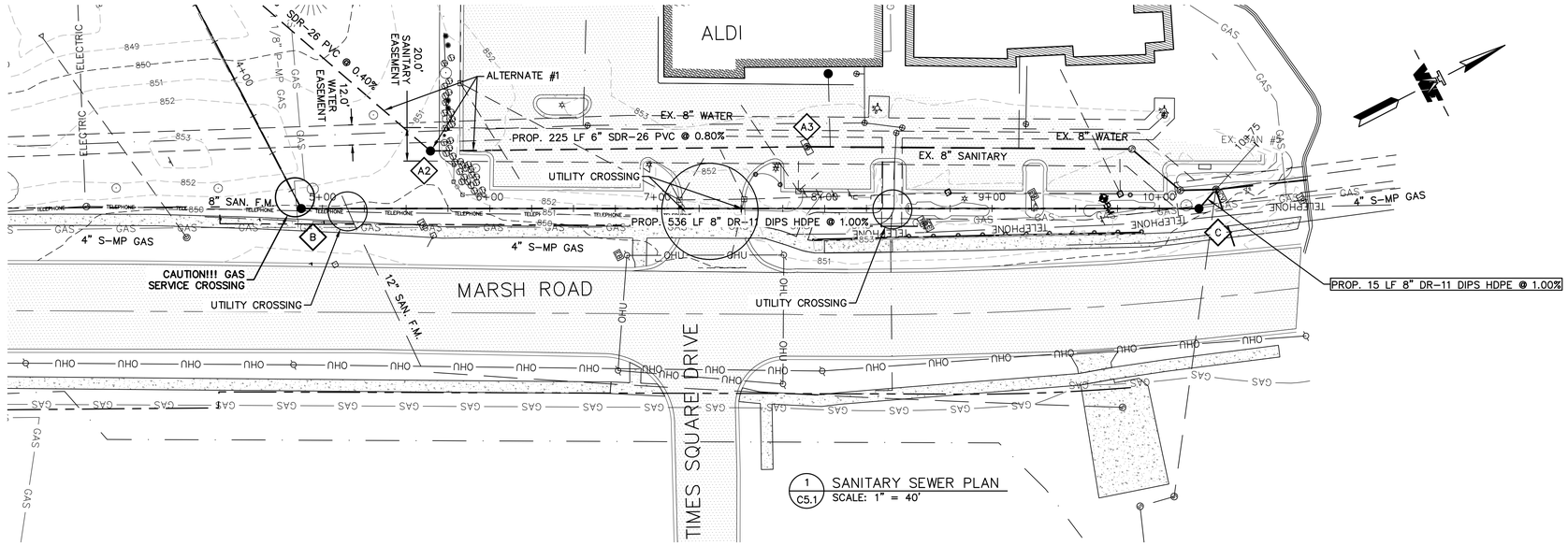
B.M.#2 (CP2) : MAG SPIKE NEAR THE S. SIDE OF OKEMOS HISTORICAL VILLAGE & CHURCH PARKING LOT, ±15' S.E. OF WASHOUT IN CURB, ELEVATION= 848.41

"ALTERNATE #1"

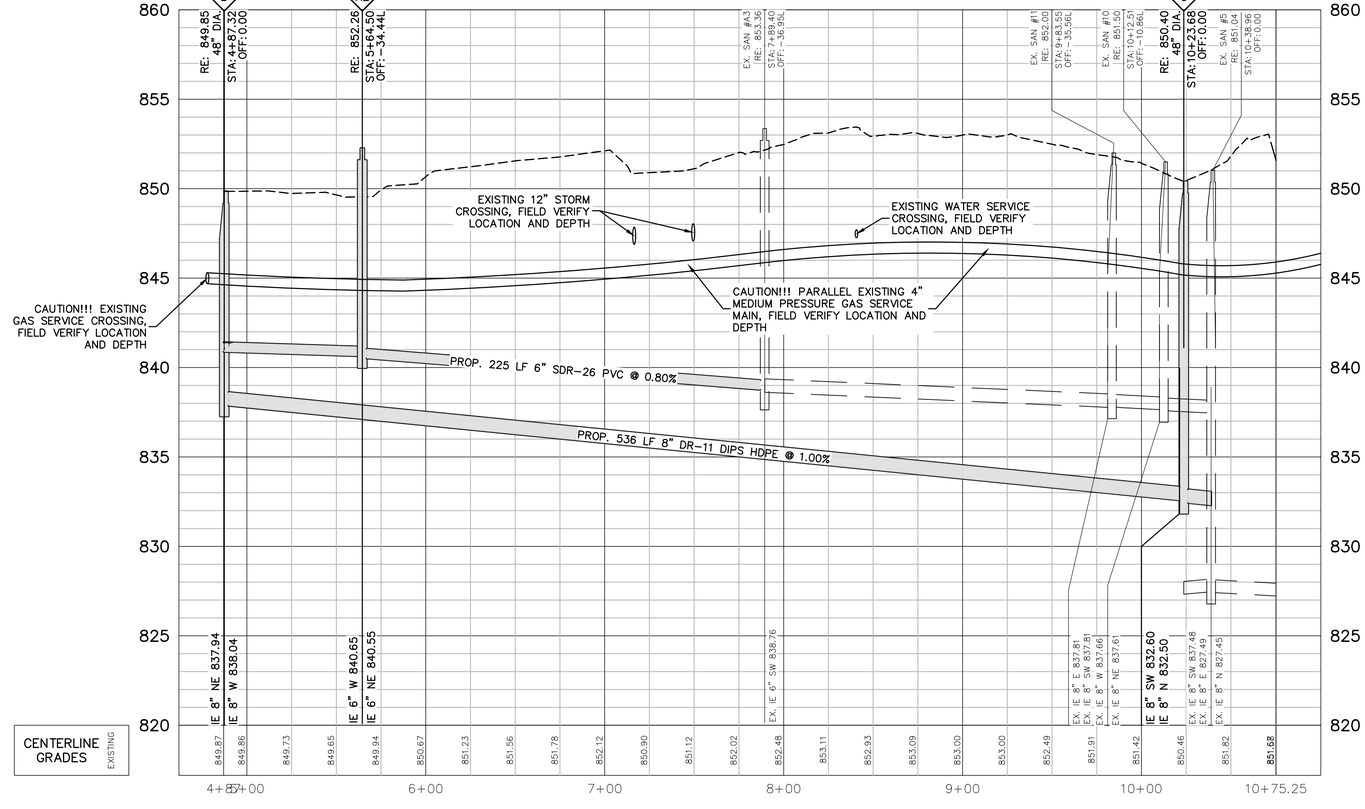
CONNECT VIA HDD FROM INSIDE THE MANHOLE – DO NOT CUT INTO PAVEMENT.

SUGGESTED PROCEDURE PER MERIDIAN TWP.:

1. SEND PILOT DRILL FROM LAWN AREA TO THE EXISTING MANHOLE;
2. CORE MANHOLE FROM WITHIN AND CONNECT A STEEL CABLE WITH A WINCH;
3. PULL BACK STEEL CABLE AND CONNECT NEW PIPE;
4. SIMULTANEOUSLY WINCH AND PUSH NEW PIPE INTO PLACE; AND
5. SEAL MANHOLE CONNECTION USING A LINK-SEAL DEVICE AND NON-SHRINK GROUT.



1 C5.1 SANITARY SEWER PLAN
SCALE: 1" = 40'



2 C5.1 SANITARY SEWER PROFILE
SCALE: HORIZ: 1" = 40'
VERT: 1" = 4'

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REVISION	DATE	DRAWN	DESCRIPTION
1	07/25/19	JAL	EDIT TRENCHED SANITARY PIPE

WOLVERINE
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312 North Street
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Ph: 517.676.9200
Fx: 517.676.9396
http://www.wolveng.com

PROJECT
CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

SHEET TITLE
SANITARY SEWER PLAN

APPROVED	DBH
CHECKED	DBH
DRAWN	HTK
JOB NO.	18-0066
DATE	5/23/2019
SCALE	1" =40'
SHEET NO.	C5.1

S:\Projects\2018\18-0066_CSD\DWGs\C5.1 SANITARY SEWER PLAN.dwg, Thursday, July 25, 2019 3:19:02 PM, Jesse A. Lester

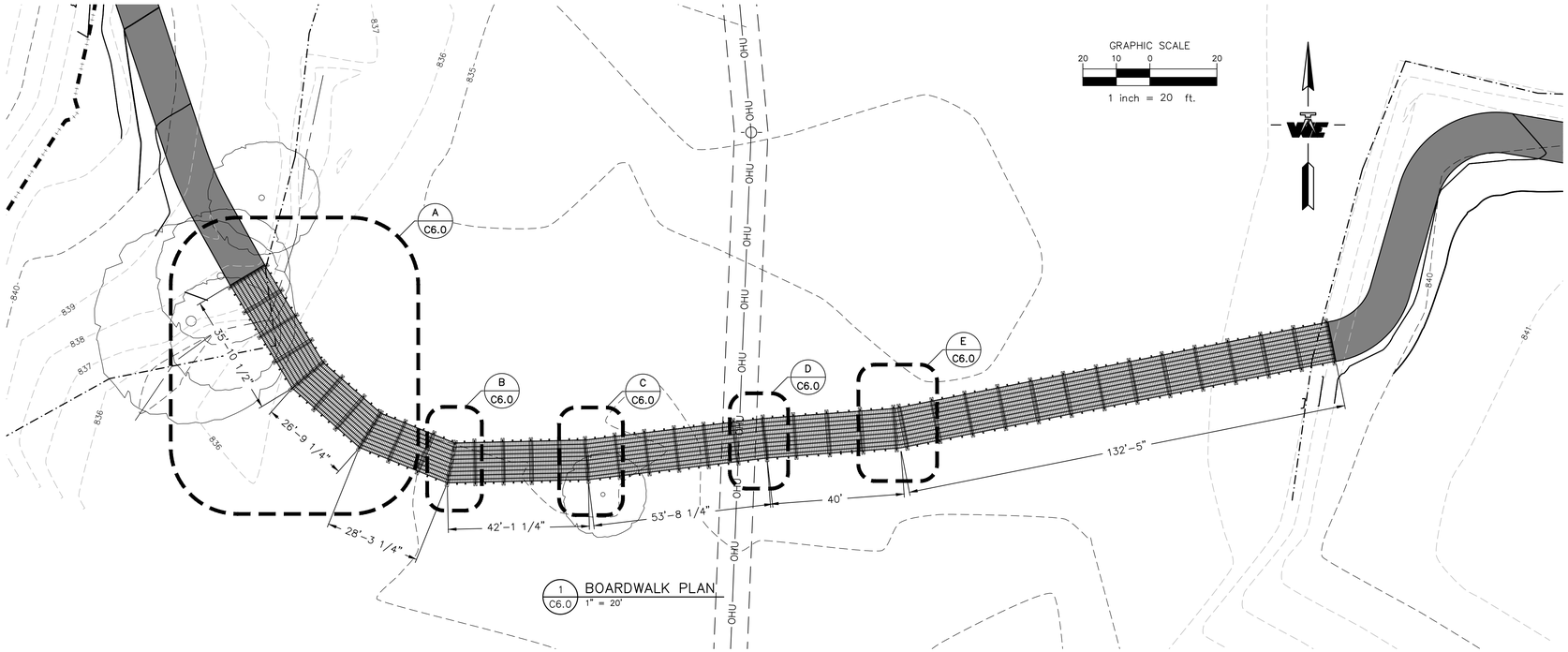
BENCHMARKS:

B.M#1 (CP99) : MAG SPIKE NEAR S.E. CORNER OF CENTRAL PARK SOUTH RETENTION POND, ±20' S.E. OF HYDRANT, ELEVATION= 846.59

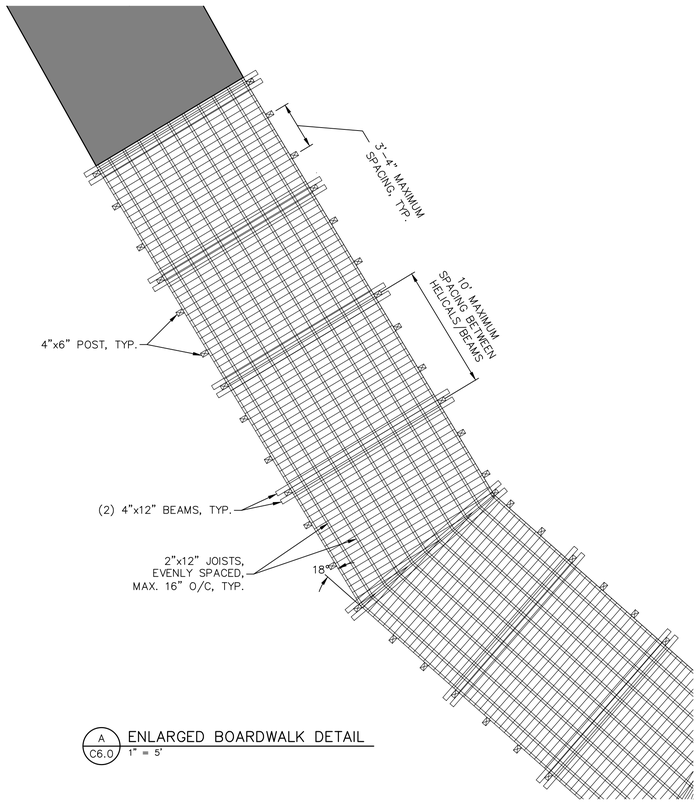
B.M#2 (CP2) : MAG SPIKE NEAR THE S. SIDE OF OKEMOS HISTORICAL VILLAGE & CHURCH PARKING LOT, ±15' S.E. OF WASHOUT IN CURB, ELEVATION= 848.41

BOARDWALK CONSTRUCTION NOTES

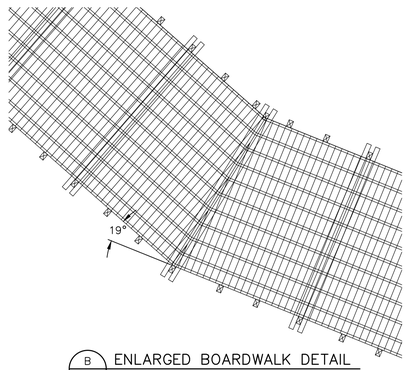
1. ALL LUMBER SHALL BE KILN DRIED SOUTHERN PINE #2 OR APPROVED EQUAL. THE CONTRACTOR SHALL ENSURE THAT ALL QUALITY CONTROL REQUIREMENTS AS SPECIFIED IN SECTION 912 OF MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION (2012 EDITION) ARE ADHERED TO.
2. ALL LUMBER SHALL BE GRADE A SELECT QUALITY.
3. ALL LUMBER SHALL BE PRESSURE TREATED TO REFUSAL WITH WOOD PRESERVATIVE. PRESSURE TREATING SHALL BE TO 0.60 MINIMUM FOR WOOD IN CONTACT WITH GROUND. ALL OTHER PRESSURE TREATING SHALL BE TO 0.40 MINIMUM. CCA WOOD PRESERVATIVE SHALL NOT BE USED. ENGINEER SHALL APPROVE AN ALTERNATIVE MATERIAL.
4. AVOID HORIZONTAL EXPOSURE OF END GRAIN OR PROVIDE ADEQUATE PROTECTION BY FLASHING OR SEALING. AVOID SITUATIONS WHERE MOISTURE MAY BE TRAPPED BY USING SPACERS AND/OR FLASHING, CHALKING, SEALANT, OR PLASTIC ROOF CEMENT.
5. ALL BOLTS, WASHERS, AND OTHER HARDWARE USED FOR CONSTRUCTION SHALL BE GALVANIZED TO PREVENT CORROSION AND STAINING. USE GALVANIZED FLAT WASHERS UNDER HEADS OF LAG BOLTS, SCREWS AND NUTS.
6. DECK SCREWS USED FOR CONSTRUCTION SHALL BE CLIMACOATED, HOT DIPPED, GALVANIZED PLATED, OR APPROVED EQUAL, TO PREVENT CORROSION AND STAINING. DECK SCREWS SHALL BE #8x4" WITH AN UNTHREADED UPPER SHAFT TO PREVENT BOARD JACKING, PROVIDING A TIGHTER FASTENING.
7. GAP ON DECKING SHALL BE ⅛" MIN.
8. THERE SHALL BE NO END GRAIN NAILING AND TOE NAILING UNLESS SPECIFIED BY THE ENGINEER.
9. THE BOARDWALK SHALL BE CONSTRUCTED IN SUCH A MANNER THAT WILL MINIMIZE THE AMOUNT OF DISTURBANCE TO THE WETLAND AREA. ALL RESTORATION TO DISTURBED AREAS SHALL ADHERE TO THE REQUIREMENTS OF MDEQ WETLAND PERMIT, AND SHALL BE INCLUDED IN THE COST OF THE BOARDWALK.
10. 4"x12" BEAMS SHALL BE ATTACHED TO POSTS WITH CARRIAGE BOLTS WITH WASHERS ON BOTH SIDES. COUNTERSINK NUT ENDS FLUSH WITH FACE OF TIMBER.



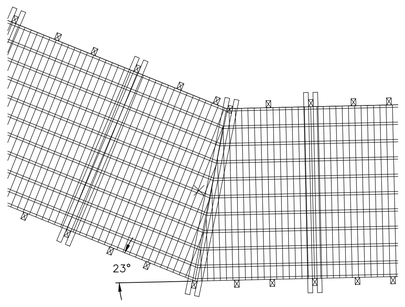
1 C6.0 BOARDWALK PLAN 1" = 20'



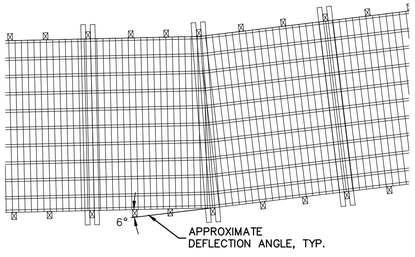
A C6.0 ENLARGED BOARDWALK DETAIL 1" = 5'



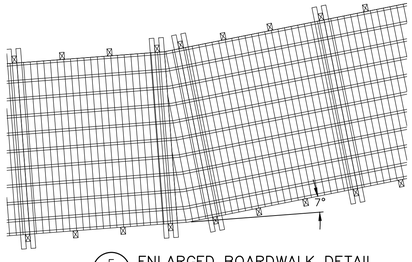
B C6.0 ENLARGED BOARDWALK DETAIL 1" = 5'



C C6.0 ENLARGED BOARDWALK DETAIL 1" = 5'



D C6.0 ENLARGED BOARDWALK DETAIL 1" = 5'



E C6.0 ENLARGED BOARDWALK DETAIL 1" = 5'

REVISION	DATE	DRAWN	DESCRIPTION

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312 North Street
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Ph: 517.676.9200
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PROJECT: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

SHEET TITLE: BOARDWALK DETAILS

APPROVED	DBH
CHECKED	DBH
DRAWN	HTK
JOB NO.	18-0066
DATE	3/20/19
SCALE	AS NOTED
SHEET NO.	C6.0

BENCHMARKS:

B.M#1 (CP99) : MAG SPIKE NEAR S.E. CORNER OF CENTRAL PARK SOUTH RETENTION POND, ±20' S.E. OF HYDRANT, ELEVATION= 846.59

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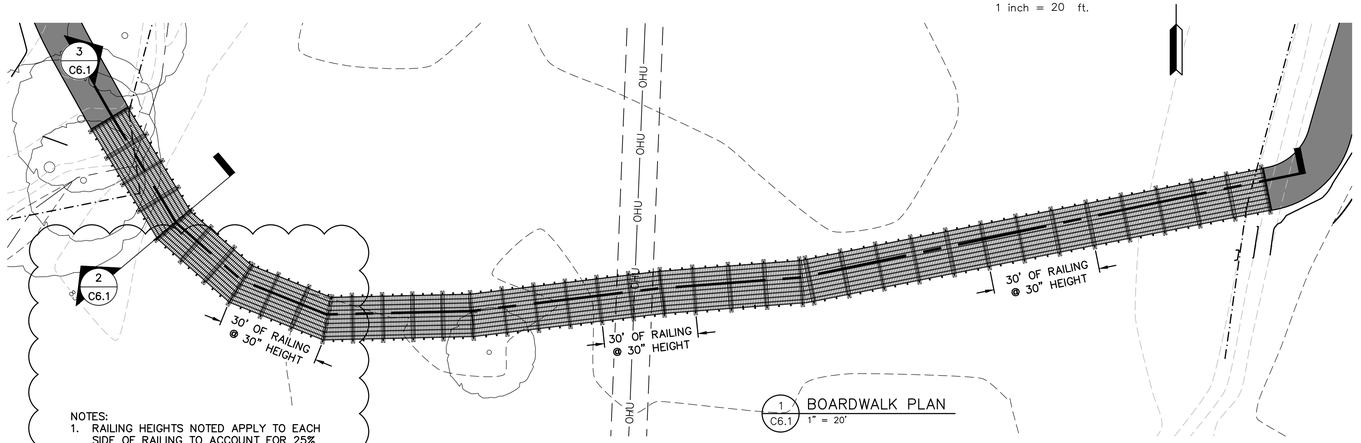
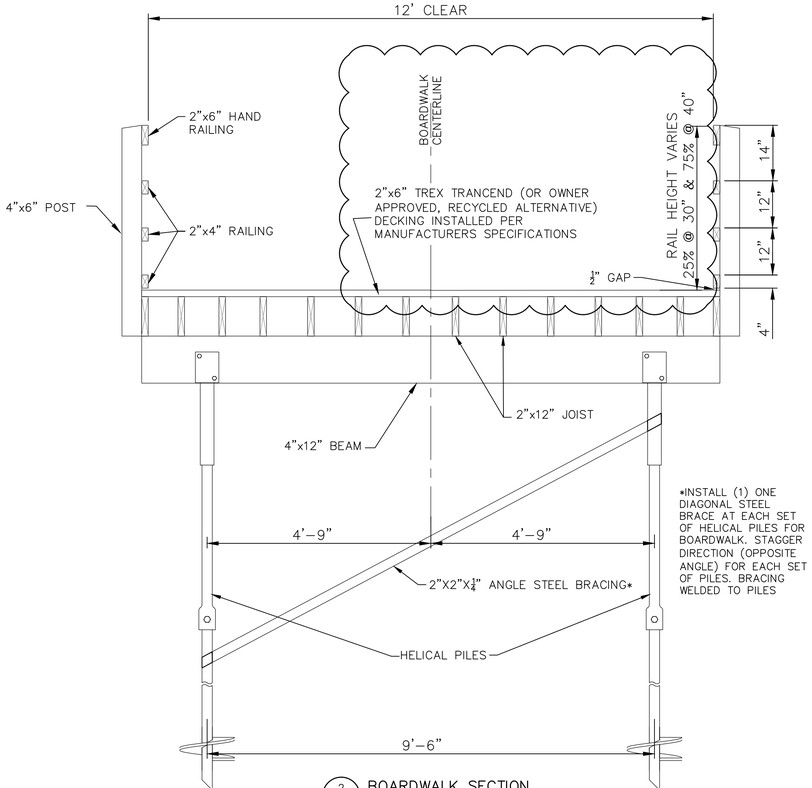


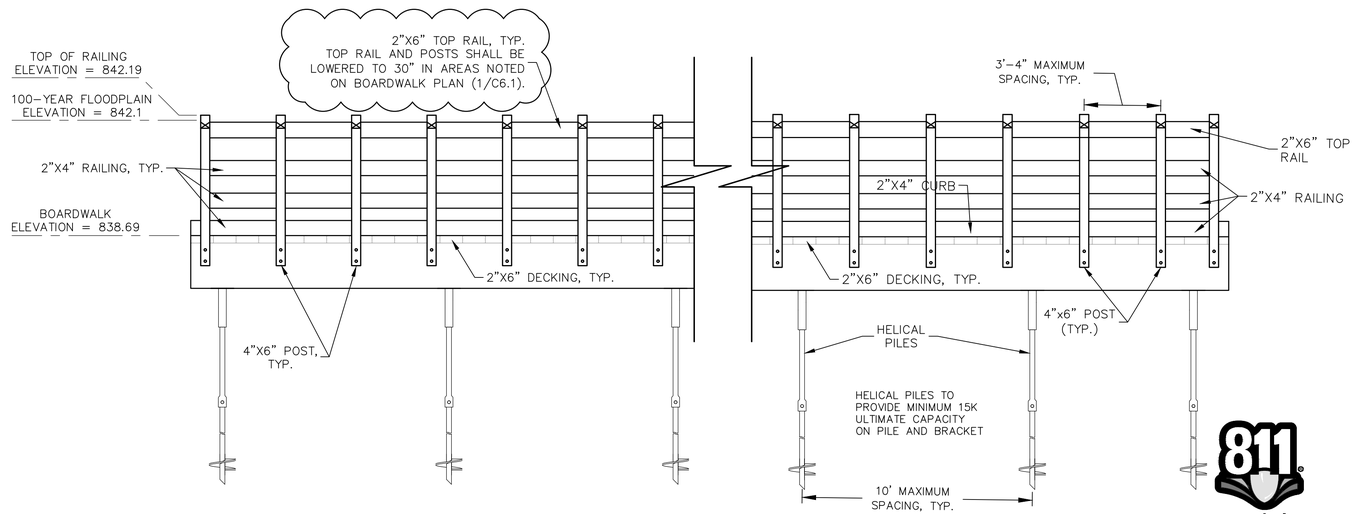
NOTES:
1. RAILING HEIGHTS NOTED APPLY TO EACH SIDE OF RAILING TO ACCOUNT FOR 25% MIN. LOWERED HEIGHT REQUIREMENT.
2. RAILINGS SHALL BE 40" FROM DECKING SURFACE UNLESS OTHERWISE NOTED ON THE PLANS.
3. ALL RAILINGS SHALL MEET ADA REQUIREMENTS.

1 / C6.1 BOARDWALK PLAN
1" = 20'

GRAPHIC SCALE
20 10 0 20
1 inch = 20 ft.



2 / C6.1 BOARDWALK SECTION
NOT TO SCALE



3 / C6.1 BOARDWALK SECTION
NOT TO SCALE

REVISION	DATE	DRAWN	DESCRIPTION
1	06/25/19	JAL	UPDATE GRADING & ELEVATIONS
2	07/24/19	JAL	ADD RECYCLED DECKING, MOD RAILING HEIGHT PER DNR

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PROJECT
CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

SHEET TITLE
BOARDWALK DETAILS

APPROVED	DBH
CHECKED	DBH
DRAWN	HTK
JOB NO.	18–0066
DATE	3/18/19
SCALE	AS NOTED
SHEET NO.	C6.1

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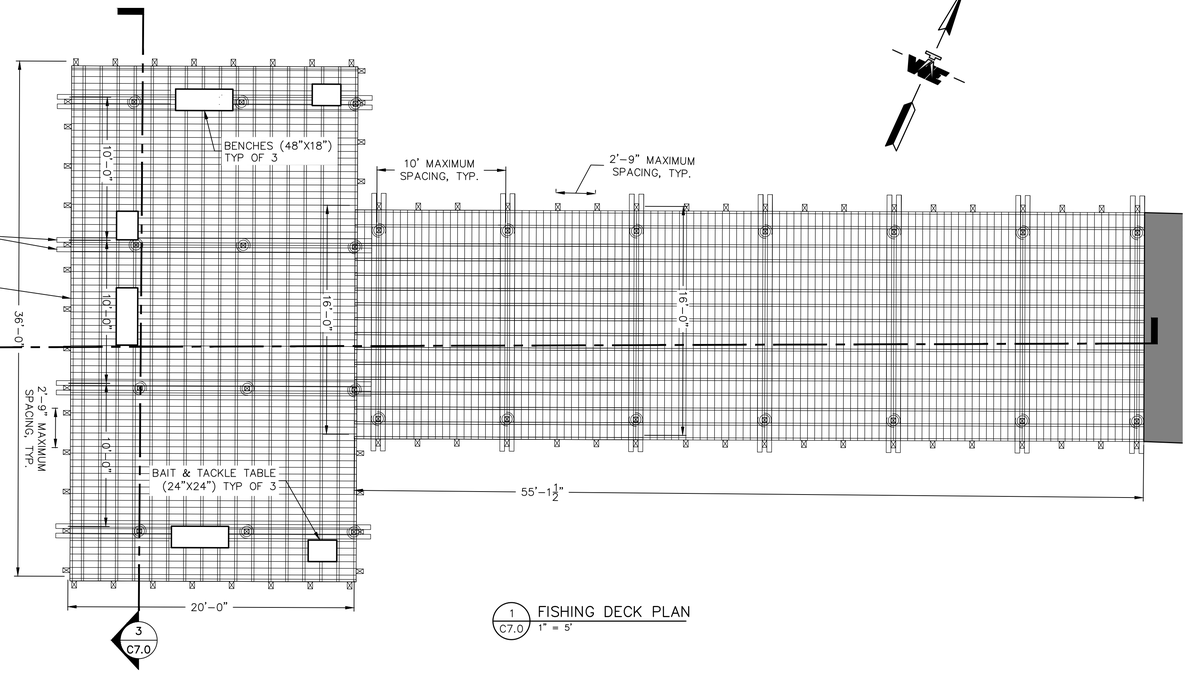
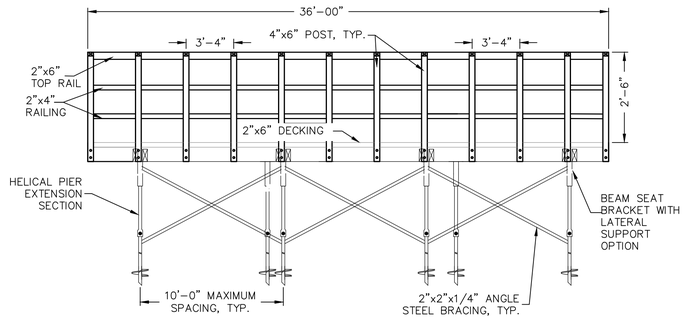


1 C7.0 FISHING DECK PLAN 1" = 5'



3 C7.0 FISHING DECK SECTION 1" = 5'

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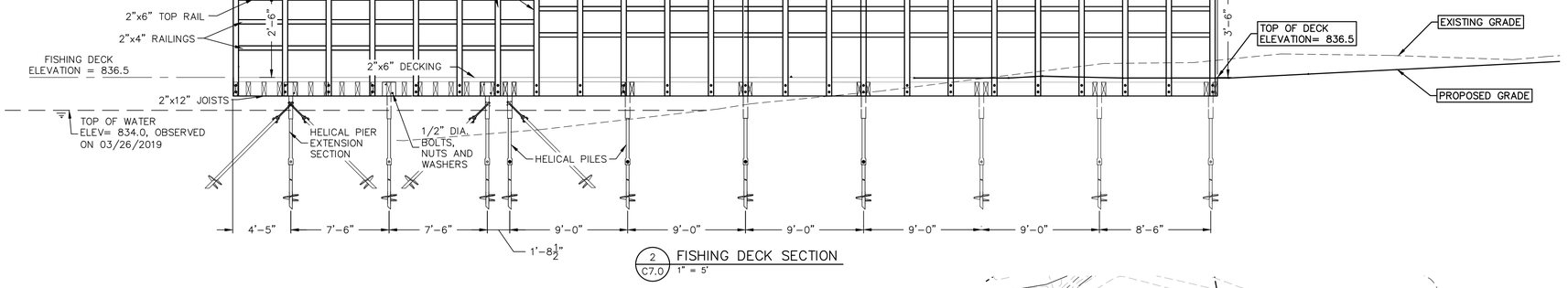
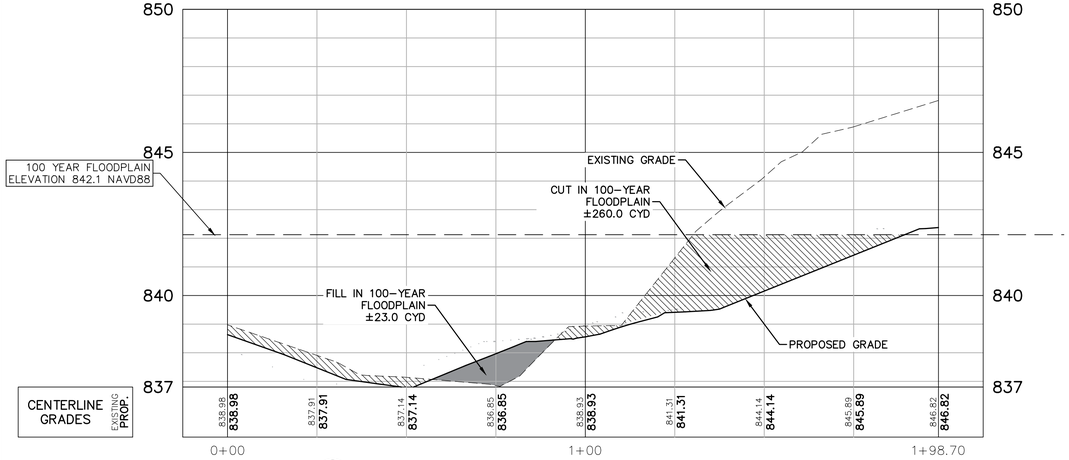
NOTE:
HELICAL PILES TO PROVIDE 15K LBS ULTIMATE CAPACITY ON PIERS AND BRACKETS



2 C7.0 FISHING DECK SECTION 1" = 5'

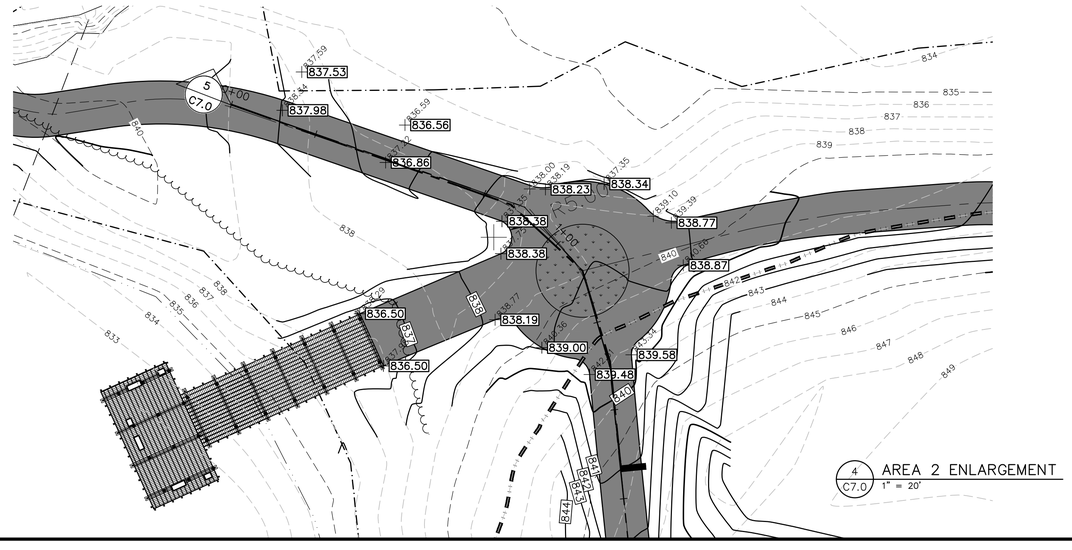
CUT/FILL QUANTITY (BELOW 100-YEAR FLOOD ELEVATION)			
LOCATION	WETLAND AREA IMPACTED (SFT)**	CUT VOLUME (CYD)	FILL VOLUME (CYD)
AREA 1	-1830	0	63
AREA 2	0	260	23
FISHING DECK*	0	0	14.9
BOARDWALK*	0	0	47.6
WETLAND MITIGATION	4,100	130	0
SUB-TOTAL	2270	390	148.5
NET WETLAND AREA GAINED/(LOST)	**2,270**	**(CUT)/FILL TOTAL**	**(241.50)**

*FILL IS COMPRISED OF WOOD MEMBERS AND DECKING MATERIALS BELOW 100-YEAR FLOODPLAIN
**NEGATIVE NUMBER DENOTES REMOVAL



5 C7.0 AREA 2 PROFILE 1" = 20'

NOTE: CUT AND FILL QUANTITIES SHOWN IN DETAIL 5/C7.0 ARE FOR "AREA 2" ONLY.



4 C7.0 AREA 2 ENLARGEMENT 1" = 20'

REVISION	DATE	DRAWN	DESCRIPTION
1	04/26/19	JAL	REVISE GRADING
2	05/23/19	JAL	UPDATE GRADING AND PATH TO AVOID WETLAND
3	06/25/19	JAL	UPDATE CUT/FILL QUANTITIES AND ELEVATIONS

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PROJECT: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

SHEET TITLE: FISHING DECK PLAN AND PROFIL-DETAILS

APPROVED: DBH
CHECKED: DBH
DRAWN: HTK
JOB NO.: 18-0066
DATE: 3/18/19
SCALE: AS NOTED
SHEET NO.: C7.0

BENCHMARKS:

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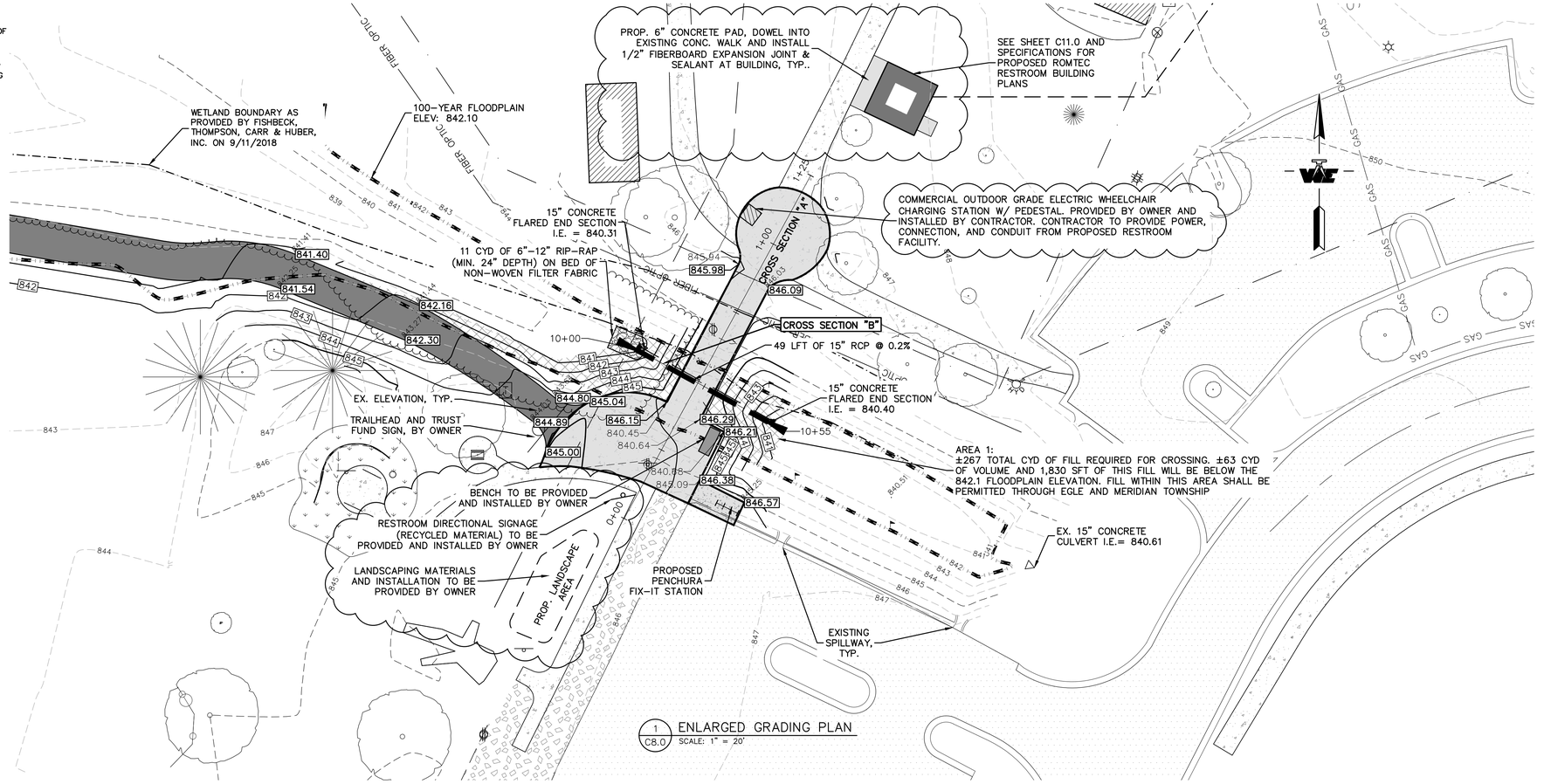
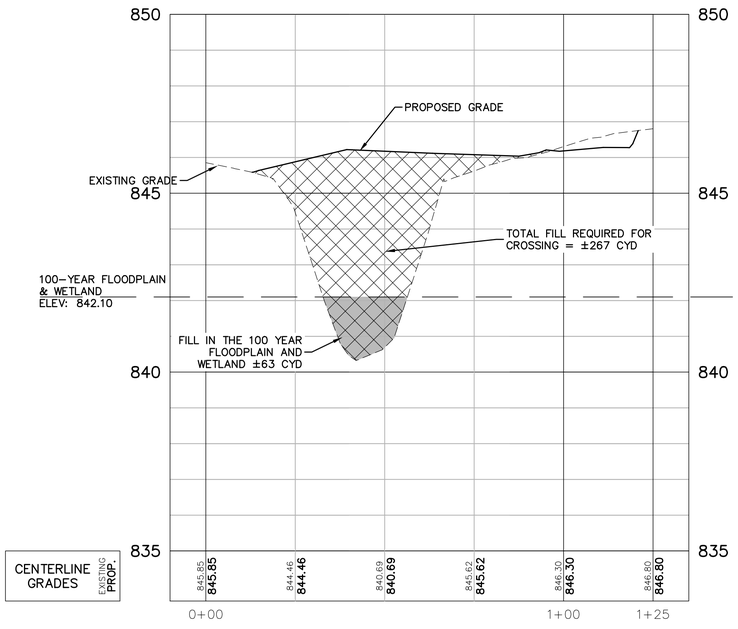
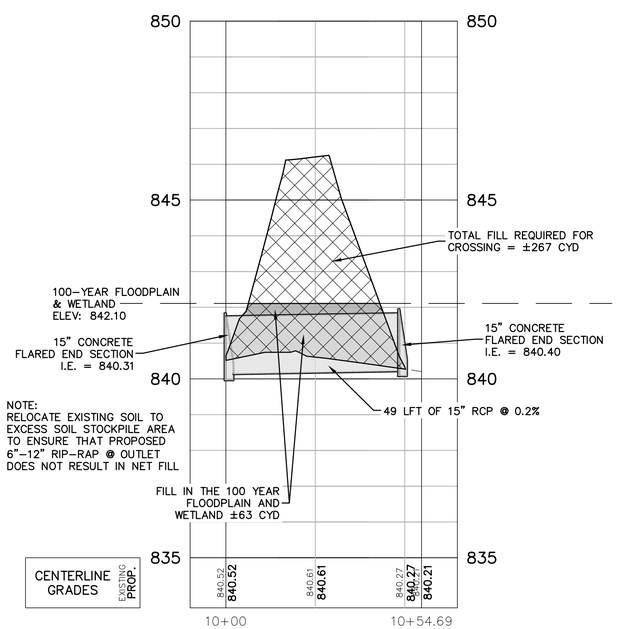


1 / C8.0 ENLARGED GRADING PLAN
SCALE: 1" = 20'



3 / C8.0 "AREA 1" CROSS SECTION "A"
SCALE: 1" = 20'
HORIZ: 1" = 2'



3 / C8.0 "AREA 1" CROSS SECTION "B"
SCALE: 1" = 20'
HORIZ: 1" = 2'

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REVISION	DATE	DRAWN	DESCRIPTION
1	04/29/19	JAL	REVISE STORM GRADING
2	05/20/19	JAL	REVISE GRADING, ADD FILL NOTES
3	06/19/19	JAL	REVISE GRADING AND QUANTITIES
4	07/24/19	JAL	ADD WHEELCHAIR CHARGING STATION, SIGN, AND BENCH PER DNR

WOLVERINE
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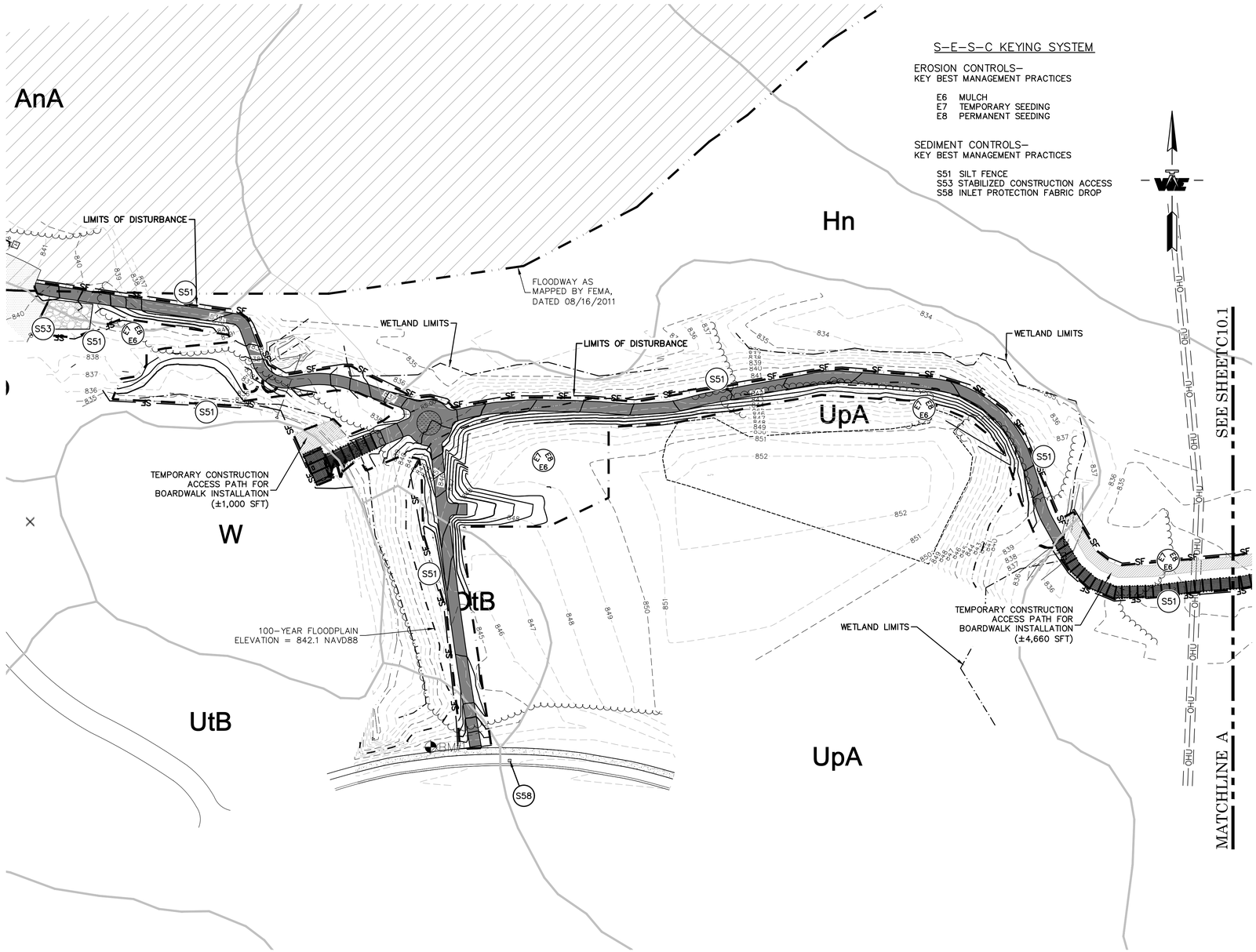
PROJECT: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

SHEET TITLE: ENLARGED PLAN (AREA 1)

APPROVED: DBH
CHECKED: DBH
DRAWN: HTK
JOB NO.: 18-0066
DATE: 11/12/18
SCALE: AS NOTED
SHEET NO.: C8.0

S:\Projects\2018\18-0066_C3D\DWGs\C8.0 ENLARGED PLAN (AREA 1).dwg, Wednesday, July 24, 2019 4:00:08 PM, Jesse A. Lawter



S-E-S-C KEYING SYSTEM

EROSION CONTROLS–
KEY BEST MANAGEMENT PRACTICES

E6 MULCH
E7 TEMPORARY SEEDING
E8 PERMANENT SEEDING

SEDIMENT CONTROLS–
KEY BEST MANAGEMENT PRACTICES

S51 SILT FENCE
S53 STABILIZED CONSTRUCTION ACCESS
S58 INLET PROTECTION FABRIC DROP

SOIL EROSION NOTES:

1. APPROVAL IS GRANTED ACCORDING TO THE SOIL EROSION AND SEDIMENTATION CONTROL (SESC) PLAN, PREPARED BY WOLVERINE ENGINEERS AND SURVEYORS, INC., SUBMITTED FEBRUARY 27, 2019, EXCEPT AS AMENDED HEREIN, OR AS AMENDED DURING CONSTRUCTION BY LETTER FROM THE INGHAM COUNTY DRAIN COMMISSIONER'S OFFICE.

2. IF WORK DOES NOT COMMENCE FOR SEVERAL MONTHS, AS INDICATED IN THE APPLICATION, THE PERMIT WILL BE EXTENDED AT NO CHARGE TO ALLOW FOR NINE MONTHS FROM COMMENCEMENT OF EARTH DISTURBANCE ACTIVITY. PLEASE CONTACT JASON LYNN (517.719.4901) TO ARRANGE FOR THIS EXTENSION WHEN YOU ARE READY TO COMMENCE THE PROJECT.

3. APPROVAL OF THIS PERMIT DOES NOT AUTHORIZE ANY EARTH DISTURBANCE ACTIVITY IN STATE REGULATED WETLANDS OR INLAND STREAMS, EXCEPT AS APPROVED AND AUTHORIZED BY A MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY (MDEQ) PERMIT UNDER PART 301 OR 303 OF PUBLIC ACT 451 OF 1994, IF NECESSARY, WHICH SHALL BE SUBMITTED TO THE INGHAM COUNTY DRAIN COMMISSIONER'S OFFICE PRIOR TO COMMENCING ANY EARTH DISTURBANCE AUTHORIZED HEREIN. PLEASE NOTE THAT THE INGHAM COUNTY DRAIN COMMISSIONER'S OFFICE IS NOT AUTHORIZED TO IMPLEMENT PART 301 OR 303 OF PUBLIC ACT 451 OF 1994, OR MAKE WETLAND OR OTHER DETERMINATIONS PURSUANT TO THESE ACTS AS TO WHAT IS EXEMPTED AND WHAT NEEDS A PERMIT; AND THEREFORE, ISSUANCE OF THIS PERMIT DOES NOT IMPLY OR CONFIRM THE LOCATION OF WETLANDS OR OTHER WATERS OF THE STATE AS SHOWN ON THE PLAN, OR IMPLY OR CONFIRM THE NEED FOR A PERMIT UNDER THESE ACTS OR THE EXEMPTION UNDER THESE ACTS. IT IS THE RESPONSIBILITY OF THE PERMITTEE TO ENSURE THAT STATE REGULATED WETLANDS AND/OR INLAND STREAMS ARE NOT IMPACTED BY ANY EARTH DISTURBANCE AUTHORIZED UNDER THIS PERMIT WITHOUT THE PROPER MDEQ PERMIT, IF REQUIRED, AND TO ACQUIRE ANY NECESSARY PERMITS FROM THE MDEQ PRIOR TO THE INITIATION OF THE EARTH CHANGE AUTHORIZED HEREIN. PLEASE NOTE THAT AMENDMENTS TO THIS PERMIT MAY BE NECESSARY TO CONFORM WITH THE REQUIREMENTS OF ANY ISSUED MDEQ PERMIT, OR ANY MODIFICATIONS TO ANY ISSUED MDEQ PERMIT.

4. CONTACT INFORMATION FOR ALL ON-SITE CONTRACTORS WHO WILL BE DISTURBING THE EARTH, INCLUDING ON-SITE CONTACT PERSON, OFFICE, MOBILE AND FAX PHONE NUMBERS, AND ADDRESSES SHALL BE PROVIDED TO THE INGHAM COUNTY DRAIN COMMISSIONER'S OFFICE, ATTENTION JASON LYNN, PRIOR TO THAT COMPANY'S COMMENCEMENT OF ANY EARTH DISTURBANCE AUTHORIZED BY THIS PERMIT. THE SUBMITTED SESC PLAN IS HEREBY SO AMENDED.

5. THE LANDOWNER, CONTRACTOR(S), AND ANY AGENT INVOLVED IN OBTAINING OR EXERCISING AND PERFORMING THE EARTH DISTURBANCE WORK AUTHORIZED BY THIS PERMIT, ARE ALL HELD RESPONSIBLE TO ENSURE THAT THE WORK IS PERFORMED IN ACCORDANCE WITH ALL APPROVED PLANS, SPECIFICATIONS, AND CONDITIONS CONTAINED AND PERMITTED HEREIN. PRIOR TO INITIATING EARTH DISTURBANCE AUTHORIZED HEREIN, THE PERMITTEE IS REQUIRED TO PROVIDE A COPY OF THIS PERMIT AND APPROVED SESC PLAN TO ANY CONTRACTOR(S) AND AGENTS INVOLVED WITH EARTH DISTURBANCE WORK. THE CONTRACTOR(S) AND AGENTS ARE REQUIRED TO PROVIDE A COPY OF THE PERMIT AND APPROVED SESC PLAN TO ALL SUBCONTRACTORS INVOLVED WITH EARTH DISTURBANCE WORK. THE SUBMITTED SESC PLAN IS HEREBY SO AMENDED.

6. IF THE PROPERTY SUBJECT TO THIS PERMIT IS TRANSFERRED, THE PERMIT, INCLUDING ALL PERMIT OBLIGATIONS AND CONDITIONS, ARE TRANSFERRED WITH THE PROPERTY ALONG WITH THE RESPONSIBILITY FOR ANY VIOLATIONS OF THE PERMIT THAT EXIST ON THE DATE OF THE TRANSFER OF THE PROPERTY. IF A PARCEL OF THE PROPERTY, BUT NOT THE ENTIRE PROPERTY IS TRANSFERRED, THE PERMIT OBLIGATIONS AND CONDITIONS WITH RESPECT TO THAT PARCEL ARE TRANSFERRED, BUT NOT THE PERMIT, ALONG WITH THE RESPONSIBILITY FOR ANY VIOLATIONS OF THE PERMIT WITH RESPECT TO THAT PARCEL THAT EXIST ON THE DATE OF THE TRANSFER OF THE PARCEL. NOTICE OF PROPERTY OR PARCEL TRANSFERS SHALL BE SUBMITTED TO THE INGHAM COUNTY DRAIN COMMISSIONER'S OFFICE PRIOR TO TRANSFER AND SHALL OTHERWISE BE IN COMPLIANCE WITH MCL 324.9112. MAINTENANCE RESPONSIBILITIES SHALL BECOME PART OF ANY SALES AGREEMENTS FOR THE LAND ON WHICH THE PERMANENT SESC MEASURES ARE LOCATED. THE SUBMITTED SESC PLAN IS HEREBY SO AMENDED.

7. THE FOLLOWING GENERAL CONDITIONS ARE HEREBY MADE CONDITIONS OF THIS PERMIT: 1) DESIGN, CONSTRUCT, AND COMPLETE THE EARTH CHANGE IN A MANNER THAT LIMITS THE EXPOSED AREA OF DISTURBED LAND FOR THE SHORTEST PERIOD OF TIME. 2) REMOVE SEDIMENT CAUSED BY THE ACCELERATED SOIL EROSION FROM RUNOFF WATER BEFORE IT LEAVES THE SITE OF THE EARTH CHANGE. 3)TEMPORARY OR PERMANENT CONTROL MEASURES SHALL BE DESIGNED AND INSTALLED TO CONVEY WATER AROUND, THROUGH, OR FROM THE EARTH CHANGE AT A NON-EROSIVE VELOCITY. 4) INSTALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES BEFORE OR UPON COMMENCEMENT OF THE EARTH CHANGE ACTIVITY AND MAINTAIN MEASURES ON A DAILY BASIS. REMOVE TEMPORARY MEASURES AFTER PERMANENT MEASURES ARE IN PLACE AND THE AREA IS STABILIZED. 5) COMPLETE PERMANENT SOIL EROSION CONTROL MEASURES FOR THE EARTH CHANGE WITHIN FIVE CALENDAR DAYS AFTER FINAL GRADING OR UPON COMPLETION OF THE FINAL EARTH CHANGE. IF IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE THE EARTH CHANGE, THEN MAINTAIN TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES UNTIL PERMANENT EROSION CONTROL MEASURES ARE IN PLACE AND THE AREA IS STABILIZED. THE SUBMITTED SESC PLAN IS HEREBY SO AMENDED.

8. THE PERMIT SHALL BE POSTED BY THE CONTRACTOR AND AVAILABLE AT THE CONSTRUCTION SITE DURING THE EARTH DISTURBANCE ACTIVITY AS THE LINEAR WORK PROGRESSES, VISIBLE FROM THE PUBLIC ROAD, UNTIL THE LAND IS PERMANENTLY STABILIZED AND THIS OFFICE CLOSES THE PERMIT, LAMINATING THE PERMIT WILL HELP IT TO WITHSTAND THE WEATHER.

9. AN INGHAM COUNTY INSPECTOR IS TO VERIFY PROPER INSTALLATION OF THE SESC MEASURES PRIOR TO COMMENCEMENT OF EARTH DISTURBANCE AUTHORIZED HEREIN (CONTACT JASON LYNN, 719.4901, TO ARRANGE FOR THIS INSPECTION). THE SUBMITTED SESC PLAN IS HEREBY SO AMENDED.

10. THE AUTHORITY TO CONDUCT ACTIVITIES AS AUTHORIZED BY THIS PERMIT IS GRANTED UNDER PROVISIONS OF PART 91, ACT 451 OF PUBLIC ACT OF 1994. APPROVAL HEREIN DOES NOT CONVEY, PROVIDE, OR OTHERWISE IMPLY APPROVAL OF ANY OTHER GOVERNING ACT ORDINANCE, OR REGULATION, NOR DOES IT WAIVE THE PERMITTEE'S OBLIGATION TO ACQUIRE ANY OTHER APPROVALS OR AUTHORIZATIONS NECESSARY TO CONDUCT THE PERMITTED ACTIVITIES, INCLUDING, BUT NOT LIMITED TO, PERMITS FROM THE INGHAM COUNTY DRAIN COMMISSIONER FOR CROSSING A DRAIN, ENCROACHING IN A DRAIN EASEMENT, OR DISCHARGING TO A DRAIN.

11. PERMITTEE HEREBY RELEASES, WAIVES, AND DISCHARGES INGHAM COUNTY AND THE INGHAM COUNTY DRAIN COMMISSIONER, ITS EMPLOYEES AND AGENTS, AND THE DRAINAGE DISTRICT FROM ANY AND ALL LIABILITY TO PERMITTEE ARISING UNDER OR IN ANY MANNER RELATED TO THE PRIVILEGES GRANTED UNDER THIS PERMIT.

12. IN ISSUING THIS PERMIT, THE INGHAM COUNTY DRAIN COMMISSIONER'S OFFICE HAS RELIED ON THE INFORMATION AND DATA PROVIDED BY PERMITTEE IN CONNECTION WITH THE APPLICATION. IF SUBSEQUENT TO THE ISSUANCE OF THIS PERMIT, SUCH INFORMATION OR DATA ARE FOUND TO BE FALSE, INCOMPLETE, OR INACCURATE, THE INGHAM COUNTY DRAIN COMMISIONER'S OFFICE MAY MODIFY, REVOKE, OR SUSPEND THE PERMIT, IN WHOLE OR IN PART, IN ACCORDANCE WITH THE NEW INFORMATION.

13. FAILURE TO COMPLY WITH THE CONDITIONS OF THIS PERMIT MAY SUBJECT THE PERMITTEE TO REVOCATION OF THE PERMIT AND OTHER ACTION AS CITED BY PART 91, ACT 451 OF THE PUBLIC ACTS OF 1994, UNDER WHICH THIS PERMIT IS GRANTED.

14. REQUESTS BY THE PERMITTEE FOR MODIFICATION OF THE APPROVED SESC PLAN HEREIN SHALL BE SUBMITTED IN WRITING TO CARLA CLOS.

15. INITIATION OF WORK APPROVED UNDER THIS PERMIT CONFIRMS THE PERMITTEE'S ACCEPTANCE AND AGREEMENT TO COMPLY WITH THE TERMS AND CONDITIONS OF THIS PERMIT.

REVISION	DATE	DRAWN	DESCRIPTION
1	05/20/19	JAL	GENERAL PLAN UPDATES

WOLVERINE
Engineers & Surveyors, Inc.
312 North Street
Mason, Michigan 48854
Ph: 517.676.9200
Fx: 517.676.9396
http://www.wolveng.com

Know what's below. Call before you dig.

!!! CAUTION !!!

THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE VARIOUS UTILITY OWNERS IN ACCORDANCE WITH MICHIGAN P.A. NO. 174 OF 2013.

SESC LEGEND

- ASPHALT
- GRASS
- STORM SEWER
- STORM MANHOLE / STORM CATCH BASIN / STORM END SECTION
- CONSTRUCTION LIMITS
- 100 CONTOUR – MJR
- 100 CONTOUR – MNR
- XX BMP KEY (SEE SHEET C5.1 FOR BMP DETAILS)

SEQUENCE OF CONSTRUCTION

WEEK 1: INSTALL SOIL EROSION CONTROL (SILT FENCE, INLET PROTECTION)
WEEK 2–4: SITE CLEARING, SITE DEMOLITION.
WEEK 4–12: INSTALL MISC. SITE UTILITIES, CONCRETE, AND ASPHALT.
WEEK 13: CLEAN–UP, REMOVE TEMP. SESC MEASURES.

ANTICIPATED START DATE: 8/1/2019
ANTICIPATED COMPLETION DATE: 11/31/2019

THE SITE WILL BE PERMANENTLY STABILIZED WITHIN 5 DAYS OF FINAL GRADE OR FINAL ACTIVITY IN AN AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PERMANENT STABILIZATION MEASURES FOR THE SITE. TURF (RE)ESTABLISHMENT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR FOR ONE YEAR AFTER PROJECT COMPLETION (PART OF 1–YEAR WARRANTY). ONCE THE 1–YEAR WARRANTY PERIOD HAS ENDED, THE AREA WILL BE INSPECTED BY THE OWNER AND ANY FAILURES OF VEGETATION TO ESTABLISH, WILL BE RE–SEEDED BY THE PROJECT OWNER.

THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT BY THE CONTRACTOR.

REMOVE TEMP. SESC MEASURES DATE IS APPROXIMATE AND TEMPORARY SESC MEASURES SHALL BE LEFT IN PLACE UNTIL SOILS ARE COMPLETELY STABILIZED AND PAVING IS COMPLETE.

DEWATERING

DEWATERING IS NOT ANTICIPATED AT THIS TIME. IF DEWATERING IS REQUIRED TO COMPLETE THE CONSTRUCTION OF BUILDING STRUCTURES OR UTILITIES, A REVISED PLAN SHALL BE SUBMITTED TO INGHAM COUNTY DRAIN COMMISSION PRIOR TO PROCEEDING WITH ANY DEWATERING.

SOILS

THE USDA SOIL CONSERVATION SERVICE SOIL SURVEY OF INGHAM COUNTY, OCTOBER 5, 2017, INDICATES THE SITE IS COMPRISED OF THE FOLLOWING SOILS:

AnA –AUBBEENAUBBEE–CAPAC SANDY LOAMS, 0 TO 3 PERCENT SLOPES
Co – COCOLWOOD–BROOKSTON LOAMS
Hn – HOUGHTON MUCK, 0 TO 1 PERCENT SLOPES
MtB – METEA LOAMY SAND, 2 TO 6 PERCENT SLOPES
MtC – METEA LOAMY SAND, 6 TO 12 PERCENT SLOPES
OtB – OSHTEMO–SPINKS LOAMY SANDS, 0 TO 6 PERCENT SLOPES
UpA – URBAN LAND–CAPAC–COLWOOD COMPLEX, 0 TO 4 PERCENT SLOPES
UtB – URBAN LAND–MARLETTE COMPLEX, 2 TO 12 PERCENT SLOPES
W – WATER

SITE INFO

A.) DISTURBED AREA: 112,300 SFT OR 2.6 ACRES

NOTES:

1. DISTURBED AREAS OUTSIDE OF WETLAND BOUNDARIES SHALL BE ROUGH GRADED, RECEIVE A MINIMUM OF 4–INCHES OF TOP SOIL AND FINE GRADED, SEEDED AND MULCHED.
2. GRASS SEED MIX SHALL BE EARTHCARPET SPARTAN GRADE A MIXTURE, MICHIGAN STATE SEED SOLUTIONS, GRAND LEDGE, MICHIGAN, PH. 800 647–8873. SEE NOTE 6 BELOW FOR WETLAND SEEDING REQUIREMENTS.
3. EXCESS MATERIAL SHALL BE DISPOSED OF AS DIRECTED BY THE OWNER/ENGINEER.
4. SILT FENCE SHALL BE INSTALLED ON BACK OF CURB OR SIDEWALK UPON COMPLETION OF ANY PROPOSED WORK AREA TO PREVENT THE TRACKING OF SEDIMENT OVER PAVEMENT.
5. ALL TEMPORARY EARTH DISTURBANCE RESULTING FROM INSTALLATION OF THE PIER, BOARDWALK, DRAIN CROSSING, OR OTHER ASSOCIATED ACTIVITIES SHALL BE FULLY RESTORED IMMEDIATELY FOLLOWING THE ACTIVITY WHICH CAUSED THE DISTURBANCE.
6. APPROPRIATE WETLAND SEEDING AS SPECIFIED BY THE ENGINEER SHALL BE USED TO RESTORE ANY WETLAND AREAS WHICH ARE DISTURBED. SEEDING VARIES DEPENDING ON SPECIFIC WETLAND CONDITIONS.
7. TEMPORARY WETLAND RESTORATION AREAS SHALL BE STABILIZED AND APPROVED BY MERIDIAN CHARTER TOWNSHIP WITHIN 3–MONTHS OF THE DISTURBANCE. MERIDIAN CHARTER TOWNSHIP RESERVES THE RIGHT TO REQUEST ADDITIONAL SEED OR STABILIZING METHODS AS REQUIRED TO MEET PRE–DISTURBANCE CONDITION. CONTRACTOR IS RESPONSIBLE FOR RESTORATION IN THESE AREAS UNTIL THEY ARE FULLY STABILIZED.

PROJECT: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

SHEET TITLE: SESC PLAN (WEST)

APPROVED	DBH
CHECKED	DBH
DRAWN	HTK
JOB NO.	18–0066
DATE	11/12/18
SCALE	1" = 60'
SHEET NO.	C9.0

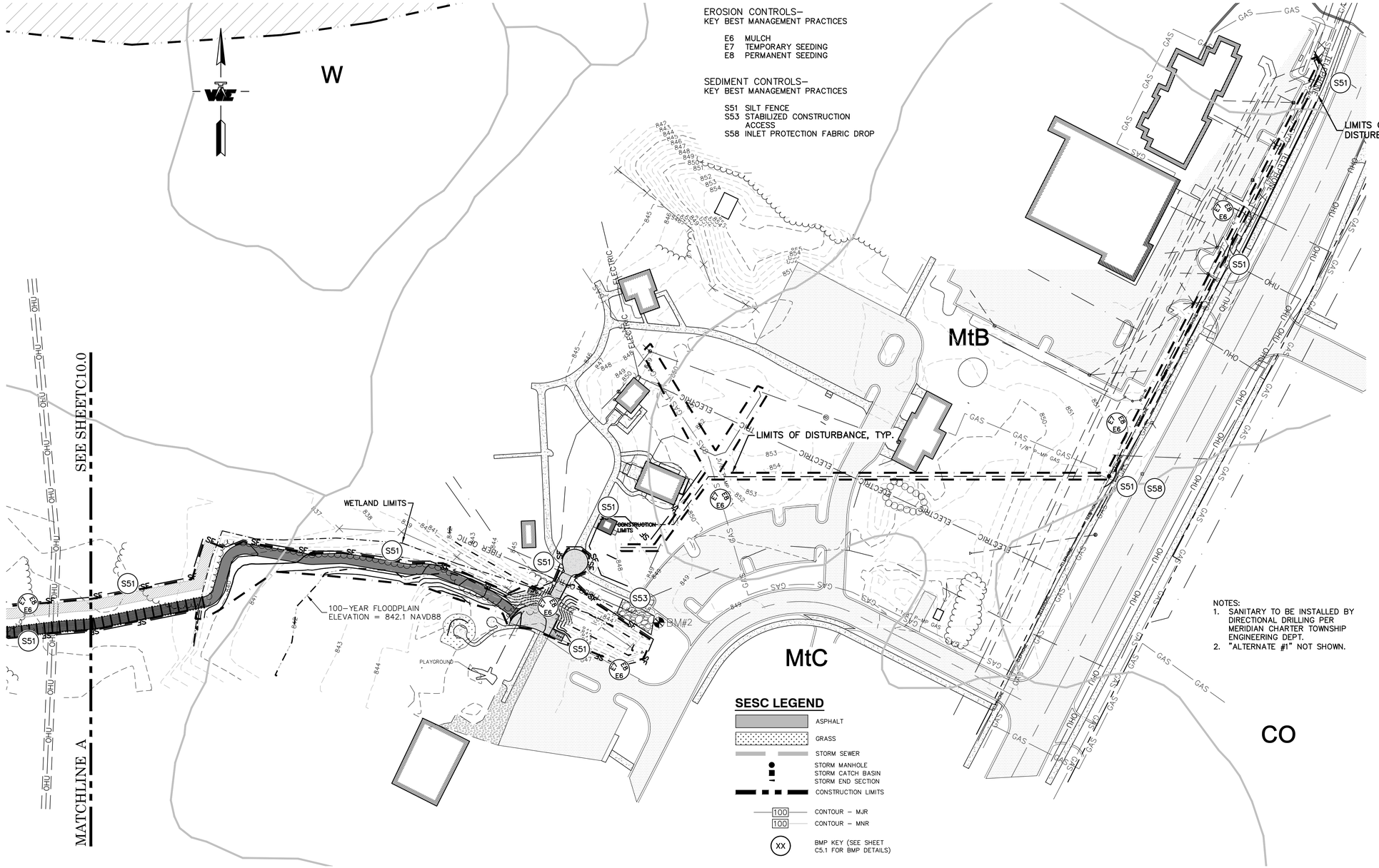
S-E-S-C KEYING SYSTEM

EROSION CONTROLS–
KEY BEST MANAGEMENT PRACTICES

E6 MULCH
E7 TEMPORARY SEEDING
E8 PERMANENT SEEDING

SEDIMENT CONTROLS–
KEY BEST MANAGEMENT PRACTICES

S51 SILT FENCE
S53 STABILIZED CONSTRUCTION ACCESS
S58 INLET PROTECTION FABRIC DROP



SESC LEGEND

- ASPHALT
- GRASS
- STORM SEWER
- STORM MANHOLE
- STORM CATCH BASIN
- STORM END SECTION
- CONSTRUCTION LIMITS
- 100 CONTOUR – MJR
- 100 CONTOUR – MNR
- XX BMP KEY (SEE SHEET C5.1 FOR BMP DETAILS)

NOTES:
1. SANITARY TO BE INSTALLED BY DIRECTIONAL DRILLING PER MERIDIAN CHARTER TOWNSHIP ENGINEERING DEPT.
2. "ALTERNATE #1" NOT SHOWN.

811
Know what's **below.**
Call before you dig.

!!! CAUTION !!!

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REVISION	DATE	DRAWN	DESCRIPTION
1	05/30/19	JAL	GENERAL PLAN UPDATES
2	06/25/19	JAL	GENERAL PLAN UPDATES

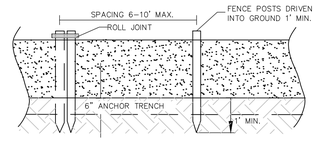
WOLVERINE
Engineers & Surveyors, Inc.
312 North Street
Mason, Michigan 48854
Ph: 517 676 9200
Fx: 517 676 9396
http://www.wolveng.com

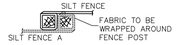
PROJECT
CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

SHEET TITLE
SESC PLAN (EAST) & NOTES

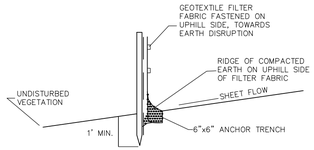
APPROVED	DBH
CHECKED	DBH
DRAWN	HTK
JOB NO.	18–0066
DATE	11/12/18
SCALE	1" = 60'
SHEET NO.	C9.1

S51 SILT FENCE





ROLL JOINTS



STANDARD SYMBOL

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S51 SILT FENCE SPECIFICATIONS

When
- A temporary measure for preventing sediment movement.

Why
- Used to prevent sediment suspended in runoff from leaving an earth change area.

Where
- Use adjacent to critical areas, wetlands, base of slopes, and watercourses.

How
1. Install parallel to a contour.
2. The silt fence should be made of woven geotextile fabric.
3. Silt fence should accommodate no more than 1/2 to 1 acre of drainage per 100' of fence and on slopes less than 1:2 (v:h).
4. Dig a 6" trench along the area where the fence is to be installed.
5. Place 6" of the silt fence bottom flap into the trench.
6. Backfill the trench with soil and compact the soil on both sides. Create a small ridge on the up–slope side of the fence.
7. Install wooden stakes 6 – 10' apart and drive into the ground a minimum of 12".
8. Staple the geotextile fabric to the wooden stakes.
9. Join sections of silt fence by wrapping ends together (See drawing).

Maintenance
- Inspect frequently and immediately after each storm event. Check several times during prolonged storm events. If necessary, repair immediately.
- If the sediment has reached 1/3 the height of the fence, the soil should be removed and disposed of in a stable upland site.

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

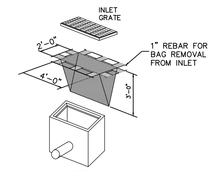
S51 SILT FENCE SPECIFICATIONS

Maintenance (cont.)
- The fence should be re–installed if water is seeping underneath it or if the fence has become ineffective.
- Silt fence should be removed once vegetation is established and up–slope area has stabilized.

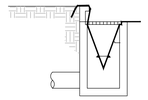
Limitations
- Silt fence may cause temporary ponding and could fail if too much water flows through the area.
- Do not use in areas with concentrated flows.
- Chance of failure increases if fence is installed incorrectly or if sediment accumulation is not removed.

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S58 INLET PROTECTION – FABRIC DROP



ISOMETRIC VIEW

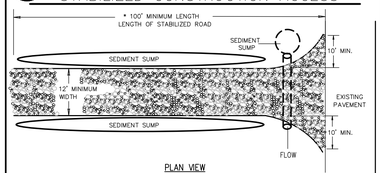


INSTALLATION DETAIL

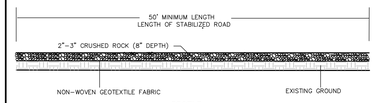
STANDARD SYMBOL

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S53 STABILIZED CONSTRUCTION ACCESS



PLAN VIEW



PROFILE

NOTES:
1. Establish stabilized construction entrance prior to the initiation of site construction activities.
2. Care should be taken to prevent material movement into adjacent wetlands/waterbodies.
3. Care should be taken to maintain existing roadside drainage via culvert installation, with sediment sump placed downflow of culvert.

STANDARD SYMBOL

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S53 STABILIZED CONSTRUCTION ACCESS SPECIFICATIONS

When
- Construction traffic is expected to leave a construction site.
- Stabilization of interior construction roads is desired.

Why
- To minimize tracking of sediment onto public roadways and to minimize disturbance of vegetation.

Where
- Stabilized construction entrances shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must be routed over the rock ingress/egress corridor.

How
1. Stabilized construction access road should be established at the onset of the construction activities and maintained in place for the duration of the construction project.
2. Installation of this practice should be the responsibility of the site clearing or excavating contractor.
3. Access location should be cleared of woody vegetation.
4. Non–woven geotextile fabric shall be placed over the existing ground prior to placing stone.
5. Access size should be a minimum of 50'. (30' for single residence lot).
6. Access width should be 12' minimum, flared at the existing road to provide a turning radius.
7. Crushed aggregate (2" to 3"), or reclaimed or recycled concrete equivalent, shall be placed at least 8" deep over the length and width of the ingress/egress corridor.

Maintenance
- Periodic inspection and needed maintenance shall be provided after each rain event.
- Stabilized entrances shall be repaired and rock added as necessary.

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S53 STABILIZED CONSTRUCTION ACCESS SPECIFICATIONS

Maintenance (cont.)
- Sediment deposited on public rights–of–way shall be removed immediately and returned to the construction site.
- If soils are such that washing of tires is required, it shall be done in a wash rack area, stabilized with stone, immediately prior to the construction access stabilized corridor.
- At the project completion, rock access road should be removed and disposed of unless utilized as subgrade for final road.

Limitations
- Effectiveness limited, sediment may be tracked onto roads requiring additional action.

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S58 INLET PROTECTION – FABRIC DROP SPECIFICATIONS

When
- When sediment laden stormwater requires treatment before entering a stormwater drainage system.

Why
- To prevent sediment from entering stormwater systems.

Where
- Use in or at stormwater inlets, especially at construction sites or in streets.

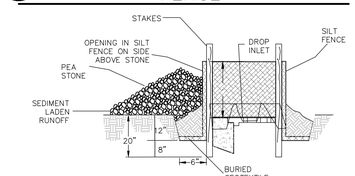
How
1. A filter fabric bag is hung inside the inlet, beneath the grate.
2. Replace grate, which will hold bag in place.
3. Anchor filter bag with 1" rebar for removal from inlet.
4. Flaps of bag that extend beyond the bag can be buried in soil in earth areas.

Maintenance
- Drop inlet filters should be inspected routinely and after each major rain event.
- Damaged filter bags should be replaced.
- Clean and/or replace filter bag when 1/2 full.
- Replace clogged fabric immediately.
- If needed, initiate repairs immediately upon inspection.
- Remove entire protective mechanism when upgradient areas are stabilized and streets have been swept.

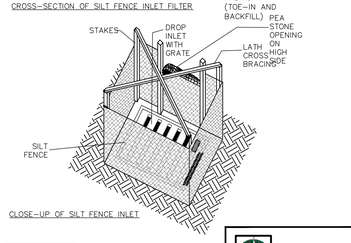
Limitations
- Can only accommodate small flow quantities.
- Requires frequent maintenance.
- Ponding may occur around storm drains if filter is clogged

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S59 INLET PROTECTION – FABRIC FENCE



CROSS–SECTION OF SILT FENCE INLET FILTER



CLOSE–UP OF SILT FENCE INLET

STANDARD SYMBOL

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

E8 PERMANENT SEEDING SPECIFICATIONS

When
- To finalize stabilization of temporary seeding areas or when an area needs permanent stabilization following completion of construction. Also used when vegetative establishment can correct existing soil erosion or sedimentation above or below grade.

Why
- To stabilize soil and prevent or reduce soil erosion/sedimentation problems from developing.

Where
- Used on construction and earth change sites which require permanent vegetative stabilization.

How
1. Review SESC plan and construction phasing to identify areas in need of permanent vegetative stabilization.
2. Select perennial grass and ground cover for permanent cover.
3. Seed mixes vary. However, they should contain native species.
4. Seed mixes should be selected through consultation with a certified seed provider and with consideration of soil type, light, moisture, use applications, and native species content.
5. Soil tests should be performed to determine the nutrient and pH levels in the soil. The pH may need to be adjusted to between 6.5 and 7.0.
6. Prepare a 3–5" deep seedbed, with the top 3–4" consisting of topsoil.
7. Slopes steeper than 1:3 should be roughened.
8. Apply seed as soon as possible after seedbed preparation. Seed may be broadcast by hand, hydroseeding, or by using mechanical drills.
9. Mulch immediately after seeding.
10. Dormant seed mixes are for use after the growing season, using seed which lies dormant in the winter and begins growing as soon as site conditions become favorable.

STANDARD SYMBOL

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

E8 PERMANENT SEEDING SPECIFICATIONS

How (cont.)
11. Protect seeded areas from pedestrian or vehicular traffic.
12. Divert concentrated flows away from the seeded area until vegetation is established.

Maintenance
- Inspect weekly and within 24 hours following each rain event in the first few months following installation to be sure seed has germinated and permanent vegetative cover is being established.
- Add supplemental seed as necessary.

Limitations
- Seeds need adequate time to establish.
- May not be appropriate in areas with frequent traffic.
- Seeded areas may require irrigation during dry periods.
- Seeding success is site specific, consider mulching or sodding when necessary.

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

E8 PERMANENT SEEDING

Planting Zones:	Lower Peninsula (South of T20N) Zone 1	Lower Peninsula (North of T20N) Zone 2	Upper Peninsula Zone 3
Seeding Window Permanent Seeding	4/15 – 10/10	5/1 – 10/1	5/1 – 9/20
Seeding Window Dormant Seeding*	11/15 – Freeze	11/01 – Freeze	11/01 – Freeze

Source: Adapted from MDOT Interim 2003 Standard Specifications for Construction

	Zone 1 Lower Peninsula (South of U.S. 10)	Zone 2 Lower Peninsula (North of U.S. 10)	Zone 3 Upper Peninsula
Seeding Dates (with Irrigation or Mulch)	4/1 – 8/1	5/1 – 9/20	5/1 – 9/10
Seeding Dates (w/o Irrigation or Mulch)	4/1 – 5/20 or 8/10 – 10/1	5/1 – 6/10 or 8/1 – 9/20	5/1 – 6/15 or 8/1 – 9/20
Dormant Seeding Dates*	11/1 – Freeze	10/25 – Freeze	10/25 – Freeze

Source: Adapted from USDA NRCS Technical Guide #342 (1999)

* Dormant seeding is for use in the late fall after the soil temperature remains consistently below 50 F, prior to the ground freezing. This practice is appropriate if construction on a site is completed in the fall but the seed was not planted prior to recommended seeding dates. No seed germination will take place until spring. A cool season annual grass may be added in an attempt to have some fall growth.
- Mulch must be used with dormant seed.
- Do not seed when the ground is frozen or snow covered.
- Do not use a dormant seed mix on grassed waterways.

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

SEEDING SCHEDULE

NOVEMBER 1 – APRIL 1 DORMANT SEED WITH HAY MULCH AND TACKIFIER OR HEAVY STRAW BLANKET (PEGGED) SEED MIX A.	JULY 1 – AUGUST 1 SEED MIX A OR B, IRRIGATION REQUIRED
APRIL 1 – JULY 1 SEED MIX A OR B	AUGUST 1 – NOVEMBER 1 SEED MIX A
DATES ARE DEPENDENT ON TEMPERATURE AND PRECIPITATION. WHEN IN DOUBT, CONTACT THE CITY ENGINEER'S OFFICE.	
GRASS SEED SPECIFICATION – EARTHCARPET SPARTAN GRADE "A", MICHIGAN STATE SEED SOLUTIONS, 800 647–8873. CHECK WITH SUPPLIER FOR OTHER MIXTURES SUITABLE FOR THE LOCATION AND SOIL TYPES TO BE STABILIZED.	
CONTRACTOR TO USE MIX A UNLESS OTHERWISE INSTRUCTED BY ENGINEER.	
MIX A (SPARTAN GRADE "A") 20% PERENNIAL RYEGRASS MIX 40% FESCUE MIX 40% BLUEGRASS MIX APPLY AT 5–6#/1000 SFT	MIX B 40% ANNUAL RYEGRASS 30% PERENNIAL RYEGRASS 30% SEED OATS APPLY AT 8#/1000 SFT
FOLLOW SOIL TEST RECOMMENDATIONS FOR FERTILIZER. IF NO SOIL TEST WAS DONE, APPLY 12–12–12 (NITROGEN–PHOSPHORUS–POTASSIUM) AT A RATE RECOMMENDED BY THE MANUFACTURER OR AT 10 #/1000 S.F.	

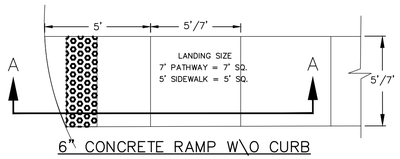
REVISION	DATE	DRAWN	DESCRIPTION

WOLVERINE
Engineers & Surveyors, Inc.
312 North Street
Mason, Michigan 48854
Ph: 517.676.9200
Fx: 517.676.9396
http://www.wolveng.com

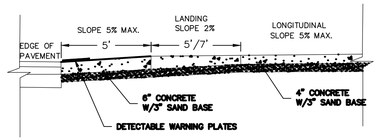
PROJECT
CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

SHEET TITLE
SESC DETAILS

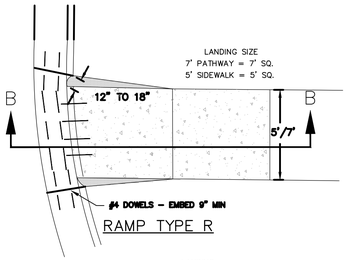
APPROVED	DBH
CHECKED	DBH
DRAWN	HTK
JOB NO.	18–0066
DATE	3/21/19
SCALE	NO SCALE
SHEET NO.	C9.2



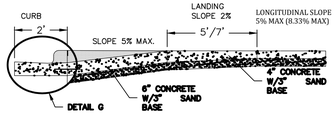
6" CONCRETE RAMP W\O CURB



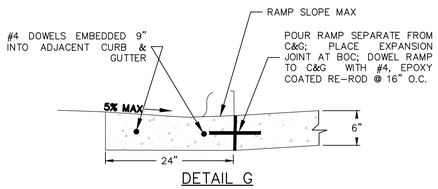
CROSS SECTION A–A



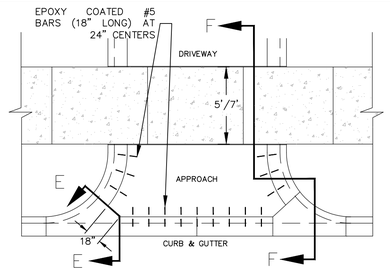
RAMP TYPE R



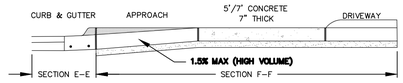
CROSS SECTION B–B



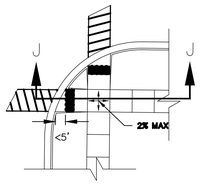
DETAIL G



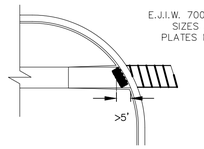
TYP. COMMERCIAL DRIVEWAY PLAN



CROSS SECTIONS E–E; F–F



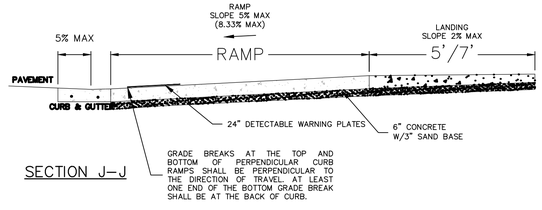
RAMPS LOCATED IN RADIUS



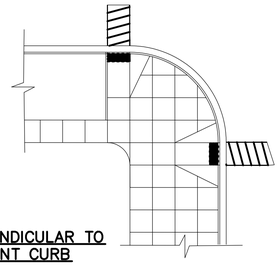
RAMP LOCATED IN RADIUS

DETECTABLE WARNING DETAILS

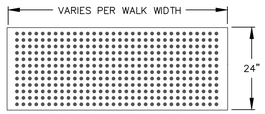
E.J.I.W. 7005 DETECTABLE WARNING PLATE
SIZES AVAILABLE 12", 18" & 24"
PLATES MUST BE ASPHALTIC COATED



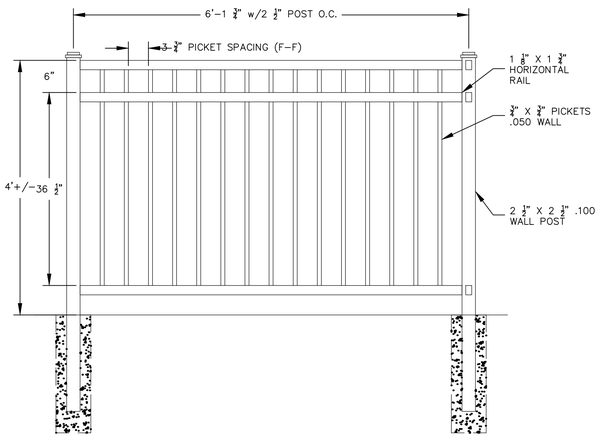
SECTION J–J



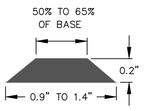
RAMP
PERPENDICULAR TO
TANGENT CURB



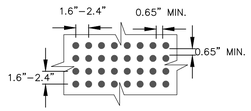
DOME ALIGNMENT



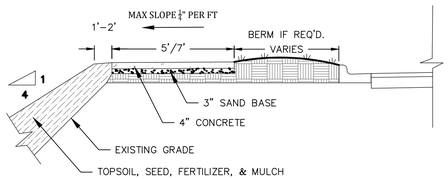
FENCE DETAIL



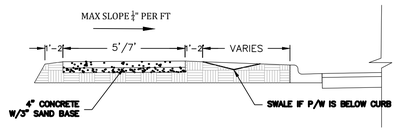
DOME SECTION



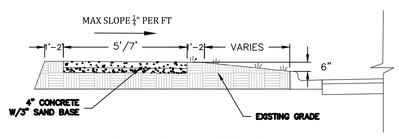
DOME SPACING



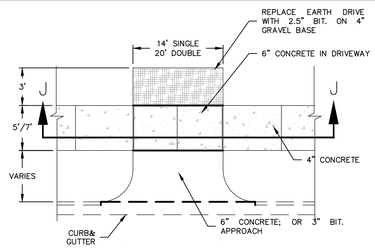
EMBANKMENT & BERM CROSS SECTION



SWALE CROSS SECTION

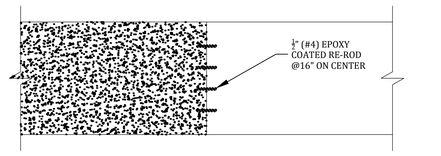


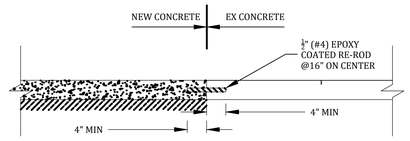
TYPICAL CROSS SECTION



TYP. RESIDENTIAL DRIVEWAY PLAN

CROSS SECTIONS J–J

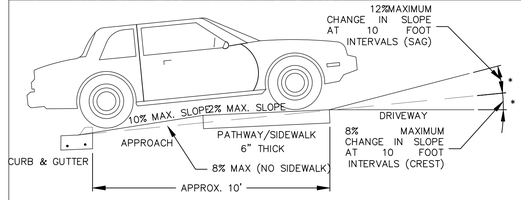




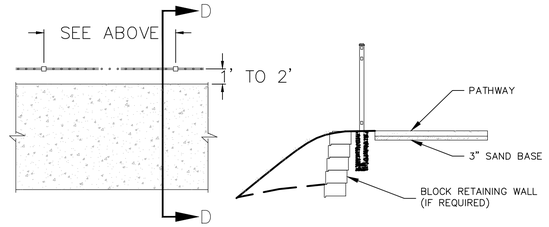
CONCRETE PINNING DETAIL

CROSS SECTION- (NO SCALE)

GENERAL NOTES
1. SIDEWALKS/PATHWAYS SHALL BE 4" THICK CONCRETE EXCEPT AT DRIVEWAYS.
2. SIDEWALKS/PATHWAYS THRU DRIVES SHALL BE: 6" (RESIDENTIAL); 7" (MULTI–RESIDENTIAL & COMMERCIAL)
3. 3" OF COMPACTED SAND BASE SHALL BE PLACED UNDER ALL SIDEWALKS/PATHWAYS.
4. ALL BITUMINOUS APRONS SHALL BE 2 1/2" THICK, UNLESS NOTED OTHERWISE
5. PROPERTY IRONS SHALL BE MAINTAINED BY THE CONTRACTOR.
6. ALL EXISTING CONCRETE AND BITUMINOUS TO BE REMOVED SHALL BE SAWCUT.ALL CONCRETE AND BITUMINOUS REMOVAL SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.
7. ALL AGGREGATE BASE SHALL BE 22A, 4" THICK.
8. ALL TREE AND BUSH REMOVAL SHALL BE CONSIDERED PART OF SUB–GRADE PREPARATION.
9. LOCATION OF NEW PLANT MATERIAL SHALL BE AS DIRECTED BY THE ENGINEER, AND SHALL BE INSTALLED IN ACCORDANCE WITH GUIDELINES ESTABLISHED BY THE A.A.O.N.
10. ALL PLANT MATERIAL NOT MARKED FOR REMOVAL SHALL BE PROTECTED.
11. BITUMINOUS DRIVES SHALL BE SAWCUT 18" ON EITHER SIDE OF PROPOSED PATHWAY.



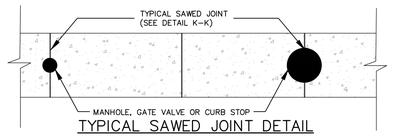
RESIDENTIAL DRIVEWAY SLOPES



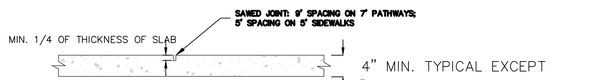
FENCE PLAN

FENCE CROSS SECTION D–D

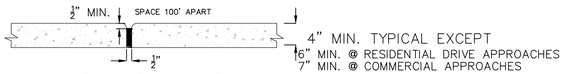
NOTE: FENCE POSTS CAN BE ANCHORED TO THE PATHWAY; THEN PATHWAY MUST BE WIDENED TO EIGHT FEET



TYPICAL SAWED JOINT DETAIL



TYPICAL CONTROL JOINT K–K



TYPICAL EXPANSION JOINT L–L

Meridian Charter Township
Ingham County, Michigan
ENGINEERING

5' SIDEWALK & 7' PATHWAY DETAIL SHEET

DRAWN BY: JG 08/01/05 CHECKED BY: YI 08/01/05

REVISIONS:		
DATE:	BY:	COMMENTS:
04/30/03	JG	ADD REBAR TO CURB & GUTTER
08/01/05	JG	CLARIFY RAMP DETAILS
12/20/06	JG	FENCE POST IN PVC PIPE W/SAND
12/29/08	JG	RAMPS W/ DETECTABLE WARNING PLATES
08/14/09	NN	LANDING CROSS SECTIONS
03/18/16	JG	DOWEL DETAIL FOR NEW/EX CONCRETE
01/22/18	NN	SPEC & DETAIL SHEET OVERHAUL

SCALE: NOT TO SCALE | PAGE: ** OF ** | PAGE: PATHWAY DETAIL SHEET 2018.DWG

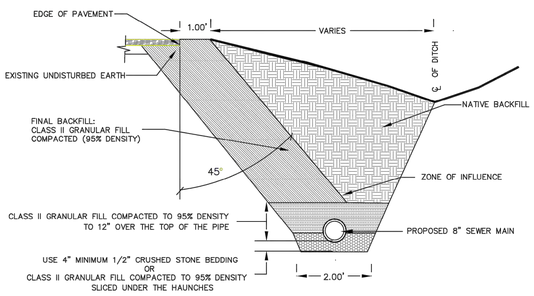
REVISION	DATE	DRAWN	DESCRIPTION

WOLVERINE
Engineers & Surveyors, Inc.
312 North Street
Mason, Michigan 48854
Ph: 517.676.9200
Fx: 517.676.9396
http://www.wolveng.com

PROJECT: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

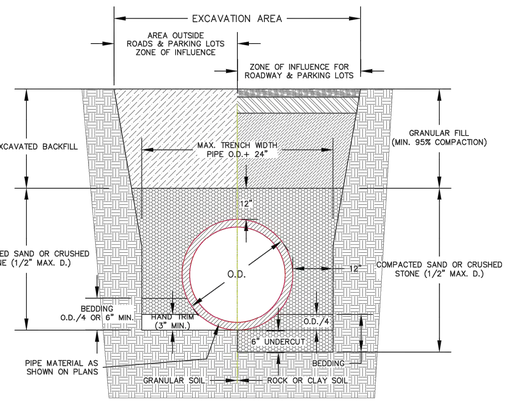
SHEET TITLE: DETAILS & NOTES

APPROVED	DBH
CHECKED	DBH
DRAWN	HTK
JOB NO.	18–0066
DATE	11/12/18
SCALE	AS NOTED
SHEET NO.	C10.0



CLASS–B TRENCH DETAIL

SCALE: NONE



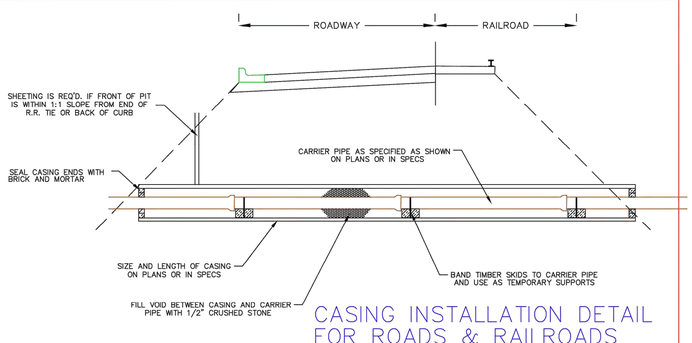
THE PVC (SDR–26) PIPE MATERIAL SHALL CONFIRM TO ASTM D 2241, WITH BELL AND SPIGOT JOINTS IN ACCORDANCE WITH ASTM F 477

PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D 2321. ALL PIPE SHALL BE MARKED TO PROVIDE ASTM DESIGNATIONS, SDR NUMBER, MANUFACTURERS NAME AND PIPE DIAMETER.

THE CONTRACTOR SHALL TEST THE MAIN FOR DEFLECTION BY PULLING A MANDREL THROUGH THE SEWER AFTER ALL BACKFILL HAS BEEN PLACED AND COMPACTED OVER THE PIPE. THE MAXIMUM ALLOWABLE DEFLECTION SHALL NOT EXCEED 5% OF THE PIPE'S INSIDE DIAMETER. THE OUTSIDE DIAMETER OF THE TEST MANDREL SHALL BE EQUAL TO THE TO THE INSIDE DIAMETER OF THE PIPE LESS 5%. THE INITIAL TEST SHALL BE PERFORMED AT LEAST 30 DAYS AFTER PIPE INSTALLATION. A SECOND TEST SHALL BE PERFORMED AFTER 10 MONTHS OF PIPE INSTALLATION.

TYPICAL TRENCH DETAIL (SDR26 PVC ONLY)

NO SCALE

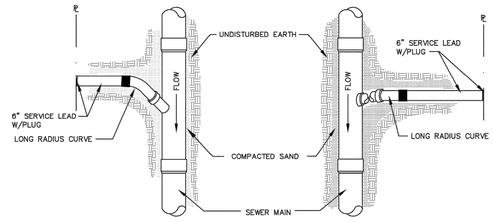


CASING INSTALLATION DETAIL FOR ROADS & RAILROADS

CASING AND CARRIER PIPE TO BE INSTALLED BY METHOD OTHER THAN OPEN CUT

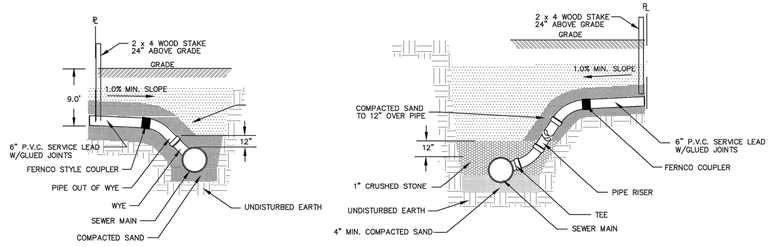
NOTES

1. WORK IN ROADS AND IN RAILROAD RIGHT–OF–WAYS SHALL BE IN ACCORDANCE WITH THE APPROPRIATE REGULATORY AGENCY'S REQUIREMENTS.
2. CASING PIPE SHALL BE ASTM 139, GRADE B OR ASTM A–53, GRADE B OR API 5–L, GRADE B OR API GRADE B WITH 0.375" MINIMUM WALL THICKNESS.



PLAN WITHOUT RISER

PLAN WITH RISER



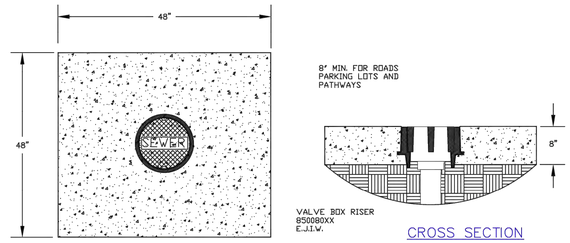
SECTION WITHOUT RISER

SECTION WITH RISER

NOTES

1. LEADS AND RISERS SHALL BE CONSTRUCTED OF MATERIALS AS SPECIFIED AND OF SIZES AS SHOWN ON PLAN.
2. DEPTH AT PROPERTY LINE SHALL BE 9' UNLESS SHOWN OTHERWISE ON PLANS.
3. IF CONCRETE PIPE IS USED, AN ASBESTOS CEMENT BELL IS TO BE CAST IN WALL OF PIPE FOR USE AS TEE BRANCH.
4. FERNCO STYLE FLEXIBLE COUPLINGS SHALL BE USED WHEN CONNECTING HOUSE TO STUB.
5. MIN. 3' SEPERATION BETWEEN WATER & SEWER SERVICES.
6. ALL REFERENCES TO STONE BEDDING SHALL MEAN CRUSHED STONE.

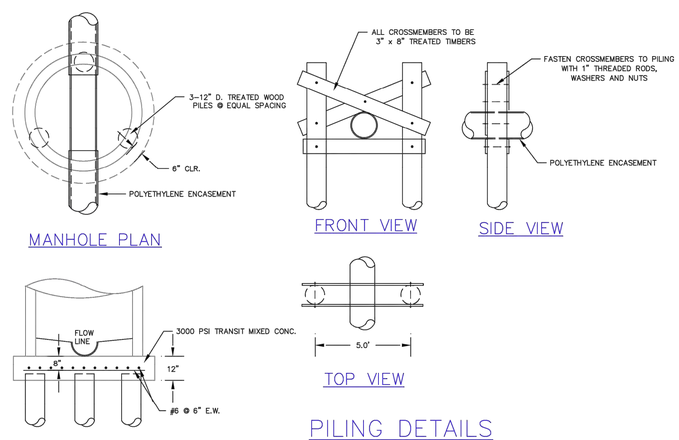
SERVICE/CONNECTION DETAIL



PLAN

CROSS SECTION

CLEANOUT BOXES IN CONCRETE



MANHOLE PLAN

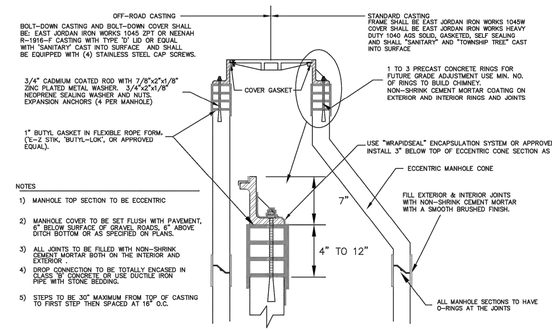
FRONT VIEW

SIDE VIEW

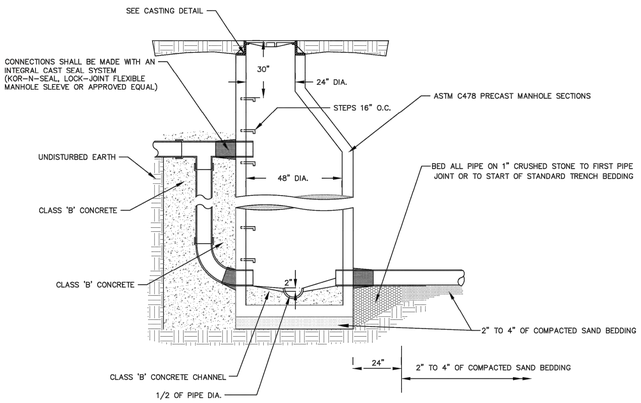
TOP VIEW

MANHOLE SECTION

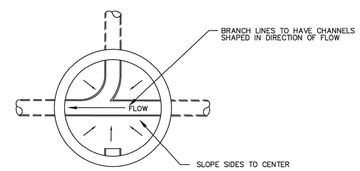
PILING DETAILS



MANHOLE CASTING DETAIL



MANHOLE–SECTION DETAIL



MANHOLE FLOWLINE PLAN

NOTE: USE A HALF PIPE AS A FORM FOR A CONCRETE FLOW CHANNEL.

Meridian Charter Township
ingham county, michigan
PUBLIC WORKS DEPARTMENT

STANDARD DETAILS FOR SANITARY SYSTEM

DRAWN BY: MK 3/83 | CHECKED BY: JB 3/83

REVISIONS:		
DATE	BY:	COMMENTS:
4/96	JG	COMPUTER GENERATED
7/2/99	JG	ADD BOLTS TO CASTING DETAIL
1/13/00	JG	ADD SDR 26 DETAIL
5/12/08	JG	ADD "WRAPIDSEAL" & NON–SHRINK GROUT TO MANHOLE/CASTING DETAIL.
7/31/12	JG	CLARIFIED CRUSHED STONE
5/15/15	JG	ADD CLEANOUT BOX IN CONCRETE

SCALE: NONE | SHEET _ OF _ | SANDETAL.DWG

REVISION	DATE	DRAWN	DESCRIPTION

WOLVERINE
Engineers & Surveyors, Inc.
317 North Street
Mason, Michigan 48854
Ph: 517 676 9200
Fx: 517 676 9396
http://www.wolveng.com

PROJECT: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

SHEET TITLE: DETAILS & NOTES 2

APPROVED	DBH
CHECKED	DBH
DRAWN	HTK
JOB NO.	18–0066
DATE	11/12/18
SCALE	AS NOTED
SHEET NO.	C10.1

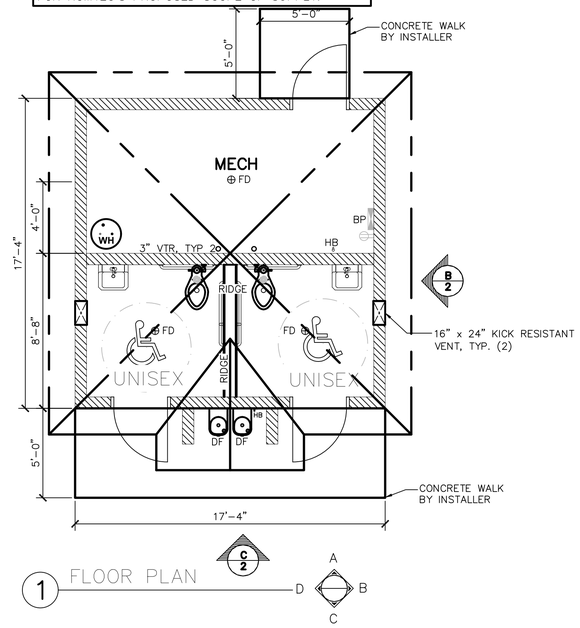
LEGEND		
SYMBOL	DESCRIPTION	AREA / QUANTITY
	EXTERIOR WALL LIGHTS	3
	INTERIOR WALL LIGHTS	2
	INTERIOR CEILING LIGHTS	1
	ELECTRICAL OUTLET	1
	FLOOR DRAIN	3
HB-1	WALL FAUCET	1
HB	WALL HYDRANT	1
EF-3	ELECTRIC EXHAUST FAN EXHAUST FAN 210CFM	1
	16" x 24" KICKPROOF WALL VENT	2
TP	TWO ROLL TP DISPENSER	2
PTD	TOWEL DISPENSER	2
SD	SOAP DISPENSER	2

THESE PLAN VIEW AND ELEVATION DRAWINGS ARE A PRELIMINARY ARCHITECTURAL REPRESENTATION OF THE BUILDING. ALL DIMENSIONS, FEATURES AND COMPONENTS SHOWN ON THESE PRELIMINARY DRAWINGS MAY OR MAY NOT BE PART OF THE QUOTE. PLEASE REFER TO THE "SCOPE OF SUPPLY AND SERVICES" LETTER PROVIDED WITH YOUR QUOTE FOR ROMTEC'S PROPOSED SCOPE OF SUPPLY.

WALL TYPE SCHEDULE

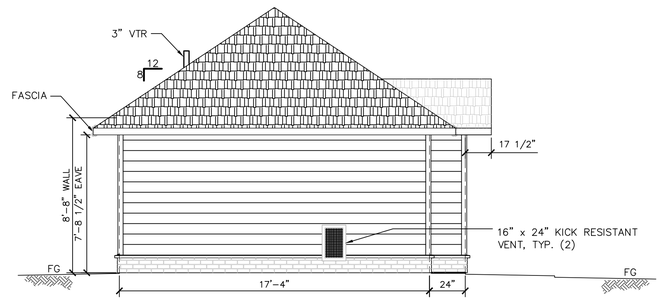
8" REINFORCED CONCRETE MASONRY BLOCK WALL WITH MORTAR JOINTS, GROUTED SOLID ALL CELLS RUNNING BOND PATTERN.

8" WOOD FRAMED WALL

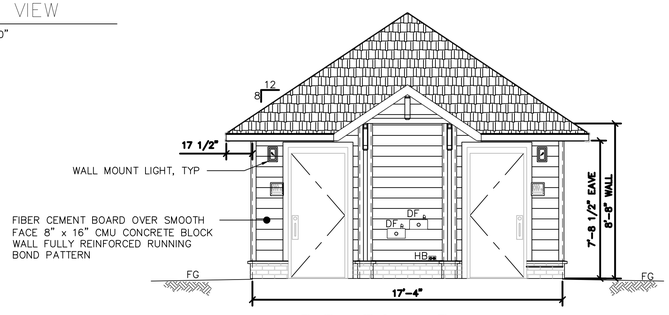


1 FLOOR PLAN

NOTES:
1. ALL INTERIOR AND EXTERIOR LIGHTS SHALL BE LED.
2. INTERIOR LIGHTS SHALL BE CONNECTED TO AN OCCUPANCY SENSOR WITH KEY OVERRIDE SWITCH.
3. INTERIOR LIGHTS SHALL BE POWERED BY AN EXTERNAL SOLAR PANEL. COORDINATE LOCATION OF SOLAR PANEL WITH ROMTEC. FINAL LOCATION SHALL BE APPROVED IN WRITING BY ROMTEC AND OWNER.
4. AUTOMATIC TRANSFER SWITCH SHALL BE INSTALLED IN THE EVENT EXTERNAL SOLAR PANEL CHARGE IS NOT SUFFICIENT FOR INTERIOR LIGHTING.
5. ALL INTERIOR FAUCETS SHALL BE AUTOMATIC (MOTION ACTIVATED).
6. DRINKING FOUNTAIN SHOWN IN ELEVATION VIEW SHALL HAVE TWO HEIGHTS MEETING CURRENT ADA REQUIREMENTS.



B ELEVATION VIEW
SCALE: 1/4" = 1'-0"



C ELEVATION VIEW
SCALE: 1/4" = 1'-0"

REVISION	DATE	DRAWN	DESCRIPTION
1	07/24/2019	JAL	ADDITIONAL NOTES ADDED PER DNR COMMENTS

WOLVERINE
Engineers & Surveyors, Inc.
312 North Street
Mason, Michigan 48854
Ph: 517 676 9200
Fx: 517 676 9396
http://www.wolveng.com

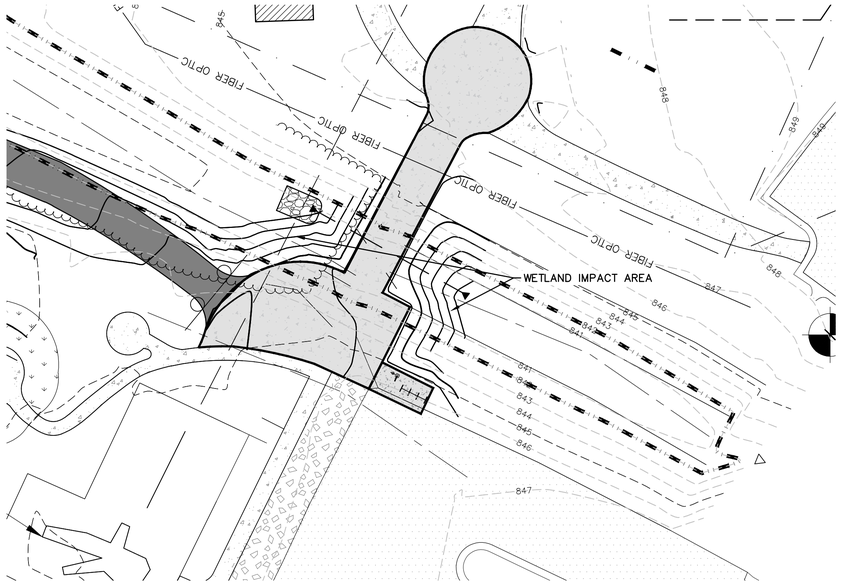
PROJECT
CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

SHEET TITLE
RESTROOM PLAN & ELEVATIONS

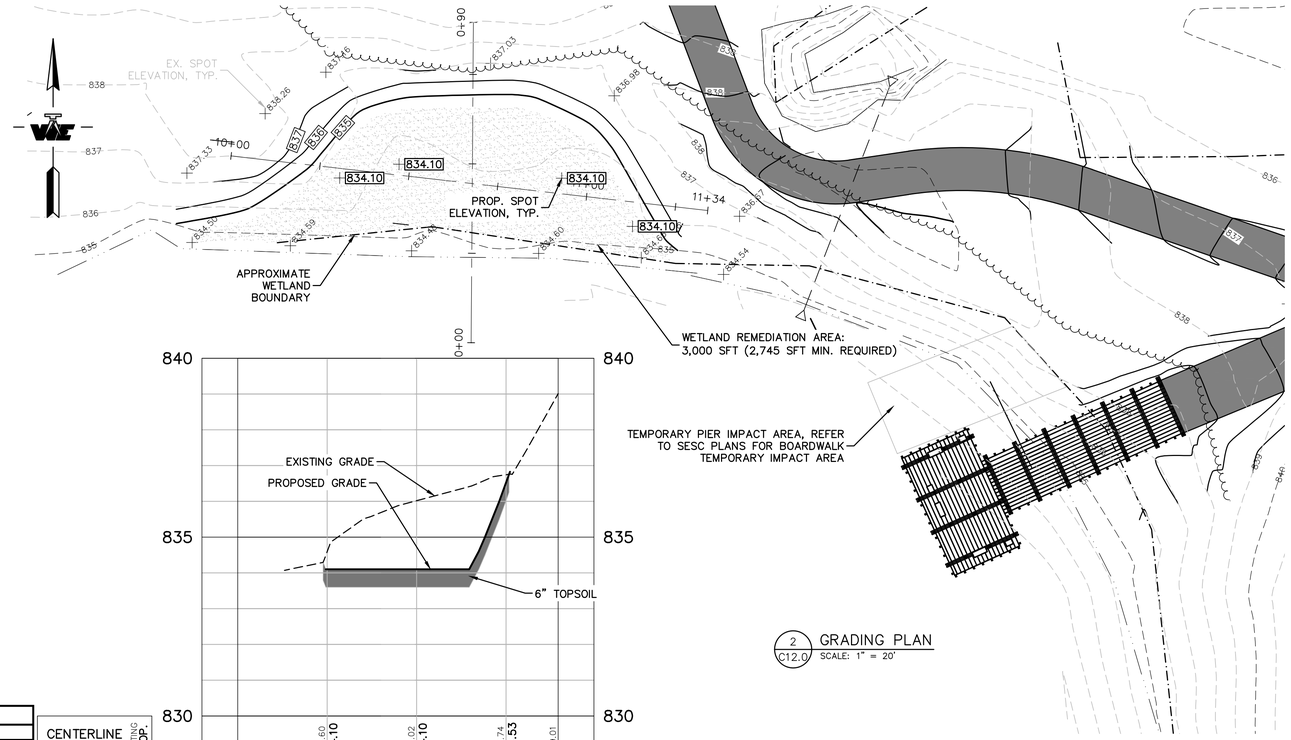
APPROVED: DBH
CHECKED: DBH
DRAWN: HTK
JOB NO.: 18-0066
DATE: 11/12/18
SCALE: 1/4" = 1'-0"
SHEET NO.: C11.0

ROMTEC
18240 NORTH BANK ROAD · ROSEBURG, OR 97470
(541) 496-3541 FAX (541) 496-0803

PRELIMINARY



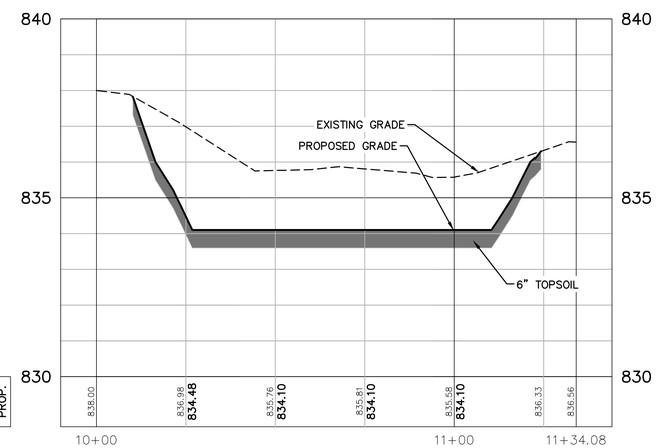
1 C12.0 DRAIN CROSSING PLAN
SCALE: 1" = 20'



2 C12.0 GRADING PLAN
SCALE: 1" = 20'

3 C12.0 NORTH/SOUTH PROFILE
SCALE: HORIZ: 1" = 20'

CENTERLINE GRADES — EXISTING: PROP.:



4 C12.0 EAST WEST PROFILE
SCALE: HORIZ: 1" = 20'

CENTERLINE GRADES — EXISTING: PROP.:

CONSTRUCTION AND DESIGN:
THE WETLAND MITIGATION AREA HAS BEEN DESIGNED TO CLOSELY MATCH THE EXISTING CONTOURS OF THE ADJACENT POND. IT IS OUR INTENT THAT THIS DESIGN WILL ALLOW FOR THE COLLECTION AND RETENTION OF OVERLAND RUNOFF, PRECIPITATION, GROUNDWATER, AND STANDING WATER. THE PURPOSE OF THIS WETLAND MITIGATION AREA WILL BE TO RECREATE A HABITAT THAT FUNCTIONS AS THE SURROUNDING WETLAND AREAS WHICH HAVE BEEN IMPACTED BY THE PROPOSED IMPROVEMENTS.

THE WETLAND MITIGATION AREA WILL BE CONSTRUCTED SIMULTANEOUSLY WITH ADJACENT SITE GRADING. THE EXCAVATED MATERIAL DURING THE WETLAND MITIGATION CONSTRUCTION IS TO BE PLACED IN UPLAND AREAS AS NOTED ON THE PLANS. THE PROPOSED PROJECT ACTIVITIES SHALL MEET STATE AND LOCAL WATER QUALITY STANDARDS AND FOLLOW SEDIMENTATION AND EROSION CONTROL (SESC) BEST MANAGEMENT PRACTICES (BMPS) USING SESC METHODS AS OUTLINED WITHIN THE APPROVED SESC PLAN AND DETAIL SHEETS. SEE APPROVED SESC PLANS BY WOLVERINE ENGINEERS AND SURVEYORS, INC.

SOILS:
THE WETLAND MITIGATION AREA WILL BE EXCAVATED TO A MINIMUM DEPTH OF SIX (6) INCHES (OR MATCHING THICKNESS OF THE EXISTING TOPSOIL), STOCKPILED ON-SITE, AND REPLACED ONTO THE MITIGATION AREA BOTTOM, WHICH WILL HAVE BEEN OVER-EXCAVATED TO A DEPTH APPROXIMATELY 6 INCHES BELOW THE FINISHED CONTOUR ELEVATION. THE MITIGATION AREA WILL BE TOPPED WITH A SIX-INCH LAYER OF TOP-SOIL. THE REPLACEMENT OF THIS LOCAL TOPSOIL WILL ENSURE FERTILE SOILS WITH THE NATURAL SEEDBED AND WILL LIKELY ALLOW SPONTANEOUS OR VOLUNTEER PLANT GROWTH FROM THE ADJACENT WETLAND AREAS.

PLANTING:
VEGETATION IN THE WETLAND MITIGATION AREA WILL INCLUDE SPONTANEOUS OR VOLUNTEER PLANT GROWTH FROM ADJACENT POND AND EXISTING TOPSOIL PLACED BACK DURING SITE GRADING AND CONSTRUCTION ACTIVITIES. IN ADDITION, THE WETLAND MITIGATION AREAS WILL BE APPLIED WITH EMERGENT WETLAND SEED MIX FOLLOWING CONSTRUCTION AND GRADING ACTIVITIES. THE VEGETATION WILL INCLUDE SPECIES AND/OR VARIETIES NATIVE TO MICHIGAN OR THE MIDWEST, DEPENDING ON AVAILABILITY AT LOCAL NURSERIES.

PER MERIDIAN TOWNSHIP: THE PERFORMANCE STANDARDS FOR THE WETLAND MITIGATION AND RESTORATION AREAS ARE:
- SIXTY PERCENT COVER OF NATIVE WETLAND PLANT SPECIES.
- TEN PERCENT COVER OR LESS OF INVASIVE SPECIES.

THE PROPOSED WETLAND MITIGATION AREA WILL BE SEEDED AT RATE OF 35.44 POUNDS/ACRE OF PURE LIVE SEED (PLS) WITH NATIVE EMERGENT VEGETATION. THE SEED MIX INCLUDES SEVERAL PERMANENT AND TEMPORARY GRASSES, SEDGES, RUSHES, AND HERBACEOUS FORBS. THE EMERGENT WETLAND SEED MIX LIST IS LISTED UNDER THE "WETLAND MITIGATION SPECIES LIST".

LONG-TERM PROTECTION:
THE APPLICANT WILL ENSURE THAT NO CONSTRUCTION ACTIVITIES WILL OCCUR WITHIN WETLAND MITIGATION BOUNDARIES. IN ADDITION, SIGNAGE WILL BE PLACE ALONG BUFFER EDGES BEYOND THE WETLAND MITIGATION AREA. TYPICAL SIGNAGE WILL READ:

WETLAND CONSERVATION AREA

NO CONSTRUCTION OR PLACEMENT OF STRUCTURES ALLOWED.

NO MOWING, CUTTING, FILLING, DREDGING OR APPLICATION OF CHEMICALS ALLOWED.

MERIDIAN TOWNSHIP

FINANCIAL GUARANTEE:
UPON APPROVAL OF THE WETLAND USE PERMIT APPLICATION, THE APPLICANT WILL POST A SURETY BOND TO MERIDIAN TOWNSHIP TO ENSURE THE MITIGATION IS TIMELY AND PROPERLY COMPLETED, THAT THE MITIGATION IS THEREAFTER MANAGED, MONITORED*, AND PROTECTED, AS PROVIDED BY THE MITIGATION PLAN, AND TO GUARANTEE COMPLIANCE WITH THE PLAN.

*MONITORING TO BE PROVIDED BY MERIDIAN TOWNSHIP PER ARTICLE IV "WETLAND PROTECTION" OF THE CHARTER TOWNSHIP OF MERIDIAN CODE OF ORDINANCES. CORRECTIVE ACTIONS SHALL BE COMPLETED BY CONTRACTOR.

WETLAND MITIGATION SPECIES LIST

WETLAND MITIGATION LIST SUMMARY

SEED MIX	RATE (LBS/ACRE)	ACERAGE	REQUIRED LBS
EMERGENT WETLAND SEED MIX	35.44	0.063	2.23

Wetland Mitigation Plant List
Emergent Wetland Vegetation

PERMANENT GRASSES, SEDGES, AND RUSHES			
Species	**Scientific Name**	**Oz/Acre**	**Indicator**
Bristly Sedge	Carex comosa	2	OBL
Common Lake Sedge	Carex lacustris	1.5	OBL
Bottlebrush Sedge	Carex lurida	4	OBL
Spike Rush	Eleocharis obtusa	3	OBL
Common Rush	Juncus effusus	4	OBL
Rice Cut Grass	Leersia oryzoides	3	OBL
Hardstem Bulrush	Schoenoplectus acutus	6	OBL
Chairmakers Rush	Scirpus pungens	6	OBL
Softstem Bulrush	Scirpus validus	8	OBL
	Total	**37.50 oz/acre**	

TEMPORARY COVER			
Species	**Scientific Name**	**Oz/Acre**	**Indicator**
Redtop	Agrostis alba	4	OBL
Seed Oats	Avena sativa	360	OBL
Annual Rye	Lolium multiflorum	100	OBL
	Total	**464.00 oz/acre**	

FORBS			
Species	**Scientific Name**	**Oz/Acre**	**Indicator**
Sweet Flag	Acorus calamus	3	OBL
Swamp Milkweed	Asclepias incarnata	2	OBL
Water Plantain	Alisma spp.	4	OBL
Spotted Joe-Pye-Weed	Eupatorium maculatum	1	OBL
Rosemallow	Hibiscus spp.	3	OBL
Blue Flag Iris	Iris virginica	4	OBL
Cardinal Flower	Lobelia cardinalis	1	OBL
Great Blue Lobelia	Lobelia siphilitica	1	FACW
Monkey Flower	Mimulus ringens	1	OBL
Arrow Arum	Peltandra virginica	12	OBL
Pickeral Weed	Pontederia cordata	8	OBL
Broad-leaf Arrowhead	Sagitaria latifolia	8	OBL
Bur Reed	Sparganiiium eurycarpum	4	OBL
Blue Vervain	Verbena hastata	2	FACW
	Total	**54 oz/acre**	

WETLAND MITIGATION CONSTRUCTION SEQUENCE:
1. ON-SITE PRE-CONSTRUCTION MEETING
2. INSTALL EROSION AND SEDIMENTATION CONTROL MEASURES PER APPROVED SESC PLAN
3. CLEAR AND GRUB VEGETATION WITHIN PROPOSED WETLAND MITIGATION AREA
4. STOCKPILE EXISTING TOPSOIL FOR RE-USE
5. GRADE PROPOSED WETLAND AREA INCLUDING 6" OVERCUT FOR 6" TOPSOIL PLACEMENT.
6. REMOVE ANY WATER WHICH MAY HAVE ACCUMULATED IN THE MITIGATION AREA.
7. PLACE AND SPREAD 6" TOPSOIL.
8. SEED AND MULCH THE WETLAND MITIGATION AREA AND ANY DISTURBED UPLAND AREAS. SLOPES GREATER THAN 25% SHALL RECEIVE MULCH BLANKET PER SESC SPECIFICATIONS.
9. CONTRACTOR TO PROVIDE AS-BUILT DRAWINGS TO OWNER TO CONFIRM PROPOSED GRADES AND REQUIRED MITIGATION AREA.
10. REMOVE TEMPORARY SESC MEASURES IF APPROVED BY OWNER.

FIVE-YEAR MONITORING PLAN:

SHOULD THE WETLAND MITIGATION AREA FAIL TO ESTABLISH AFTER FIVE COMPLETED GROWING SEASONS, FAIL TO SATISFACTORILY PROGRESS TO A SELF-SUSTAINING WETLAND SYSTEM AS DESIGNED AND/OR THE PERCENT COVER BY INVASIVE SPECIES, SUCH AS PHRAGMITES AUSTRALIS (COMMON REED), PHALARIS ARUNDINACEA (REED CANARY GRASS) AND LYTHRUM SALICARIA (PURPLE LOOSESTRIFE) IS GREATER THAN 10%, THE APPLICANT WILL:
1. ASSESS THE PROBLEM AND ITS PROBABLE CAUSES;
2. DEVELOP REASONABLE AND NECESSARY CORRECTIVE MEASURES AS A REVISION TO THE ORIGINAL PLAN;
3. MAKE ANY REASONABLE MODIFICATION DEEMED NECESSARY BY MERIDIAN TO ASSURE SUCCESS OF THE MITIGATION WETLAND DEVELOPMENT;
4. SUBMIT A COPY OF THE PROPOSED CORRECTIVE MEASURES TO MERIDIAN FOR REVIEW;
5. UPON MERIDIAN'S APPROVAL, IMMEDIATELY IMPLEMENT THE CORRECTIVE MEASURES.

WETLAND RESTORATION PLAN FOR TEMPORARY WETLAND IMPACT AREAS ADJACENT TO THE FISHING PIER AND BOARDWALK:

TEMPORARY NON-TREATED TIMBERS OR MATTING (CONSTRUCTION EQUIPMENT STABILIZATION MEASURES) SHALL BE PLACED IN AREAS OF TEMPORARY WETLAND IMPACT AS REQUIRED FOR PIER AND BOARDWALK INSTALLATION.

ALL CONSTRUCTION EQUIPMENT STABILIZATION MEASURES SHALL BE REMOVED IMMEDIATELY UPON COMPLETION OF EACH PHASE OF WORK TO REDUCE OVERALL IMPACT TO EXISTING WETLAND AREAS.

FOLLOWING PIER AND BOARDWALK CONSTRUCTION, ALL DISTURBED AREAS WILL BE SEEDED WITH THE EMERGENT WETLAND SEED MIX LISTED ON THE WETLAND MITIGATION PLAN SHEET.

SOILS COMPACTED OR CLEARED OF EXISTING VEGETATION BY CONSTRUCTION ACTIVITIES SHALL BE DISKED, HARROWED OR OTHERWISE PREPARED FOR ADEQUATE PLANTING OF WETLAND SEED MIX.

ALL WETLAND AREAS DISTURBED DURING PIER AND BOARDWALK CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITION. IMPACTED AREAS SHALL BE MONITORED BY MERIDIAN TOWNSHIP PER THE "FIVE-YEAR MONITORING PLAN". CORRECTIONS SHALL BE MADE BY CONTRACTOR AS DIRECTED BY MERIDIAN TOWNSHIP.

REVISION	DATE	DRAWN	DESCRIPTION
1	08/06/2019	JAL	REVISE PLAN PER FTDMR/MERIDIAN COMMENTS

WOLVERINE
Engineers & Surveyors, Inc.
312 North Street
Mason, Michigan 48854
Ph: 517 676 9200
Fx: 517 676 9396
http://www.wolveng.com

PROJECT
CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

SHEET TITLE
WETLAND MITIGATION & RESTORATION

APPROVED: DBH
CHECKED: DBH
DRAWN: JAL
JOB NO.: 18-0066
DATE: 07/25/19
SCALE: 1" = 20'
SHEET NO.: C12.0

S:\Projects\2018\18-0066_C3D\DWGs\C12.0 WETLAND MITIGATION & RESTORATION.dwg, Tuesday, August 06, 2019 2:57:23 PM, Jesse A. Lawler

CHARTER TOWNSHIP OF MERIDIAN
INGHAM COUNTY, MICHIGAN

CONTRACT DOCUMENTS
AND
SPECIFICATIONS

FOR

CONTRACT 1: HISTORICAL VILLAGE GATEWAY AND RESTROOM

CONTRACT 2: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR

August 2019

WOLVERINE
Engineers & Surveyors, Inc.
312 North Street
Mason, Michigan 48854
Ph: 517-676-9200
Fx: 517-676-9396
http://www.wolveng.com

State or federal funds are being used to assist in construction and relevant State or federal requirements will apply.

CHARTER TOWNSHIP OF MERIDIAN
INGHAM COUNTY, MICHIGAN

CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

CONTRACT 1: HISTORICAL VILLAGE GATEWAY AND RESTROOM
CONTRACT 2: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR

August 2019

WOLVERINE ENGINEERS & SURVEYORS, INC.
312 NORTH STREET
MASON, MI 48854
517 676-9200
JOB 18-0066

CHARTER TOWNSHIP OF MERIDIAN- HISTORICAL VILLAGE GATEWAY AND RESTROOM, CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR

TABLE OF CONTENTS

ADVERTISEMENT FOR BIDS

The **CHARTER TOWNSHIP OF MERIDIAN,** Ingham County, Michigan, will receive sealed bids for **CONTRACT 1- HISTORICAL VILLAGE GATEWAY AND RESTROOM and CONTRACT 2- CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR** until **10:00 a.m.,** Local Time**, Tuesday, September 17, 2019** at the Charter Township of Meridian, 5151 Marsh Road, MI 48864. At that time and place all bids received shall be publicly opened and read aloud.

General Description

This project consists of construction of Central Meridian Regional Asphalt Trail Connector– Central Park Drive, and will consist of Concrete Pathway, Restroom Building, 8" Sanitary Sewer line, Elevated Boardwalk, Fishing Deck, and any Related Restoration.

Construction for **CONTRACT 1 - HISTORICAL VILLAGE GATEWAY AND RESTROOM** shall include, as contained within the construction plans, Removing the ex. Footbridge, backfill and construct of 2680 Sft of 4" Concrete Pathway, backfill the removed Footbridge with 150 Cyd Compacted Class II Sand. Construction of 1,004 Lft 8" Sanitary Sewer line with three Structures 48" Dia. Install and furnish a Restroom Building and connect it to the proposed sanitary sewer line. Construction of Bike Repair Station, Bike Rack. Construction of Rain Garden and connecting and extending the Ex. culvert to improve drainage, and topsoil, seeding and mulching and other miscellaneous work items normally included with the above described work items.

Construction of **CONTRACT 2 - CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR** Construction shall include: Construction of 12' wide 2400 Lft Non-Motorized Asphalt Trail. Construction of 12' Wide 335 Lft long of elevated wooden Boardwalk, 16' Wide 55 Lft long Elevated Boardwalk, and (36' x 20') Fishing Deck. Entrance Sign, and topsoil, seeding and mulching and other miscellaneous work items normally included with the above described work items.

PLEASE NOTE: THIS PROJECT WILL BE BID AND AWARDED AS TWO SEPARATE CONTRACTS. YOU MAY BID ON CONTRACT 1, OR CONTRACT 2, OR BOTH CONTRACTS TOGETHER.

Documents - IMPORTANT

The Issuing Office for the Bidding Documents is: **Wolverine Engineers & Surveyors, Inc., 312 North Street, Mason, MI 48854, Phone 517.676.9200.** Prospective Bidders may obtain copies of the Bidding Documents from the Issuing Office as described below.

Contract Documents for the project will be on file and available for inspection at the offices of the Charter Township of Meridian, 2100 Gaylord Smith Ct, Haslett, MI 48840; and at the offices of Wolverine Engineers and Surveyors, Inc. 312 North Street, Mason, MI 48854;

Builders Exchange offices in Lansing, Kalamazoo, and Grand Rapids, Construction Association of Michigan in Bloomfield Hills, Michigan.

Electronic Bidding Documents will be furnished **free-of-charge** by registering with Wolverine Engineers & Surveyors, Inc. **All bidders MUST register with Engineer by sending an email to janicer@wolveng.com requesting to be added to the bidders list.** Registering ensures timely receipt of all addenda. Following registration, complete hard copy sets of Bidding Documents may be purchased from the Issuing Office and cost will depend on the number and size of the Drawings and Project Manual, applicable taxes, and shipping method selected by the prospective Bidder. Cost of Bidding Documents and shipping is non-refundable. Upon Issuing Office's receipt of payment, printed Bidding Documents will be sent via the prospective Bidder's delivery method of choice; the shipping charge will depend on the shipping method chosen. The date that the Bidding Documents are transmitted by the Issuing Office will be considered the Bidder's date of receipt of the Bidding Documents. Partial sets of the Bidding Documents will not be available from the Issuing Office.

Bid Bond

Each bid proposal shall be accompanied with a bid bond, certified check or cashier's check payable to the Owner in an amount not less than five percent (5%) of the bid as a guarantee that the bidder shall, within ten (10) days after the award of a contract, execute a contract or agreement and file necessary insurance and other bonds if selected as the accepted bidder. If the selected awardee fails to properly execute the necessary bonds, agreement, and insurance requirement, the bid bond shall be deemed forfeited to the Owner as liquidated damages.

Bid Rejections

The Owner reserves the right to accept, reject or negotiate any or all bids, to waive or not to waive informalities in bids or bidding procedures and to accept any bid determined to be in the best interest of the Owner, whether a bid is lowest or not.

Bids shall be held for consideration for a period of time not to exceed SIXTY (60) days from the date of bid opening without increase in cost bid for the project. Further time extension may occur only with mutual agreement by the Owner and the successful bidder and the Surety Company issuing the bid bond for the successful bidder. The Owner also reserves the right to reject any or all bids received which are judged by the Owner to not serve the best interests of the Owner in the conduct of this project.

The Owner shall have the right to determine if bids are responsive and responsible and to waive defects or irregularities in any bid if it appears in the best interest of the Owner to do so.

CHARTER TOWNSHIP OF MERIDIAN
NON – DISCRIMINATION PLAN

Charter Township of Meridian
5151 Marsh Road
Okemos, MI 48864
517-853-4000

CHARTER TOWNSHIP OF MERIDIAN
NON – DISCRIMINATION
POLICY STATEMENT

CHARTER TOWNSHIP OF MERIDIAN

The Contractor shall adhere to all applicable Federal, State and local laws, ordinances, rules and regulations prohibiting discrimination with regards to employees and applicants for employment. The Contractor, as required by law, shall not discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions or privileges of employment, or a matter directly or indirectly related to employment because of race, color, religion, national origin, age, sex, height, weight, marital status, or handicap that is unrelated to the individual's ability to perform the duties of a particular job or position. Breach of this section shall be regarded as a material breach of this Contract.

INFORMATION FOR BIDDERS

1. Description of Work

The work consists of doing everything required to be performed, and providing and furnishing all of the labor, power, materials as described in the Specifications and Drawings, necessary tools and equipment, Workman's Compensation and Property Damage and Public Liability Insurance, superintendence and all utility and transportation services required to complete in a workmanlike manner all the work required.

2. Location of Work and Soil Conditions

The work required under this contract is located upon sites owned by the Owner and/or rights-of-way obtained by the Owner.

The bidder shall base his bid upon his personal information on soils, soil conditions, roadways and working areas, facilities for receiving, transporting, handling, storing and placing materials and equipment and shall base his bid upon his personal knowledge of environment and physical conditions which he may encounter during construction. This personal knowledge must be obtained by the bidder from his own detailed inspection of the proposed construction site together with information such as he shall personally acquire, or obtain from his own observations and investigations.

The Owner and the Owner's Engineer shall have no financial or other responsibility for soil conditions which may be encountered by the bidder and/or contractor because of soil, physical or environmental conditions or circumstances.

3. Owner

The word "Owner" as used in the Specifications and Contract Documents shall refer to the **CHARTER TOWNSHIP OF MERIDIAN**, Ingham County, Michigan.

4. Basis of Proposals

Proposals are solicited for the construction of the work as shown on the Drawings and/or as described in the Specifications at prices as listed on the Proposal blanks. The quantities given are to be regarded as approximate only and as being given for the general guidance of the bidders and as a basis upon which the different proposals will be compared. In comparing proposals, the total Base Bid Price will be used as the basis of award. Bid prices will be corrected for errors in extensions or additions.

5. Form of Proposals

All proposals must be submitted on the form prepared for that purpose, which are titled "Bid Proposal". Each Bid Proposal, included with the Contract Documents, shall be enclosed in a sealed envelope, addressed to: "**Charter Township of Meridian,** Ingham County, Michigan" and clearly marked on the outside of the proposal packet **Contract 1: Historical Village Gateway And Restroom** and, or, **Contract 2: Central Meridian Regional Trail Connector**, within the Charter Township of Meridian limits.

6. Interpretation of Contract Documents

If any individual, corporation or partnership contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of the Drawings, Specifications, or other parts of the documents, he may submit to the Owner a written request for an interpretation thereof. The person submitting the request will be responsible for its prompt delivery. Any interpretation of the documents will be made by an addendum issued by the Engineer. A copy of such addendum will be mailed or delivered to each person receiving a set of the documents and to such other prospective bidders as have requested that they be furnished with a copy of each Addendum.

7. Bid Bond Required

Each bid must be accompanied by a certified or cashier's check, or a bid bond in a sum not less than five percent (5%) of the total amount of the bid, made payable to the Owner.

The proceeds of such checks or bid bonds shall become the property of the Owner in case of refusal or failure of the individual, corporation or partnership to whom the award is to be made to enter into a contract with the Owner within ten (10) days after formal notification.

8. Return of Bid Bond

The bid bond of all except the three (3) apparent lowest bidders will be returned within three (3) days after the opening of the bids. When the Agreement is executed, the bonds of the two remaining unsuccessful bidders will be returned. The Bid Bond of the successful Bidder will be retained until the Payment Bond and Performance Bond have been executed and approved, after which it will be returned.

9. Withdrawal of Bids

Any bidder may withdraw his bid prior to the scheduled time for receipt of bids. No bidder may withdraw his bid for a period of SIXTY (60) days from the date of bid opening.

10. Basis of Award

The contract for this construction shall be awarded to the lowest responsive, responsible bidder. The lowest bid shall be determined on the basis of the lowest bid for the total of all sections of the bid proposal.

The procedure for Bid Award shall be as follows:

(l) Open Sealed Bids
(2) Engineer reviews Bid Proposals and makes recommendation for award to Owner.
(3) Decision by Owner.

Prior to final award of the contract, the Bidder shall be required to furnish evidence satisfactory to the Owner and to the Engineer that the Bidder has the facilities, equipment, ability and pecuniary resources to fulfill the conditions of the contract.

11. Right to Reject and Waive Defects

The Owner shall have the right to determine if bids are responsive and responsible, and to waive minor defects or irregularities in any Proposal, if it appears in the interest of the Owner to do so. Bids which contain stipulations shall not be considered.

12. Bid Proposal

The items required to be completed by the Bidder are specially printed on yellow paper. The Bidder is cautioned that each item contained in the Bid Proposal and supplemental documents in the yellow area must be properly completed for the bid to be considered.

THE BIDDER SHALL COMPLETE THE FOLLOWING:

(l) Proposal which includes legal status of bidder (Prop)
(2) Bid Bond or attached bid certificate (B. Bond)
(3) Bid Proposal must remain in Bid Book when turning in bid.

The legal status of the bidder, that is, as a corporation, a partnership, or an individual, must be stated in the Proposal. A corporation bidder must name the state in which its articles of incorporation are held and must give the title of the official having authority to sign contracts. A partnership bidder must give the full name and post-office address of all partners. (See Bid Proposal).

The official address of each Bidder must be provided in the Bid Proposal. All proposals shall be in full conformity with all conditions set forth in the Information to Bidders, Contract, Specifications and Drawings.

13. Owner Right to Reduce Scope of Work

If the apparent lowest, responsive, responsible bidder exceeds the funds available to the Owner for the project, the Owner shall then have the right to reduce the scope of the work, delete items in the Bid Proposal or reject all bids.

Changes in project scope as-bid shall be by Change Order No. l which shall be agreed to by the Owner and the Contractor and which shall be signed at the same time as the Contract.

14. Time for Consideration of Proposals

The Owner shall have SIXTY (60) days to consider the award of the Contract. If no contract is awarded within SIXTY (60) days from the date of bid opening, all bids and proposals shall be considered as automatically rejected.

15. Execution of Contract

The Bidder to whom the contract is awarded will be required to execute the Contract and obtain the performance BOND and payment BOND within ten (10) calendar days from the date when NOTICE OF AWARD is delivered to the BIDDER. The NOTICE OF AWARD shall be accompanied by the necessary Contract and BOND forms. In case of failure of the BIDDER to execute the Contract, the OWNER may consider the BIDDER in default, in which case the BID BOND accompanying the proposal shall become the property of the OWNER.

The OWNER within ten (10) days of receipt of acceptable performance BOND, payment BOND and Contract signed by the party to whom the Contract was awarded shall sign the Contract and return to such party an executed duplicate of the Contract. Should the OWNER not execute the Contract within such period, the BIDDER may by WRITTEN NOTICE withdraw the signed Contract. Such notice of withdrawal shall be effective upon receipt of the notice by the OWNER.

The NOTICE TO PROCEED shall be issued within ten (10) days of the execution of the Contract by the OWNER. Should there be reasons why the NOTICE TO PROCEED cannot be issued within such period, the time may be extended by mutual agreement, between the OWNER and CONTRACTOR. If the NOTICE TO PROCEED has not been issued within the ten (10) day period or within the period mutually agreed upon, the CONTRACTOR may terminate the Contract without further liability on the part of either party.

16. Bonds

The successful bidder will be required to execute three (3) bonds, in the forms hereto attached, with sureties acceptable to the Owner. One bond shall be conditioned for the faithful fulfillment of the Contract and to include the protection of the Owner from all liens and damages arising out of the work; another bond to be conditioned for the payment of all labor and materials used in the work and the protection of the Owner from all liens and damages arising therefrom; each of which bonds shall be in amount equal to the total amount of the contract. The third bond shall be a Maintenance and Guarantee Bond in the amount of one hundred percent (100%) of the contract price. All bonds shall extend from time of issuance of a "Notice to Proceed" by the Owner. The Maintenance and Guarantee Bond shall be for a period of one (1) year from the date of the payment of the final estimate.

17. Contractors Insurance

The Contractor shall not commence work under this Contract, until he has obtained all insurance required under this section, and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his subcontract until all similar insurance required of the subcontractor has been so obtained and approved.

In addition to the insurance requirements of paragraph 2l, "Insurance" of the General Conditions, the Contractor shall provide the following coverages:

a. Compensation Insurance.--The Contractor shall take out and maintain during the life of the Contract, Worker's Compensation Insurance in accordance with the Worker's Compensation Law of Michigan, for all of his employees employed at the site of the project, and in case any work is sublet, the Contractor shall require the subcontractor similarly to provide said insurance for all of the latter's employees, unless such employees are covered by the protection afforded by the Contractor.

b. Public Liability and Property Damage Insurance.--The Contractor shall take out and maintain during the life of the Contract such Public Liability and Property Damage Insurance as shall protect him and any Subcontractor performing work covered by the Contract, including owned and non-owned automobile insurance, and protect and hold the Owner, **CHARTER TOWNSHIP OF MERIDIAN, INGHAM COUNTY DEPARTMENT OF TRANSPORTATION AND ROADS, INGHAM COUNTY DRAIN COMMISSION, and WOLVERINE ENGINEERS & SURVEYORS, INC.,** harmless from claims for damages for personal injury, including accidental death, as well as from claims for property damages, which may arise from operations under this contract, whether such operations be by himself, or by any Subcontractor or by anyone directly or indirectly employed by either of them. The amounts of such insurance shall be as provided herein.

c Indemnification-Owner's Protective Insurance.--The CONTRACTOR shall purchase an Owner's Protective Insurance Policy which will indemnify and hold harmless the OWNER and the ENGINEER and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the WORK, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by an negligent or willful act or omission of the CONTRACTOR, and SUBCONTRACTOR, any directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

In any and all claims against the OWNER or ENGINEER, or any of their agents or employees, by any employee of the CONTRACTOR, any SUBCONTRACTOR, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any SUBCONTRACTOR under workmen's compensation acts, disability benefit acts or other employee benefits acts.

The Owner's Protective Indemnification Insurance Policy shall specifically name as insured, the **Charter Township of Meridian, and Wolverine Engineers & Surveyors, Inc.** Certificate of this policy and coverage shall be provided prior to commencement of work.

Insurance and additional insured: The contractor shall provide for and on behalf of the state, the commission, the department and its officials, agents and employees, and all agencies specifically named below and their employees, Owner’s Protective Public Liability Insurance. Such insurance shall provide coverage and limits the same as the Contractor’s Public Liability Insurance.

d. Underground Collapse and Explosion -- The Contractor shall take out and maintain during the life of the Contract, coverage for Underground Collapse and Explosion Insurance as shall protect him and any Subcontractor performing work covered by the Contract, from claims for damages that may arise from operations under this Contract, whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by either of them and the amounts of such insurance shall be as follows.

e. Builders Risk Insurance--The Contractor shall provide all Builders Risk Insurance for damage by fire, explosion and other causes to any part of the construction, which fully protects him and the Owner from loss or damage while the project is under construction and prior to the full acceptance thereof by the Owner. The policies shall be payable to the Contractor and to the Owner as their interests may appear.

f. Minimum coverage limits for Public Liability Insurance and Owner's Protective Insurance shall be as follows:

Bodily Injury - $ 1,000,000/$ 1,000,000 Aggregate
Property Damage - $1,000,000 Aggregate
Combined Single Limit - $ 2,000,000

g. The Surety & insurance companies providing all coverages on this Project shall have and maintain during the term of this contract a minimum A.M. Best (Best's Key Rating Guide) rating classification of "A-".

h. Standard language regarding cancellation will be as follows: "***Should any of the above described policies be cancelled before the expiration date thereof, the issuing insurer will provide by first class mail 30 days written notice to the certificate holder."*** **The language *"failure to do so shall impose no obligation or liability of any kind upon the insurer, its agents or representatives",*** shall be struck from the certificate(s).

18. Time of Starting and Completion

The work to be done is to be started by the Contractor at the site, fifteen (15) calendar days after receipt of written "Notice to Proceed", unless the Owner shall, in writing authorize a further delay, and the work shall be prosecuted diligently thereafter and shall be completed as stated in Section 21, Information to Bidders unless the time shall be extended by the Owner under the provisions of the Contract.

19. Definition of Notice

Where in any of the Contract Documents there is any provision to the giving of any notice, such notice shall be deemed to have been given: (l) As to the Owner, when written notice shall be delivered to the Engineer of the Owner, or shall have been placed in the mails addressed to the chief executive officer of the Owner at the place where the bids for the Contract were opened; (2) As to the Contractor, when a written notice shall have been delivered to the chief representative of the Contractor at the site of the work or by mailing such notice to the Contractor at the place stated in the papers prepared by him to accompany his proposal as the address of his permanent place of business; (3) As to the surety, on the performance bond when a written notice is placed in the United States Mails addressed to the surety at the home office of said surety or to its agents who executed such performance bond in behalf of such surety.

20. Payments to Contractor

Payments to Contractors will be made in accordance with General Conditions, Paragraph 19 and with Act 524 of Michigan Public Acts of 1980, as applicable. In preparing estimates, the material delivered on the site and preparatory work done may be taken into consideration.

All material and work covered by partial payments made shall thereupon become the sole property of the Owner, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the Owner to require the fulfillment of all of the terms of the Contract.

Final payment to the contractor shall not be made until final acceptance of all work under this Contract. Final acceptance shall mean acceptance and approval by the Owner and Engineer of the entire work under this Contract and approval of all records and other written data required in the Contract Documents. A Consent of Surety for Final Payment must be submitted before releasing all the retainage.

21. Time of Completion and Liquidated Damages

Bidder must agree to commence work on or before a date to be specified in a written A Notice to Proceed@ of the Owner and to fully complete the various items of construction within **90** consecutive calendar days and in accordance with any intermediate completion dates as outlined and described in the Schedule of Construction in the Special Conditions of the Specifications. It is an important part of this Contract that the various sections of the work be completed on a planned time schedule and the Contractor shall adhere to the requirements of the Schedule for Construction unless the schedule is changed by the Engineer in writing.

The Contractor agrees to pay as liquidated damages the sum as listed in the Bid Proposal, for each successive calendar day that the Contractor or any Subcontractor shall be in default beyond the date of completion or beyond any intermediate date required in the Schedule of Construction. Liquidated damages shall be imposed in accordance with Paragraph 15 "Time for Completion and Liquidated Damages," of the General Conditions.

22. Elliott-Larsen Civil Rights Act

Neither the Contractor nor any of its subcontractors shall discriminate against any employee or applicant for employment with respect to hire, tenure, terms, conditions or privileges of employment or a matter directly or indirectly related to employment because of race, color, religion, national origin, age, sex, height, weight or marital status, and Contractor agrees that all subcontracts will provide language substantially identical to that set forth herein. It is further understood that a breach of this covenant may be regarded as a material breach of this contract.

23. Michigan Handicappers' Civil Rights Act

Incorporated by reference in Section 209 of Article 2 of the Michigan Handicappers' Civil Rights Act of 1976, as amended, which states in part that a contractor and his/her subcontractor(s) shall not "discriminate against an employee or applicant for employee with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of handicap that is unrelated to the individual's ability to perform the duties of a particular job or position." Breach of this covenant may be regarded as a material breach of this Agreement.

24. Americans With Disabilities Act

Incorporated by reference in Section 102 of the American With Disabilities Act, 42 U.S.C. Subsection 12112, which provides that no covered entity shall discriminate against a qualified individual with a disability because of the disability of such individual with regard to job application procedures, the hiring, advancement, or discharge of employees, employee compensation, job training, and other terms, conditions and privileges of employment, and Section 202 of the Americans With Disabilities Act, 42 U.S.C. Subsection 12132, which provides that no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs or activities of a public entity or be subject to discrimination by any such entity.

25. Non-Discrimination Statement

The (Recipient), in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 U.S.C. 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, SubTitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

SPECIAL CONDITIONS
(Project Specifications)
CHARTER TOWNSHIP OF MERIDIAN
CONTRACT 1: HISTORICAL VILLAGE GATEWAY AND RESTROOM
CONTRACT 2: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR

1. General

These Special Project Conditions are intended to modify, add to, or clarify the Contract Plans and Specifications.

Where any section of the Contract Documents is supplemented by these Special Project Conditions, the section shall remain in effect and the Special Project Conditions shall be considered added thereto.

The Special Conditions of the Contract (Project Specifications, Standard Specifications, Advertisement, Information for Bidders, and General Conditions), together with the Bid Proposal, Contract and Bonds have been bound together for convenience and together with the Plans shall govern this construction and shall constitute the Contract Documents.

2. Description of the Project

This project consists of construction of Historical Village Gateway, and will consist of Concrete pathway, Restroom Building, 8" Sanitary sewer line, Bike racks – Bike Repair Station and any related Restoration and -Central Meridian Regional Trail Connector, and will consist of Asphalt None- Motorized Trail, Elevated Boardwalk, Fishing Deck, and Related Restoration. The Pathway will run from the end of proposed concrete pathway in Central Park to the Central Park South Entrance.

Construction for **CONTRACT 1 - HISTORICAL VILLAGE GATEWAY AND RESTROOM** shall include, as contained Removing the ex. Footbridge, backfill and construct of 2680 Sft of 4" Concrete Pathway, backfill the removed Footbridge with 150 Cyd Compacted Class II Sand. Construction of 1,166 Lft 8" Sanitary Sewer line with three Structures 48" Dia. Restroom Building and connect it to the proposed sanitary sewer line. Construction of Rain Garden and connecting and extending the Ex. culvert to improve drainage, and topsoil, seeding and mulching and other miscellaneous work items normally included with the above described work items.

Construction of **CONTRACT 2 - CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR**. shall include, as contained Construction of 12' wide, 2400 Lft, Non-Motorized Asphalt Trail. Construction of 12' Wide 350 Lft long of elevated wooden Boardwalk, 16' Wide 100 Lft long Elevated Boardwalk, and (36' x 20') Fishing Deck. Construction of Bike Repair Station and Bike Rack. Entrance Sign, and topsoil, seeding and mulching and other miscellaneous work items normally included with the above described work items.

PLEASE NOTE: THIS PROJECT WILL BE BID AND AWARDED AS TWO SEPARATE CONTRACTS. YOU MAY BID ON CONTRACT 1, OR CONTRACT 2, OR BOTH CONTRACTS TOGETHER.

3. Schedule of Construction

The Contractor shall, at the preconstruction meeting, provide a schedule of construction showing the start and completion dated for all streets in this project. The schedule shall limit the number of streets under construction at any one time.

The Owner reserves the right to amend the schedule if severe conflicts are perceived.

4. Use of Michigan Department of Transportation Standard Specifications

The handbook entitled "2012 Standard Specifications for Construction" adopted by the Michigan Department of Transportation shall be a Contract Document for this construction project and shall be binding when cited in these specifications, construction drawings and plans or related Contract Documents. The handbook cited shall hereinafter be referred to as MDOT Standard Specifications, or alternatively MDOT Specifications.

MDOT Standard Specifications shall, when cited, be binding in its entirety except when specifically modified, in which instance the applicable Special Conditions shall govern.

5. Disposition of Surplus Excavated Material

All surplus earth excavation from trenches, roadway embankment, or slope excavation shall become property of the Contractor. All surplus material not required for making fills, and other materials such as bituminous pavement shall be hauled and disposed of by the Contractor in a safe legal manner, and all other materials shall be incidental to the cost of construction unless otherwise stated in the Bid Proposal.

6. Excavation, Filling and Grading

This work shall include all removing, stripping, excavation of earth and other materials, filling, hauling and other work necessary to conform to the finish elevations and contours as described in the Specifications and shown on the Plans. All areas to receive fill or stockpiled spill shall have the topsoil stripped prior to placement of the material. Topsoil shall be stripped and stockpiled on site as directed by the Engineer for future use by the Owner. The work shall include fine grading and cleanup of the construction site upon completion of the work.

The Contractor shall accomplish all clearing within the limits designated by the Engineer or as required for the construction work involved and shall dispose of all materials so removed to the satisfaction of the Engineer.

Existing topsoil shall be removed and stockpiled on the site and after grading is completed, the topsoil shall be replaced to a minimum depth of 4” over all disturbed areas. After fine grading, the area shall be fertilized, mulched and seeded with a good quality lawn seed as defined under Standard Project Requirements, Page SPR 10, Item 28.

7. Coordination of Construction Activities

The Contractor shall be responsible for coordinating the activities of his work crews with the activities of his subcontractors and with the Owner, all local police, fire and emergency services, and any other public or private contractors performing work activities in the project area.

8. Utility Coordination

For protection of underground utilities and in conformance with Public Act 53, the contractor shall contact Miss Dig at **800-482-7171** a minimum of three full working days, excluding Saturdays, Sundays, and holidays prior to any 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.

No additional compensation will be paid to the Contractor for delays due to material shortages or other reasons beyond the control of the County/City, or for delays on construction due to the encountering of existing utilities that are, or are not, shown on the plans.

9. Construction Signage and Maintaining Traffic

It shall be the Contractor's responsibility to furnish and maintain Construction Zone Signage in accordance with the "Michigan Manual of Uniform Traffic Control Devices" (MMUTCD) and any requirements that may be deemed necessary by the Charter Township of Meridian Police Department.

10. Incidental Items

The Bid Proposal lists the major work items that will be necessary to construct this project. Any additional items of work that are necessary to complete the project shall be considered incidental. Examples of incidental items include, but are not limited to: removal, temporary relocation, and replacement of mailboxes and mailbox posts, support of existing utilities and repair of existing field tiles and fences encountered during construction.

11. Trimming of Trees and Limbs

The proposed construction will be adjacent to and under many mature trees. It is intended to protect the trees during construction. As such, the Contractor is required to prune any overhanging limbs or branches which may interfere with the operations associated with the installation of utilities.

The branches, limbs, etc. shall be pruned in accordance with accepted practices for pruning as published by the International Society of Arboriculture (217) 355-9411. All pruning shall be completed by a competent, experienced person and/or company. All trimmed limbs or branches shall be removed from the site and properly disposed of by the Contractor.

Any tree, limb or branch damaged during construction operations shall be (pruned) to prevent further damage to the tree. This shall be completed at no additional cost to the project.

12. Pavement Removal

The work item Pavement Removal, shall consist of all material regardless of thickness, equipment costs, and labor to remove, salvage, and disposal of all types of pavement material including asphalt, brick pavers, concrete, driveways, and any other paving material, or combination, to the full depth and width of removal area. This includes any paving materials layered in combination with granular material.

13. Disposal of Material

Removed materials shall become the property of the Contractor and shall be disposed of outside the right-of-ways, the Contractor shall furnish the Engineer written permission from the property owner of the disposal site.

Adjacent soils or base materials removed when removing pavement, shall be replaced with a similar material at the Contractors expense.

14. Sawcut and Removal

Sawcuts on concrete, bituminous, or a combination thereof shall be made at locations as shown on the plans or as directed by the Engineer. In removing old pavement, curb, gutter, sidewalk, driveways, or similar structures where adjoining surfaces of the existing structures are to be left in the finish work, the old structure shall be removed to existing joints or sawed to a reasonably true line with a power driven concrete saw to full depth.

The Contractor shall take any precautions necessary to maintain a clean vertical edge on the sawcut throughout the duration of work. Any re-sawing or additional removal and replacement of pavement, curbs, gutter, sidewalk, or combination thereof which may be necessary, due to Contractor carelessness, shall be at the Contractor's expense.

Removed materials shall become the property of the Contractor and shall be disposed in a legal manner. The Contractor shall furnish the Engineer written permission from the property owner of the disposal site.

Adjacent soils or base materials removed when removing pavement shall be replaced with a similar material at the Contractor's expense.

All work in this section shall be measured and paid for by the linear foot at the contract unit prices and shall include all labor, equipment, and materials needed to accomplish the work.

15. Vegetation Removal

This provision covers the removal of all vegetation within the influence of construction area. Removals shall be made at locations as shown on the plans or as directed by the Engineer.

It is the intent that as little as possible vegetation be removed or damaged. It shall be the Contractor's responsibility to provide protection to any vegetation not scheduled to be removed.

Any vegetation damaged, destroyed, or removed without prior approval by the Engineer, shall be replaced in kind at the Contractor's expense.

Removed materials shall become the property of the Contractor and shall be disposed of off site in a legal manner. The Contractor shall furnish the Engineer written permission from the property owner(s) of the disposal site(s).

Adjacent material and or vegetation removed or damaged when removing existing vegetation shall be replaced in kind the Contractor's expense.

The removal of trees 8 inches to 36 inches in diameter or larger shall be measured per item removed and shall be paid for at the contract unit price per item which shall include all labor, equipment, and materials needed to accomplish the work. All other forms of vegetation, including stumps, to be removed shall be considered incidental and shall be removed and disposed of at the Contractor's expense.

16. Mowing

Mow, pick up litter and dispose of litter. Comply with all state regulations and local mowing ordinances.

Use equipment suitable and adequate for the mowing operation. Do not create a hazard, hindrance or delay to the public, nor damage to the roadside.

Furnish equipment in good repair and maintain to produce a neat, clean and sharp cut to the grass at all times. Do not use equipment that pulls or rips grass or otherwise damages the turf. Use equipment that can cut to 3 inches above the ground. Equip mowers with guards to prevent debris from being thrown from the cutter.

The Township will not be responsible for damage to the Contractor's equipment due to obstacles encountered during the work.

Mowing equipment will include tractor drawn grass cutting equipment, and other power or hand equipment necessary to satisfactorily complete the work.

The Engineer will specify all areas to be mowed. Pick up, remove, and dispose of litter each day before cutting each area.

Hand trim, when specified, tight to all walls, fences, curbs, poles or other fixed objects within the mowing areas.

Mow landscape areas to a height of 4 inches. Cut all hand trimming at walls and curbs flush to adjacent concrete or sidewalk.

Mowing will be completed one (1) time and will be incidental to the contract. Litter, trash pickup and disposal are to be included and incidental to this item.

17. Curing Compound

All concrete shall be cured in accordance with the 2012 MDOT Standard Specifications for Construction, and as specified herein.

After texturing operations have been completed and after the free water has left the surface, coat and seal the pavement surface and sides of slip-formed pavement with a uniform layer of membrane curing compound.

Apply, not less than one gallon per 25 square yards of surface for each application. Apply the second coat after the first coat has dried sufficiently but do not exceed two hours between coats.

Keep the compound thoroughly mixed according to the manufacturer's recommendation. Do not thin curing compound.

Reapply curing compound immediately to all surfaces damaged by rain, joint sawing, Contractor's foot traffic or other activities.

If fixed-forms are removed during the curing period, coat the entire area of the sides of the pavement with curing compound immediately after removal of the forms.

It shall be the Contractor's responsibility to furnish and provision personnel to protect concrete from vandalization or damage until cured. Replacement of damaged concrete shall be determined by Engineer and replaced at no additional cost to the Owner/Project.

These requirements for curing are minimum requirements only. Repair or replacement of any concrete showing injury or damage due to inadequate curing is required. All costs associated with this work will be borne by the Contractor and included in the cost associated with the related items of work.

THIS PROPOSAL SHALL NOT BE DETACHED FROM THESE SPECIFICATIONS WHEN SUBMITTING BID

BID PROPOSAL

Proposal of_____
(hereinafter called "Bidder")* a corporation, organized and existing under the laws of the State of _____ a partnership, or an individual doing business as _____

To: CHARTER TOWNSHIP OF MERIDIAN
Ingham County, Michigan

Gentlemen:

The Bidder, in compliance with your Advertisement for Bids for the construction of the contract entitled, **CONTRACT 1: HISTORICAL VILLAGE GATEWAY AND RESTROOM, CONTRACT 2: CENTRAL MERIDIAN REGIONAL TRAIL CONNECTOR** having examined the Drawings, Specifications, related documents, the site of the proposed work and being familiar with all of the conditions surrounding the construction of the proposed project including the soil and other site conditions, availability of materials and supplies, hereby propose to construct the project in accordance with the Contract Documents within the time set forth therein, and at the prices stated herein. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which the Proposal is a part.

Bidder hereby agrees to commence work under this Contract on or before a date to be specified in written "Notice to Proceed" of the Owner and to fully complete the project in accordance with the schedule for completion as outlined in Information for Bidders. Bidder further agrees to pay as liquidated damages, the sum of $500.00 each consecutive calendar day thereafter as hereinafter provided in the Information for Bidders.

Bidder acknowledges receipt of the following addendum:

_____

_____

_____

*Insert corporation, partnership, or individual as applicable.

Bidder agrees to perform all the work described in the Contract Documents, for the following price(s):

CONTRACT 1: Historical Village Gateway and Restroom					
ITEM	**EST. QTY.**	**UNIT**	**DESCRIPTION**	**UNIT PRICE**	**TOTAL**
1	2,680	Sft	4” Concrete Sidewalk		
2	1,166	Ft	8” HDPE Dr-11, Sanitary Sewer (Directional Drill)		
3	3	Ea	Sanitary Sewer Structure, 48” Dia		
4	1	Ea	8” Sanitary Sewer Tap (Connect to MH A)		
5	1	Ea	8” Sanitary Sewer Tap (Connect to EX SAN #5)		
6	1	LS	Foot Bridge removal		
7	8	Ea	Soil Erosion control, Inlet Fabric Drop Protection		
8	925	Ft	Soil Erosion control, Silt Fence		
9	1	Ea	Furnish and Install the Pre-Engineered Restroom Building, foundation, and associated equipment		
10	11	Cyd	6”-12” Rip Rap @ 15” Storm Outlet		
11	150	Cyd	Fill Ex. Drain Area (Topsoil-Seed-Mulch)		
12	150	Cyd	Compacted Class II Granular Material		
13	49	Lft	15” RCP Storm Pipe w/ (2) 15” Flared End Sections		
14	1	LS	Site Prep, Grading, and Demolition		
15	1	LS	Cleanup & Site Restoration		
			TOTAL AMOUNT OF BID – CONTRACT 1		
			Historical Village Gateway and Restroom		
ALTERNATE #1					
16	716	Ft	Alternate #1 – 6” SDR-26 Sanitary Sewer		
17	1	Ea	Sanitary Sewer Structure, 48” Dia		
18	1	Ea	6” Sanitary Sewer Tap (Connect to MH A)		
19	1	Ea	6” Sanitary Sewer Tap (Connect to EX SAN #A3)		
			TOTAL AMOUNT OF ALTERNATE #1		
NOTE: If alternate #1 is selected, replace items #2, #4, and #5 from contract #1 with Alternate items #16, #18, and #19 and add Item #17.					
CONTRACT 2: Central Meridian Regional Trail Connector					
1	500	Cyd	6", 21AA Aggregate Base		
2	250	Cyd	22A Aggregate (Embankment)		
3	650	Tons	HMA 13A (4”)		
4	4,200	Sft	12’ Wide Boardwalk		
5	1,600	Sft	16’ Wide Boardwalk, and (20’x36’) Fishing		

			Deck		
6	2,810	Ft	Soil Erosion control, Silt Fence		
7	2	Ea	Furnish and Install Trail Signs and Posts		
8	1	Ea	Furnish and Install Bike Repair Station w/ Air Pump and Vinyl Decals		
9	2	Ea	Furnish and Install Bike Rack		
10	1	LS	Wetland Remediation Area		
11	1	LS	Site Prep, Grading, and Demolition		
12	1	LS	Cleanup & Site Restoration		
13	2050	Lft	Tensar BX1100 Geogrid (Minimum 4m width)		
			TOTAL AMOUNT OF BID - CONTRACT 2		
			Central Meridian Regional Trail Connector		
			Total Amount of Bid – Contract 1 & Contract 2		
			Total Amount of Bid – Contract 1 (w/Alternate #1) & Contract 2		

Bidders shall enter amounts for ALL Bid Items.

The Bidder agrees that the above total Amount of Base Bid, (corrected for any errors in extensions or additions) shall be the basis for determination of award of this contract along with all other requirements and consideration for award as provided under Basis of Award, Information for Bidders. Bidder further agrees that final contract price will be adjusted up or down to reflect actual units constructed, furnished or placed under this Contract. Engineer shall check extensions and addition of all items.

The above prices shall include all labor, materials, removal, overhead, profit, insurance, etc. to cover the finished work of the several kinds called for.

Bidder understands that the Owner reserves the right to reject any, or all bids, and to waive any informalities in the bidding.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of SIXTY (60) calendar days after the scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of bid, bidder will execute the formal contract attached within ten (10) days. The bid security attached in the sum of _____ is to become the property of the Owner in the event the Contract and Bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

IN WITNESS WHEREOF, the Contractor agrees to the foregoing terms this _____day of _____, 20__.

By: _____
Title: _____
P.O. Address: _____
_____
_____
Zip Code
Telephone No: _____

LEGAL STATUS OF BIDDER

The bidder shall fill out the appropriate form and strike out the other two.

A corporation duly organized and doing business under the laws of the State of _____for whom _____ _____ bearing the official title of _____, whose signature is affixed to this proposal, is duly authorized to execute contracts.

A partnership, all of the members of which, with addresses, are:

_____ _____
_____ _____
_____ _____
_____ _____

An individual, whose signature is affixed to this proposal.

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,_____ as Principal, and _____ as Surety, are hereby held and firmly bound unto **Charter Township of Meridian** as OWNER in the penal sum of _____ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this_____day of_____, 20_____.

The Condition of the above obligation is such that whereas the Principal has submitted to **Charter Township of Meridian** a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the **Charter Township of Meridian -Contract 1 – Historical Village Gateway And Restroom and/or Contract 2 – Central Meridian Regional Trail Connector.**

NOW, THEREFORE

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attachment hereto (properly completed in accordance with said BID) and shall furnish a BOND for faithful performance of said contract, and for the payment of all persons performing labor furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____(L.S.) _____

Principal Surety

By: _____

IMPORTANT - Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

The Surety and insurance companies providing all coverages on this Project shall have and maintain during the term of this contract a minimum A.M. Best (Best's Key Rating Guide) rating classification of "A-".

CONTRACT

THIS AGREEMENT, Entered into this _____ day of _____, by and between _____ of _____, party of the first part and hereinafter called the Contractor, and the **Charter Township of Meridian**, hereinafter called the Owner, party of the second part.

WITNESSETH, That the said Contractor, for the consideration hereinafter mentioned, has agreed and does hereby agree with the said Owner that he will furnish all labor, power, materials, equipment, supplies, superintendence, Bonds, Workmen's Compensation, Public Liability and Property Damage Insurance to do and complete the work for the construction of **Charter Township of Meridian -Contract 1 - Historical Village Gateway And Restroom.**
for the said Owner and that he will fully complete the same according to the Drawings and Specifications therefore and according to the proposal attached hereto and made a part of this Contract, to which reference is made for a more particular description of the work.

Contract 1 $_____

The Contractor agrees, as he has bid, to do said work at the prices bid in his Proposal, which price is understood to cover every contingency, the furnishing of all labor, power, materials, supplies, equipment, superintendence, complete insurance coverage, and the completion of everything connected with the construction of said **Charter Township of Meridian -Contract 2 - Central Meridian Regional Trail Connector.**

Contract 2 $_____

The total contract price (Sum of Contract 1 & Contract 2), based on prices stated in the proposal and approximate quantities stated therein is _____**($_____).**

It is agreed between the parties, that in case the Contractor shall abandon the work to be done or shall fail to do said work, or any part thereof, according to the terms of this Contract or in case the Owner shall at any time be convinced that the work is unreasonably delayed, or that the conditions of the Contract are being willfully violated, or executed carelessly, or in bad faith, then and in such case, the Owner reserves the right to declare this Contract forfeited and to relet the unfinished portion thereof and such person or persons to whom said work shall have been relet, are hereby authorized to complete said work without hindrance from the Contractor. And the said Contractor shall be liable, in case of the non-performance of this Contract or any part thereof, and he hereby agrees to pay to the said Owner, as damages, all costs, charges and expenses attending such reletting and also such sum or sums as it shall cost to complete said Contract over and above the amounts agreed therefore.

In case of actual or alleged disagreement or discrepancy between the Contract, the Specifications and the Drawings, the language and provisions of the Contract shall take precedence and prevail. Several sections of the Contract Documents are herein listed in their order of precedence:

(a) Contract
(b) Bid Proposal and Addenda (as accepted in signed Contract Documents)
(c) Information for Bidders
(d) Special Conditions

(e) Technical Specifications
(f) Drawings
(g) Standard Project Requirements
(h) General Conditions

All Contract documents herein listed, shall be binding by parties signatory to this Contract.

The Contractor hereby agrees to commence work under this Contract on or before a date to be specified in a written "Notice to Proceed" of the Owner and to fully complete the project in accordance with the schedule for completion as outlined in Information for Bidders, "Liquidated Damages". The Contractor further agrees to pay the sum of liquidated damages, as stated in Bid Proposal Page 1, for each consecutive day thereafter as hereinafter provided in "Information to Bidders."

The Contractor hereby certifies and agrees that all construction work and all operations relating to work done under this contract by the Contractor or any subcontractor will be done in accordance with all applicable, current Federal and State laws and regulations and the Occupational Safety and Health Act. The Contractor further certifies that he will provide training and instruction on state and federal safety laws and regulations and on safe working practices to all persons involved with work under this contract.

The Contractor agrees that at his own expense, he shall protect and defend the Owner and agrees to indemnify, and save harmless the Owner for all damage, injuries, deaths, costs and expenses that may be incurred as a result of any activities of the Contractor or his subcontractors on this project.

The Contractor and the Owner mutually agree that the Owner shall have the right to reduce the scope of this work in accordance with the Bid Proposal of these Contract Documents and that such deletion, when made in writing by the Owner or his Engineer shall be by an amount which is in accordance with the Contractor's Bid Proposal.

IN WITNESS WHEREOF, the parties hereunto have set their hands and seals the day and year first above written.

CHARTER TOWNSHIP OF MERIDIAN _____
Owner Contractor

By_____ By_____

_____Title _____Title

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, That _____ Contractor, as principal, and _____ as surety, are held and firmly bound unto the **Charter Township of Meridian** Owner, in the sum of _____ **($)** to be paid to the Owner for which payment well and truly to be made we jointly and severally bind ourselves, our heirs, executors, administrators, and assigns firmly by these presents.

THE CONDITIONS OF THE ABOVE OBLIGATIONS ARE such that,

WHEREAS the _____did, on the ____ day of _____, **by** articles that date enter into contract with the said Owner for the construction of **Charter Township of Meridian-Contract 1 – Historical Village Gateway And Restroom and/or Contract 2 – Central Meridian Regional Trail Connector**

NOW, THEREFORE, if the said Contractor shall save and hold harmless the said Owner for all public liability and damages of every description in connection therewith, shall well and faithfully in all things fulfill the said contract according to all the conditions and stipulations therein contained in all respects, and shall save and hold harmless the said Owner from and against all liens and claims of every description in connection therewith, then this obligation shall be void and of no effect; but otherwise it shall remain in full force and virtue, and, in the event that the said Owner shall extend the time for the completion of said work or otherwise modify elements of the contract in accordance with provisions thereof, such extension of time or modification of the contract shall not in any way release the sureties of this bond.

WITNESS our hands and seals this ____day of _____,

WITNESSES:

_____ _____(SEAL)

_____ _____(SEAL)
Principal

_____ _____ (SEAL)

_____ _____ (SEAL)
Surety

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENT, that we, _____ of _____ hereinafter called the Principal, and _____ hereinafter called the Surety, are held and firmly bound unto the **Charter Township of Meridian** Owner, in the sum_____**($)** to the payment whereof, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these present.

Sealed with our seals and dated this ____ day of _____A.D., **.**

WHEREAS, the above named Principal has entered into a certain contract with the **Charter Township of Meridian**, hereinafter called the Owner, dated the ____ day of _____ , A.D., . (Hereinafter called the Contract) for **Charter Township of Meridian-Contract 1 – Historical Village Gateway And Restroom and/or Contract 2 – Central Meridian Regional Trail Connector** which contract and the specifications for said work shall be deemed a part hereof as fully as if set out herein.

AND, WHEREAS, this bond is given in compliance with and subject to the provisions of Act No. 213 of the Public Acts of Michigan for the year 1963, as amended.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION IS SUCH that if the above named Principal, legal representatives, or successors shall pay or cause to be paid to all subcontractors, persons, firms and corporations, the same may become due and payable, all indebtedness which may arise from said Principal to a subcontractor or party performing labor or furnishing materials, or any subcontractor to any person, firm, or corporation on account of any labor performed or materials furnished in connection with the contract, construction, and work herein referred to, then this obligation shall be void; otherwise to remain in full force and effect.

This bond given upon the express condition that any alterations, or modifications that may be hereafter recorded or made in the construction and complete installation of the work here referred to, or the placing of an inspector or superintendent thereon by the Owner shall not operate to discharge or release the sureties thereon.

IN WITNESS THEREOF, the parties hereto have caused this instrument to be executed by their respective authorized officers this ____ day of _____, A.D., 2019.

_____(Seal)
Principal

_____(Seal)
Surety

Signed, sealed and delivered in the presence of:

_____

Bonds correct in form: _____Attorney

MAINTENANCE AND GUARANTEE BOND

KNOW ALL MEN BY THESE PRESENT, that _____ Contractor, as principal and _____, as surety, are held and firmly bound unto **Charter Township of Meridian** Owner, in the sum of _____**($_____)** to be paid to said Owner, its legal representative and assigns, for which payment will and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns and each and every one of them jointly and firmly by these present.

Sealed with our seals and dated the ____ day of _____, 2019

WHEREAS, the above-named principal has entered into a certain written contract with **Charter Township of Meridian**, dated this ____ day of _____, 2019**,** wherein the principal agreed as follows:

Charter Township of Meridian-Contract 1 – Historical Village Gateway And Restroom and/or Contract 2 – Central Meridian Regional Trail Connector.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that by and under said contract, the above-named principal has agreed with said Owner for a period of one (1) year from the date of the payment of the final estimate and for such new guarantee periods as may be required pursuant to the Special Project Conditions, General Conditions, to keep in good order and repair any defect in all the work done under said contract either by the Principal or his subcontractors, or his material suppliers, that may develop during said period due to improper materials, defective equipment, workmanship or arrangements, and any other work affected in making good such imperfections, shall also be made good, all without expense to the Owner, excepting only such part or parts of said work as may have been disturbed without the consent or approval of the Principal after the final acceptance of the work and that whenever directed so to do by the Owner, by notice served in writing, either personally or by mail, on the Principal at_____ _____ or _____ legal representative, or successors, or on the Surety at _____ he will proceed at once to make such repairs as directed by said Owner; and in case of failure so to do within one (1) week from the date of service of such notice, or within reasonable time, not less than one (1) week, as shall be fixed in said notice, then the said Owner shall have the right to purchase such materials and employ such labor and equipment as may be necessary for the purpose and to undertake to do and make such repairs and charge the expense thereof to and receive same from said Principal or Surety. If any repair is necessary to be made at once to protect life and property, then and in that case, the said Owner may take immediate steps to repair or barricade such defects without notice to the Contractor. In such accounting, the Owner shall not be held to obtain the lowest figure for doing of the work or any part thereof, but all sums actually paid therefore shall be charged to the Principal or Surety. In this connection, the judgment of the Owner is final and conclusive. If the said Principal for a period of one (1) year from the date of the final estimate payment shall keep such work so constructed under the contract in good order and repair, excepting only such part or parts of such work as may have been disturbed without the consent or approval of said Principal after the final acceptance of the same and shall, whenever notice is given as hereinbefore speci-

fied, at once proceed to make repair as in said notice directed or shall reimburse said Owner for any expense incurred by making such repairs, should the Principal or Surety fail to do as hereinbefore specified and shall fully indemnify, defend and save harmless the said Owner from all suits and actions for damages of every name and description brought or claimed against it for or on account of any injury to person or property received or sustained by any party or parties, by or from any of the acts or omissions or through the negligence of said Principal, servants or employees, in the prosecution of the work included in said contract and from any and all claims arising under the Workmen's Compensation Act, so called, of the State of Michigan, then the above obligation shall be void, otherwise to remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed by their respective authorized officers this ____ day of, _____ 2019.

Signed, Sealed and delivered
in the presence of:

_____ _____(L.S.)

_____ _____(L.S.)

_____ _____(L.S.)

_

NOTICE OF AWARD

TO: **Date: _____, 2019**

PROJECT Description: **Charter Township of Meridian-Contract 1 – Historical Village Gateway And Restroom and/or Contract 2 – Central Meridian Regional Trail Connector.**

The OWNER has considered the BID submitted by you for the above described WORK in response to its Advertisement for Bids dated_____, and Information for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of ( )

You are required by the Information for Bidders to execute the Contract and furnish the required CONTRACTOR'S Performance BOND, Payment BOND, Maintenance and Guarantee Bond and certificates of insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Contract and to furnish said BONDS within ten (10) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the Owner.

Dated this ___ day of _____ **, 2019**

CHARTER TOWNSHIP OF MERIDIAN
Owner
By: _____
Title: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

By: _____ this the_____day of_____, **2019.**
By: _____Title:_____

NOTICE TO PROCEED

TO: _____
_____
_____

DATE: _____

PROJECT**: Charter Township of Meridian-Contract 1 – Historical Village Gateway And Restroom and/or Contract 2 – Central Meridian Regional Trail Connector.**

You are hereby notified to commence WORK in accordance with the Contract dated _____**, 2019** on or before _____, **2019**, and you are to complete the WORK within **90** consecutive calendar days thereafter. The date of completion of all WORK is therefore _____, **2019.**

CHARTER TOWNSHIP OF MERIDIAN
Owner

By: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____this the _____ day of _____, **2019**.

By: _____

Title: _____

Employer Identification
Number: _____

CONSENT OF SURETY
For Final Payment

PROJECT NAME: **Charter Township of Meridian-Contract 1 – Historical Village Gateway And Restroom and/or Contract 2 – Central Meridian Regional Trail Connector.**

OWNER: **CHARTER TOWNSHIP OF MERIDIAN**

PROJECT NO.: **18-0066**

AMOUNT OF CONTRACT 1: _____

AMOUNT OF CONTRACT 2: _____

AMOUNT OF CONTRACT 1 & CONTRACT 2: _____

In accordance with the provisions of the above-named contract between the Owner and the Contractor, the following named surety:

_____
_____

on the Payment Bond of the following-named Contractor:

_____
_____

hereby approves of final payment to the Contractor, and further agrees that said final payment to the Contractor shall not relieve the Surety Company named herein of any of its obligations to the Owner as set forth in said Surety company's bond.

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand and seal this _____day of _____20 _____.

_____
(Name of Surety Company)

_____
(Signature of Authorized Representative)

TITLE: _____

(Corporation Seal)

CONTRACTS FOR IMPROVMENT TO REAL PROPERTY
Act 57 of 1998

AN ACT to require contractors to provide certain notices to governmental entities concerning improvements on real property; to allow for the modification of contracts for improvement to real property; to provide for remedies; and to repeal acts and parts of acts.

History: 1998, Act 57, Eff. Oct. 6, 1998.

The People of the State of Michigan enact:

125.1591 Definitions.

Sec. 1. As used in this act:

(a) "Contractor" means a person who contracts with a governmental entity to improve real property or perform or manage construction services. Contractor does not include a person licensed under article 20 of the occupational code, 1980 PA 299, MCL 339.2001 to 339.2014.

(b) "Governmental entity" means the state, a county, city, township, village, public educational institution, or any political subdivision thereof.

(c) "Improve" means to build, alter, repair, or demolish an improvement upon, connected with, or beneath the surface of any real property, to excavate, clear, grade, fill, or landscape any real property, to construct driveways and roadways, or to perform labor upon improvements.

(d) "Improvement" includes, but is not limited to, all or any part of any building, structure, erection, alteration, demolition, excavation, clearing, grading, filling, landscaping, trees, shrubbery, driveways, and roadways on real property.

(e) "Person" means an individual, corporation, partnership, association, governmental entity, or any other legal entity.

(f) "Real property" means the real estate that is improved, including, but not limited to, lands, leaseholds, tenements, hereditaments, and improvements placed on the real property.

History: 1998, Act 57, Eff. Oct. 6, 1998.

125.1592 Improvement contract exceeding $75,000; provisions.

Sec. 2. A contract between a contractor and a governmental entity for an improvement that exceeds $75,000.00 shall contain all of the following provisions:

(a) That if a contractor discovers 1 or both of the following physical conditions of the surface or subsurface at the improvement site, before disturbing the physical condition, the contractor shall promptly notify the governmental entity of the physical condition in writing:

(*i*) A subsurface or a latent physical condition at the site is differing materially from those indicated in the improvement contract.

(*ii*) An unknown physical condition at the site is of an unusual nature differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the improvement contract.

(b) That if the governmental entity receives a notice under subdivision (a), the governmental entity shall promptly investigate the physical condition.

(c) That if the governmental entity determines that the physical conditions do materially differ and will cause an increase or decrease in costs or additional time needed to perform the contract, the governmental entity's determination shall be made in writing and an equitable adjustment shall be made and the contract modified in writing accordingly.

(d) That the contractor cannot make a claim for additional costs or time because of a physical condition unless the contractor has complied with the notice requirements of subdivision (a). The governmental entity may extend the time required for notice under subdivision (a).

(e) That the contractor cannot make a claim for an adjustment under the contract after the contractor has received the final payment under the contract.

History: 1998, Act 57, Eff. Oct. 6, 1998.

125.1593 Contract completion; performance; consent of governmental entity; arbitration; judgment rendered.

Sec. 3. (1) If the contractor does not agree with the governmental entity's determination, with the governmental entity's consent the contractor may complete performance on the contract.

(2) At the option of the governmental entity, the contractor and the governmental entity shall arbitrate the contractor's entitlement to recover the actual increase in contract time and costs incurred because of the physical condition of the improvement site. The arbitration shall be conducted in accordance with the rules of the American arbitration association and judgment rendered may be entered in any court having jurisdiction.

History: 1998, Act 57, Eff. Oct. 6, 1998.

125.1594 Incorporation of additional provisions.

Sec. 4. If an improvement contract does not contain the provisions required under section 2, the provisions shall be incorporated into and considered part of the improvement contract.

History: 1998, Act 57, Eff. Oct. 6, 1998.

125.1595 Rights or remedies.

Sec. 5. This act does not limit the rights or remedies otherwise available to a contractor or the governmental entity under any other law or statute.

History: 1998, Act 57, Eff. Oct. 6, 1998.

125.1596 Repealed. 2001, Act 28, Imd. Eff. June 22, 2001.

Compiler's note: The repealed section pertained to repeal of act.

Act No. 524
Public Acts of 1980
Approved by Governor
January 29, 1981

PAYMENT TO CONTRACTORS

STATE OF MICHIGAN
80TH LEGISLATURE
REGULAR SESSION OF 1980

Introduced by Rep. Ryan

ENROLLED HOUSE BILL NO. 5541

An ACT to provide for the terms of certain construction contracts with certain public agencies; to regulate the payment and retainage of payments on construction contracts with certain public agencies; and to provide for the resolution of certain disputes.

The People of the State of Michigan enact:

Sec. 1. As used in this act:

(a) "Agent" means the person or persons agreed to or selected by the contractor and the public agency pursuant to section 4(2).

(b) "Architect or professional engineer' means an architect or professional engineer licensed under Act No. 299 of the Public Acts of 1980, being sections 339.101 to 339.2601 of the Michigan Compiled Laws, and designated by a public agency in a construction contract to recommend progress payments.

(c) "Construction contract" or "contract" means a written agreement between a contractor and a public agency for the construction, alteration, demolition, or repair of a facility, other than a contract having a dollar value of less than $30,000.00 or a contract that provides for 3 or fewer payments.

(d) "Contract documents" means the construction contract; instructions to bidders; proposal; conditions of the contract; performance bond; labor and material bond; drawings; specifications; all addenda issued before execution of the construction contract and all modifications issued subsequently.

(e) "Contractor" means an individual, sole proprietorship, partnership, corporation, or joint venture, that is a party to a construction contract with a public agency.

(f) "Facility" means a building, utility, road, street, boulevard, parkway, bridge, ditch, drain, levee, dike, sewer, park, playground, or other structure or work that is paid for with public funds or a special assessment.

(g) "Progress payment" means a payment by a public agency to a contractor for work in place under the terms of a construction contract.

(h) "Public agency" means this state, or a county, city, township, village, assessment district, or other political subdivision, corporation, commission, agency, or authority created by law. However, public agency does not include the state transportation department, a school district, junior or community college, the Michigan state housing development authority created in Act No. 346 of the Public Acts of 1966, as amended,
being sections 125.1401 to 125.1496 of the Michigan Compiled Laws and a municipal electric utility or agency. "Assessment district" means the real property within a distinct area upon which special assessments are levied or imposed for the construction, reconstruction, betterment, replacement, or repair of a facility

to be paid for by funds derived from those special assessments imposed or levied on the benefitted real property.

(1) "Retainage" or "retained funds" means the amount withheld from a progress payment to a contractor pursuant to section 3.

Sec. 2. (1) The construction contract shall designate a person representing the contractor who will submit written requests for progress payments, and a person representing the public agency to whom requests for progress payments are to be submitted. The written requests for progress payments shall be submitted to the designated person in a manner and at such times as provided in the construction contract.

(2) The processing of progress payments by the public agency may be deferred by the public agency until work having a prior sequence, as provided in the contract documents, is in place and is approved.

(3) Each progress payment requested, including reasonable interest if requested under subsection (4) shall be paid within 1 of the following time periods, whichever is later:

(a) Thirty days after the architect or professional engineer has certified to the public agency that work is in place in the portion of the facility covered by the applicable request for payment in accordance with the contract documents.

(b) Fifteen days after the public agency has received the funds with which to make the progress payment from a department or agency of the federal or state government, if any funds are to come from either of those sources.

(4) Upon failure of a public agency to make a timely progress payment pursuant to this section, the person designated to submit requests for progress payments may include reasonable interest on amounts past due in the next request for payment.

Sec. 3. (1) To assure proper performance of a construction contract by the contractor, a public agency may retain a portion of each progress payment otherwise due as provided in this section.

(2) The retainage shall be limited to the following:

(a) Not more than 10% of the dollar value of all work in place until work is 50% in place.

(b) After the work is 50% in place, additional retainage shall not be withheld unless the public agency determines that the contractor is not making satisfactory progress, or for other specific cause relating to the contractor's performance under the contract. If the public agency so determines, the public agency may retain not more than 10% of the dollar value of work more than 50% in place.

(3) The retained funds shall not exceed the pro rata share of the public agency's matching requirement under the construction contract and shall not be commingled with other funds of the public agency and shall be deposited in an interest bearing account in a regulated financial institution in this state wherein all such retained funds are kept by the public agency which shall account for both retainage and interest on each construction contract separately. A public agency is not required to deposit retained funds in an interest bearing account if the retained funds are to be provided under a state or federal grant and the retained funds have not been paid to the public agency.

(4) Except as provided in section 4(7) and (8), retainage and interest earned on retainage shall be released to a contractor together with the final progress payment.

(5) At any time after 94% of work under the contract is in place and at the request of the original contractor, the public agency shall release the retainage plus interest to the original contractor only if the original contractor provides to the public agency an irrevocable letter of credit in the amount of the retainage plus interest, issued by a bank authorized to do business in this state, containing terms mutually acceptable to the contractor and the public agency.

Sec. 4. (1) The construction contract shall contain an agreement to submit those matters described in subsection (3) to the decision of an agent at the option of the public agency.

(2) If a dispute regarding a matter described in subsection (3) arises, the contractor and the public agency shall designate an agent who has background, training, and experience in the construction of facilities similar to that which is the subject of the contract, as follows:

(a) In an agreement reached within 10 days after a dispute arises.

(b) If an agreement cannot be reached within 10 days after a dispute arises, the public agency shall designate an agent who has background, training, and experience in the construction of facilities similar to that which is the subject of the contract and who is not an employee of the agency.

(3) The public agency may request dispute resolution by the agent regarding the following:

(a) At any time during the term of the contract, to determine whether there has been a delay for reasons that were within the control of the contractor, and the period of time that delay has been caused, continued, or aggravated by actions of the contractor.

(b) At any time after 94% of work under the contract is in place, whether there has been an unacceptable delay by the contractor in performance of the remaining 6% of work under the contract. The agent shall consider the terms of the contract and the procedures normally followed in the industry and shall determine whether the delay was for failure to follow reasonable and prudent practices in the industry for completion of the project.

(4) This dispute resolution process shall be used only for the purpose of determining the rights of the parties to retained funds and interest earned on retained funds and is not intended to alter, abrogate, or limit any rights with respect to remedies that are available to enforce or compel performance of the terms of the contract by either party.

(5) The agent may request and shall receive all pertinent information from the parties and shall provide an opportunity for an informal meeting to receive comments, documents, and other relevant information in order to resolve the dispute. The agent shall determine the time, place, and procedure for the informal meeting. A written decision and reasons for the decision shall be given to the parties within 14 days after the meeting.

(6) The decision of the agent shall be final and binding upon all parties. Upon application of either party, the decision of the agent may be vacated by order of the circuit court only upon a finding by the court that the decision was procured by fraud, duress, or other illegal means.

(7) If the dispute resolution results in a decision:

(a) That there has been a delay as described in subsection (3)(a), all interested earned on retained funds during the period of delay shall become the property of the public agency.

(b) That there has been unacceptable delay as described in subsection (3)(b), the public agency may contract with a subsequent contractor to complete the remaining 6% of work under the contract, and interest earned on retained funds shall become the property of the public agency. A subsequent contractor under this subdivision shall be paid by the public agency from the following sources until each source is depleted, in the order listed below:

(i) The dollar value of the original contract, less the dollar value of funds already paid to the original contractor and the dollar value of work in place for which the original contractor has not received payment.

(ii) Retainage from the original contractor, or funds made available under a letter of credit provided under section 3(5).

(iii) Interest earned on retainage from the original contractor, or funds made available under a letter of credit provided under section 3(5).

(8) If the public agency contracts with a subsequent contractor as provided in subsection (7)(b), the final progress payment shall be payable to the original contractor within the time period specified in section 2(3). The amount of the final progress payment to the original contractor shall not include interest earned on retained funds. The public agency may deduct from the final progress payment all expenses of contracting with the subsequent contractor. This act shall not impair the right of the public agency to bring an action or to otherwise enforce a performance bond to complete work under a construction contract.

Sec.5. (1) Except as provided in subsection (2), this act shall apply only to a construction contract entered into after the effective date of this act.

(2) For a construction contract entered into before the effective date of this act, the provisions of this act may be implemented by a public agency, through a contract amendment, upon the written request of the contractor, with such consideration as the public considers adequate.

Sec.6. This act shall take effect January 1, 1983.

GENERAL CONDITIONS

1. DEFINITIONS

1.1 Wherever used in the CONTRACT DOCUMENTS, the following terms shall have the meanings indicated and shall be applicable to both the singular and plural thereof:

1.2 ADDENDA - Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the CONTRACT DOCUMENTS, DRAWINGS, and SPECIFICATIONS, by additions, deletions, clarifications or corrections.

1.3 BID - The offer or proposal of the BIDDER submitted on the prescribed form setting forth the prices for the WORK to be performed.

1.4 BIDDER - Any person, firm or corporation submitting a BID for the WORK.

1.5 BONDS - Bid Bond, Performance, Payment and Maintenance and Guarantee Bonds and other instruments of surety, furnished by the CONTRACTOR and the CONTRACTOR'S surety in accordance with the CONTRACT DOCUMENTS.

1.6 CHANGE ORDER - A written order to the CONTRACTOR authorizing an addition, deletion, or revision in the WORK within the general scope of the CONTRACT DOCUMENTS or authorizing an adjustment in the CONTRACT PRICE or CONTRACT TIME.

1.7 CONTRACT DOCUMENTS - The CONTRACT, including ADVERTISEMENT FOR BIDS, INFORMATION FOR BIDDERS, PROPOSAL, BID BOND, CONTRACT, PAYMENT BOND, PERFORMANCE BOND, MAINTENANCE AND GUARANTEE BOND, NOTICE OF AWARD, NOTICE TO PROCEED, CHANGE ORDER, DRAWINGS, SPECIFICATIONS, and ADDENDA.

1.8 CONTRACT PRICE - The total monies payable to the CONTRACTOR under the terms and conditions of the CONTRACT DOCUMENTS.

1.9 CONTRACT TIME - The number of calendar days stated in the CONTRACT DOCUMENTS for the completion of the WORK.

1.10 CONTRACTOR - The person, firm, or corporation with whom the OWNER has executed the Agreement.

1.11 DRAWINGS - The parts of the CONTRACT DOCUMENTS which show the characteristics and scope of the WORK to be performed and which have been prepared or approved by the ENGINEER.

1.12 ENGINEER - The person, firm, or corporation named as such in the CONTRACT DOCUMENTS.

1.13 FIELD ORDER - A written order effecting a change in the WORK not involving an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, issued by the ENGINEER to the CONTRACTOR during construction.

1.14 NOTICE OF AWARD - The written notice of the acceptance of the BID from the OWNER to the successful BIDDER.

1.15 NOTICE TO PROCEED - Written communication issued by the OWNER to the CONTRACTOR authorizing him/her to proceed with the WORK and establishing the date for commencement of the WORK.

1.16 OWNER - A public or quasi-public body or authority, corporation, association, partnership, or an individual for whom the WORK is to be performed.

1.17 PROJECT - The undertaking to be performed as provided in the CONTRACT DOCUMENTS.

1.18 RESIDENT PROJECT REPRESENTATIVE - The authorized representative of the OWNER who is assigned to the PROJECT site or any part thereof.

1.19 SHOP DRAWINGS - All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the CONTRACTOR, or SUBCONTRACTOR, manufacturer, SUPPLIER or distributor, which illustrate how specific portions of the WORK shall be fabricated or installed.

1.20 SPECIFICATIONS - A part of the CONTRACT DOCUMENTS consisting of written descriptions of a technical nature of materials, equipment, construction systems, standard and workmanship.

1.21 SUBCONTRACTOR - An individual, firm or corporation having a direct contact with CONTRACTOR or with any other SUBCONTRACTOR for the performance of a part of the WORK at the site.

1.22 SUBSTANTIAL COMPLETION - That date certified by the ENGINEER when the construction of the PROJECT or a specified part thereof is sufficiently completed, in accordance with the CONTRACT DOCUMENTS, so that the PROJECT or specified part can be utilized for the purposes for which it is intended.

1.23 SUPPLEMENTAL GENERAL CONDITIONS - Modifications to General Conditions required by a Federal agency for participation in the PROJECT and approved by the agency in writing prior to inclusion in the CONTRACT DOCUMENTS, or such requirements that may be imposed by applicable state laws.

1.24 SUPPLIER - Any person or organization who supplies materials or equipment for the WORK, including that fabricated to a special design, but who does not perform labor at the site.

1.25 WORK - All labor necessary to produce the construction required by the CONTRACT DOCUMENTS, and all materials and equipment incorporated or to be incorporated in the PROJECT.

1.26 WRITTEN NOTICE - Any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at their last given address, or delivered in person to said party to their authorized representative on the WORK.

2. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS

2.1 The CONTRACTOR may be furnished additional instructions and detail drawings, by the ENGINEER, as necessary to carry out the WORK required by the CONTRACT DOCUMENTS.

2.2 The additional drawings and instructions thus supplied will become a part of the CONTRACT DOCUMENTS. The CONTRACTOR shall carry out the WORK in accordance with the additional detail drawings and instructions.

3. SCHEDULES, REPORTS AND RECORDS

3.1 The CONTRACTOR shall submit to the OWNER such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data where applicable as are required by the CONTRACT DOCUMENTS for the WORK to be performed.

3.2 Prior to the first partial payment estimate the CONTRACTOR shall submit construction progress schedules showing the order in which the CONTRACTOR proposes to carry on the WORK, including dates at which the various parts of the WORK will be started, estimated date of completion at each part and, as applicable:

3.2.1 The dates at which special drawings will be required; and

3.2.2 Respective dates for submission of SHOP DRAWINGS, the beginning of manufacture, the testing and the installation of materials, supplies and equipment.

3.3 The CONTRACTOR shall also submit a schedule of payments that the CONTRACTOR anticipates will be earned during the course of the WORK.

4. DRAWINGS AND SPECIFICATIONS

4.1 The intent of the DRAWINGS and SPECIFICATIONS is that the CONTRACTOR shall furnish all labor, materials, tools, equipment and transportation necessary for the proper execution of the WORK in accordance with the CONTRACT DOCUMENTS and all incidental work necessary to complete the PROJECT in an acceptable manner, ready for use, occupancy or operation by the OWNER.

4.2 In case of conflict between the DRAWINGS and SPECIFICATIONS, refer to Contract. Figure dimensions on DRAWINGS shall govern over general DRAWINGS.

4.3 Any discrepancies found between the DRAWINGS and SPECIFICATIONS and site conditions or any inconsistencies or ambiguities in the DRAWINGS or SPECIFICATIONS shall be immediately reported to the ENGINEER, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. WORK done by the CONTRACTOR after discovery of such discrepancies, inconsistencies or ambiguities shall be done at the CONTRACTOR'S risk.

5. SHOP DRAWINGS

5.1 The CONTRACTOR shall provide SHOP DRAWINGS as may be necessary for the prosecution of the WORK as required by the CONTRACT DOCUMENTS. The ENGINEER shall promptly review all SHOP DRAWINGS. The ENGINEER'S approval of any SHOP DRAWING shall not release the CONTRACTOR from responsibility for deviations from the CONTRACT DOCUMENTS. The approval of any SHOP DRAWING which substantially deviates from the requirement of the CONTRACT DOCUMENTS shall be evidenced by a CHANGE ORDER.

5.2 When submitted for the ENGINEER'S review, SHOP DRAWINGS shall bear the CONTRACTOR'S certification that he has reviewed, check and approved the SHOP DRAWINGS and that they are in conformance with the requirements of the CONTRACT DOCUMENTS.

5.3 Portions of the WORK requiring a SHOP DRAWING or sample submission shall not begin until the SHOP DRAWING or submission has been approved by the ENGINEER. A copy of each approved SHOP DRAWING and each approved sample shall be kept in good order by the CONTRACTOR at the site and shall be available to the ENGINEER.

6. MATERIALS, SERVICES AND FACILITIES

6.1 It is understood that, except as otherwise specifically stated in the CONTRACT DOCUMENTS, the CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete and deliver the WORK within the specified time.

6.2 Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the WORK. Stored materials and equipment to be incorporated in the WORK shall be located so as to facilitate prompt inspection.

6.3 Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.

6.4 Materials, supplies, and equipment shall be in accordance with samples submitted by the CONTRACTOR and approved by the ENGINEER.

6.5 Materials, supplies, or equipment to be incorporated into the WORK shall not be purchased by the CONTRACTOR or the SUBCONTRACTOR subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

7. INSPECTION AND TESTING

7.1 All materials and equipment used in the construction of the PROJECT shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the CONTRACT DOCUMENTS.

7.2 The OWNER shall provide all inspection and testing services not required by the CONTRACT DOCUMENTS.

7.3 The CONTRACTOR shall provide at the CONTRACTOR'S expense the testing and inspection services required by the CONTRACT DOCUMENTS.

7.4 If the CONTRACT DOCUMENTS, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any WORK to specifically be inspected, tested, or approved by someone other than the CONTRACTOR, the CONTRACTOR will give the ENGINEER timely notice of readiness. The CONTRACTOR will then furnish the ENGINEER the required certificates of inspection, testing or approval.

7.5 Inspections, tests, or approvals by the ENGINEER or others shall not relieve the CONTRACTOR from the obligations to perform the WORK in accordance with the requirements of the CONTRACT DOCUMENTS.

7.6 The ENGINEER and the ENGINEER'S representatives will at all times have access to the WORK. In addition, authorized representatives and agents of any participating Federal or State agency shall be permitted to inspect all work, materials, payrolls, records or personnel, invoices of materials, and other relevant data and records. The CONTRACTOR will provide proper facilities for such access and observation of the WORK and also for any inspection or testing thereof.

7.7 If any WORK is covered contrary to the written instructions of the ENGINEER it must, if required by the ENGINEER, be uncovered for the ENGINEER'S obser-

vation and replaced at the CONTRACTOR'S expense.

7.8 If the ENGINEER considers it necessary or advisable that covered WORK be inspected or tested by others, the CONTRACTOR, at the ENGINEER'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, materials, tools and equipment. If it is found that such WORK is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, if, however, such WORK is not found to be defective, the CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate CHANGE ORDER shall be issued.

8. SUBSTITUTIONS

8.1 Whenever a material, article, or piece of equipment is identified on the DRAWINGS or SPECIFICATIONS by reference to brand name or catalogue numbers, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equivalent capacities, quality and function shall be considered. The CONTRACTOR may recommend the substitution of a material, article, or piece of equipment of equivalent substance and function for those referred to in the CONTRACT DOCUMENT by reference to brand name or catalogue number, and if, in the opinion of the ENGINEER, such material, article, or piece of equipment is of equivalent substance and function to that specified, the ENGINEER may approve its substitution and use by the CONTRACTOR. Any cost differential shall be deductible from the CONTRACT PRICE and the CONTRACT DOCUMENTS shall be appropriately modified by CHANGE ORDER. The CONTRACTOR warrants that if substitutes are approved, no major changes in the function or general design of the PROJECT will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the CONTRACTOR without a change in the CONTRACT PRICE or CONTRACT TIME.

9. PATENTS

9.1 The CONTRACTOR shall pay all applicable royalties and license fees, and shall defend all suits or claims for infringement of any patent rights and save the OWNER harmless from loss or account thereof, except that the OWNER shall be responsible for any such loss when a particular process, design, or product of a particular manufacturer or manufacturers is specified, however, if the

CONTRACTOR has reason to believe that the design, process or product specified is an infringement of a patent, the CONTRACTOR shall be responsible for such loss unless the CONTRACTOR promptly gives such information to the ENGINEER.

10. SURVEYS, PERMITS, REGULATIONS

10.1 The OWNER shall furnish all boundary surveys and establish all base lines for locating the principal component parts of the WORK together with a suitable number of benchmarks adjacent to the WORK as shown in the CONTRACT DOCUMENTS. From the information provided by the OWNER, unless otherwise specified in the CONTRACT DOCUMENTS, the CONTRACTOR shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pipe locations and other working points, lines, elevations and cut sheets.

10.2 The CONTRACTOR shall carefully preserve benchmarks, reference points and stakes and, in case of willful or careless destruction, shall be charged with the resulting expense and shall be responsible for any mistake that may be caused by their unnecessary loss or disturbance.

10.3 Permits and licenses of a temporary nature necessary for the prosecution of the WORK shall be secured and paid for by the CONTRACTOR unless otherwise stated in the SUPPLEMENTAL GENERAL CONDITIONS (SPECIAL CONDITIONS). Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the OWNER, unless otherwise specified. The CONTRACTOR shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the WORK as drawn and specified. If the CONTRACTOR observes that the CONTRACT DOCUMENTS are at variance therewith, the CONTRACTOR shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided in Section l3, CHANGES IN THE WORK.

11. PROTECTION OF WORK, PROPERTY AND PERSONS

11.1 The CONTRACTOR will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the WORK. The CONTRACTOR will take all necessary precautions for the safety of, will provide the necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss of all employees on the WORK and other persons who may be affected thereby, all the WORK and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks,

pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

11.2 The CONTRACTOR will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. The CONTRACTOR will erect and maintain, as required by the conditions and progress of the WORK, all necessary safeguards for safety and protection. The CONTRACTOR will notify owners of adjacent utilities when prosecution of the WORK may affect them. The CONTRACTOR will remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or part, by the CONTRACTOR, any SUBCONTRACTOR or anyone directly or indirectly employed by any of them or anyone of whose acts any of them be liable, except damage or loss attributable to the fault of the CONTRACT DOCUMENTS or to the acts or omissions of the OWNER, of the ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the CONTRACTOR.

11.3 In emergencies affecting the safety of persons or the WORK or property at the site or adjacent thereof, the CONTRACTOR, without special instructions or authorization from the ENGINEER or OWNER, shall act to prevent threatened damage, injury or loss. The CONTRACTOR will give the ENGINEER prompt WRITTEN NOTICE of any significant changes in the WORK or deviations from the CONTRACT DOCUMENTS caused thereby, and a CHANGE ORDER shall thereupon be issued covering the changes and deviations involved.

12. SUPERVISION BY CONTRACTOR

12.1 The CONTRACTOR will supervise and direct the WORK. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The CONTRACTOR will employ and maintain on the WORK a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR'S representative at the site. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to the supervisor shall be as binding as if given to the CONTRACTOR. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the WORK.

13. CHANGES IN THE WORK

13.1 The OWNER may at any time, as the need arises, order changes within the scope of the WORK without invalidating the Agreement. If such changes increase or decrease the amount due under the CONTRACT DOCUMENTS, or in the time

required for performance of the WORK, an equitable adjustment shall be authorized by CHANGE ORDER.

13.2 The ENGINEER, also, may at any time, by issuing a FIELD ORDER, make changes in the details of the WORK. The CONTRACTOR shall proceed with the performance of any changes in the WORK so ordered by the ENGINEER unless the CONTRACTOR believes that such FIELD ORDER entitles the CONTRACTOR to a change in CONTRACT PRICE or TIME, or both, in which event the CONTRACTOR shall give the ENGINEER WRITTEN NOTICE thereof within seven (7) days after the receipt of the ordered change. Thereafter the CONTRACTOR shall document the basis for the change in CONTRACT PRICE or TIME within thirty (30) days. The CONTRACTOR shall not execute such changes pending the receipt of an executed CHANGE ORDER or further instruction from the OWNER.

14. CHANGES IN CONTRACT PRICE

14.1 The CONTRACT PRICE may be changed only by a CHANGE ORDER. The value of any WORK covered by a CHANGE ORDER or of any claim for increase or decrease in the CONTRACT PRICE shall be determined by one or more of the following methods in the order of precedence listed below:

a. Unit prices previously approved.

b. An agreed lump sum.

15. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

15.1 The date of beginning and the time for completion of the WORK are essential conditions of the CONTRACT DOCUMENTS and the WORK embraced shall be commenced on a date specified in the NOTICE TO PROCEED.

15.2 The CONTRACTOR will proceed with the WORK at such rate of progress to insure full completion within the CONTRACT TIME. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the CONTRACT TIME for the completion of the WORK described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the WORK.

15.3 If the CONTRACTOR shall fail to complete the WORK within the CONTRACT TIME, or extension of time granted by the OWNER, then the CONTRACTOR will pay to the OWNER the amount for liquidated damages as specified in the BID for each calendar day that the CONTRACTOR shall be in default after the

time stipulated in the CONTRACT DOCUMENTS.

15.4 The CONTRACTOR shall not be charged with liquidated damages or any excess cost, and shall not be entitled to additional payment, when the delay in completion of the WORK is due to the following and the CONTRACTOR has promptly given WRITTEN NOTICE of such delay to the OWNER or ENGINEER.

15.4.1 To any preference, priority, or allocation order duly issued by the OWNER.

15.4.2 To unforeseeable causes beyond the control and without the fault or negligence of the CONTRACTOR, including but not restricted to, acts of God, or of the public enemy, acts of the OWNER, acts of another CONTRACTOR in the performance of a contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather; and

15.4.3 To any delays of SUBCONTRACTORS occasioned by any of the causes specified in paragraph l5.4.l and l5.4.2 of this article.

16. CORRECTION OF WORK

16.1 The CONTRACTOR shall promptly remove from the premises all WORK rejected by the ENGINEER for failure to comply with the CONTRACT DOCUMENTS, whether incorporated in the construction or not, and the CONTRACTOR shall promptly replace and reexecute the WORK in accordance with the CONTRACT DOCUMENTS and without expense to the OWNER and shall bear the expense of making good all WORK of other CONTRACTORS destroyed or damaged by such removal or replacement.

16.2 All removal and replacement WORK shall be done at the CONTRACTOR'S expense. If the CONTRACTOR does not take action to remove such rejected WORK within ten (l0) days after receipt of WRITTEN NOTICE, the OWNER may remove such WORK and store the materials at the expense of the CONTRACTOR.

17. SUBSURFACE CONDITIONS

17.1 The CONTRACTOR shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the OWNER by WRITTEN NOTICE of:

17.1.1 Subsurface or latent physical conditions at the site differing materially

from those indicated in the CONTRACT DOCUMENTS; or

17.1.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in WORK of the character provided for in the CONTRACT DOCUMENTS.

17.2 The OWNER shall promptly investigate the conditions, and if it is found that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the WORK, an equitable adjustment shall be made, and the CONTRACT DOCUMENTS shall be modified by a CHANGE ORDER. Any claim to the CONTRACTOR for adjustment hereunder shall not be allowed unless the required WRITTEN NOTICE has been given; provided that the OWNER may, if the OWNER determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

18. SUSPENSION OF WORK, TERMINATION AND DELAY

18.1 The OWNER may suspend the WORK or any portion thereof for a period of not more than ninety days or such further time as agreed upon by the CONTRACTOR by WRITTEN NOTICE to the CONTRACTOR and the ENGINEER which shall fix the date on which WORK shall be resumed. The CONTRACTOR will resume that WORK on the date so fixed. The CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to any suspension.

18.2 If the CONTRACTOR is adjudged bankrupt or insolvent, or makes a general assignment for the benefit of its creditors, or if a trustee or receiver is appointed for the CONTRACTOR or for any of its property, or if CONTRACTOR files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or repeatedly fails to make prompt payments to SUBCONTRACTORS or for labor, materials or equipment or disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the WORK or disregards the authority of the ENGINEER or otherwise violates any provision of the CONTRACT DOCUMENTS, then the OWNER may, without prejudice to any other right or remedy and after giving the CONTRACTOR and its surety a minimum of ten (l0) days from delivery of a WRITTEN NOTICE, terminate the services of the CONTRACTOR and take possession of the PROJECT and of all materials, equipment, tools, construction equipment and machinery thereon owned by the CONTRACTOR, and finish the WORK by whatever method the OWNER may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the WORK is finished. If the unpaid balance of the CONTRACT PRICE exceeds the direct and indirect

costs of completing the PROJECT, including compensation for additional professional services, such excess SHALL BE PAID TO THE CONTRACTOR. If such costs exceed such unpaid balance, the CONTRACTOR SHALL PAY THE DIFFERENCE TO THE OWNER. Such costs incurred by the OWNER will be determined by the ENGINEER and incorporated in a CHANGE ORDER.

18.3 Where the CONTRACTOR'S services have been so terminated by the OWNER, said termination shall not effect any right of the OWNER against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of monies by the OWNER due the CONTRACTOR will not release the CONTRACTOR from compliance with the CONTRACT DOCUMENTS.

18.4 After ten (l0) days from delivery of a WRITTEN NOTICE to the CONTRACTOR and the ENGINEER, the OWNER may, without cause and without prejudice to another right or remedy, elect to abandon the PROJECT and terminate the CONTRACT. In such case the CONTRACTOR shall be paid for all WORK executed and any expense sustained plus reasonable profit.

18.5 If, through no act or fault of the CONTRACTOR, the WORK is suspended for a period of more than ninety (90) days by the OWNER or under an order of court or other public authority, or the ENGINEER fails to act on any request for payment within thirty (30) days after it is submitted, or the OWNER fails to pay the CONTRACTOR substantially the sum approved by the ENGINEER or awarded by arbitrators within thirty (30) days of its approval and presentation, then the CONTRACTOR may, after ten (l0) days from delivery of a WRITTEN NOTICE to the OWNER and the ENGINEER terminate the CONTRACT and recover from the OWNER payment for all WORK executed and all expenses sustained. In addition and in lieu of terminating the CONTRACT, if the ENGINEER has failed to act on a request for payment or if the OWNER has failed to make any payment as aforesaid, the CONTRACTOR may upon ten (l0) days written notice to the OWNER and the ENGINEER stop the WORK until paid all amounts then due, in which event and upon resumption of the WORK CHANGE ORDERS shall be issued for adjusting the CONTRACT PRICE or extending the CONTRACT TIME or both to compensate for the costs and delays attributable to the stoppage of the WORK.

18.6 If the performance of all or any portion of the WORK is suspended, delayed or interrupted as a result of a failure of the OWNER or ENGINEER to act within the time specified in the CONTRACT DOCUMENTS, or if no time is specified, within a reasonable time, an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, shall be made by CHANGE ORDER to compensate the CONTRACTOR for the costs and delays necessarily caused by the failure of the OWNER or ENGINEER.

19. PAYMENT TO CONTRACTOR

19.1 At least ten (l0) days before each progress payment falls due (but not more often than once a month), the CONTRACTOR will submit to the ENGINEER a partial payment estimate filled out and signed by the CONTRACTOR covering the WORK performed during the period covered by the partial payment estimate and supported by such data as the ENGINEER may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the WORK but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the OWNER, as will establish the OWNER'S title to the material and equipment and protect the OWNER'S interest therein, including applicable insurance. The ENGINEER will, within ten (l0) days after receipt of each partial payment estimate, either indicate in writing approval of payment, and present the partial payment estimate to the OWNER, or return the partial payment estimate to the CONTRACTOR indicating in writing the reasons for refusing to approve payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the partial payment estimate. The OWNER will, within thirty (30) days of presentation of an approved partial payment estimate, pay the CONTRACTOR a progress payment on the basis of the approved partial payment estimate less the retainage. The retainage shall be an amount equal to l0% of said estimate until 50% of the work has been completed. At 50% completion, further partial payments shall be made in full to the CONTRACTOR and no additional amounts may be retained unless the ENGINEER certifies that the job is not proceeding satisfactorily, but amounts previously retained shall not be paid to the CONTRACTOR. At 50% completion or any time thereafter when the progress of the WORK is not satisfactory, additional amounts may be retained but in no event shall the total retainage be more than l0% of the value of the work completed. Upon substantial completion of the work, any amount retained may be paid to the CONTRACTOR. When the WORK has been substantially completed except for WORK which cannot be completed because of weather conditions, lack of materials or other reasons which in the judgment of the OWNER are valid reasons for non-completion, the OWNER may make additional payments, retaining at all times an amount sufficient to cover the estimated cost of the WORK still to be completed.

19.2 The request for payment may also include an allowance for the cost of such major materials and equipment which are suitably stored either at or near the site.

19.3 Prior to SUBSTANTIAL COMPLETION, the OWNER, with the approval of the ENGINEER and with the concurrence of the CONTRACTOR, may use any completed or substantially completed portions of the WORK. Such use shall not constitute an acceptance of such portions of the WORK.

19.4 The OWNER shall have the right to enter the premises for the purposes of doing work not covered by the CONTRACT DOCUMENTS. This provision shall not be construed as relieving the CONTRACTOR of the sole responsibility for the

care and protection of the WORK, or the restoration of any damaged WORK except such as may be caused by agents or employees of the OWNER.

19.5 Upon completion and acceptance of the WORK, the ENGINEER shall issue a certificate attached to the final payment request that the WORK has been accepted under the conditions of the CONTRACT DOCUMENTS. The entire balance found to be due the CONTRACTOR, including the retained percentages, but except such sums as may be lawfully retained by the OWNER, shall be paid to the CONTRACTOR within thirty (30) days of completion and acceptance of the WORK.

19.6 The CONTRACTOR will indemnify and save the OWNER or the OWNER'S agents harmless from all claims growing out of the lawful demand of SUBCONTRACTORS, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, tools and all supplies, incurred in the furtherance of the performance of the WORK. The CONTRACTOR shall, at the OWNER'S request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the CONTRACTOR fails to do so the OWNER may, after having notified the CONTRACTOR, either pay unpaid bills or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the CONTRACTOR shall be resumed in accordance with the terms of the CONTRACT DOCUMENTS, but in no event shall the provisions of this sentence be construed to impose any obligations upon the OWNER to either the CONTRACTOR, the CONTRACTOR'S Surety, or any third party. In paying any unpaid bills of the CONTRACTOR, any payment so made by the OWNER shall be considered as a payment made under the CONTRACT DOCUMENTS by the OWNER to the CONTRACTOR and the OWNER shall not be liable to the CONTRACTOR for any such payments made in good faith.

19.7 If the OWNER fails to make payment thirty (30) days after approval by the ENGINEER, in addition to other remedies available to the CONTRACTOR, there shall be added to each such payment interest at the maximum legal rate commencing on the first day after said payment is due and continuing until the payment is received by the CONTRACTOR.

20. ACCEPTANCE OF FINAL PAYMENT AS RELEASE

20.1 The acceptance by the CONTRACTOR of final payment shall be and shall operate as a release to the OWNER of all claims, and all liability to the CONTRACTOR other than claims in stated amounts as may be specifically excepted by the CONTRACTOR for all things done or furnished in connection with

this WORK and for every act and neglect of the OWNER and others relating to or arising out of this WORK. Any payment, however, final or otherwise, shall not release the CONTRACTOR or its sureties from any obligations under the CONTRACT DOCUMENTS or the Performance and Payment BONDS.

21. **INSURANCE - Refer to Information for Bidders - "Section 17 - Contractors Insurance"**

21.1 The CONTRACTOR shall purchase and maintain such insurance as will protect it from claims set forth below which may arise out of, or result from, the CONTRACTOR'S execution of the WORK, whether such execution be by the CONTRACTOR, any SUBCONTRACTOR or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

21.1.1 Claims under workmen's compensation, liability benefit and other similar employee benefit acts;

21.1.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of employees;

21.1.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than employees;

21.1.4 Claims for damages insured by usual personal injury liability coverage which are sustained (l) by any person as a result of offense directly or indirectly related to the employment of such person by the CONTRACTOR, or (2) by any other person; and

21.1.5 Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom.

21.2 Certificates of Insurance acceptable to the Owner shall be filed with the OWNER prior to commencement of the WORK. These Certificates shall contain a provision that coverages afforded under the policies will not be canceled unless at least fifteen (l5) days prior WRITTEN NOTICE has been given to the OWNER.

2l.3 The CONTRACTOR shall procure and maintain, at the CONTRACTOR'S own expense, during the CONTRACT TIME, Liability insurance as hereinafter specified:

21.3.1 CONTRACTOR'S General Public Liability and Property Damage Insurance including vehicle coverage issued to the CONTRACTOR and protecting the CONTRACTOR from all claims for personal injury, including death and all claims for destruction of or damage to property, arising out of or in connection

with any operations under the CONTRACT DOCUMENTS, whether such operations be by the CONTRACTOR or by a SUBCONTRACTOR employed by the CONTRACTOR or anyone directly or indirectly employed by the CONTRACTOR or by a SUBCONTRACTOR employed by the CONTRACTOR. Insurance shall be written with a limit of liability of not less than $1,000,000 for all damages arising out of bodily injury, including death, at any time resulting therefrom, sustained by any one person in any one accident; and a limit of liability of not less than $1,000,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than $1,000,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than $1,000,000 aggregate for any such damage sustained by two or more persons in any one accident; and a combined single limit of liability of not less than $2,000,000.

21.3.2 The CONTRACTOR shall acquire and maintain, if applicable, Fire and Extended Coverage insurance upon the PROJECT to the full insurable value thereof for the benefit of the OWNER, the CONTRACTOR and SUBCONTRACTORS as their interest may appear. This provision shall in no way release the CONTRACTOR or CONTRACTOR'S surety from obligations under the CONTRACT DOCUMENTS to fully complete the PROJECT.

21.4 The CONTRACTOR shall procure and maintain, at the CONTRACTOR'S own expense, during the CONTRACT TIME, in accordance with the provisions of the laws of the state in which the WORK is performed, Workmen's Compensation Insurance, including occupational disease provisions, for all of the CONTRACTOR'S employees at the site of the PROJECT and in case any WORK is sublet, the CONTRACTOR shall require such SUBCONTRACTOR similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the CONTRACTOR. In case any class of employees engaged in hazardous work under this contract at the site of the PROJECT is not protected under Workmen's Compensation statue, the CONTRACTOR shall provide, and shall cause each SUBCONTRACTOR to provide, adequate and suitable insurance for the protection of its employees not otherwise protected.

21.5 The CONTRACTOR shall secure, if applicable, "All Risks" type Builder's Risk Insurance for WORK to be performed. Unless specifically authorized by the OWNER, the amount of such insurance shall not be less than the CONTRACT PRICE totaled in the BID. The policy shall cover not less than the losses due to fire, explosion, hail, lightening, vandalism, malicious mischief, wind, collapse, riot, aircraft, and smoke during the CONTRACT TIME, and until the WORK is accepted by the OWNER. The policy shall name as the insured the CONTRACTOR, and the OWNER.

22. CONTRACT SECURITY

22.l The CONTRACTOR shall within ten (l0) days after the receipt of the NOTICE OF AWARD furnish the OWNER with a Performance BOND and a Payment BOND in penal sums equal to the amount of the CONTRACT PRICE, conditioned upon the performance by the CONTRACTOR of all undertakings, covenants, terms, conditions and agreements of the CONTRACT DOCUMENTS, and upon the prompt payment by the CONTRACTOR to all persons supplying labor and materials in the prosecution of the WORK provided by the CONTRACT DOCUMENTS. Such BONDS shall be executed by the CONTRACTOR and a corporate bonding company licensed to transact such business in the state in which the WORK is to be performed and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these BONDS shall be borne by the CONTRACTOR. If at any time a surety on any such BOND is declared a bankrupt or loses its right to do business in the state in which the WORK is to be performed or is removed from the list of Surety Companies accepted on Federal Bonds, CONTRACTOR shall within ten (l0) days after notice from the OWNER to do so, substitute an acceptable BOND (or BONDS) in such form and sum and signed by such other surety or sureties as may be satisfactory to the OWNER. The premiums on such BOND shall be paid by the CONTRACTOR. No further payment shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable BOND to the OWNER.

23. ASSIGNMENTS

23.l Neither the CONTRACTOR nor the OWNER shall sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of any right, title or interest therein, or any obligations thereunder, without written consent of the other party.

24. INDEMNIFICATION

24.l The CONTRACTOR will indemnify and hold harmless the OWNER and the ENGINEER and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the WORK, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the CONTRACTOR, and SUBCONTRACTOR, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

24.2 In any and all claims against the OWNER or the ENGINEER, or any of their

agents or employees, by any employee of the CONTRACTOR, any SUBCONTRACTOR, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any SUBCONTRACTOR under workmen's compensation acts, disability benefit acts or other employee benefits acts.

24.3 The obligation of the CONTRACTOR under this paragraph shall not extend to the liability of the ENGINEER, its agents or employees arising out of the preparation or approval of maps, DRAWINGS, opinions, reports, surveys, CHANGE ORDERS, design or SPECIFICATIONS.

25. SEPARATE CONTRACTS

25.l The OWNER reserves the right to let other contracts in connection with this PROJECT. The CONTRACTOR shall afford other CONTRACTORS reasonable opportunity for the introduction and storage of their materials and the execution of their WORK and shall properly connect and coordinate the WORK with theirs. If the proper execution or results of any part of the CONTRACTOR'S WORK depends upon the WORK of any other CONTRACTOR, the CONTRACTOR shall inspect and promptly report to the ENGINEER any defects in such WORK that render it unsuitable for such proper execution and results.

25.2 The OWNER may perform additional WORK related to the PROJECT or the OWNER may let other contracts containing provisions similar to these. The CONTRACTOR will afford the other CONTRACTORS who are parties to such Contracts (or the OWNER, if the OWNER is performing the additional WORK) reasonable opportunity for the introduction and storage of materials and equipment and the execution of WORK, and shall properly connect and coordinate the WORK with theirs.

25.3 If the performance of additional WORK by other CONTRACTORS or the OWNER is not noted in the CONTRACT DOCUMENTS prior to the execution of the CONTRACT, written notice thereof shall be given to the CONTRACTOR prior to starting any such additional WORK. If the CONTRACTOR believes that the performance of such additional WORK by the OWNER or others involves it in additional expense or entitles it to an extension of the CONTRACT TIME, the CONTRACTOR may make a claim thereof as provided in Sections 14 and 15.

26. SUBCONTRACTING

26.l The CONTRACTOR may utilize the services of specialty SUBCONTRACTS on

those parts of the WORK which, under normal contracting practices, are performed by specialty SUBCONTRACTORS.

26.2 The CONTRACTOR shall not award WORK to SUBCONTRACTOR(S), in excess of fifty **(**50**%)** percent of the CONTRACT PRICE, without prior written notice and approval of the OWNER.

26.3 The CONTRACTOR shall be fully responsible to the OWNER for the acts and omissions of its SUBCONTRACTORS, and of persons either directly or indirectly employed by them, as the CONTRACTOR is for the acts and omissions of persons directly employed by the SUBCONTRACTOR.

26.4 The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the WORK to bind SUBCONTRACTORS to the CONTRACTOR by the terms of the CONTRACT DOCUMENTS insofar as applicable to the WORK of SUBCONTRACTORS and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the CONTRACT DOCUMENTS.

26.5 Nothing contained in this CONTRACT shall create any contractual relationship between any SUBCONTRACTOR and the OWNER.

27. ENGINEER'S AUTHORITY

27.l The ENGINEER shall act as the OWNER'S representative during the construction period, shall decide questions which may arise as to quality and acceptability of materials furnished and WORK performed, and shall interpret the intent of the CONTRACT DOCUMENTS in a fair and unbiased manner. The ENGINEER will make visits to the site and determine if the WORK is proceeding in accordance with the CONTRACT DOCUMENTS.

27.2 The CONTRACTOR will be held strictly to the intent of the CONTRACT DOCUMENTS in regard to the quality of materials, workmanship, and execution of the WORK. Inspections may be made at the factory or fabrication plant of the source of material supply.

27.3 The ENGINEER will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

27.4 The ENGINEER shall promptly make decisions relative to interpretation of the CONTRACT DOCUMENTS.

28. LAND AND RIGHTS-OF-WAY

28.l Prior to issuance of NOTICE TO PROCEED, the OWNER shall obtain all land and rights-of-way necessary for carrying out and for the completion of the WORK to be performed pursuant to the CONTRACT DOCUMENTS, unless otherwise mutually agreed.

28.2 The OWNER shall provide to the CONTRACTOR information which delineates and describes the lands owned and rights-of-way acquired.

28.3 The CONTRACTOR shall provide at its own expense and without liability to the OWNER any additional land and access thereto that the CONTRACTOR may desire for temporary construction facilities, or for storage of materials.

29. GUARANTEE

29.l The CONTRACTOR shall guarantee all materials and equipment furnished and WORK performed for a period of one (l) year from the date of the payment of the final estimate. The CONTRACTOR warrants and guarantees for a period of one (l) year from the date of the payment of the final estimate, that the completed system is free from all defects due to faulty materials or workmanship and the CONTRACTOR shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the system resulting from such defects. The OWNER will give notice of observed defects with reasonable promptness. In the event that the CONTRACTOR should fail to make such repairs, adjustments, or other WORK that may be made necessary by such defects, the OWNER may do so and charge the CONTRACTOR the cost thereby incurred.

29.2 To insure reliability of the materials and equipment provided under this Contract, the normal one-year guarantee will be modified as follows:

WHEN a second failure occurs on the same equipment item, component part of an equipment item, material component, or on any item that may be related to a previously failed item, a new one-year guarantee will go into effect when the failed item is repaired. The new guarantee will apply only to the failed and repaired item. The Maintenance and Guarantee Bond of this Contract will also remain in effect during any of the guarantee extensions due to second failures.

30. TAXES

30.l The CONTRACTOR will pay all sales, consumer, use, and other similar taxes required by the laws of the place where the WORK is performed.

31. MICHIGAN STATE ELLIOTT-LARSEN CIVIL RIGHTS ACT

31.1 Incorporated by reference in Section 209 of Article 2 of the Michigan State Elliott-Larsen Civil Rights Act of 1976, as amended, which states in part that a contractor and his/her subcontractor(s) shall not "discriminate against an employee or applicant for employee with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, height, weight, or marital status." Breach of this covenant may be regarded as a material breach of this Agreement.

32. MICHIGAN HANDICAPPERS' CIVIL RIGHTS ACT

32.1 Incorporated by reference in Section 209 of Article 2 of the Michigan Handicappers' Civil Rights Act of 1976, as amended, which states in part that a contractor and his/her subcontractor(s) shall not "discriminate against an employee or applicant for employee with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of handicap that is unrelated to the individual's ability to perform the duties of a particular job or position." Breach of this covenant may be regarded as a material breach of this Agreement.

33. AMERICANS WITH DISABILITIES ACT

33.1 Incorporated by reference in Section 102 of the American With Disabilities Act, 42 U.S.C. Subsection 12112, which provides that no covered entity shall discriminate against a qualified individual with a disability because of the disability of such individual with regard to job application procedures, the hiring, advancement, or discharge of employees, employee compensation, job training, and other terms, conditions and privileges of employment, and Section 202 of the Americans With Disabilities Act, 42 U.S.C. Subsection 12132, which provides that no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs or activities of a public entity or be subject to discrimination by any such entity.

STANDARD PROJECT REQUIREMENTS

l. General

All labor, materials and equipment furnished and installed under this Contract shall conform to the requirements of this section, except as otherwise specified in other sections of the Specifications.

2. Use of Michigan Department of Transportation 2012 Standard Specifications and Other Standard Specifications

The handbook entitled "2012 Standard Specifications for Construction" adopted by the Michigan Department of Transportation shall be a Contract Document for this project and shall be binding when cited. The handbook shall hereinafter be referred to as MDOT 2012 Standard Specifications, or alternatively MDOT 2012 Specifications.

Reference to standard specifications of any technical society, organization, or association, or to codes of local or state authorities, shall mean the latest standard, code or specification adopted and published at the date of taking bids, unless specifically stated otherwise.

3. Schedule of Construction

Within fifteen (15) days of the Notice to Proceed and before beginning any work, the Contractor shall submit to the Engineer, a proposed schedule of construction for the various sections and elements of the project. The schedule shall contain the approximate dates for beginning and completion of the various parts of the work. The Engineer shall review and approve the proposed schedule and shall have the right to make any reasonable changes in the schedule which may be in the best interests of the Owner.

4. Construction Site

All construction will take place within the limits of property presently owned by the Owner, including street right-of-ways, or on private property in easements obtained by the Owner, or in Michigan State Highway Right-of- Ways. Street right-of-way lines and construction easement limits on private property are shown on the Drawing and the Contractor shall confine his operations within these lines, unless the Contractor obtains written permission from the respective property owners for additional working space. The Contractor shall be responsible for all damage to private or public property and restoration shall be in accordance with the Drawings and Specifications.

5. Temporary Pumping of Sewage and Ground Water

The Contractor shall be responsible for providing all necessary equipment for adequate size, capacity and reliability for pumping sewage and ground water during the construction. No additional payment shall be made for the dewatering or sewage pumping as part of this contract, unless specifically provided for in the Bid Proposal.

Sanitary sewage which must be pumped on a temporary basis during construction shall be discharged to nearby sanitary sewers and under no circumstances shall sewage be discharged to storm sewers or water courses.

The pumping of ground water where required for construction shall be discharged to nearby storm sewers or water courses, if such water is of a clean nature free from excessive silt and polluting materials. The Contractor shall not discharge quantities of water in excess of the capacity of existing storm sewers or water courses and he shall be responsible for any damage incurred to storm sewers or water courses which result from actions of the Contractor. Storm sewers used for ground water discharge shall be maintained and left in a clean condition. Equipment used by the Contractor for temporary pumping of sewage or ground water shall be adequately equipped with suitable muffler to reduce the operating noise to a level acceptable to the Engineer. The use of excessively noisy equipment for night time pumping will not be allowed. The Contractor is encouraged to use electrically driven pumps to eliminate pumping noise.

Prior to beginning construction, the Contractor shall advise the Engineer, in detail of his plan for temporary pumping of sewage and ground water. This plan will include a description of the equipment to be used and it's expected noise rating in decibels.

6. Soil Erosion and Sedimentation Control

All work under this contract shall be done in accordance with the Soil Erosion and Sedimentation Control Act of 1972, Act 347 of Michigan. Any permit required for this purpose will be taken out by the Owner. It shall be the Contractor's responsibility to adhere to all requirements of the permit and the Soil Erosion and Sedimentation Control Act.

7. Shop Drawings

The Contractor as soon as possible shall submit to the Engineer shop drawings and delivery schedule (6 copies) for every item of equipment or material to be incorporated in the work which is fabricated or manufactured off the site, including those pertaining to structural and reinforcing steel, electrical, plumbing, carpentry, heating and ventilation. The Contractor shall make any corrections in the drawings required by the Owner or the Engineer, who after checking will retain three copies and return three copies to the Contractor.

The Engineer's review of shop drawings of equipment and materials shall extend only to deter-

mining the conformity of such equipment and materials with the general features of the Contract Drawings and Contract Specifications prepared by the Engineer. It shall be the responsibility of the Contractor to determine the correctness of all dimensions and minor details of such equipment and materials so that they will fit into the completed work and so that when incorporated in the work correct operation will result. The Contractor shall also be responsible for furnishing and installing such equipment and materials which fully meet the requirements of specifications for performance and reliability.

The shop drawings shall indicate shop painting treatments, including type and manufacturer of paint.

Nameplate data for equipment with electric motors shall be included on the shop drawings.

Shop drawings for major systems or assemblies shall be submitted in complete sets.

No work shall be done with the item in question, until the Engineer has reviewed the shop drawings.

8. Laws, Ordinances, Codes and Regulations

The Contractor and Subcontractor shall observe and comply with all Federal, State and Local codes, ordinances, laws and regulations in force at the construction site, and shall protect and indemnify the Owner and the Owner's officers and agents against any claim or liability arising from or based on any violation of the same.

The Contractor shall pay for and obtain all licenses and permits for the work, pay all charges for inspection and tests, and file Drawings and Specifications to the inspection department having jurisdiction, unless otherwise indicated.

The Contractor will be responsible for notifications and inspections required under any permit.

9. Fences

No fences shall be removed or destroyed by the Contractor without the written permission of the Engineer. The Contractor shall be held fully responsible for any damages caused by his work to adjoining fences. Fences that have to be removed shall be preserved and replaced in a manner acceptable to the Engineer. Damaged material shall be replaced by new material.

l0. Monuments or Stakes

The Contractor must carefully protect from disturbance or injury all monuments of City, County, State or Federal Government, stakes and bench marks, and shall not excavate nearer than five feet (5') to any of them without the permission of the Engineer, or until they have been removed,

witnessed or otherwise disposed of by the Engineer. Monuments, stakes or bench marks destroyed by the Contractor prior to approval of the Engineer shall be replaced by the Engineer. Cost of said replacement shall be charged to the Contractor.

ll. Mutual Responsibility of Contractors

If, through acts of neglect on the part of the Contractor, any other Contractor or any subcontractor shall suffer loss or damage on the work, the Contractor shall settle with such other contractor or subcontractor by agreement or arbitration. If such other contractor or subcontractor shall assert any claim against the Owner on account of any damage alleged to have been sustained, the Owner shall notify the Contractor, who shall indemnify and save harmless the Owner against any such claim.

12. Protection of Trees and Shrubs and Transplanting

The Contractor shall protect from damage all trees and shrubs and other items which are not designated by the Engineer for removal. Trees removed as part of the construction shall be considered incidental to construction, unless otherwise provided for in the Bid Proposal. Trees and shrubs required by the Engineer to be transplanted and which can be transplanted by hand shall be considered incidental to construction, unless otherwise provided for in the Bid Proposal. Trees required by the Engineer to be transplanted and which require the use of a tree spade shall be paid for at the bid price when so provided in the Bid Proposal. The tree spade shall be of sufficient capacity to relocate trees up to six (6) inches in trunk diameter.

l3. Street Maintenance

All streets where construction trucking takes place under this Contract shall at all times be maintained by the Contractor, unless otherwise indicated. At all times shall the Contractor have available on the project adequate and suitable road maintenance equipment. The Contractor shall provide dust control measures for all streets where construction work has been completed or is ongoing and for all streets utilized as detour routes during construction. Dust shall be controlled by adding either granular or liquid chloride or other approved materials in a sufficient amount to control the dust. Where extreme dry conditions exist, the Engineer may also require water to be added to the street surface.

If the Contractor fails to provide adequate street maintenance and dust control, the Engineer shall stop the construction work until such time as all streets are properly maintained.

Spillage of materials or mud tracking on streets or roads where hauling or trucking takes place shall be prevented. Any accidental spillage or tracking shall be immediately cleaned up as required by the Engineer.

l4. Maintaining Traffic

The Contractor shall cooperate in every respect with the local Fire Department, Police Department, and DPW, Michigan Department of Transportation, the County Road Commission, and the Engineer in maintaining safe traffic conditions on the project at all times and for providing access to private property adjacent to the construction for emergency vehicles. The Contractor shall provide and maintain throughout the time of construction, all lights, barricades, signing, flag men, and other safety equipment in accordance with the Michigan Manual of Uniform Traffic Control Devices and which may be required by the Engineer. The Contractor shall coordinate his operations with the local governing agencies having jurisdiction to provide advance notice of the closing of any street. The Contractor shall provide 24-hour maintenance of all traffic safety equipment and shall provide telephone numbers of at least two persons for contact in case of emergency.

Streets, except State Highways, subject to construction work under this Contract may be closed to all traffic, except emergency vehicles, during normal working hours (7:00 a.m. to 5:00 p.m.) but shall be open for local traffic during night hours. The Contractor shall not close any street to traffic without prior notification of all property owners and allowance of sufficient time for evacuation and the Contractor shall conduct his operation at all times to provide ready access to residences and businesses abutting the construction areas, by emergency vehicles. Driveways shall be repaired and restored immediately after construction to provide access to property by the owners. All signing and barricades shall meet the requirements of the Michigan Manual of Uniform Traffic Control Devices. The Contractor shall be solely responsible for maintaining safe traffic conditions for vehicles and pedestrians at all times.

15. Incidental Work

All work to be done by the Contractor shown on the Drawings, or as specified and enumerated in the clauses of the Specifications and also any and all minor details of the work not specifically mentioned in the Drawings or Specifications but obviously necessary for the proper completion of the work, such as the proper connection of new work to old, shall be considered as incidental to and so being a part of and included with the work for which prices are named in the Contract Documents. The Contractor will not be entitled to any extra or additional compensation unless specifically stated otherwise.

16. Injuries to Persons and Property

The Contractor alone shall be held responsible for all injuries to persons and for all damages to property of the Owner or others, caused by or resulting from the actions or the negligence of himself, his employees or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. He must restore all injured public or private property in accordance with the drawings and specifications and as a minimum, to a condition as good as when he started the work, purchasing new materials to replace all that which is injured, or destroyed during the course of the work.

Should the Contractor refuse to make such repairs or not show due diligence therein the Owner may make or cause to be made such necessary repairs, and the cost thereof shall be deducted from any money which may be due or become due from the Owner. All private property must be left in a condition satisfactory to the Owner.

17. Safety

The Contractor and Subcontractor shall comply with Federal, State and Local laws and regulations governing the furnishing and use of safeguards, safety devices, and protective equipment, and take any other needed actions on his own responsibility as necessary to protect the life and health of employees on the job and safety of the public and to protect property during the construction of the project.

The "Safety and Health Regulations for Construction" and subsequent amendments promulgated by the U.S. Department of Labor must be followed on the construction of this project. These regulations are identified as Chapter XVII of Title 29, Code of Federal Regulations (CFR), Part l926.

All of the Contractors' and Subcontractors' operations and construction equipment shall comply with the requirements of the Michigan Occupational Safety and Health Act, Act l54, P.A. l974, and Michigan Occupational Safety and Health Rules and Standard, insofar as they apply to the work to be performed under this Contract.

On all tunneling operations, the Contractor and Subcontractors shall comply with the requirements of the Michigan Occupational Health and Safety Standards for Construction, specifically Chapter VI, Part IV - Control Measures for Hazardous Atmospheres. Copies of the Standard are available from the Michigan Department of Health and the Department of Labor.

l8. Utilities

The locations and elevations of existing underground utilities as shown on the plans are only approximate. No guarantee is either expressed or implied as to the completeness or accuracy thereof. The contractor shall be exclusively responsible for determining the exact utility locations and elevations prior to the start of construction. It is the contractor's responsibility to notify the various utility owners in accordance with Michigan's P.A. No. 53 of 1974.

Where any utilities, water, sewer, gas, telephone, cable T.V., or any other either public or private, are encountered, the Contractor must provide adequate protection for them and he will be held responsible for any damages to such utilities arising from his operations.

When it is apparent that construction operations may endanger the foundation of any utility conduit, or the support of any structure, the Contractor shall notify the utility owner of this possibility and he shall take such steps as may be required to provide temporary bracing or support of

conduits or structures.

When it is the policy of utility owners to make repairs to damaged conduit or other structures, the Contractor shall cooperate, to the fullest extent with the utility, and he shall see that his operations interfere as little as possible with those operations.

When it is necessary, in order to carry out the work, that an electric, telephone, or light pole be moved to a new location, or moved and replaced after construction, the Contractor shall arrange for the moving of such poles and the lines thereof, and shall pay any charges therefore.

Unless otherwise indicated on the Drawings, the Contractor shall replace any disturbed sewer or drain, or relay same at a new grade to be established by the Engineer such that sufficient clearance for the sewer will be provided.

The Contractor will receive no extra compensation for replacement of sewers or drains encountered, whether shown on the plans or not, connections to new sewers, or for relaying at a new grade and/or line where necessary, except where specifically noted otherwise on the Drawings or in the Specifications.

19. Contractors Responsibility to Maintain Record Drawings

To assist the Engineer in preparation of final record drawings, and to insure that any construction details which are in variance from the Construction Drawings are properly recorded, the Contractor shall maintain in his field office a set of Drawings upon which any such changes are neatly recorded. The Engineer shall furnish the Contractor with a set of Construction Drawings prior to start of construction and from time to time during construction shall check with the Contractor for insuring that this set is properly maintained and complete.

20. Concrete Sidewalks

All work for sidewalk construction shall conform to the requirements of MDOT 2012 Standard Specifications, Concrete Sidewalk. Materials for sidewalks shall meet the requirements of the appropriate section of the MDOT 2012 Standard Specifications. Concrete shall be MDOT Grade P1 having a compressive strength of 3500 psi in 28 days.

Remolded bituminous expansion joints, l/2-inch thick shall be placed at all intersections of sidewalks, where sidewalks meet curb and gutter or driveways and every 50 feet of sidewalk.

Concrete sidewalk shall be uniform 4-inch thickness except at driveways where the sidewalk shall be 6-inches thick for the full width of the driveway.

Sidewalks shall be constructed to lines and grades as set by the Engineer or in accordance with the Engineer's instructions where existing walks, curb and gutter or other structures control the location and elevation of the new walk. Sidewalks shall be neatly marked and edged in accord-

ance with good practice and according to instructions by the Engineer. A light broom finish shall be provided.

21. Disposition of Surplus Excavated Materials

Unless indicated otherwise, all surplus excavated material resulting from construction on this project, shall be hauled and disposed of by the Contractor. The Contractor shall provide all necessary equipment for loading, hauling and disposal of the material. Hauling trucks shall not be overloaded and spillage of material from trucks along the haul routes will not be allowed and the Contractor shall be responsible for prompt cleaning of streets where spillage occurs. The cost of all hauling and disposal of surplus material shall be incidental to the construction work.

22. Boring, Jacking and Tunneling

Where required on the Drawings, the Contractor shall bore and jack steel casing pipe. The bid price shall include all materials, labor and appurtenances necessary for completion of each bore. Boring under State Highways shall be in accordance with MDOT requirements.

Tunneling of trees, where required on the Drawings, shall be paid at the unit amount bid times the distance from drip edge to drip edge of the tree.

23. Sanitary Facilities

The Contractor shall provide at convenient points, properly secluded from observation, a sufficient number of toilets for the use of the employees and shall maintain them strictly without nuisance and without offense to the public, or to residents in the vicinity of the work. The number, location, character, condition and maintenance of these facilities, must at all times be such as will meet the approval of the Engineer and OSHA requirements.

24. Equipment and Material Storage

Pumps and other machinery shall be stored in weathertight buildings furnished by the Contractor. Motors, electrical switchgear, and other equipment of a delicate nature, shall be stored in weathertight warehouses which are maintained at a temperature of at least 60 degree F. Steel and iron items may be placed in open yard storage, but any such items having attached motors or other machinery units shall have such units well wrapped with waterproof material for protection from the weather.

Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. All painted surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of the Engineer.

Materials and equipment stored and placed upon or near the site of the work shall at all times be so located as not to interfere with work being prosecuted by other Contractors in the employment of the Owner or with street drainage. The Contractor shall be fully responsible for any damage from any cause, to stored materials. Damaged materials shall be replaced with new before incorporating said materials into the work.

25. Construction Clean Up

Immediately after the completion of the work or any portion of it, the Contractor shall remove all unused material, refuse or dirt placed at the site or in the vicinity of the work, or resulting from its prosecution and restore the site in as clean and sightly condition as before the work was begun. All work areas shall be left in as good a condition as before the construction was started.

26. Contractor Responsibilities

The Contractor shall have charge of and shall be responsible for the entire work under this Contract until its completion and acceptance by the Owner. A competent superintendent, foreman and other representative invested with sufficient authority to conduct the work properly shall be maintained on the work at all times. The superintendent or foreman shall be acceptable to the Engineer and shall be employed by the Contractor for the duration of this job. No change in superintendents or foreman shall be made without the approval of the Engineer. When in the opinion of the Engineer, the superintendent or foreman is not competent for any reason, he shall be immediately relieved of his responsibility as relates to this project and shall be dismissed from the job site when requested by the Engineer. The Engineer shall be the sole judge as to the qualifications and competency of the superintendent or foreman.

27. Changes in Scope of Work

The Owner shall have the right to make alterations in any of the work herein contemplated either before or after its commencement, when such changes are defined in a written change order by the Engineer and provided such changes do not change the total volume of work more than twenty-five percent (25%), or do not change the general nature and scope of the work. If such alterations diminish the quantity of the work to be done, or diminish the quantity of material to be furnished, they shall not constitute a claim for damages or for anticipated profits on the work dispensed with. The Contractor shall, however, be reimbursed for any expenses he has incurred on the deleted work. If the changes increase the amount of work, or the amount of material furnished, such increase shall be paid for according to the quantity of work actually done, and the quantity of material actually furnished and the price or prices actually stipulated in this Contract, payment either for labor performed or materials furnished shall be in accordance with the Contract Bid Proposal and accepted as full payment.

Upon mutual agreement of written change order, between the Owner and the Contractor, quantities or volumes of work may be changed more than the above stipulated twenty-five percent,

such changes to be at the prices shown in the Proposal. If the quantities or volumes of work are changed at the time of award of the Contract, the Owner shall have the further right to increase or decrease such revised quantities or volumes by twenty-five percent (25%) by subsequent change order at any time prior to date of substantial completion.

MATERIAL TESTING

Bidders shall prepare their bids for the materials specified herein and as listed in these Specifications or designated on the Drawings. Material tests shall be in accordance with the following requirements or as may be required under appropriate section of MDOT 2012 Standard Specifications, whichever is most stringent as determined by the Engineer.

1. General:

All materials incorporated in this contract shall be subject to inspection and test as follows: All tests except as noted, shall be made by an independent established Testing Laboratory, employed and paid for by the Owner. Samples at the mill or factory shall be taken by a representative of the Testing Laboratory. Samples of a construction materials from the site of the work, such as sand, gravel, concrete cylinders, pipe, etc., for which laboratory tests are required shall be taken assembled or prepared on the site of the work by representatives of the Testing Laboratory. Any necessary containers, shipping boxes, or crates shall be supplied by the Testing Laboratory. The Contractor shall furnish, without additional charge, all material that may reasonably be required for testing purposes. Visual tests of all materials and slump tests of concrete required under the following schedule will be made by the Engineer without cost to the Contractor.

The tests to be made, the number of samples, and acceptance and rejection shall be based on the standards and tentative standards of the American Society for Testing Materials (ASTM), unless otherwise noted. Two signed copies of test reports on Testing Laboratory forms or letterhead shall be delivered to the Engineer as soon as available. Wherever in the following tabulation the letters A.S.T.M. are used, they shall be interpreted to mean the latest Standard Specifications of the American Society for Testing Materials.

The following is a listing of tests required for materials to be incorporated into the work. All laboratory tests called for shall be by an independent commercial laboratory approved by the Engineer. The Engineer may require, in lieu of independent laboratory tests, that a certification of the quality of material shipped to the project, be provided by the manufacturer. Where certifications are accepted in lieu of Owner tests, the certifications shall be furnished by the contractor or manufacturer at no charge to the owner. Certifications when so required shall be provided on the basis of A.S.T.M. specifications or other standards acceptable to the Engineer.

2. Cement:

Tests shall be made on the entire cement requirements on car samples or bin (sealed) samples.

Sampling and number of tests shall be performed in compliance with A.S.T.M. Specification Serial Designation C183. The following outlined tests shall be performed in compliance with the A.S.T.M. Specification Serial Designation listed.

A.S.T.M. Serial Designation

Fineness	C115
Expansion	C151
Time of Setting	C191
Compressive Strength	C109
Tensile Strength	C190
Content	C185

Chemical analysis tests will not be required unless specifically designated in the Special Conditions of the Contract.

3. Sand:

Standard Tests shall be made in advance of concreting per A.S.T.M. C33 and A.S.T.M. C40 on each fine aggregate proposed to be used. Other tests being satisfactory, the aggregate may be used pending results of 28-day mortar strength tests. Tests shall also be made as the work progresses on each 1,000 cubic yards of fine aggregate for concrete to assure uniformity.

4. Gravel, Stone:

Standard Tests shall be made in advance of concreting on each grading of each coarse aggregate proposed to be used, per A.S.T.M. C33. However, the requirements of P. 11 may be omitted for gravel and crushed stone if evidence is furnished showing that the material has proved satisfactory as coarse aggregate in concrete which has been subjected for a period of at least five years to essentially the same conditions of service and exposure as the structure in which the material is to be used. Tests shall also be made as the work progresses on each 1,000 cubic yards of coarse aggregate for concrete to assure uniformity.

5. Concrete:

Advance Tests to the concrete shall be made in accordance with A.S.T.M. C31. Four standard 6" compression cylinders, 2 to be tested at 7 days and 2 at 28 days, per A.S.T.M. C39, shall be made with the proportioning and materials proposed to be used in the major part of these tests if suitably referenced on the reports which shall be issued at 7 to 28 days. These tests shall be repeated if necessary because of changes in materials or unsatisfactory results.

During the progress of the work, and for each different mix of concrete, a set of 2 standard 6" concrete cylinders shall be made and tested, where from 10 to 100 cubic yards of concrete are placed, during each and every day's operation. On pours of less than 10 cubic yards, the engineer may require samples at the rate of 2 per pour.

An additional set of cylinders shall be made for each 100 cubic yards or major fraction thereof over and above the first 100 cubic yards. The cylinders of each set shall be molded from the same sample of concrete and tested at 7 days or at 28 days as may be specially desired. Sampling of concrete for test purposes shall be per A.S.T.M. C172. Making and curing of test cylinders shall be per A.S.T.M. C31. Testing of specimens shall be per A.S.T.M. C39.

Where 25 or more cubic yards of concrete are placed, and as necessary to maintain desired consistency of the concrete a slump test shall be made per A.S.T.M. C143. Not less than one such test be made for each 50 cubic yards of concrete placed at one operation. Such test shall also be made on each sample of concrete used in fabricating test specimens.

6. Brick for manholes, catchbasins, and valve basins:

Visual inspection at site, for conformance with A.S.T.M. C32. Sampling and testing per A.S.T.M. C67 for conformance with A.S.T.M. C32 by an independent laboratory paid for by the Contractor, or manufacturers certification.

7. Brick: (Bldg.):

Tests by independent laboratory, for each 50M delivered, including first sampling and testing per A.S.T.M. C67 for conformance with brick specified per A.S.T.M. C62, paid for by the Contractor.

8. Precast Reinforced Manhole Section:

Visual inspection at the site for conformance with A.S.T.M. C478 and for the elastomer joints A.S.T.M. C443. Tests by an independent laboratory per the above A.S.T.M. sections for conformance, and certification by the manufacture.

9. Concrete Block for Manholes, Catchbasins and Valve Basins:

Visual inspection at site for conformance with A.S.T.M. C139, tests by independent laboratory, paid for by the Contractor, or certification by manufacture.

10. Vitrified Sewer Pipe:

Visual inspection at the site for conformance with A.S.T.M. C-700 E.S. and certification by the manufacturer.

11. PVC Pressure and Non-Pressure Pipe:

Each piece of pipe shall bear the Manufacturers name and number and shall be certified by the Manufacturer to have met the requirements of A.S.T.M. D224l, D3l39, D3034, D32l2 and F477.

12. ABS Truss Pipe and ABS Solid Wall Pipe:

Each piece of pipe shall bear the Manufacturers name and number and shall be certified by the Manufacturer to have met the requirements of A.S.T.M. D2680 and D275l.

13. Concrete Sewer Pipe: (8" and l0" diameter pipe).

Visual inspection at the site, for conformance with A.S.T.M. Cl4 and manufactures certifications.

14. Reinforced Concrete Sewer and Culvert Pipe: (l2 inch diameter and larger)

Visual inspection at the site for conformance with A.S.T.M. C76 and manufactures certification.

15. Ductile Iron Pipe and Fittings:

Each piece of pipe shall bear the manufacture's serial number, and shall be certified by the Manufacturer to have met the requirements of A.N.S.I. 2l.5l, 2l.l0, 2l.ll and 2l.40. Also, each piece shall be visually inspected in the field for specifications conformance. Inspection and laboratory tests at source by independent testing laboratory for conformance with the A.N.S.I. numbers for Iron Pipe and Fittings if more than 200 tons are required. These tests shall be paid for by the Owner.

l6. Prestressed Concrete Cylinder Pipe:

Cement, sand, gravel, stone and concrete shall be tested, as specified in Paragraphs 2, 3, 4 and 5 of this section. Tests by independent testing laboratory on cylinder steel, and bar wire reinforcing and manufactures certification.

17. Non-Cylinder Prestressed Concrete Pipe:

Cement, sand, gravel, stone and concrete shall be tested as specified in Paragraphs 2, 3, 4 and 5 of this section. Tests by independent testing laboratory on bar and wire reinforcing, paid for by the Contractor, or certification by the manufacture.

18. Building Stone:

Visual inspection on site, tests by independent laboratory per A.S.T.M. C97, C99, C218 and Cl70, paid for by the Contractor.

19. Reinforcing:

Inspection and tests by an independent laboratory for conformance with the A.S.T.M. Specifications, paid for by the Contractor or manufactures certification.

20. Structural Steel & Misc. Steel and Metal:

Where less than 50 tons are required field inspections for rust, dimensions, riveting, welding, painting, etc., shall be performed by the Engineer.

Where more than 50 tons are required, certified copies of mill tests on steel used in fabrication and shop inspection by an independent laboratory per A.S.T.M. A7, as revised, shall be submitted to the Engineer.

21. Bituminous Mixtures:

Shall be as per the notes on the construction Drawings or otherwise in accordance with MDOT 2012 Standard Specifications.

22. Optional Concrete Pipe Specifications:

The ASTM C-655 Specification which allows the supplier of concrete pipe to take advantage of local materials to produce a concrete pipe capable of meeting high load requirements is allowed. This specification bases the strength of a particular pipe on actual pipe load performance rather than rules of minimum reinforcement and compressive concrete strength. Tests which provide performance data on local materials shall be submitted to the Engineer for approval.

HELICAL PILES

1.0 GENERAL

1.1 Purpose of Specification

The purpose of this specification is to detail the furnishing of all designs, materials, tools, equipment, labor and supervision, and installation techniques necessary to install Helical Piles as detailed on the project documents, including connection details. This shall include provisions for load testing that may be part of the scope of work.

1.2 Scope of Work

This work consists of furnishing all necessary engineering and design services (if required), supervision, labor, tools, materials, and equipment to perform all work necessary to install the Helical Piles per the specifications described herein, and as shown on the project documents. The Contractor shall install a Helical Pile that will develop the load capacities as detailed in the project documents. This may also include provisions for load testing to verify Helical Pile capacity and deflection, if part of the scope of work.

1.3 Helical Pile Suppliers

1.3.1 Subject to compliance with requirements, provide helical pile systems manufactured by Maclean Dixie Helical Foundation Systems or equivalent. The manufacturer must supply a solid round corner square or hollow pipe helical pile with forged connections. The manufacture must supply a product that does not utilize a bolted or field welded connection to resist torsional forces.

1.4 NOT USED

1.5 Definitions

Allowable Load – Mechanical (ALM): The maximum allowable load on a structural element as specified by its manufacturer. ALM is usually limited to 50% of the rated ultimate mechanical capacity.
Allowable Load – Geotechnical (ALG): The maximum allowable load that may be transferred into a Helical Screw Pile Foundation as determined by the geotechnical properties of the soil. Usually determined by load test behavior or engineering analysis. ALG is typically limited to 30% to 50% of the Ultimate Geotechnical Capacity of the pile, but this may vary, depending on project parameters and other factors.
Bearing Stratum: The undisturbed soil layer at the helical pile location which provides a significant portion of the axial resistance of an installed helical pile bearing on one or more of the pile helices.

Coupling: Central steel shaft connection means formed as integral part of the plain extension shaft material. Couplings are internal or external sleeves, or hot upset forged sockets.

Coupling Bolt(s): High strength, structural steel fasteners used to connect Helical Pile segments together. Coupling bolts should only transfer axial forces.

Creep: The continuous deflection (movement) of a pile while subjected to a constant load.
Crowd: Axial compressive force applied to the helical anchor as needed to ensure that the anchor progresses into the ground a distance equal to the helix pitch (approximately 3 inches) for each revolution.
Dead Load: Loads resulting from the weight of the structure plus all material (equipment) permanently fastened thereto or supported thereby.
Design Load (DL): The maximum load that will be transferred to the pile. The Design Load is expressed in terms of magnitude and direction. Design Loads can be Tensile, Compressive or Lateral. Also known as Service Load and Working Load.
Effective Torsional Resistance: Effective Torsional Resistance is used to estimate Ultimate Geotechnical Capacity of a pile during construction. Helical Pile Foundations are typically installed to a predetermined specified installation torque.
Failure – Geotechnical: Unless otherwise noted, geotechnical failure is achieved when continuous deflection (movement) of a pile occurs while subjected to a constant load.
Foundation: An element that connects a structure to the earth. Loads are transferred from the structure, to the foundation, to the earth. These loads can be Compression, Tension, Lateral or Dynamic.
Geotechnical Capacity: The maximum load that can be resisted via the bearing of helices on the soil and skin friction or adhesion between the soil and shaft in which the pile is embedded.
Foundation Capacity: The bearing capacity of the helical pile (helices and skin friction) interaction with the specified bearing soil.
Helical Extension: Same as a Plain Extension, but with one or more helices welded to it. A helical extension may be utilized to increase the pile bearing capacity. May be used in areas of very weak soils or as an onsite modification when unexpected weak soils are encountered. The Helical Extension is attached directly above the Helical Lead section or sometimes above other helical extensions
Helical Lead Section: A central Shaft with one or more Helices welded to it. The first component of a Helical Pile Foundation that enters the soil. Extensions are used in conjunction with the Helical Lead Section to achieve the specified depth and to enter competent soil.
Helical Pile: A bearing type foundation element consisting of a lead or starter section, helical extension (if so required by site conditions), plain extension section(s), and a pile cap or bracket. A.k.a. helical screw pile, screw pile, helical screw foundation, helical anchor. Their purpose is to transfer structural loads (tension and/or compression) to a load bearing stratum.

Helical Pile Contractor (contractor): Installer of the Helical Foundation System. The installer must be a Maclean Dixie Certified installer and purchase products and supplies from a Maclean Dixie Distributor.

Helix or Helices: Generally, a rounded steel plate formed into a helical flight. When rotated in

the ground, the helical shape provides thrust along its longitudinal axis thus aiding in the anchor installation, plus the plate transfers axial load to the soil through bearing after installation.
Helix Driver: A high torque hydraulic motor used to *advance* (rotate) a helical pile into the soil to the specified bearing depth. Depending on the capacity of the helix driver, it may be either handheld or machine operated.

Installation Torque: The resistance generated by a Helical Pile when installed into soil. The installation resistance is a function of the soil type, and size and shape of the various components of the Helical Pile.

Live Load: Loads resulting from vehicles, people, snow, ice, wind, and impact. Other forces resulting from earthquakes and other extraordinary conditions.
Load Test: Conducted in accordance with ASTM D1143-07 to determining capacity and relation of load to movement by applying incremental loads to the helical pile.
Pile Cap: Connection means by which structural loads are transferred to the Helical Pile. The type of connection varies depending upon the requirements of the project and type of Helical Pile material used.

Pitch: The distance between the upper and lower split edges of the helices. The distance a lead should travel in one rotation.

Plain Extension: A central shaft (with no helices) that is attached directly above the helical lead section. Extensions are coupled together and are used to extend the helical lead section to a required depth and into a soil stratum of suitable strength.
Project Documents: Documentation that is considered part of the official project record. This includes but not limited to project drawings, specifications, submittals, etc.
Proof Test: Load testing a Helical Pile Foundation by applying loads in predetermined increments, maintaining each load for a period of time and recording deflection at the beginning and end of each increment. Engineers, to determine Allowable Load, often apply the results of Proof Tests.
Rated or Ultimate Mechanical Capacity: The Ultimate Mechanical Capacity of a structural element as specified by its manufacturer. Determined by load tests and/or engineering analysis. Also referred to as Mechanical Strength.
Rated or Ultimate Torsional Strength: The maximum torque that can be safely applied to a Helical Screw Pile Foundation during installation.
Reveal: The distance from the ground surface to the upper end of the last installed extension of an anchor, measured along the anchor's longitudinal axis.
Safety Factor - Geotechnical (SFG): The ratio of the Ultimate Geotechnical Capacity (UCG) of a Helical Screw Pile Foundation to the Design Load.
Safety Factor – Mechanical (SFM): The ratio of the Rated Ultimate Mechanical Capacity of a structural element to the Design Load.
Shaft: The central shaft of a Helical Pile used to transfer load from the structure to the helices. Shafts may be solid round corner square steel bar or hollow steel pipe sections. Shaft sizes typically range from 1.25" to 2.00" round corner square and from 2.875" to 10.75" diameter hollow round.

Specified Installation Torque: The Effective Torsional Resistance to be achieved - as specified by the project engineer of record.
Ultimate Pile Capacity – Geotechnical (UCG): The maximum load that can be applied to a Helical Pile Foundation prior to soil bearing failure. At this point no additional capacity can be justified.
Ultimate or Rated Pile Capacity – Mechanical (UCM): The manufacturers' Rated Ultimate Mechanical Capacity of the Helical Pile Foundation.
Ultimate Pullout Resistance: Limit state based on the lesser of mechanical strength or Global Capacity of the helical anchor - defined as the point at which no additional axial tension load can be justified.

1.6 Allowable Tolerances

1.6.1 Centerline of Helical Piles shall not be more than 3 inches (76mm.) from indicated plan location.

1.6.2 Helical Pile plumbness shall be within 2 degrees of design alignment.

1.6.3 Top elevation of the Helical Piles shall be within +1 inch (25mm.) to -2 inches (-50mm.) of design vertical elevation.

1.7 Quality Assurance

1.7.1 The Helical Pile Contractor (contractor) shall be experienced in placement of Helical Foundation systems and shall furnish all materials, labor and supervision to perform the specified work. The contractor shall be trained and certified by Maclean Dixie or a Maclean Dixie recognized Distributor in the proper methods to install Maclean Dixie Helical Products. The contractor's current certification documents shall be included with the design submittal and to the Architect upon request.

1.7.2 The contractor shall employ an adequate number of skilled workers who are experienced in the necessary crafts and who are familiar with the specified requirements and methods needed for proper performance of the work required in this specification.

1.7.3 All Helical Piles shall be installed in the presence of the Owner's Testing Agent. The Testing Agent shall have the right of access to any and all field installation records and test reports.

1.7.4 Helical Pile systems (lead, extensions, brackets) as specified herein shall be designed, manufactured and tested to appropriate ASTM standards.

1.7.5 The design recommendation of the Helical Piles shall be performed by an experienced designer. The design recommendation shall be submitted with all assumptions, data and calculations to the Geotechnical Engineer of record for their approval (and seal if required). Only after the design recommendation is approved by the Geotechnical Engineer of record will it be con-

sidered the Helical Pile design.

1.8 Design Criteria

1.8.1 The Helical Pile design or design recommendation shall be developed to meet specified loads and design criteria as indicated on the Structural Engineer of record's project drawings and notes. The calculations and drawings required from the contractor shall be submitted to the project Architect for review and acceptance in accordance to section 3.1 "Construction Submittals". The design shall be in accordance with Chapter 18 of IBC 2006.

1.8.2 Except where noted on the plans, all helical pile components shall be designed and installed to provide a maximum axial deflection of 0.5 inches and a minimum factor of safety as follows:

Compression	2
Tension	2
Lateral	2
Buckling	2

1.8.3 The Helical Pile design shall take into account pile spacing (typically 3 times the diameter of the largest helices measured center to center) , soil stratification and strain compatibility issues as are present for the project.

1.8.4 Helical Pile capacity in soil shall not be relied upon from the following soil layers as defined in the geotechnical reports:

a. Fill
b. Organic Laden Soils
c. Very Soft or Soft Clays
d. Very Loose to Loose Sands

The overall length and installed torque of a Helical Pile shall be specified such that the required in-soil capacity is developed by bearing on the helices in the specified strata(s).

1.8.5 Lateral load and Bending: Where the Helical Piles are subjected to lateral or base sheer loads as indicated on the project documents, the bending moment from said loads shall be determined using lateral load analysis software such as LPILE by Ensoft , Inc or an equivalent software. The required soil parameters for the required design shall be provided by the Geotechnical Engineer of record.

1.8.6 Critical Buckling Load: Where Helical Piles are installed into low strength soils (N<5) or the pile extrudes above the ground surface, the critical buckling load shall be determined using load analysis software such as LPILE by Ensoft , Inc or an equivalent software. The required soil parameters for the required design shall be provided by the Geotechnical Engineer of record.

1.8.7 Expansive Soils: Helical Piles used in areas where expansive soils are present may require the use of special construction methods to mitigate possible effects form soil shrinkage or swelling. Helical Pile shafts should be isolated from the concrete footing if said footing is in contact with the expansive soils.

1.8.8 Down-Drag/Negative Skin Friction: Helical Piles are slender shaft foundation elements and are not practically affected by down-drag/negative skin friction. If Helical Piles with central steel shafts >4" in diameter are used in areas where compressible or decomposing soils overlie bearing stratum, or where expansive or frozen soils can cause pile jacking, Helical Pile shafts should be provided with a no-bond zone along specified lengths to prevent load transfer that may adversely affect pile capacity. Alternatively, Helical piles can be provided with sufficient axial load capacity to resist down drag/negative skin friction forces.

1.8.9 The Helical Pile attachment (pile cap) shall distribute the design load to the concrete foundation such that the concrete bearing stress does not exceed those in the ACI Building Code and the stresses in the steel helices and welds does not exceed AISC allowable stresses for steel members.

1.8.10 Corrosion Protection: The Pile Foundation system shall be designed, fabricated and installed to meet a corrosion service life of at least 30 years. Consideration shall be given to the corrosion potential (aggressiveness) of the soils encountered at the project site. As a minimum, all lead and extension sections must be hot-dip galvanized in accordance with ASTM A123 and A153 (as appropriate) after fabrication.

1.9 Ground Condition

The Owner's Geotechnical Report, including soil boring logs, a soil boring location plan and soil parameters shall be made available to the person or firm preparing the Helical Pile Design recommendation for the Geotechnical Engineer of record's review. This report shall be used as a basis for the Helical Pile design recommendation and ultimate design utilizing generally accepted engineering judgment and methods.

2.0 Referenced Codes and Standards

Standards listed by reference, including revisions by issuing authority, form a part of this specification section to the extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title, or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation. In case of conflict, the particular requirements of this specification shall prevail. The latest publication as of the issue of this specification shall govern, unless indicated otherwise.

2.1 American Society for Testing and Materials (ASTM):

2.1.1 ASTM A29/A29M Steel Bars, Carbon and Alloy, Hot-Wrought and Cold Finished.
2.1.2 ASTM A36/A36M Structural Steel.
2.1.3 ASTM A53 Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
2.1.4 ASTM A153 Zinc Coating (Hot Dip) on Iron and Steel Hardware.
2.1.5 ASTM A252 Welded and Seamless Steel Pipe Piles.
2.1.6 ASTM A775 Electrostatic Epoxy Coating
2.1.7 ASTM A193/A193M Alloy-Steel and Stainless-Steel Bolting Materials for High Temperature Service.
2.1.8 ASTM A320/A320M Alloy-Steel Bolting Materials for Low Temperature Service.
2.1.9 ASTM A325 Standard Specification for Structural Bolts, Steel, Heat Treated, 120/1OS ksi Minimum Tensile Strength.
2.1.10 ASTM ASOO Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
2.1.11 ASTM A513 Standard Specification for Electric Resistance Welded Carbon and Alloy Steel Mechanical Tubing.
2.1.1 ASTM A536 Standard Specifications for Ductile Iron Castings
2.1.13 ASTM A572 HSLA Columbium-Vanadium Steels of Structural Quality.
2.1.14 ASTM A618 Hot-Formed Welded and Seamless High-Strength Low-Alloy Structural Tubing.
2.1.15 ASTM A656 Hot-Rolled Structural Steel, High-Strength Low-Alloy Plate with Improved Formability.
2.1.16 ASTM A958 Standard Specification for Steel Castings, Carbon, and Alloy, with Tensile Requirements, Chemical Requirements Similar to Wrought Grades.
2.1.17 ASTM A1018 Steel, Sheet and Strip, Heavy Thickness Coils, Hot Rolled, Carbon, Structural, High-Strength Low Alloy, Columbium or Vanadium, and High-Strength Low-Alloy with Improved Formability.
2.1.18 ASTM D1143 Method of Testing Piles Under Static Axial Compressive Load.
2.1.19 ASTM D3689 Method of Testing Individual Piles Under Static Axial Tensile Load.
2.1.20 ASTM A123 / A123M - 09 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
2.1.21 ASTM A500 / A500M - 10a Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
2.1.22 ASTM A576 - 90b (2006) Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality

2.2 American Welding Society (AWS):

2.2.1 AWS D1.1 Structural Welding Code- Steel.
2.2.2 AWS D1.2 Structural Welding Code- Reinforcing Steel.

2.3 American Society of Civil Engineers (ASCE):

2.3.1 ASCE 20-96 Standard Guidelines for the Design and Installation of Pile Foundations.

2.4 International Code Council (ICC):

2.4.1 International Building Code IBC 2006

2.5 Society of Automotive Engineers (SAE):

2.5.1 SAE J429 Mechanical and Material Requirements for Externally Threaded Fasteners.

3.0 Submittals

3.1 Construction Submittals

3.1.1 The contractor shall prepare and submit to the project Architect for review and approval shop drawings, working drawings and design calculations for the Helical Piles intended for use at least 21 calendar days prior to planned start of construction (but note also Paragraph 3.1.7). When required, all submittals shall be signed and sealed by a Registered Professional Engineer, preferably the project Geotechnical Engineer of record, currently licensed in the project State.

3.1.2

3.1.3 The submittal shall include the following:

3.1.3a Helical Pile number, location and pattern by assigned identification number
3.1.3b Helical Pile design load
3.1.3c Type and size of central steel shaft
3.1.3d Helix configuration (number and diameter of helix plates)
3.1.3e Minimum effective installation torque
3.1.3f Minimum overall length
3.1.3g Inclination of Helical Pile
3.1.3h Cut-off elevation
3.1.3i Helical Pile attachment to structure relative to grade beam, column pad, pile cap, etc.
3.1.3j Detail drawings for all helical pile components, including corrosion protection and pile top attachment. Include helical pile lead/starter and extension section identification (manufacturer's catalog numbers).

3.1.4 If required, the Contractor shall submit certified mill test reports for the central steel shaft, as the material is delivered, to the Architect for record purposes. The ultimate strength, yield strength, % elongation, and chemistry composition shall be provided.

3.1.5 The Contractor shall submit plans for pre-production (optional) and production testing for the· Helical Piles to the Architect for review and acceptance prior to beginning load tests. The purpose of the test is to determine the load versus displacement response of the Helical Pile and provide an estimation of ultimate capacity.

3.1.6 The Contractor shall submit to the Architect copies of calibration reports for each torque measuring system and all load test equipment to be used on the project. The calibration tests shall have been performed within forty-five (45) working days of the date submitted. Helical Pile installation and testing shall not proceed until the Architect has received the calibration reports. These calibration reports shall include, but are not limited to, the following information:

3.1.6a Name of project and Contractor
3.1.6b Name of testing agency
3.1.6c Identification (serial number) of device calibrated
3.1.6d Description of calibrated testing equipment
3.1.6e Date of calibration
3.1.6f Calibration data

3.1.7 Work shall not begin until all the submittals have been received and approved by the Architect. The Contractor shall allow the Architect a reasonable time to review, comment, and return the submittal package after a complete set has been received. All costs associated with incomplete or unacceptable submittals shall be the responsibility of the Contractor.

3.2 Installation Records

The Contractor shall provide the Architect copies of Helical Pile installation records within 24 hours after each installation is completed. Formal copies shall be submitted on a weekly basis. These installation records shall include, but are not limited to, the following information.

3.2.1 Name of project and Contractor
3.2.2 Name of Contractor's supervisor during installation
3.2.3 Date and time of installation
3.2.4 Name and model of installation equipment
3.2.5 Type of torque indicator used
3.2.6 Location of Helical Pile by assigned identification number
3.2.7 Actual Helical Pile type and configuration - including lead section (number and size of helices), number and type of extension sections (manufacturer's SKU numbers)
3.2.8 Helical Pile installation duration and observations.
3.2.9 Total length of installed Helical Pile
3.2.10 Cut-off Elevation
3.2.11 Inclination of Helical Pile
3.2.12 Installation torque at one-foot intervals for the final 10 feet
3.2.13 Comments pertaining to interruptions, obstructions, or other relevant information
3.2.14 Rated load capacities

3.3 Tests Reports

The Contractor shall provide the Architect copies of field test reports within 24 hours after completion of the load tests. Formal copies shall be submitted within a reasonable amount of time following test completion. These test reports shall include, but are not limited to, the following

information (note Section 6- Helical Pile Load Tests).

3.3.1 Name of project and Contractor
3.3.2 Name of Contractor's supervisor during installation
3.3.3 Name of the owner's testing agency, if required.
3.3.4 Date, time, and duration oftest
3.3.5 Location of Helical Pile by assigned identification number
3.3.6 Type of test (i.e. tension or compression)
3.3.7 Description of calibrated testing equipment and test set-up
3.3.8 Actual Helical Pile type and configuration - including lead section, number and type of extension sections (manufacturer's catalog numbers)
3.3.9 Steps and duration of each load increment
3.3.10 Cumulative pile-head movement at each load step
3.3.11 Comments pertaining to test procedure, equipment adjustments, or other relevant information
3.3.12 Signed by the representative of the owner's testing agency, registered professional engineer (Geotechnical Engineer of record), or as required by local jurisdiction

3.4 Closeout Submittals

3.4.1 Warranty: Warranty documents specified herein

3.4.1.a Project Warranty: Refer to Conditions of the Contract for project warranty provisions
3.4.1.b Manufacturer's Warranty: Submit, for Owner's Acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights the Owner may have under Contract Document.

4.0 Materials

4.1 Helical Steel Plates
4.1.1 The helices are high strength low alloy steel per ASTM A1018 grade 55, class 1 with a minimum 55 ksi (379 MPa) yield strength and 65 ksi (450 MPa) tensile strength. The helical plates are factory welded to the pile shaft.

4.2 Pile Leads and Extension:
4.2.1 Round Corner Square Shafts (RCS)
4.2.1.1 1.25-inch (31.75mm) RCS shafts should be hot-wrought carbon steel conforming to ASTM A576, Grade 1045 with a minimum 60 ksi (413 MPa) yield strength and 34 ksi (234 MPa) tensile strength.
4.2.1.2 1.5-inch (38 mm) RCS shafts should be hot-wrought carbon steel conforming to ASTM A576, Grade 10V45M with a minimum 70 ksi (482 MPa) yield strength and 100 ksi (689 MPa) tensile strength.
4.2.1.3 1.75-inch (44.5mm) RCS shafts are steel conforming to ASTM A576, Grade 1530 with minimum 90 ksi (621 MPa) yield strength and 120 ksi (827 MPa) tensile strength.
4.2.1.4 2.00-inch (50.8mm) RCS shafts are steel conforming to ASTM A576, Grade 1530 with

minimum 90 ksi (621 MPa) yield strength and 120 ksi (827 MPa) tensile strength.

4.2.2 Pipe Shafts
4.2.2.1 2.875, 3.50, 4.50-inch (73, 88.9, 114.3 mm) pipe shafts conform to ASTM A500, Grade C with minimum yield strength of 50 ksi (345 MPa) and a minimum tensile strength of 62 ksi (427 MPa).
4.2.4.2 8.625-inch (219.075mm) pipe shafts conform to ASTM A500, Grade C with minimum yield strength of 50 ksi (345 MPa) and a minimum tensile strength of 62 ksi (427 MPa).

4.2.3 Couplings
4.2.3.1 The coupling shall be made from cast steel conforming to ASTM A958, Grade SC 1045 with a minimum 40 ksi (276 MPa) yield strength and 80 ksi (551 MPa) tensile strength.

4.3 Coupling Bolts
4.3.1 The coupling bolts for lead and extension are 0.75 inch (19.1mm) or 0.875 inch (22.2mm) in diameter conforming to either ASTM A490 or ASTM A325, Type 1 and have a Class C hot-dipped zinc coating to ASTM A153 with threads excluded from shear plane.

5.0 **Execution**

5.1 Site Conditions

5.1.1 Prior to commencing Helical Pile installation, the Contractor shall inspect the work of all other trades and verify that all said work is completed to the point where Helical Piles may commence without restriction.

5.1.2 The Contractor shall verify that all Helical Piles may be installed in accordance with all pertinent codes and regulations regarding such items as underground obstructions, right-of-way limitations, utilities, etc.

5.1.3 In the event of a discrepancy, the Contractor shall notify the Architect. The Contractor shall not proceed with Helical Pile installation in areas of discrepancies until said discrepancies have been resolved.

5.1.4 Do not cut any reinforcing steel in existing foundation elements without the prior written approval of the Structural Engineer of Record.

5.2 Installation Equipment

5.2.1 Shall be rotary type, hydraulic power driven torque motor with clockwise and counter-clockwise rotation capabilities. The torque motor shall be capable of continuous adjustment to revolutions per minute (RPM's) during installation. Percussion drilling equipment shall not be permitted. The torque motor shall have torque capacity sufficient to reach the torsional strength rating of the central steel shaft to be installed.

5.2.2 Equipment shall be capable of applying adequate down pressure (crowd) and torque simultaneously to suit project soil conditions and load requirements. The equipment shall be capable of continuous position adjustment to maintain proper Helical Pile alignment.

5.3 Installation Tooling

5.3.1 A continuous monitoring indicator shall be used during Helical Pile installation. The torque indicator can be an integral part of the installation equipment or externally mounted in-line with the installation tooling. Shear pin torque indicators are **not** allowed.

5.3.1.a Shall be capable of providing continuous measurement of applied torque throughout the installation.

5.3.1.b Shall be capable of torque measurements in increments of at least 100 ft-lb.

5.3.1.c Shall be calibrated prior to pre-production testing or start of work. Indicators that measure torque as a function of hydraulic pressure shall be calibrated at normal operating temperature.

5.3.1.d Shall be re-calibrated, if in the opinion of the Testing Agent and/or Contractor reasonable doubt exists as to the accuracy of the torque measurements.

5.4 Installation Procedures

5.4.1 Central Steel Shaft: (Lead and Extension Sections)

5.4.1.a The Helical Pile installation technique shall be such that it is consistent with the geotechnical, logistical, environmental, and load carrying conditions of the project.

5.4.1.b The lead section shall be positioned at the location as shown on the working drawings. Battered Helical Piles can be positioned perpendicular to the ground to assist in initial advancement into the soil before the required batter angle shall be established but avoid damage to the pile, such as bending the shaft. The Helical Pile sections shall be engaged and advanced into the soil in a smooth, continuous manner at a rate of rotation of 5 to 20 RPM's. Extension sections shall be provided to obtain the required minimum overall length and installation torque as shown on the working drawings. Connect sections together using coupling bolt(s) and nut torqued to 40 ft-lb.

5.4.1.c Sufficient down pressure shall be applied to uniformly advance the Helical pitch the appropriate depth. The rate of rotation and magnitude of down pressure shall be adjusted for different soil conditions and depths.

5.5 Termination Criteria

5.5.1 The torque as measured during the installation shall not exceed the torsional strength rating of the central steel shaft.

5.5.2 The minimum installation torque, embedment and minimum overall length criteria as shown on the working drawings shall be satisfied prior to terminating the Helical Pile installation.

5.5.3 If the torsional strength rating of the central steel shaft and/or installation equipment has been reached prior to achieving the minimum overall length required, the Contractor shall have the following options:

5.5.3.a Terminate the installation at the depth obtained subject to the review and acceptance of the Owner's Geotechnical Engineer, or:

5.5.3.b Remove the existing Helical Pile and install a new one with fewer and/or smaller diameter helices. The new helix configuration shall be subject to review and acceptance of the Owner's Geotechnical Engineer. If reinstalling in the same location, the top-most helix of the new Helical Pile shall be terminated at least (3) three feet or 3 x the last helix diameter whichever is greater beyond the terminating depth of the original Helical Pile.

5.5.4 If the minimum installation torque as shown on the working drawings is not achieved at the minimum overall length, and there is no maximum length constraint, the Contractor shall have the following options:

5.5.4.a Install the Helical Pile deeper using additional extension sections, or:

5.5.4.b Remove the existing Helical Pile and install a new one with additional and/or larger diameter helix plates. The new helix configuration shall be subject to review and acceptance of the Owner's Geotechnical Engineer. If re installing in the same location, the top-most helix of the new Helical Pile shall be terminated at least (3) three feet or 3 x the last helix diameter which ever is greater beyond the tenninating depth of the original Helical Pile.

5.5.4.c Lower the load capacity of the Helical Pile and install additional Helical Pile(s). The lowered capacity and additional Helical Pile location shall be subject to the review and acceptance of the Owner's Geotechnical Engineer and the Structural Engineer of Record.

5.5.5 If the Helical Pile is refused or deflected by a subsurface obstruction, the installation shall be terminated, and the pile removed. The obstruction shall be removed, if feasible, and the Helical Pile re-installed. If the obstruction can't be removed, the Helical Pile shall be installed at an adjacent location, subject to review and acceptance of the Owner's Geotechnical Engineer and the Structural Engineer of Record.

5.5.6 If the torsional strength rating of the central steel shaft and/or installation equipment has been reached prior to proper positioning of the last plain extension section relative to the final elevation, the Contractor may remove the last plain extension and replace it with a shorter length

extension. If it is not feasible to remove the last plain extension, the Contractor may cut said extension shaft to the correct elevation. The Contractor shall not reverse (back-out) the Helical Pile to facilitate extension removal.

5.5.7 The average torque for the last three feet 3 x the last helix diameter whichever is greater of penetration shall be used as the basis of comparison with the minimum installation torque as shown on the working drawings. The average torque shall be defined as the average of the last three readings recorded at one-foot intervals.

6.0 Helical Pile Load Tests

6.1 Load Test Equipment

6.1.1 The load test equipment shall be capable of increasing or decreasing the applied load incrementally. The incremental control shall allow for small adjustments, which may be necessary to maintain the applied load for a sustained, hold period.

6.1.2 The reaction system shall be designed so as to have sufficient strength and capacity to distribute the test loads to the ground. It should also be designed to minimize its movement under load and to prevent applying an eccentric load to the pile head. Test loads are normally higher than the design loads on the structure. The direction of the applied load shall be collinear with the Helical Pile at all times.

6.1.3 Dial gauge(s) shall be used to measure Helical Pile movement the dial gauge shall have an accuracy of at least +/- 0.001-in. and a minimum travel sufficient to measure all Helical Pile movements without requiring resetting the gauge. The dial gauge shall be positioned so its stem is parallel with the axis of the Helical Pile. The stem may rest on a smooth plate located at the pile head. Said plate shall be positioned perpendicular to the axis of the Helical Pile. The dial gauge shall be supported by a reference apparatus to provide an independent fixed reference point Said reference apparatus shall be independent of the reaction system and shall not be affected by any movement of the reaction system.

6.1.4 The load test equipment shall be re-calibrated, if in the opinion of the Testing Agent and/or Contractor reasonable doubt exists as to the accuracy of the load or deflection measurements.

6.2 Pre-Production Tests

Load tests shall be performed to verify the suitability and capacity of the proposed Helical Pile, and the proposed installation procedures prior to installation of production helical piles. One (1) sacrificial test helical pile shall be constructed immediately prior to the start of work on the production piles. The Owner's Geotechnical Engineer shall determine the pre-production test location. Additional purpose of pre-production tests is to empirically verify the ultimate capacity to the average installing torque of the Helical Pile for the project site.

Pre-production Helical Pile installation methods, procedures, equipment, and overall length shall be identical to the production Helical Piles to the extent practical except where approved otherwise by the Owner.

The Contractor shall submit for review and acceptance the proposed Helical Pile load testing procedure. The pre production test proposal shall be in general conformance with ASTM 01143 and/or D-3689, and shall provide the minimum following information:

- Type and accuracy of load equipment
- Type and accuracy of load measuring equipment
- Type and accuracy of pile-head deflection equipment
- General description of load reaction system, including description of reaction anchors
- Calibration report for complete load equipment, including hydraulic jack, pump, pressure gauge, hoses, and fittings.

The test sequence shall be as shown in *Table 3* to the extent practical.

If the pre-production test fails to meet the design requirements, the Contractor shall modify the Helical Pile design and/or installation methods and retest the modified anchor.

6.3 Production Helical Pile Testing

The Contractor shall perform proof the Helical Pile proof test as selected by the Owner's Geotechnical Engineer. At the Contractor's suggestion, but with the Engineer's permission, tension tests may be performed in lieu of compression tests up to 1.00 DL for Helical Piles with sufficient structural tension capacity.

The test sequence shall be as shown in Table4 to the extent practical.

The acceptance criteria for production Helical Piles shall be per Section 6.5 Item 1.

If a production Helical Pile that is tested does not meet the acceptance criteria, the Contractor shall be directed to proof test another Helical Pile in the vicinity. For Helical Piles that do not meet the acceptance criteria and further construction of other foundations, the Contractor shall modify the design, the construction procedure, or both. These modifications include, but are not limited to, installing replacement Helical Piles, modifying the installation methods and equipment, increasing the minimum effective installation torque, changing the helix configuration, or changing the Helical Pile material (i.e., central steel shaft). Modifications that require changes to the structure shall have prior review and acceptance of the Architect. Any modifications of design or construction procedures shall be at the Contractor's expense.

6.4 Testing Program

6.4.1 The hydraulic jack shall be positioned at the beginning of the test such that the unloading and repositioning of the jack during the test shall not be required. The jack shall also be positioned co-axial with respect to the pile head so as to minimize eccentric loading. The hydraulic

jack shall be capable of applying a load not less than two times the proposed design load (DL) and must be capable applying load appropriate to the testing program. The stroke of the jack shall not be less than the theoretical elastic shortening of the total Helical Pile length at the maximum test load.

6.4.2 An alignment load (AL) shall be applied to the Helical Pile prior to setting the deflection measuring equipment to zero or a reference position. The AL shall be no more than 10% of the design load (i.e., 0.1 DL). After the AL is applied, the test set-up shall be inspected carefully to ensure it is safe to proceed.

6.4.3 Axial compression or tension load tests shall be conducted by loading the Helical Pile in stepwise fashion as shown in Table-3 or Table-4 (as appropriate) to the extent practical. Pile-head deflection shall be recorded at the beginning of each step and after the end of the hold time. The beginning of the hold time shall be defined as the moment when the load equipment achieves the required load step.

6.4.4 Test loads shall be applied until continuous jacking is required to maintain the load step or until the test load increment equals the specified maximum testing load (i.e., 2.0 DL), whichever occurs first. The observation period for this last load increment shall be 10 minutes. Displacement readings shall be recorded at 1, 2, 3, 4, 5 and 10 minutes (load increment maxima only).

6.4.5 The applied test load shall be removed in approximately equal decrements per the schedule in Table-3 or Table-4 (as appropriate). The hold time for these load decrements shall be 1 minute, except for the last decrement, which shall be held for 5 minutes.

Load Steps	Hold Time (minutes)
AL	1.0
0.20 DL	2.5
0.40 DL	2.5
0.60 DL	2.5
0.80 DL	2.5
1.0 DL	2.5
0.75 DL	1.0
0.50 DL	1.0
0.25 DL	1.0
AL	1.0
0.5 DL	1.0
1.0 DL	1.0
1.2 DL	2.5
1.4 DL	2.5
1.8 DL	2.5
1.8 DL	2.5
2.0 DL	10.0
1.5 DL	1.0
1.0 DL	1.0
0.5 DL	1.0
AL	5.0

Table 3-Steps for Pre-production Load Testing
AL=Alignment Load
DL= Design Load

Load Step	Hold Time (minutes)
AL	0.0
0.20 DL	2.5
0.40 DL	2.5
0.60 DL	2.5
0.80 DL	2.5
1.00 DL	10.0
0.60 DL	1.0
0.40 DL	1.0
0.20 DL	1.0
AL	5.0

Table 4-Steps for Production Load Testing
AL=Alignment Load
DL= Design Load

6.5 Acceptance Criteria for Helical Pile Verification Load Tests

Both of the following criteria must be met for approval:

1. The Helical Pile shall sustain the compression and tension design capacities (1.0 DL with no more than 0.5 in. total vertical movement of the pile-head as measured relative to the top of the Helical Pile prior to the start of testing.

2. Failure does not occur at the 2.0 DL maximum compression and tension test loads. The failure load shall be defined by one of the following definitions- whichever results in the lesser load:

- The point at which the movement of the Helical Pile tips exceeds the elastic compression/tension of the pile shaft by 0.08 B, where B is defined as the diameter of the largest helix. *(Note that tension loads are limited to the minimum ultimate tensile strength of the coupling joint(s) of the central steel shaft. It is recommended to use the minimum ultimate tensile strengths as published by the pile supplier).*
- The point at which the slope of the load versus deflection (at end of increment) curves exceeds 0.50 inches/kip.

The Contractor shall provide to the Architect copies of field test reports confirming Helical Pile configuration and construction details within 24 hours after completion of the load tests. Formal copies shall be submitted as per Section 3.3. This written documentation will either confirm the load capacity as required on the working drawings or propose changes based upon the results of the pre-production tests.

When a Helical Pile fails to meet the acceptance criteria, modifications shall be made to the design, the construction procedures, or both. These modifications include, but are not limited to, lowering the Helical Pile load capacity, modifying the installation methods and equipment, increasing the minimum effective installation torque, changing the helix configuration, or changing the Helical Pile material (i.e., central steel shaft). Modifications that require changes to the structure shall have prior review and acceptance of the Architect. The cause for any modifications of design or construction procedures shall be decided in order to determine any additional cost implications.

7.0 **Unit Prices**

7.1 NOT USED

7.2 Basis for Payment

7.2.1 Contractor shall base installation cost, including but not limited to labor, tools, materials, supervision, profit, overhead, furnishing, installation, and incidentals associated with the installa-

tion of the helical piles.

7.2.2 Contractor shall base materials for the project on the information provided in the plans and specifications. Cost for the helical piers shall be included in the lump sum price for “Footing Construction”.

7.2.3 No additional payments or considerations shall be given for helical piers outside of the lump sum “Footing Construction” bid item.

7.2.4 No payment will be made for rejected piles, including piles installed out of place, defective piles, or piles damaged during handling or installation.

SECTION 13 34 23 - PRE-ENGINEERED RESTROOM BUILDING

PART 1: GENERAL

1.1 SUMMARY

A. The work shall include furnishing the sealed architectural, structural, mechanical, and electrical plan sets as well as the structural, mechanical, and electrical building components as a complete, pre-designed packaged restroom building as shown on drawings and as specified herein.

1.2 SCOPE

A. Packaged restroom building and all associated design and engineering, with all listed components supplied by Romtec, Inc., hereafter designated as the ***building supplier***. The ***building supplier*** shall be a single source design, engineering, and manufacturer who shall supply the packaged restroom building and meet all the following scope requirements.

B. The contractor is responsible for building installation, hereafter designated as the ***building installer***. ***Building installer*** work will generally include site preparation and grading, excavations for structures, backfill and/or structural backfill, foundation and pad construction, and building construction.
*Note: Romtec Inc. does not serve as the **building installer**. Romtec Inc. is only the packaged restroom **building supplier**.*

C. The packaged restroom building should be the latest standard product of a ***building supplier*** regularly engaged and having at least ten (10) years of experience in packaged restroom building engineering, design, supply, and construction.

D. The ***building supplier*** must meet or exceed the product specification which was prepared using the Romtec Inc. building as a guide and example.

E. Alternate ***building suppliers*** shall demonstrate that they have designed, engineered, produced, delivered, and constructed at minimum ten (10) other functioning site built restroom buildings of similar type. Project completion date and a reference contact from the owner of each project must be provided.

F. Alternate ***building suppliers*** must also disclose all instances of any prior municipal or landscape architect's rejection of the same or similar product as an "or equal" to the specified basis of design building package.

G. Contractors wanting to propose an "or equal" ***building supplier*** other than Romtec Inc. are required to submit a complete submittal package with full sealed plan sets, calculations, and all pre-engineered structural items, ten (10) calendar days prior to the bid opening date. Any products proposed as "or equal" that are not as specified must be specifically listed and accompanied by the manufacturer's data sheets for review.
This will be approved or denied prior to the bid opening. Incomplete submittals will be rejected and returned to the bidder.

H. The building and its concrete footings, foundation, and slab are to be engineered by the ***building supplier*** to meet site specific conditions including wind and snow loading, local frost depth, and ground conditions.

I. Footings are to be dug by the ***building installer*** and poured on site to meet local code for permanent structures. A prefabricated, modular mat placed on compacted base is not an accepted equal to a site specific, site poured, engineered foundation.

J. Typical fasteners such as nails, staples, and screws shall be supplied by ***building installer.*** Atypical fasteners shall be supplied by ***building supplier***.

K. Building is to be designed and constructed on site to meet local codes and approvals for permanent structures. Any building that is temporary, permanently relocatable, prefabricated modular, an offsite constructed product, or pre-cast is not an accepted equal to permanent, on site, conventional construction.

L. No outside entity approval will override the local building authority's codes and inspections. Seals meant for modular homes and production plant certifications will not be allowed in lieu of sealed plans from a licensed engineer and conventional inspection during construction.

M. The Romtec building package has been quoted with the specific product colors. Changes to these color selections may result in a price increase.

N. Building sidings, treatments, and roofing are to be as specified. Precast buildings with painted textures are not to be considered architecturally equivalent.

O. Within three (3) weeks of contract award, the ***building supplier*** shall submit the packaged restroom building preliminary Scope of Supply and Design Submittal (SSDS), including the plan set drawings with all footings, foundations, slab, and structural details.

P. The SSDS is reviewed by the necessary parties and returned to the ***building supplier*** with any revisions to the contractual language, product data sheets, and/or plan set drawings. The drawings shall be of sufficient detail for the engineer(s) to review for conformity to the contract.

Q. One full round of SSDS revisions are to be provided by the ***building supplier*** in the design and engineering services before additional fees apply.

R. The ***building supplier*** shall submit complete, code compliant building plans including plans, elevations, sections, and details, under seal of a National Kitchen and Bathroom Association (NKBA) certified technical designer.

S. The ***building supplier*** shall submit complete structural calculations meeting code loads, design loads, and seismic design under seal of a professional Engineer with current license in the state of Michigan.

T. Once submittal approval is received, three (3) wet stamped sets of plans and structural calculations shall be issued. Any additional plan sets and structural calculations can be obtained for a fee.

U. The ***building supplier*** does not provide a final site plan.

V. The reviewing authority reserves the right to review or reject all submittals at their sole discretion.

W. All work and materials shall comply with the latest industry building codes and regulations for the state of Michigan.

X. Americans with Disabilities Act Accessibility Guidelines (ADAAG) will be followed in design, manufacture, and construction.

Y. The specific supplier is indicated for each item. ***Building supplier***, ***building installer***, and ***owner supplied*** components are listed as such. Products not listed as ***building supplier*** or ***building installer*** supplied, are to be ***owner supplied***.

1.3 SUBMITTAL DOCUMENTATION

The following sections shall be included in the ***building supplier***'s Scope of Supply and Design Submittal. Incomplete submittals will be rejected and returned to the bidder.

A. INTRODUCTION
B. BUILDING SUPPLIER PRODUCTS & SERVICES
C. PRODUCTS & SERVICES NOT SUPPLIED BY BUILDING SUPPLIER
D. WARRANTY & LIMITATIONS
E. PROJECT DESIGN

1.4 WARRANTY

A. The building and all its associated components shall be warranted against defects in materials and workmanship for a period of not less than one (1) year from date of final acceptance.

1.5 MAINTENANCE

A. The ***building supplier*** does not supply maintenance for the packaged restroom building.

PART 2: PRODUCTS

2.1 APPROVED MANUFACTURERS

A. Romtec, Inc.,
18240 North Bank Rd. Roseburg, OR. 97470
Tel: 541-496-3541; Fax: 541-496-0803; Email: klamar@romtec.com
Web: www.Romtec.com

B. Requests for substitutions will be considered in accordance with provisions of Section 1.

2.2 BUILDING DESCRIPTION

A. Refer to plans for quantities, dimensions, locations, and installation methods for the materials and items described in this section. The ***building supplier*** reserves the right to make substitutions of equivalent materials and items without notice.
B. Building dimensions shall match what is indicated on drawings.

2.3 CAST IN-PLACE CONCRETE

A. All equipment, labor, trades and materials shall be supplied by ***building installer***.
    1. Includes all materials and labor for foundations/footings, interior slabs, exterior/entry slabs, and sidewalks.
B. Engineered fill shall be ¾" minus crushed aggregate around footings, foundations, and slabs as required.
C. Slab vapor barrier shall be 6-mil continuous plastic under the concrete slab.
D. The foundation shall be installed as designed with all cast in-place concrete poured to dimensions specified in final plans.
    1. Footings will be built to 42" depth.
    2. Minimum compressive strength of 3000 psi at 28 days, 4+/-1" slump, with max ¾" aggregate, cured in accordance with ACI 308.
    3. Slabs shall have a fine broom finish with joints required in flat work as shown on plans.
    4. Steel rebar shall be installed as specified in final plans.
E. Concrete slab sealer shall be a water-based transparent curing, sealing and dust proofing compound with two (2) coats to be applied per manufacturer's instructions.
F. Refer to drawings for sidewalks and entry slabs.
    1. Minimum concrete compressive strength of 2500 psi at 28 days.
    2. Remesh or rebar reinforcement shall be used in sidewalks.
    3. All sidewalks shall be finished with a fine broom with control joints installed per engineer's specification.

2.4 WALLS

A. Concrete Masonry Units (CMU) shall be supplied by ***building supplier***.
    1. Walls shall be constructed of 8"W x 16"L x 8"H smooth-face mortar joint concrete masonry units (concrete blocks).
    2. Blocks shall be manufactured to ASTM C90 designation for load bearing concrete masonry units. *Note: The **Building installer** may be required to notch CMU block for bond beams, cut blocks to make the required shapes and/or grind block for fixture mounting.*
    3. Block color shall be standard ***Gray***.
B. Masonry (concrete) grout shall be supplied by ***building installer***.
    1. Grout shall have a minimum compressive strength of 2500 psi at 28 days, 9+/-1" slump, with max ½" aggregate.
    2. Fine or coarse grout may be used in accordance with 2009 UBC.
    3. All CMU must be fully grouted and may not be wetted.
C. Rebar in walls shall be supplied by ***building installer***.

1. All walls have # 4 and # 5 rebar, see plans for spacing.
2. All rebar used in building must meet ASTM A615 manufacturing standards and is to be placed per plans.

D. Interior wall finish to be latex epoxy paint supplied by ***building installer***.
E. Interior floors to be sealed concrete finish supplied by ***building installer***.
F. Fiber cement lap siding with brick accent shall be supplied by ***building supplier***.
    1. Brick accent to have cultured stone water table sill.
    2. Lap siding is primed to be painted on-site by ***building installer***.
G. Kick proof wall vents shall be supplied by ***building supplier***.
    1. Pre-assembled steel frame with 10 gauge, 1" square lock joint wire weave mesh and interior louver with integral insect screen.
    2. Vents to be powder coated ***white***.
H. Door system components shall be supplied by ***building supplier***.
    1. Door shall be Steelcraft® SZ18 standard laminated polystyrene-core, 18-gauge galvanized steel, and primed to be painted onsite by the ***building installer***.
    2. Door frame shall be pre-welded Steelcraft® 3-Sided flush frame, 16-gauge galvannealed A-60 steel, and primed to be painted onsite by the ***building installer***.
    3. Masonry door clips (3/16" dia.) for door frame shall be fitted between the doorframe and concrete blocks to bond frame to wall. Door clips allow full internal grouting of the frame during installation.
    4. Hinges shall be ANSI A5112 with non-removable pin and two ball bearings.
    5. Door closer shall have double heat treated steel tempered springs, a triple heat treated steel spindle and hold open arm.
    6. Door locks shall be pull handles with deadbolt locks.

2.5 ROOFING

A. Roof shall be supplied by ***building supplier*** except where noted.
B. Roof system shall be HIP truss roof system with dormer extension over the drinking fountains.
    1. Interior ceiling finish shall be gypsum board supplied by ***building installer***.
C. Roofing shall be cedar shake.
    1. Roofing package shall include starter shingle, cedar ridge cap, foam ridge cap, fasteners, sheet metal flashing (all sides), and 30# felt (under cedar shake).
    2. Roofing color to be selected by ***owner*** from the manufacturers standard color chart.
D. Sealant for all exposed wood shall be supplied by ***building installer***.

2.6 PLUMBING

A. Plumbing rough-in, installation and trim shall be supplied by ***building installer***.
    1. All underground water service and sewer drain(s) from building to be as specified in final site plan.
    2. All floor drains shall be as shown on final building plans.

3. Building water shutoff valve, drain, and all rough piping shall be as shown on final building plans. Final location to be set onsite.
4. Minimum water pressure at toilet and urinal flush valves shall be 40 psi. with minimum pipe sizing as per 2009 Uniform Plumbing Code Section 610.
5. Install the supplied fixtures and all other plumbing supplies as specified in final plans.

B. Floor drains shall be supplied by ***building installer***.
C. Water line drain valve shall be supplied by ***building installer***.
D. Sewer line backflow check valve shall be supplied by ***building installer***.
E. Wall mount, stainless steel, non-refrigerated drinking fountains supplied by ***building supplier***.

2.7 RESTROOM FIXTURES

A. Restroom fixtures shall be supplied by ***building supplier***.
B. Toilets shall be wall mount, top supply, white vitreous china.
    1. Flush valve shall be a chrome, manual lever with ADA compliant metal oscillating non-hold-open handle.
C. Lavatory shall be 19 in. x 17 in. white vitreous china, low-flow, and wall hung with anti-splash rim and concealed front overflow.
    1. Faucets shall be a 2.2gpm, pivot action lever style faucet.
D. Grab bars shall be stainless steel.
E. Toilet paper dispenser shall be white, wall mount with two roll capacity.
F. Surface-mounted towel dispenser shall be touchless, smooth, one at a time towel presentation of C fold or multifold.
G. Surface mounted, liquid soap dispenser with vandal-resistant, chrome-plated ABS bracket and collar, translucent polyethylene, providing visible liquid level and a 24 fl. oz. capacity container and corrosion-resistant black ABS valve.

2.1 ELECTRICAL

A. Electrical rough-in, installation and trim shall be supplied by ***building installer***.
    1. All underground and/or overhead service to building shall be as specified in the final site plan.
    2. Electric meter base and all rough wiring, switches, plugs and circuit breakers shall be as shown on final plans. The ***building supplier*** does not supply the meter base and meter.
    3. ***Building installer*** is responsible for all necessary wire, connectors, grounding, conduit etc. to install the components and meet national and local code. The installation of these components shall comply with all state and/or local codes.
B. Interior and exterior light fixtures shall be supplied by ***building supplier***.
    1. Dusk-to-dawn photocell automatically turns on at dusk and off at dawn for convenience and energy savings. The durable polycarbonate housing is bronze. High-impact polycarbonate refractor is UV-stablized to prevent yellowing.

2. Ceiling mount light fixtures shall be 48” fluorescent lights.

C. Electric exhaust fan shall be supplied by ***building supplier.***
   1. Broan #771, ceiling fan.

D. Main breaker panel shall be supplied by ***building supplier***.
   1. Breaker Panel shall be 100 Amp, single-phase, rain tight. *Note: This panel has been sized to* accept only the loads of the **building supplier** electrical fixture package. The **building supplier** has the right to modify the main breaker panel to be most efficient
      based on any changes.

2.2 OTHER MATERIALS & EQUIPMENT

A. Unless otherwise specified, the following products and materials are NOT supplied by Romtec.
   1. All items not listed in Romtec Products.
   2. Any item listed as supplied by “installer”, “contractor”, “owner”, or “others”.

B. Unless specified in the plans or submittals, Romtec does not supply the following:
   1. Building installation
   2. Asphalt paving
   3. Masonry pavers
   4. Sidewalks
   5. Landscaping
   6. Site grading
   7. Cast-in-place concrete foundations, footings, interior slabs and exterior/entry slabs
   8. Concrete slab sealer
   9. Mortar
   10. Concrete grout
   11. Rebar
   12. Latex epoxy paint
   13. Caulk for siding
   14. Plumbing rough in, installation and trim
   15. Electrical rough in, installation and trim
   16. Drain valves and backflow check valves
   17. Branch circuit breakers
   18. Switches & outlets
   19. Fluorescent tubes for light fixtures
   20. Wall hangers for toilets
   21. Typical fasteners; for example, roofing nails, staples, etc.
   22. Fasteners not included in product packaging
   23. Irrigation Equipment
   24. Gutters and downspouts
   25. Fire alarm and fire suppression equipment
   26. Lighting equipment not attached to the building
   27. Clear coat finish for all decking, glulam beams, posts, and extensions

28. All other items indicated on final plans or required by building codes which are not specifically stated as supplied by Romtec.

PART 3: EXECUTION

3.1 SPECIAL INSPECTION

A. If required, special inspection shall be ***owner supplied***.
B. If special inspection is required per the building department or other regulatory agencies, then the ***building supplier*** can assist but NOT provide this service.

3.2 INSTALLATION

A. All components to be installed according to the plan sets and/or manufacturer's instructions.

3.3 OPERATION & MAINTENANCE MANUALS

A. Upon installation, do not throw away the Operations & Maintenance manuals that are provided by some manufacturers in their packaging. Requests for additional copies from the ***building supplier*** will result in subsequent charges.

Bike Fixtation Repair Stations

SECTION 02871 OR MASTERFORMAT (2004) SECTION 129313 - BICYCLE RACKS
PART 1 GENERAL

1.1 Summary

A. This section includes specifications for Bike Fixtation Repair Stations

1.2 Related Sections

A. Related Requirements:

1. Section 12 93 14 - Bicycle Lockers: Enclosed bicycle storage lockers.
2. Section 32 39 13 – Bollards: Bollards with bicycle storage.

1.3 Related Sections

A. American International (ASTM):

1. ASTM A 53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
2. ASTM A 123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
3. ASTM A 312 - Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless-Steel Pipes.
4. ASTM A 314 - Standard Specification for Stainless Steel Billets and Bars for Forging.

1.4 Submittals

A. Product Data: Manufacturer's data sheets on each product to be used, including full range of standard color selections.
B. Maintenance Data: Manufacturer’s installation and maintenance guide.
C. Samples for Verification: Submit finish samples for review and verification.
D. Include recommended methods for repairing damage to the finish.

1.5 Quality Assurance

A. Manufacturer Qualifications: A firm experienced in manufacturing bicycle repair equipment similar to those required for this project and with a record of successful in-service performance.
B. Installer Qualifications: An experienced installer who has completed installation of bicycle repair equipment similar in material, design, and extent to that indicated for this project and whose work has resulted in construction with a record of successful in-service performance.
C. Source Limitations: Obtain each color, finish, shape and type of bicycle repair equipment from a single source with resources to provide components of consistent quality in appearance and physical properties.
D. Product Options: Drawings indicate size, shape and dimensional requirements of bicycle repair stations and are based on the specific system indicated.

1.6 Delivery, Storage and Handling

A. Deliver all materials in their original sealed containers bearing manufacturer's name and identification of product.
B. Do not store products in location with conditions outside manufacturer's absolute limits.
C. Materials delivered to the site shall be examined for concealed damage or defects in shipping. Defects shall be noted and reported to the Owner's Representative in writing.

1.7 Project Conditions

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 Warranty

A. Bike repair stations carry a two-year manufacturer's limited warranty against defects in materials and workmanship. The two-year warranty period begins the date the product is shipped from the manufacturer.

PART 2 PRODUCTS

2.1 Acceptable Manufacturers

A. Provide bicycle repair equipment manufactured by Bike Fixtation., 2647 37th Avenue S, Minneapolis, MN 55406, 1-612-568-3494. Website: www.bikefixtation.com

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 Materials

A. **Deluxe Public Work Stand**

1. Main Body .25" and 11-gauge steel
2. Top bike hanger: 2" DOM Tubing, .25" steel plate, 356-T6 Cast Aluminum, Polyethylene sleeve.
3. Protective panel: .125" UV resistant polyethelyne
4. Tool tethers: 3/16" stainless steel cable
5. Integrated air hose: High pressure rubber exterior hose with triple braided steel wire core
6. Counterbalanced Tools
    a. Phillips screwdriver with swivel
    b. Flat blade screwdriver with swivel
    c. Steel core tire lever (qty 2.)
    d. Headset wrench
    e. Pedal wrench
    f. 8/10mm cone wrench
    g. 9/11mm cone wrench
    h. Torx T25 wrench
    i. 2.5, 3, 4, 5, 6, 8mm Hex keys

B. **Public Work Stand**

1. Main Body and hanger: 2" DOM Tubing, .25" steel plate, Polyethylene sleeve.
2. Tool tethers: 3/16" stainless steel cable
3. Tools
    a. Phillips screwdriver with swivel
    b. Flat blade screwdriver with swivel
    c. Steel core tire lever (qty 2.)
    d. Headset wrench
    e. Pedal wrench
    f. 8/10mm cone wrench
    g. 9/11mm cone wrench
    h. Torx T25 wrench
    i. 2.5, 3, 4, 5, 6, 8mm Hex keys

C. **Public Toolbox**
   1. Main Body: 7-gauge steel plate
   2. Tool tethers: 3/16” stainless steel cable
   3. Tools
      a. Phillips screwdriver with swivel
      b. Flat blade screwdriver with swivel
      c. Steel core tire lever (qty 2.)
      d. Headset wrench
      e. Pedal wrench
      f. 8/10mm cone wrench
      g. 9/11mm cone wrench
      h. Torx T25 wrench
      i. 2.5, 3, 4, 5, 6, 8mm Hex keys

D. **Wheel Chock**
   1. Main Body: ¼” steel plate

2.3 Finishes

A. A hot-dipped galvanized finish: performed after fabrication is standard.
B. Powdercoat finish: TGIC UV resistant Powdercoat. For powder coated/ painted repair stations, the following specifications are required: Part is prepared for painting with hard sandblasting. An epoxy primer is electrostatically applied. A final TGIC, UV resistant polyester powder coat is applied. Final coating thickness shall be no less than 6 mils.

2.4 Setbacks and Space Use

A. Follow setbacks and space use in accordance with manufacturer's site layout document.

PART 3 EXECUTION

3.1 Examination

A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.1 Installation

A. Install bicycle repair stations in accordance with manufacturer's installation instructions.
B. Install bicycle repair stations level, plumb, square, accurately aligned, correctly located per drawings, and without warp.
C. It is the responsibility of the installer to ensure that all base materials into which the repair station will be installed can support the repair station and will not be damaged by any required installation procedures.

3.2 Ordering Information

A. When ordering or specifying this repair station, make sure the product type, finish and fastener type (if applicable) are included. Contact your Bike Fixtation representative for a current price list or to place an order.

3.3 Freight

Call 1-612-568-3494 for freight quotes.

3.4 Protection

1. Protect installed products until completion of project.
2. Touch-up, repair or replace damaged products before Substantial Completion.

Bike Fixtation Public Bike Pumps

SECTION 02871 OR MASTERFORMAT (2004) SECTION 129313 - BICYCLE RACKS
PART 1 GENERAL
1.1 Summary

B. This section includes specifications for Bike Fixtation Public Bike Pumps

1.2 Related Sections

B. Related Requirements:

1. Section 12 93 14 - Bicycle Lockers: Enclosed bicycle storage lockers.
2. Section 32 39 13 – Bollards: Bollards with bicycle storage.

1.4 Related Sections

B. American International (ASTM):

1. ASTM A 53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
2. ASTM A 123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
3. ASTM A 312 - Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless-Steel Pipes.
4. ASTM A 314 - Standard Specification for Stainless Steel Billets and Bars for Forging.

1.4 Submittals

E. Product Data: Manufacturer's data sheets on each product to be used, including full range of standard color selections.
F. Maintenance Data: Manufacturer’s installation and maintenance guide.
G. Samples for Verification: Submit finish samples for review and verification.
H. Include recommended methods for repairing damage to the finish.

1.5 Quality Assurance

E. Manufacturer Qualifications: A firm experienced in manufacturing bicycle repair equipment similar to those required for this project and with a record of successful in-service performance.
F. Installer Qualifications: An experienced installer who has completed installation of bicycle repair equipment similar in material, design, and extent to that indicated for this project and whose work has resulted in construction with a record of successful in-service performance.
G. Source Limitations: Obtain each color, finish, shape and type of bicycle repair equipment from a single source with resources to provide components of consistent quality in appearance and physical properties.
H. Product Options: Drawings indicate size, shape and dimensional requirements of bicycle repair stations and are based on the specific system indicated.

1.6 Delivery, Storage and Handling

D. Deliver all materials in their original sealed containers bearing manufacturer's name and identification of product.
E. Do not store products in location with conditions outside manufacturer's absolute limits.
F. Materials delivered to the site shall be examined for concealed damage or defects in shipping. Defects shall be noted and reported to the Owner's Representative in writing.

1.7 Project Conditions

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental

conditions outside manufacturer's absolute limits.

1.9 Warranty

B. High Security Outdoor Public Bike pumps, Electric Public Bike Pump, and Air Control panel carry a two year manufacturer's limited warranty against defects in materials and workmanship. The two year warranty period begins the date the product is shipped from the manufacturer.

C. High Security Indoor Public Bike pumps carry a one year manufacturer's limited warranty against defects in materials and workmanship. The one year warranty period begins the date the product is shipped from the manufacturer

PART 2 PRODUCTS

2.1 Acceptable Manufacturers

D. Provide bicycle repair equipment manufactured by Bike Fixtation., 2647 37th Avenue S, Minneapolis, MN 55406, 1-612-568-3494. Website: www.bikefixtation.com

E. Substitutions: Not permitted.

F. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 Materials

E. **High Security Outdoor Public Bike Pump**

7. Main Body .25" and .125" 304 stainless steel
8. Pump shaft: ¾" 304 stainless steel
9. Pressure gauge cover: ¼" polycarbonate.
10. Internal pump design: Bike Fixtation
11. Integrated air hose: High pressure rubber exterior hose with triple braided steel wire core
12. Optional Tools tethered by 3/16" stainless steel cable
    a. Steel core tire lever (qty 2.)
    b. 15mm box wrench

F. **High Security Indoor Public Bike Pump**

4. Main Body .25" and 7-gauge steel
5. Pump shaft: ¾" 304 stainless steel
6. Pressure gauge cover: ¼" polycarbonate.
7. Internal pump design: Bike Fixtation
8. Integrated air hose: High pressure rubber exterior hose with triple braided steel wire core
9. Optional Tools tethered by 3/16" stainless steel cable
    a. Steel core tire lever (qty 2.)
    b. 15mm box wrench

G. **Electric Bike Pump**

4. Main Body: 16-gauge steel
5. Pressure gauge cover: ¼" polycarbonate.
6. Internal pump design: Bike Fixtation
7. Integrated air hose: High pressure rubber exterior hose with triple braided steel wire core

H. **Air Control Panel**

1. Main Body: 16-gauge steel
2. Pressure gauge cover: ¼" polycarbonate.

3. Integrated air hose: High pressure rubber exterior hose with triple braided steel wire core.

2.4 Finishes

C. A hot-dipped galvanized finish: performed after fabrication is standard.

D. Powdercoat finish: TGIC UV resistant Powdercoat. For powder coated/ painted repair stations, the following specifications are required: Part is prepared for painting with hard sandblasting. An epoxy primer is electrostatically applied. A final TGIC, UV resistant polyester powder coat is applied. Final coating thickness shall be no less than 6 mils.

2.4 Setbacks and Space Use

B. Follow setbacks and space use in accordance with manufacturer's site layout document.

PART 3 EXECUTION

3.1 Examination

C. Do not begin installation until substrates have been properly prepared.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.1 Installation

D. Install bicycle pumps in accordance with manufacturer's installation instructions.

E. Install bicycle pumps level, plumb, square, accurately aligned, correctly located per drawings, and without warp.

F. It is the responsibility of the installer to ensure that all base materials into which the bike pump will be installed can support the bike pump and will not be damaged by any required installation procedures.

3.2 Ordering Information

B. When ordering or specifying this bike pump, make sure the product type, finish and fastener type (if applicable) are included. Contact your Bike Fixtation representative for a current price list or to place an order.

3.3 Freight

Call 1-612-568-3494 for freight quotes.

3.4 Protection

3. Protect installed products until completion of project.
4. Touch-up, repair or replace damaged products before Substantial Completion.

SECTION 02871 BICYCLE RACKS

Part 1 - General

I. SECTION INCLUDES
   a. U/2 Round and Square Tubular Steel or Stainless Steel Inverted U-Shaped bicycle racks for surface, ground or rail mounting.
      i. Parking per unit: Two (2) Bicycles

II. SUBMITTALS FOR REVIEW
   a. Product Data: For each type of product indicated.
   b. Samples: For each type of finish indicated
   c. Product Layout Drawings: For layout options and site dimensions.

III. SUBMITTALS FOR INFORMATION
   a. Manufacturer information: "Installation Guide and Owner's Manual - U/2 Racks".
   b. Maintenance Data: Included in Owner's Manual
   c. Samples for Verification: Cross Sections of finished rack.

IV. QUALITY ASSURANCE
   a. Products: Manufactured to ISO 9000 or ISO 14000 requirements.
   b. Manufacturer Qualifications A company specialized in the manufacture rolled steel tubing and welding.
   c. Conformance: Conform to Class III Bicycle Parking Facilities requirements.

V. DELIVERY, STORAGE AND HANDLING
   a. Inspect bicycle racks on delivery for carrier damage. Store bicycle racks in original undamaged packaging in an area sheltered from weather until ready for installation. Inspect bicycle racks prior to setup and installation.

VI. WARRANTY
   a. Warranty covers materials and workmanship
   b. Warranty Period:
      i. One (1) year from date of invoice for all manufacturer’s components.
   c. Warranty does not cover improper installation, neglect, misuse, accidents, vandalism, natural disasters, fire, or acts of war or terrorism.

Part 2 - Products

I. DESIGN CRITERIA & CONSTRUCTION
Round or Square options shall be selected by owner.
   a. U/2 Round: 1.90” OD Round Steel or Stainless-Steel Pipe
      i. Material: 1.5” ASTM A53 Type F Schedule 40 Black Pipe or ASTM A312 Schedule 40 Type 304 Stainless Steel Pipe.
      ii. Construction: Rolled 180-degree 10.1-inch IR bend x 35-3/4 inches high.
      iii. Mounts: Surface, Ground and Rail mountings
         1. Surface Mounting is accomplished with 3/8-inch x 2-1/2 inch x 6-1/2 inch welded base plates.
         2. Ground Mounting is accomplished by extending the pipe legs by

12 inches for 47-3/4-inch height and seep holes at bottom of legs.
3. Rail Mounting is accomplished with two (2) C3 x 4.1# structural steel punched channels.

b. U/2 Square: 2.00” OD Square Steel or Stainless-Steel Tubing
   i. Material: 2.0” Square x .120 Wall ASTM A513 Welded Steel Tubing or 2" Square x .120 Wall ASTM A554 Type 304 Stainless Steel Tubing.
   ii. Construction: Rolled 180-degree 10.1-inch IR bend x 35-3/4 inches high.
   iii. Mounts: Surface, Ground and Rail mountings
      1. Surface Mounting is accomplished with 3/8-inch x 2-1/2-inch x 6-1/2-inch welded base plates.
      2. Ground Mounting is accomplished by extending the pipe legs by 12 inches for 47-3/4-inch height. and seep holes at bottom of legs.
      3. Rail Mounting is accomplished with two (2) C3 x 4.1# structural steel punched channels.

II. BICYCLE U/2 RACKS DESCRIPTION
   a. Series: CycleSafe U/2 Racks
   b. Models:

U-Rack Drawing Number Breakdown

U-RACK DESCRIPTIONS		STANDARD STEEL		STAINLESS STEEL		RAIL MOUNTS	
STYLE	NAME	GROUND	SURFACE	GROUND	SURFACE	CHANNEL	STRUT
CLASSIC	STANDARD	12706	12729	12714	12715	12775	
	STANDARD - BRACED	12708	12705	12718	12719	12779	
	PLASTISOL	12707	12700	N/A	N/A	12751	12748
	PLASTISOL - BRACED	12727	12728	N/A	N/A	12760	12747
MODERN	BELTWAY	12116	12145				
	BOARDWALK	12113	12138				
	CENTERLINE	12115	12143				
	METROLINE	12117	12146				
	PATHWAY	12709	12144				
	RAILWAY	12114	12139				
	SUBWAY	12118	12147				
	TRAILWAY	12710	12136				
	TRICYCLE	12112	12137				
VINTAGE	BRETON	12119	12133				
	BRIDGE	12104	12142				
	CASCADE	12106	12160				
	FULTON	12109	12190				
	GREENWICH	12103	12141				
	LAFAYETTE	12105	12150				
	MADISON	12711	12130				
	MONROE	12110	12192				
	PARIS	12111	12193				
	PEARL	12108	12180				
	PLYMOUTH	12713	12140				
	RAPID	12175	12170				
	WEALTHY	12231	12131				
CUSTOM	INSIGNIA	12712	12132				
	RAPIDS	12107	12121				

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III. FINISHES

Finish to be selected by owner

a. TGIC 6 mils thick Powder Coating over zinc primer coating.
b. Plastisol 100 mils+ thick over zinc primer coated steel tubing.
c. Satin #4 finish for Stainless Steel.
d. Rack Color: color to be selected by owner

Part 3 - Execution

I. INSTALLATION

a. Where installation on concrete is specified, install racks on minimum 4 inch thick concrete slabs, sloped to provide drainage (maximum 2 degrees). For other improved surfaces, such as pavers or asphalt, contact the Manufacturer for alternate installation procedures.

b. Contractor to confirm mounting style with owner prior to ordering bike rack (Surface Mount, In-Ground Mount, or Rail Mount).

c. Surface Mount:

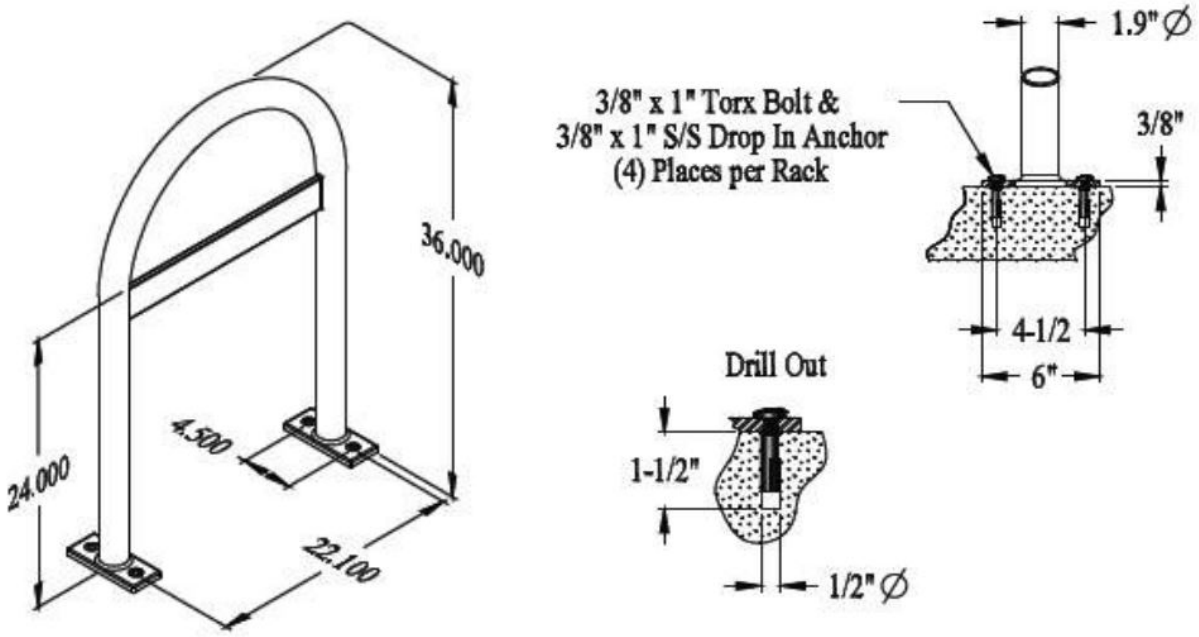
i. Determine desired placement of all bike racks before drilling any holes, avoiding concrete expansion joints. (Recommended spacing is 36-inch centers).

ii. Using predetermined center lines from previous step, mark (4) hole locations for drilling using rack flange as template. Using the 1/2-inch drill bit, drill holes in the concrete minimum of 1-1/2 inches deep. Do not damage the rack pipe surface or flange with the hammer drill or drill bit. Clean out the hole using a blow-out bulb, vacuum, or compressed air. Do not use water. It is very important to clean out the hole to ensure correct holding of the anchor.

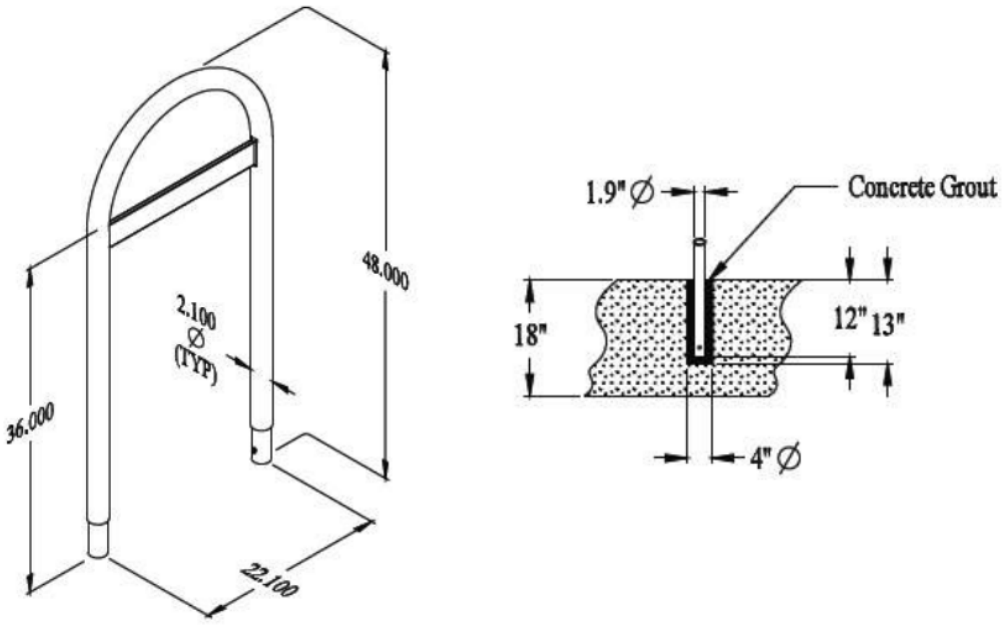
iii. Insert concrete adhesive into the hole. Drop the anchor in the hole. Insert the set tool (Part #12723) into each anchor. Using a hammer, pound the set tool until the shoulder reaches the lip of the anchor. This will assure proper anchor expansion. Let the concrete adhesive cure according to manufacturer instructions before mounting the U-Rack.

iv. Place rack over anchors. Place flat washer on security screw and thread into the anchor using the Torx bit (Part #12721 - provided). Wrench until flush with the flange plate. Check the installation to make sure it is tight to the concrete.

v. Dispose of packaging.



d. In-Ground Mount:
   i. Determine desired placement of all bike racks before drilling any holes, avoiding concrete expansion joints. (Recommended spacing is 36-inch centers). Using the predetermined center lines mark (4) hole locations.
   ii. Existing concrete surface may be core drilled with a 3 inch or 4-inch hole saw and filled with Quikcrete or a construction adhesive.
   iii. If installing on existing concrete, CycleSafe® U/2 Bike Racks can also be anchored with a non-shrink grout poured into a 4 inch or 6-inch diameter by 12-inch-deep core drilled holes.
   iv. New improved concrete surfaces 9-inch Sonotube forms can be put in place to create 18-inch footings. This is the standard for new construction and the most secure type for inverted U-Racks.



e. Rail Mount:
    i. The CycleSafe Rail-Mount inverted-U modular design can be placed in areas where permanent anchoring is not desired such as asphalt and gravel.
    ii. Simply use the (2) 6-foot C-Rails and place racks on top,
    iii. Secure with supplied tamper resistant hardware, 1/2-13NC” x 1 inch” full thread stainless steel carriage bolts and zinc plated whiz-nuts.

END OF SECTION

DELUXE PUBLIC WORK STAND

The Deluxe Public Work Stand puts the tools where the people need them — on the trails, near the streets, and in the bike rooms. Nine tools on retractable braided stainless steel cables brings durable, easy to use tools to the hands of cyclists. With a high quality vinyl decal, your branding stands out and reflects your commitment to the benefits of cycling.

Product Details

- Tools securely attach by retractable braided stainless steel cables
- Large surface area for custom branding/signage; optional Bike Fixation branding as shown is available by request
- Designed to directly interface with all three Bike Fixation High Security manual pumps and Wheel Chock attachments (sold separately)
- Long hose provides wide range of motion without touching the ground
- Impact and UV resistant front plate won't show wear and tear from pedal strikes
- ADA-compliant design

Specifications

Model #	Description	Type of Mount	Weight	Length	Width	Height	Space Requirement
26347C	Powder Coat	Flange Mount	84 lbs.	10"	10"	55"	See Back
26347G	Galvanized	Flange Mount	84 lbs.	10"	10"	55"	See Back
26347S	Stainless Steel	Flange Mount	84 lbs.	10"	10"	55"	See Back

Our Bike Fixation representatives can assist with custom layout and spacing to meet your room dimensions and desired bike capacity.

TURF ESTABLISHMENT, PERFORMANCE

a. Description. Delete Section 816 of the Michigan Department of Transportation (MDOT) 2012 Standard Specifications for Construction and replace with this special provision. The Contractor is responsible for the performance and quality of turf growth in the areas indicated on the plans and as identified by the Engineer. Comply with all local, state and federal laws and regulations in completing this work.

Establish a durable, permanent, weed-free, mature, perennial turf. The work consists of fundamental turf work, including but not limited to topsoiling, seeding, mulching, erosion control, maintenance, and repair of turf as described herein during the life of the contract.

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

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

Section 107.11 of the MDOT 2012 Standard Specifications for Construction is revised relative to the Contractor's responsibility for the repair of turf establishment work as follows. The Contractor shall be responsible, at no additional cost to the contract, for the repair of turf establishment work occasioned by storm events up to 3 inches of rain in a 24-hour period as documented by local meteorological data submitted to the Engineer for review and approval. All other portions of Subsection 107.11 remain unchanged.

1. Contractor Turf Establishment Experience Requirements. Weed control must be done by a commercial herbicide applicator, licensed in the State of Michigan and certified by the Michigan Department of Agriculture (MDA) in the appropriate category to apply herbicides. Use application procedures and materials according to federal, state and local regulations. Use of restricted use chemicals is prohibited. The Contractor must provide appropriate documentation and secure approval from the Engineer before application of herbicides.

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

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

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

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

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

1. Soil. Provide furnished or salvaged topsoil which may be blended compost, that will provide vigorous growth. Topsoil must be humus bearing and placed at least 4 inches deep. It shall be free of stones larger than 1/2 inch in diameter and other debris. Trim and grade the finished slope in accordance with Subsection 205.03.N of the Standard Specifications for Construction.

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

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

A. The seed must be legally saleable in Michigan. The seed product must not contain more than 10 percent inert materials. The seed source shall be from an MDOT approved certified vendor.

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

C. At least two of the species in the mixture proposed to be planted within 15 feet behind the curb or the shoulder must be salt tolerant.

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

4. Herbicides. Comply with all federal, state and local laws. As part of the MDA weed control application, the Contractor is required to make proper notifications and/or postings as per label and MDA requirements for all locations that will be sprayed. Notify the Engi-

neer 48 hours prior to any applications made. Furnish and apply herbicide(s) as needed. It is the Contractor's responsibility to select the herbicide(s) and the rate at which it will be used. Obtain the Engineer's approval of work and herbicide(s) selected prior to the application of the herbicide(s). Complete a spray log and submit to the Engineer each day an application is made.

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

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

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

c. Construction. The Contractor is responsible for all work and all construction methods used in completing this work. Implementation of any part of MDOT standard specifications or standard plans by the Contractor does not relieve the Contractor of responsibility for acceptability of the construction methods or for the quality of the work.

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

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

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

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

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

2. Erosion Control. Erosion must be controlled at all times according to section 208 of the Standard Specifications for Construction. Control of soil erosion is the responsibility of the Contractor. However, sedimentation controls must be placed as indicated on the plans or as directed by the Engineer. The site must be continuously monitored by the

Contractor for needed erosion repair from any cause as addressed in the contract documents. All eroded areas must be returned to their original grade as detailed in the contract documents.

If sedimentation occurs in drainage structures or any watercourse or water containment area, corrective action shall be taken immediately and all disturbed areas contributing to this sedimentation must be stabilized within 24 hours of erosion occurrence. Sediment deposited as a result of the Contractor's inability to control the soil erosion must be removed at the Contractor's expense.

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

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

All erosion occurrences and the repairs made by the Contractor must be reported to the Engineer in the format and at the frequency required by the Engineer. Any erosion, displacement, or disturbance to ongoing or completed work by any cause must be repaired by the Contractor at no additional cost to the contract unless otherwise noted herein.

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

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

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

5. Final Acceptance.

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

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

d. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price for the following contract item (pay item):

Pay Item	**Pay Unit**
Turf Establishment, Performance	Square Yard

Turf Establishment, Performance will be paid on a lump sum basis with 50 percent of the payment being made for each project location. All materials, labor, and equipment required or selected by the Contractor to install, maintain, inspect, repair, and meet the acceptance parameters for turf establishment specified in this special provision, including preparation, updating, and submittal of the Contractor's work plan and Contractor's Daily Reports, will not be paid separately but will be considered included in the contract unit price bid for **Turf Establishment, Performance**.

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

The following schedule of payment applies to work performed according to this special provision. Upon completion of topsoil surfacing stage, 50 percent of the authorized amount for **Turf Establishment, Performance** will be paid to the Contractor. The remaining authorized amount will be paid upon completion of all other work necessary to comply with this special provision and to meet all final acceptance parameters for **Turf Establishment, Performance.**