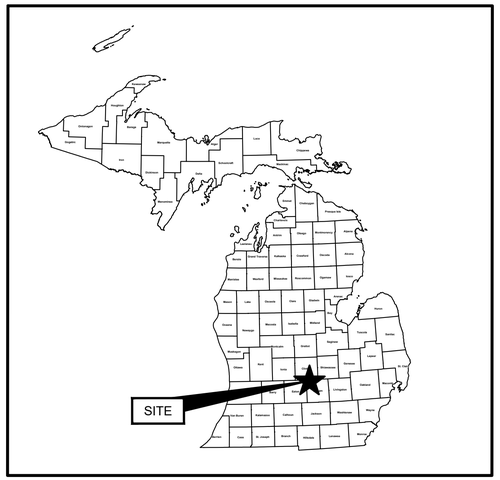
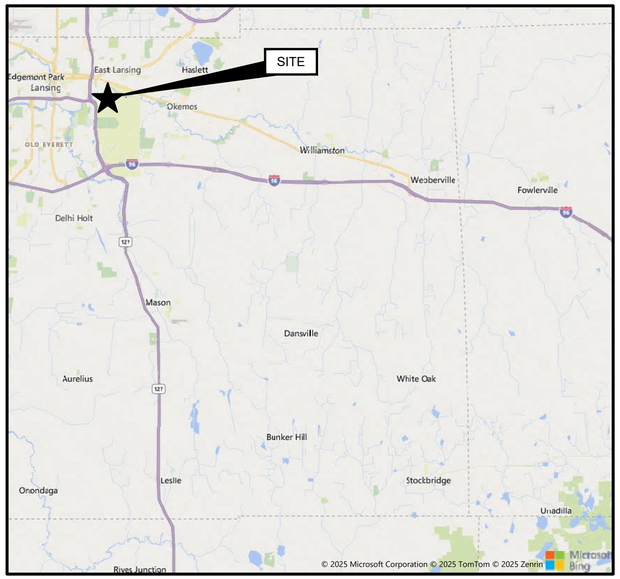
STORM SEWER
RIVER OUTFALL STRUCTURAL REPAIRS

MSU PROJECT #: CP-21037

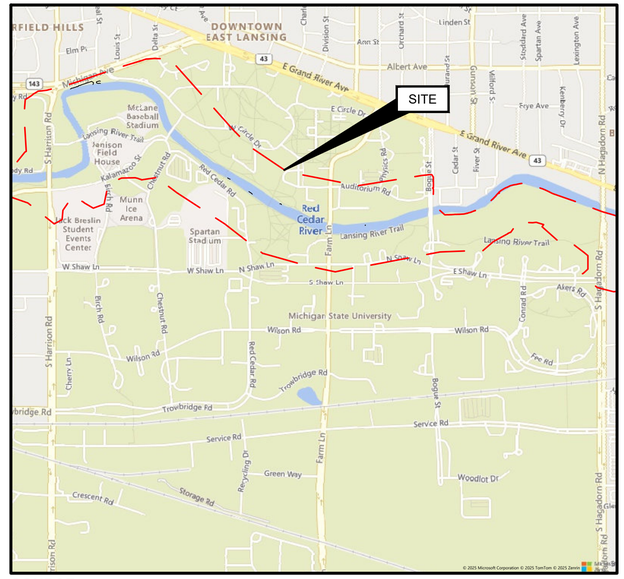


STATE MAP
(NOT TO SCALE)



SOURCE:
MICROSOFT BING 2025

COUNTY MAP
(NOT TO SCALE)



SOURCE:
MICROSOFT BING 2025

SITE LOCATION MAP
(NOT TO SCALE)

SHEET LIST TABLE

SHEET NUMBER	SHEET TITLE
1	COVER
2	NOTES & LEGEND
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12	SESC
13	DETAILS
14	OUTLET HEADWALL DETAILS
15	RESTORATION DETAILS

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GEI PROJECT NO. 2409118

Infrastructure Planning and Facilities

MICHIGAN STATE UNIVERSITY

STORM SEWER - RIVER OUTFALL STRUCTURAL REPAIRS

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

MSU PROJ. NO.
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PR. MGR.	A. LINEBAUGH
ARCH.	N/A
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APPR.	
DATE	
SCALE	AS SHOWN

NO.	DATE	ISSUE
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3	11/6/2025	FINAL REVIEW
2	6/4/2025	60% EGLE REV
1	4/7/2025	60% REVIEW
0	3/3/2025	30% REVIEW

COVER

1

SMITH, KYLE B:\Working\MICHIGAN STATE UNIV\2409118 Re-constructing Stormwater Outfalls on the Red Cedar River\00_CAD\Design\Sheets\COVER.dwg - 1/13/2026

GENERAL NOTES:

GENERAL CONSTRUCTION
AT NO TIME SHALL TRACK EQUIPMENT BE PERMITTED TO TRAVEL ON OR ACROSS PAVED ROADWAY SURFACES WITHOUT PROVIDING ADEQUATE PROTECTION BETWEEN THE TRACKS AND PAVED ROADWAY SURFACE. IF THE PAVED ROADWAY SURFACE IS DAMAGED BY FAILURE TO PROVIDE ADEQUATE PROTECTION BETWEEN THE TRACKS AND PAVED SURFACE, THE CONTRACTOR SHALL BE REQUIRED TO REPAIR THE PAVED SURFACE AT NO ADDITIONAL COST.

ALL SPRINKLER SYSTEMS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR. COST IS TO BE INCLUDED IN SPRINKLER RESTORATION ALLOWANCE.

DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.

NO WORK SHALL BE PERFORMED BEFORE 7:00 AM OR AFTER 7:00 PM MONDAY THROUGH FRIDAY. NO WORK SHALL HAPPEN ON SATURDAYS, SUNDAYS, OR UNIVERSITY HOLIDAYS UNLESS AUTHORIZED BY THE ENGINEER AND OWNER WITH AT LEAST 48 HOURS NOTICE PRIOR.

CONTRACTOR SHALL NOTIFY THE ENGINEER 72 HOURS PRIOR TO START OF CONSTRUCTION, CONSTRUCTION STAKING AND INSPECTION.

CONTRACTOR TO PROVIDE DUST CONTROL AND SWEEP ADJACENT ROADS OR SIDEWALKS DAILY, OR SEVERAL TIMES A DAY, SHOULD CONDITIONS REQUIRE.

ALL EXCAVATED MATERIAL NOT DESIGNATED FOR REUSE SHALL BE REMOVED FROM SITE AT TIME OF DISTURBANCE OR AS APPLICABLE. IF MATERIAL IS UNABLE TO BE REMOVED AT TIME OF DISTURBANCE, THE MATERIAL SHALL BE STOCKPILED ACCORDING TO THE SESC PLAN AND REMOVED PRIOR TO STORM EVENTS. THE CONTRACTOR IS RESPONSIBLE FOR DISPOSING MATERIALS ACCORDING TO LOCAL AND STATE REQUIREMENTS.

REMOVE PRIOR & RESTORE EXISTING FENCES, LANDSCAPING, AND OTHER STRUCTURES AS INDICATED ON THE PLANS. REMOVAL AND REINSTALLATION COSTS TO BE INCIDENTAL TO CONSTRUCTION AND THE COST FOR TO BE INCLUDED IN SITE CLEARING OR OTHER PAY ITEMS, PER CONTRACT DOCUMENTS.

OWNER WILL REMOVE ALL NECESSARY TREES PRIOR TO CONSTRUCTION. IN THE EVENT ADDITIONAL TREES OR SHRUBS NEED REMOVING, CONTRACTOR SHALL COORDINATE REMOVAL OF ALL TREES WITHIN THE LIMITS OF CONSTRUCTION WITH THE ENGINEER AND OWNER.

THE WORK REPRESENTED BY THIS DRAWING WAS DESIGNED BY THE ENGINEER FOR THIS SPECIFIC APPLICATION AND SPECIFIC LOCATION DESCRIBED HEREON IN ACCORDANCE WITH THE CONDITIONS PREVALENT AT THE TIME THE DESIGN WAS DONE. THE ENGINEER DOES NOT GUARANTEE AND WILL NOT BE LIABLE FOR ANY OTHER LOCATION, CONDITION, DESIGN OR PURPOSE.

PERMANENT SIGNS
ANY PERMANENT SIGNS OR STREET SIGNS REQUIRING RELOCATION DUE TO CONTRACTOR OPERATIONS SHALL BE SALVAGED AND RESET BY THE CONTRACTOR AT LOCATIONS DESIGNATED BY THE ENGINEER. SIGNS AND POSTS DAMAGED DURING THE REMOVAL AND STAGE OPERATIONS SHALL BE REPLACED WITH NEW SIGNS AND POSTS. COST FOR THIS ITEM OF WORK TO BE INCLUDED IN TRAFFIC CONTROL.

PAVEMENT REMOVAL
PAVEMENT/SIDEWALK REMOVAL AS SHOWN ON THE PLANS SHALL BE AT THE DISCRETION OF THE ENGINEER. IF IN HIS/HER JUDGEMENT, AREAS OF PAVEMENT MAY BE LEFT IN PLACE, OR ADDITIONAL AREAS ADDED, TO PROVIDE THE PROPER CROSS-SECTION AND BASE ADJUSTMENTS CAN BE MADE IN THE QUANTITIES.

UTILITIES
FOR THE PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 53, 1974, THE CONTRACTOR SHALL DIAL 1-800-482-7171 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

THE EXISTING UTILITIES ON THESE DRAWINGS HAVE BEEN SHOWN ACCORDING TO THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL FIELD LOCATE ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION AND SHALL NOTIFY THE ENGINEER AS TO WHERE POSSIBLE CONFLICT EXISTS. UTILITY INVESTIGATION FOR ALL UTILITIES SHOWN OR NOT SHOWN ON PLANS TO BE INCIDENTAL TO CONSTRUCTION.

ELECTRIC, GAS, AND COMMUNICATION UTILITIES LOCATED IN THE ROAD AND DRAIN RIGHT-OF-WAYS MUST BE LOCATED PRIOR TO EXCAVATION WORK AND ELEVATIONS MUST BE PROVIDED TO ENGINEER TO CONFIRM NO CONFLICTS EXIST PRIOR TO STORM SEWER INSTALLATION. CONTRACTOR SHALL NOTIFY THE ENGINEER AS TO WHERE POSSIBLE CONFLICTS EXIST.

ANY UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

ALL MANHOLE RIMS IN ROADWAYS AND DRIVES SHALL BE ADJUSTED PRIOR TO FINAL PAVING TO BE FLUSH WITH FINISHED GRADE. MANHOLE RIM ADJUSTMENT SHALL BE MADE AFTER THE BASE COURSE HAS BEEN PLACED AND BEFORE THE TOP COURSE IS INSTALLED.

GRADING AROUND MANHOLES/CATCHBASINS, FLARED END SECTIONS, AND OTHER STORM INLETS DETERMINED BY THE ENGINEER SHALL BE SMOOTH AND SHAPED TO PROVIDE POSITIVE DRAINAGE INTO THE INLETS. COST FOR THIS GRADING IDENTIFIED ON THE PLANS IS TO BE INCLUDED IN THE INSTALLATION COSTS OF THOSE VARIOUS ITEMS.

ALL MANHOLE TO PLASTIC PIPE CONNECTIONS SHALL BE MADE WITH KOR-N-SEAL BOOT OR ENGINEER APPROVED EQUAL.

ALL CORRUGATED METAL PIPE SHALL BE TYPE II ALUMINIZED UNLESS OTHERWISE NOTED.

ALL STORM SEWER ARE TO BE PREMIUM JOINT UNLESS OTHERWISE SPECIFIED.

ALL FLARED END SECTIONS ARE TO HAVE FACTORY SUPPLIED ANIMAL GUARD.

DEMOLISH EXISTING STRUCTURE(S) AND DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS. COST TO BE INCLUDED WITH THE ITEM BEING INSTALLED AS DIRECTED BY ENGINEER.

CONTRACTOR SHALL CONNECT ANY AND ALL FIELD TILE OUTLETS AND OTHER STORM LEADS TO PROPOSED STORM SEWER WITH PREMANUFACTURED TEES, WYES, GASKETS, SEALS, COUPLERS, BOOTS, ETC. COST IS TO BE INCLUDED IN UNIT BID PRICE FOR STORM SEWER INSTALLATION.

ALL UTILITY POLES IMPACTED DURING CONSTRUCTION SHALL BE SUPPORTED IF NECESSARY, PER THE SPECIFICATIONS OF THE INDIVIDUAL UTILITY COMPANY.

ALL UTILITIES ENCOUNTERED DURING CONSTRUCTION SHALL BE PROTECTED, PER REQUIREMENTS OF THE INDIVIDUAL UTILITY COMPANY.

TRAFFIC CONTROL
THE OWNER WILL BE SUPPLYING TRAFFIC AND PEDESTRIAN CONTROL.

PERMITS
PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED BY THE APPROPRIATE AGENCIES. ANY REQUIRED PERMITS ARE LISTED IN THE CONTRACT DOCUMENTS, SECTION 01010 - SUMMARY OF WORK.

CONSTRUCTION PROCEDURES SHALL CONFORM TO THE REQUIREMENTS OF THE APPROPRIATE PERMITTING AGENCIES.

PAVED SURFACES - ROADS, DRIVEWAYS, PATHS, AND SIDEWALKS
COORDINATE SIDEWALK CLOSURES WITH MSU A MINIMUM OF 48 HOURS IN ADVANCE.

ALL JOINTS AT INTERSECTION APPROACHES AND DRIVEWAYS SHALL BE SAW-CUT WITH BUTT-JOINTS UNLESS OTHERWISE NOTED. THE COST IS TO BE INCLUDED IN UNIT PRICE FOR ROAD AND DRIVEWAY REPAIR.

ALL DRIVING SURFACES ARE TO BE RESTORED TO IN-KIND DEPTH AND MATERIAL, UNLESS OTHERWISE SPECIFIED ON THE PLANS.

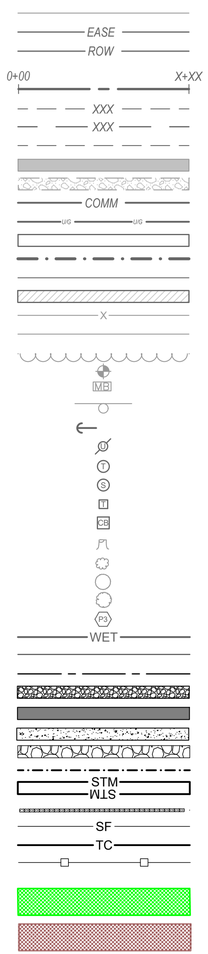
PROTECT ALL BITUMINOUS ROADS NOT SPECIFIED TO BE REMOVED DURING CONSTRUCTION. REPAIR ANY UNAUTHORIZED DAMAGE AT CONTRACTORS EXPENSE.

BROKEN CONCRETE AND DEBRIS SHALL BE CONSIDERED WASTE AND SHALL BE DISPOSED OF BY THE CONTRACTOR OFF SITE. COST OF WORK CONSIDERED INCIDENTAL TO CONSTRUCTION.

EXCAVATION SUPPORT AND SLOPES
TEMPORARY EARTH SLOPES SHALL MEET ALL OSHA REQUIREMENTS.

EXCAVATIONS SHALL BE CONSTRUCTED, SHORED, AND BRACED IN STRICT ACCORDANCE WITH CURRENT OSHA REQUIREMENTS. SITE SAFETY AND CONFORMANCE WITH OSHA REQUIREMENTS SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

THE GENERAL CONTRACTOR SHALL NOT STOCKPILE EXCAVATED MATERIALS OR EQUIPMENT IMMEDIATELY ADJACENT TO THE EXCAVATION WALLS OR SLOPES. ALL SUCH MATERIAL SHALL BE KEPT BACK FROM THE TOP OF THE EXCAVATION A MINIMUM DISTANCE EQUAL TO THE EXCAVATION DEPTH. WHERE EQUIPMENT OR MATERIALS MUST BE PLACED IMMEDIATELY ADJACENT TO THE EXCAVATION WALL, THE EXCAVATION WALLS SHALL BE DESIGNED FOR THE ANTICIPATED SURCHARGE LOADING, OR ADDITIONAL BRACING MUST BE PROVIDED TO SUPPORT THE ANTICIPATED SURCHARGE LOADING.



PROPERTY LINE
EASEMENT
ROAD RIGHT OF WAY
STATIONING ALIGNMENT
CONTOUR INTERVAL (1 FOOT)
INDEX CONTOUR INTERVAL (5 FOOT)
EXISTING GROUND SURFACE - PROFILE VIEW
EXISTING ASPHALT PAVEMENT
EXISTING GRAVEL SURFACE
EXISTING COMMUNICATION LINE
EXISTING GAS LINE
EXISTING STORM SEWER - PLAN & PROFILE VIEW
EXISTING PRESSURE PIPE - PLAN VIEW
EXISTING SANITARY FORCE MAIN PLAN VIEW
EXISTING SANITARY FORCE MAIN PROFILE VIEW
EXISTING FENCE
EXISTING BUILDING OUTLINE
EXISTING TREELINE/BRUSHLINE
EXISTING BENCHMARK
EXISTING MAILBOX
EXISTING SIGN
EXISTING GUY WIRE
EXISTING UTILITY POLE
EXISTING TELEPHONE MANHOLE
EXISTING SANITARY MANHOLE
EXISTING TELEPHONE/FIBER OPTIC PEDESTAL
EXISTING CATCH BASIN
STUMP
BUSH/SHRUB
DECIDUOUS TREE
CONIFEROUS TREE
PROPERTY OWNER ID
DELINEATED WETLAND BOUNDARY
APPROX. WATERS EDGE
PROPOSED GROUND SURFACE - PROFILE VIEW
PROPOSED GRAVEL RESTORATION
PROPOSED HMA PAVEMENT RESTORATION
PROPOSED CONCRETE RESTORATION
PROPOSED RIPRAP
PROPOSED GEOTEXTILE FABRIC
PROPOSED STORM SEWER - PLAN & PROFILE VIEW
PROPOSED STRAW WATTLE
PROPOSED SILT FENCE
PROPOSED TURBIDITY CURTAIN
PROPOSED IRON PEDESTRIAN FENCE
PROPOSED GRASS RESTORATION
PROPOSED RIVERBANK RESTORATION

ABBREVIATIONS

ABUT	ABUTMENTS	HWY	HIGHWAY
AGG	AGGREGATE	HYD	HYDRANT
ASPH	ASPHALT	IE	INVERT ELEVATION
B TO B	BACK TO BACK	IGLD	INTERNATIONAL GREAT LAKES DATUM
BM	BENCH MARK	IL	INLET
BS	BACKSLOPE	IN	INCH
B/C	BACK OF CURB	INSP	INSPECTION
BIT	BITUMINOUS	INTER	INTERSECTION
BR	BRIDGE	LB	POUND
CL	CENTERLINE	LEVCSE	LEVEL COURSE
C&G	CURB & GUTTER	LFT	LINEAL FEET
CB	CATCH BASIN	LLV	LONG LEGNTH VERTICAL
CI	CAST IRON PIPE	LSUM	LUMP SUM
CO	SANITARY SEWER CLEANOUT	LWL	LOW WATER LEVEL
CSP	CORRUGATED STEEL PIPE	MH	MANHOLE
C-C	CENTER TO CENTER	MAINT	MAINTENANCE
CEN	CENTER	MGD	MILLION GALLONS PER DAY
CIP	COMPACTED IN PLACE	MON	MONUMENT
CMP	CORRUGATED METAL PIPE	NGVD	NATIONAL GEODETIC VERTICAL DATUM
CNTY	COUNTY	OC	ON CENTER
COMB	COMBINED	OF	OVERFLOW
COMP	COMPACTED	OH	OVERHEAD
CONC	CONCRETE	PL	PROPERTY LINE
CONST	CONSTRUCT	PP	POWER POLE
COR	CORNER	PAVT	PAVEMENT
CORR	CORRUGATED	PROJ	PROJECT
CR	CREEK	PPTY	PROPERTY
CTE	CONNECT TO EXISTING	PROP	PROPOSED
CULV	CULVERT	RB	ROUND BOTTOM
CYD	CUBIC YARDS	RR	RAILROAD
CS&B	CURB STOP AND BOX	RCP	REINFORCED CONCRETE PIPE
DIP	DUCTILE IRON PIPE	RDY	ROADWAY
DEFL	DEFLECTION	REINF	REINFORCING OR REINFORCEMENT
DET	DETAIL	ROW	RIGHT OF WAY
DR	DRIVE	SG	SUBGRADE
DWY	DRIVEWAY	SW	SIDEWALK
EG	EARTHGRADE	SALV	SALVAGED
EGL	ENERGY GRADE LINE	SAN	SANITARY SEWER
EL	ELEVATION	SXN	SECTION
ELEC	ELECTRIC	SEC	SECTION (LAND SURVEY)
ELEV	ELEVATION	SEW	SEWER
EMB	EMBANKMENT	SFT	SQUARE FEET
ENC	ENCASED	SHLD	SHOULDER
ENG	ENGINEER	SIG	SIGNAL
EX	EXISTING	SPC	SPECIAL
EXC	EXCAVATION	SPEC	SPECIFICATIONS
EXIST	EXISTING	SPECPROV	SPECIAL PROVISIONS
EXP	EXPANSION	STDSPEC	STANDARD SPECIFICATIONS
FL	FLOW LINE	STM	STORM SEWER
FM	FORCE MAIN	SUB	SUBBASE
F/C	FACE CURB	SURF	SURFACE
F-F	FACE TO FACE OF CURB	SYD	SQUARE YARDS
FL	FLOOR	TCSE	TOP COURSE
FT	FOOT/FEET	TDH	TOTAL DYNAMIC HEAD
FTG	FOOTING	TRANS	TRANSMISSION
GDE	GRADE	TWP	TOWNSHIP
GR	GUARD RAIL	TYP	TYPICAL
GAL	GALLONS	UG	UNDERGROUND
GPD	GALLONS PER DAY	UNIF	UNIFORM
GPM	GALLONS PER MINUTE	VFT	VERTICAL FEET
HDW	HEADWALL	VCP	VITRIFIED CLAY PIPE
HGL	HYDRAULIC GRADE LINE	WM	WATER MAIN
HWL	HIGH WATER LEVEL	WS	WATER SERVICE

PROJECT CONTACTS

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PROJECT DATUM

HORIZONTAL:	STATE PLANE SOUTH 1983 (NAD83) - US SURVEY FOOT
VERTICAL:	NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)
SURVEY DATA	2024-2025

Infrastructure Planning and Facilities

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0 1"
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ARCH.	N/A
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NOTES & LEGEND

2

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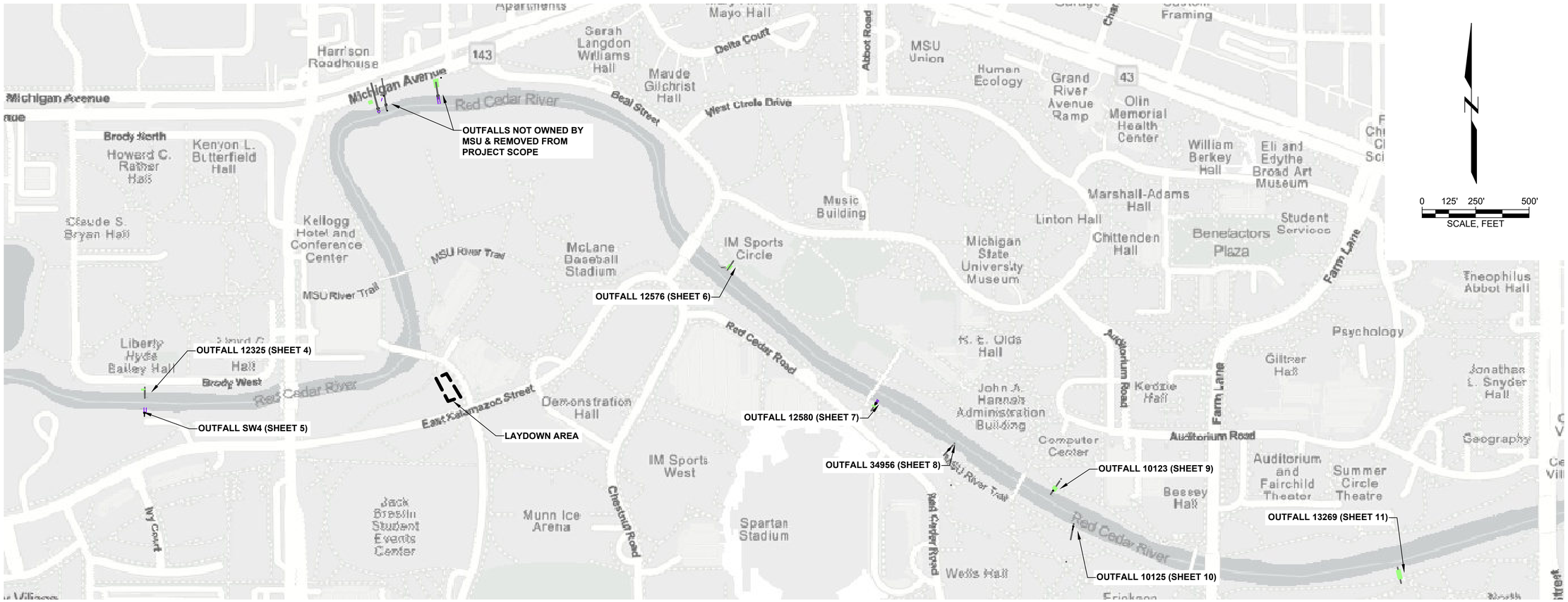

PROJECT LAYDOWN AREA
SCALE: 1" = 30'

HEADWALL SIZE ASSUMPTIONS

OUTLET #	TOP ELEV	INV ELEV	LENGTH (FT)	*HEIGHT (FT)	TOP WIDTH (FT)	BOTTOM WIDTH (FT)	VOLUME (CYD)	WEIGHT (TONS)
12325	826	821.5	11	7.5	1	2	4.6	9.2
SW4	824.75	821	11	6.8	1.25	1.25	3.4	6.9
12576	829.6	824.2	8	8.4	1	3.5	5.6	11.2
12580	828.5	822	8	9.5	1	3.5	6.3	12.7
34956	828.3	825.5	6	5.8	1	2.5	2.3	4.6
10123	830.3	827.5	4	5.8	1	2	1.3	2.6
10125	831.3	828.3	3	6.0	1	1.5	0.8	1.7
13269	830.5	826.5	8	7.0	2	4	6.3	12.6
*ASSUMES 3' DEPTH BELOW INV AS HEADWALL BOTTOM						**Total:**	**30.6**	**61.2**

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OVERVIEW

3

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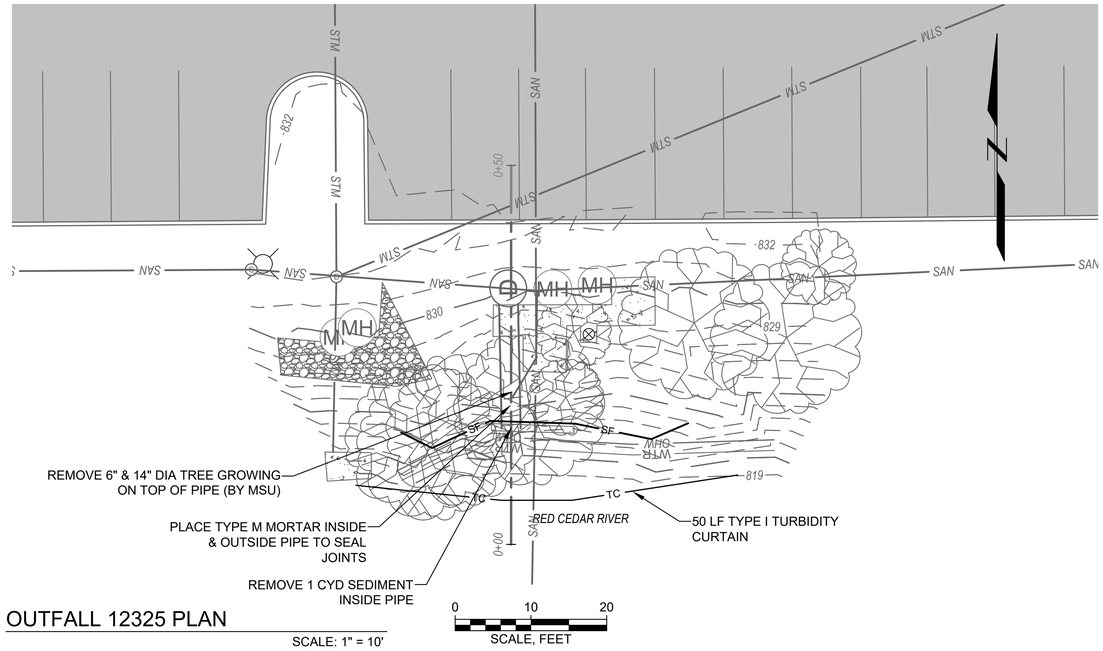
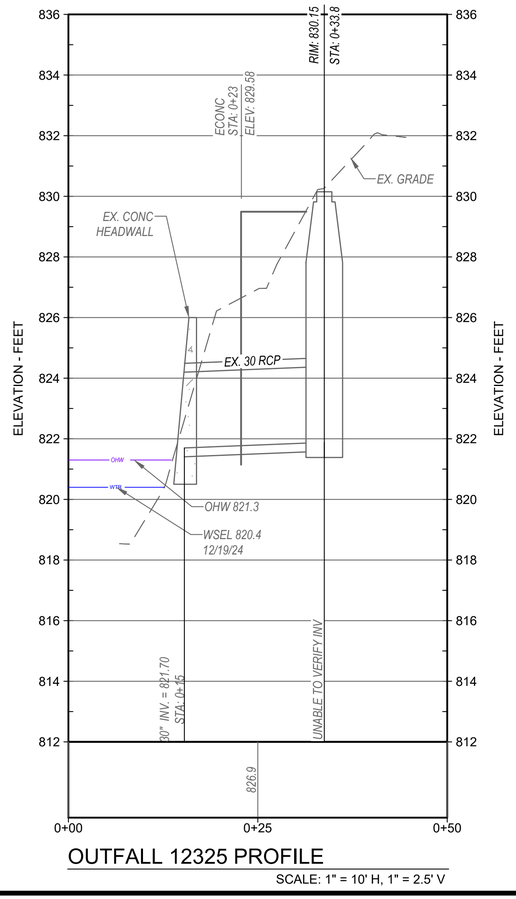


OUTFALL 12325 PLAN

SCALE: 1" = 10'

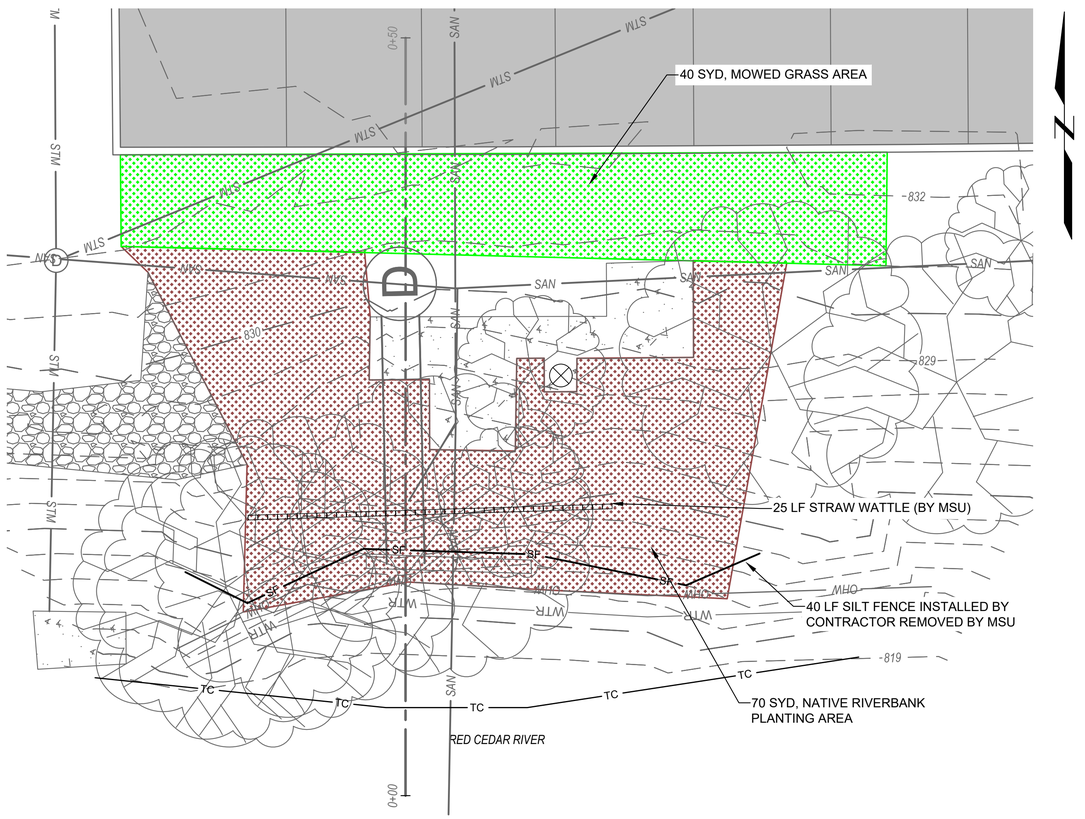
OUTFALL 12325 NOTES:

1. SURVEY INDICATED THIS OUTFALL IS NOT IN USE AND IS A COMBINED SEWER OVERFLOW.
2. OUTFALL ADJACENT TO SANITARY RIVER CROSSING.
3. SINKHOLE HAS FORMED 5' NORTH OF HEADWALL FROM OPEN PIPE JOINT.



OUTFALL 12325 PROFILE

SCALE: 1" = 10' H, 1" = 2.5' V



RESTORATION PLAN

SCALE: 1" = 5'

RESTORATION NOTES:

1. CONTRACTOR SHALL LOOSEN ANY COMPACTED SUBSOIL AND PLACE 6" OF TOPSOIL FOR ALL DISTURBED AREAS. CONTRACTOR SHALL INSTALL TOPSOIL AND PERFORM FINAL GRADING.
2. SEEDING, PLANTINGS, HYDROMULCH AND/OR STRAW BLANKET WILL BE PROVIDED AND INSTALLED BY MSU-LANDSCAPE SERVICES.
3. CONTRACTOR SHALL COORDINATE WITH MSU-LANDSCAPE SERVICES 3 DAYS PRIOR TO FINAL GRADING TAKING PLACE AT EACH OUTFALL.

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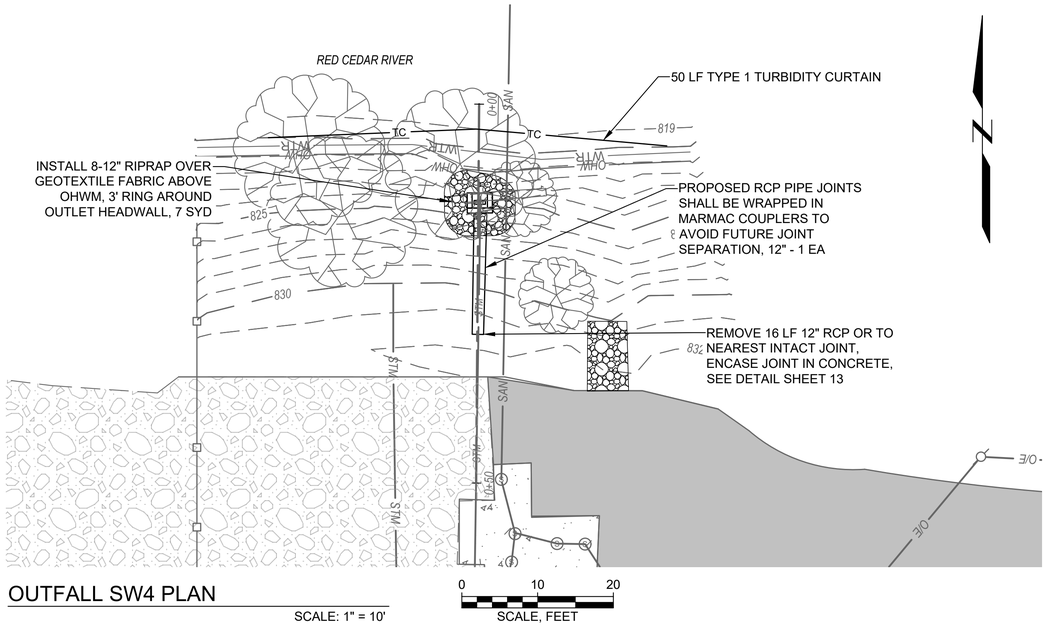
P&P - 12325

4

SMITH, KYLE B:\Working\MICHIGAN STATE UNIV\240911\8 Re-constructing Stormwater Outfalls on the Red Cedar River\00_CAD\Design\Sheets\P&P .dwg - 11/3/2026



OUTFALL SW4 PLAN

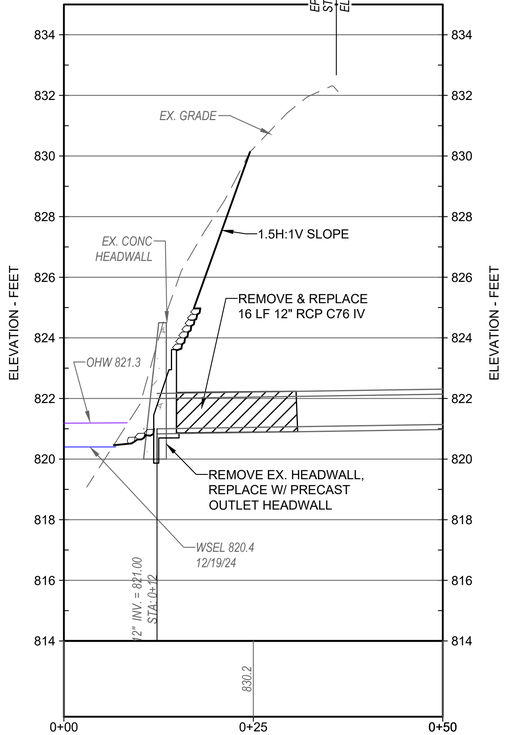
SCALE: 1" = 10'

0 10 20

SCALE, FEET

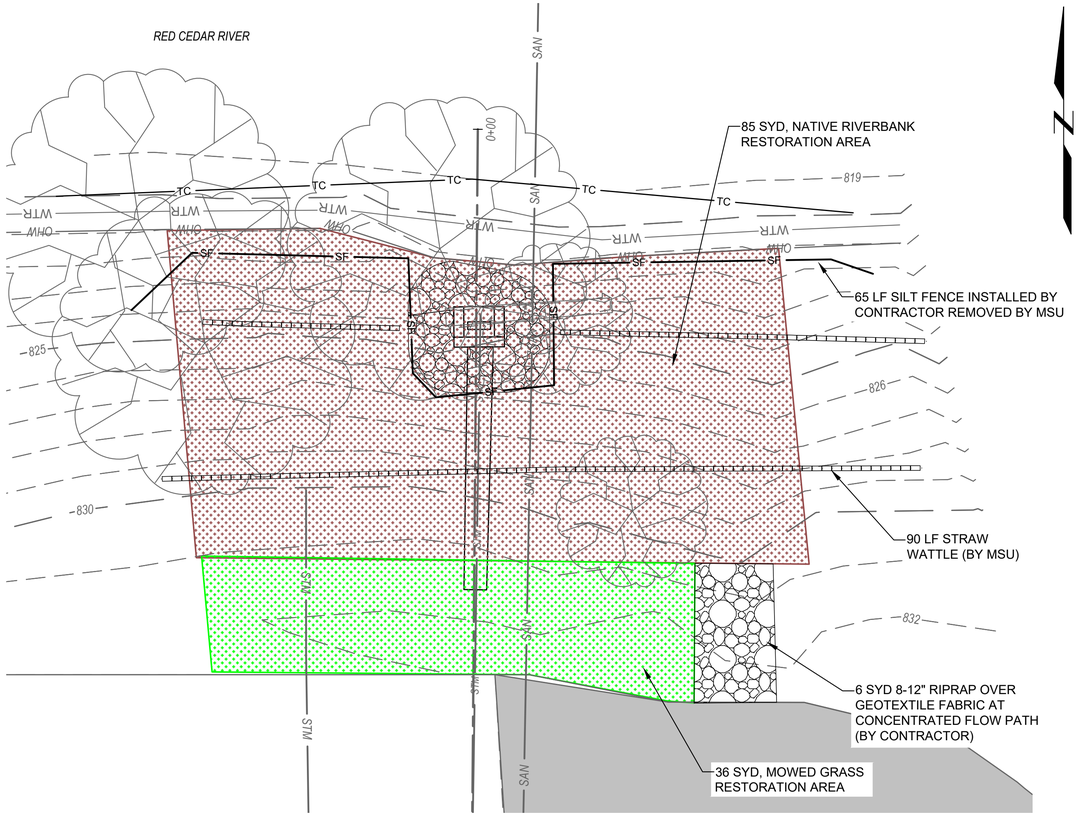
OUTFALL SW4 NOTES:

1. PIPE SEPARATION FOUND 3.5' BEYOND THE HEADWALL



OUTFALL SW4 PROFILE

SCALE: 1" = 10' H, 1" = 2.5' V



RESTORATION PLAN

SCALE: 1" = 5'

RESTORATION NOTES:

1. CONTRACTOR SHALL LOOSEN ANY COMPACTED SUBSOIL AND PLACE 6" OF TOPSOIL FOR ALL DISTURBED AREAS. CONTRACTOR SHALL INSTALL TOPSOIL AND PERFORM FINAL GRADING.
2. SEEDING, PLANTINGS, HYDROMULCH AND/OR STRAW BLANKET WILL BE PROVIDED AND INSTALLED BY MSU-LANDSCAPE SERVICES.
3. CONTRACTOR SHALL COORDINATE WITH MSU-LANDSCAPE SERVICES 3 DAYS PRIOR TO FINAL GRADING TAKING PLACE AT EACH OUTFALL.

Infrastructure Planning and Facilities

MICHIGAN STATE UNIVERSITY

STORM SEWER - RIVER OUTFALL STRUCTURAL REPAIRS

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

MSU PROJ. NO.
CP-21037

PR. MGR.	A. LINEBAUGH
ARCH.	N/A
MECH.	N/A
ELEC.	K. BEACH
CIVIL	T. OSMAN
L.A.	D. WILBER
INT. DES.	N/A
CONST. REP.	A. LINEBAUGH
APPR.	
DATE	
SCALE	AS SHOWN

NO.	DATE	ISSUE
4	02/052026	FOR BIDDING
3	11/6/2025	FINAL REVIEW
2	6/4/2025	60% EGLE REV
1	4/7/2025	60% REVIEW
0	3/3/2025	30% REVIEW

P&P - SW4

5

5 OF 15

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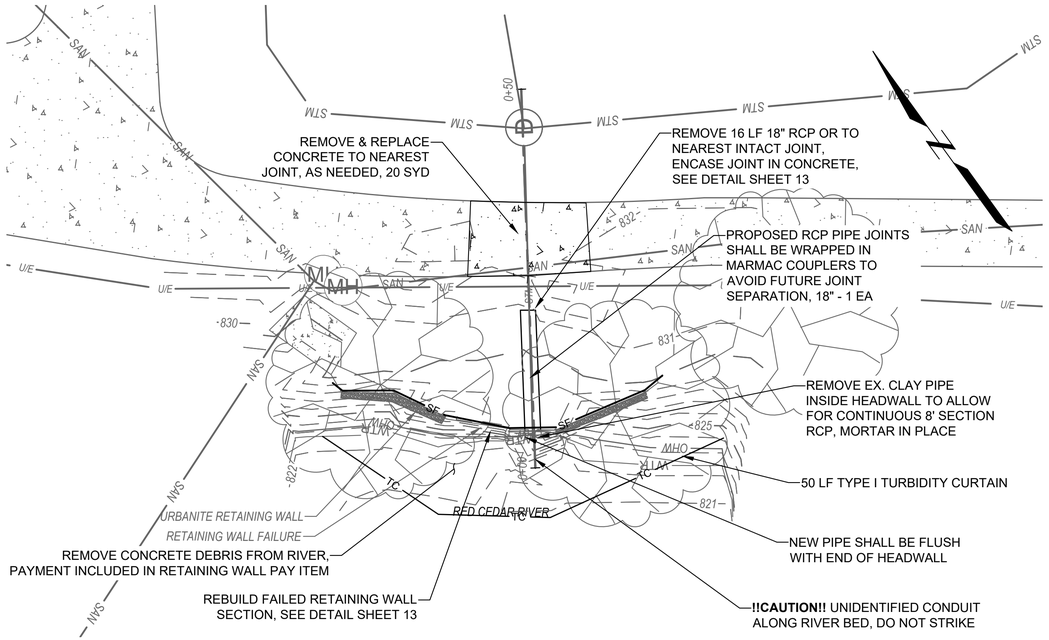


OUTFALL 12576 PLAN

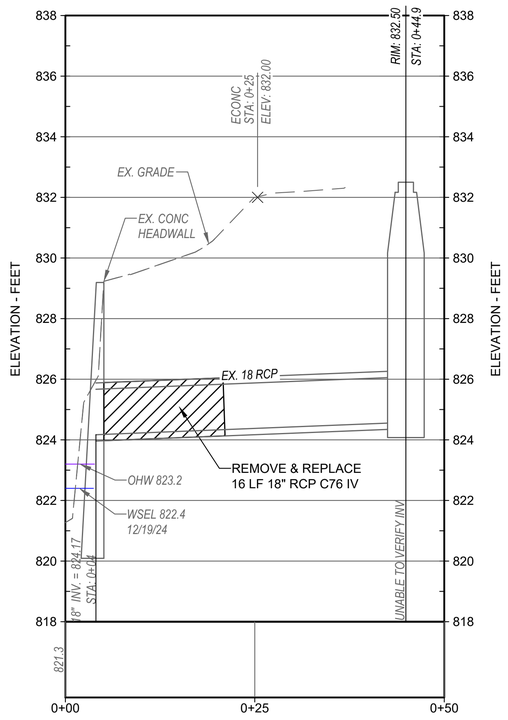
SCALE: 1" = 10'

0 10 20

SCALE, FEET

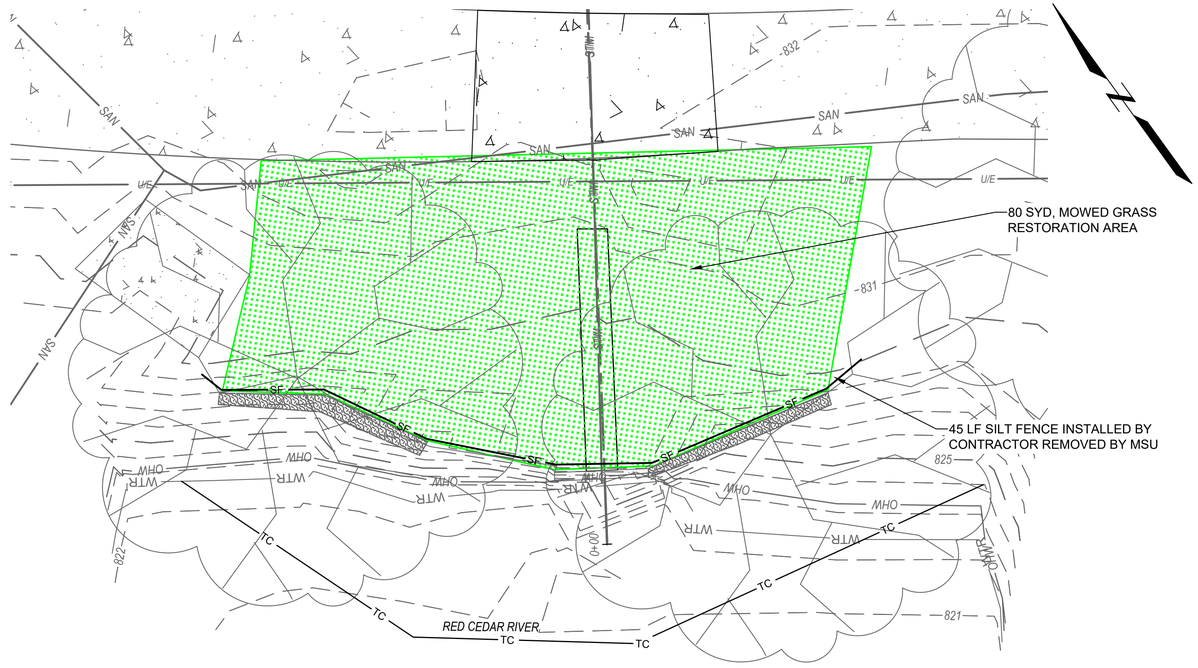
OUTFALL 12576 NOTES:

1. SIGNIFICANT RETAINING WALL FAILURE DOWNSTREAM OF HEADWALL. RETAINING WALL SECTIONS HAVE FALLEN INTO THE RIVER.
2. PIPE CONNECTION BETWEEN CLAY PIPE INSIDE HEADWALL AND RCP BEYOND HEADWALL HAS SEPARATED. RCP HAS SHIFTED DOWN APPROXIMATELY 6".



OUTFALL 12576 PROFILE

SCALE: 1" = 10' H, 1" = 2.5' V



RESTORATION PLAN

SCALE: 1" = 5'

RESTORATION NOTES:

1. CONTRACTOR SHALL LOOSEN ANY COMPACTED SUBSOIL AND PLACE 6" OF TOPSOIL FOR ALL DISTURBED AREAS. CONTRACTOR SHALL INSTALL TOPSOIL AND PERFORM FINAL GRADING.
2. SEEDING, PLANTINGS, HYDROMULCH AND/OR STRAW BLANKET WILL BE PROVIDED AND INSTALLED BY MSU-LANDSCAPE SERVICES.
3. CONTRACTOR SHALL COORDINATE WITH MSU-LANDSCAPE SERVICES 3 DAYS PRIOR TO FINAL GRADING TAKING PLACE AT EACH OUTFALL.

Infrastructure Planning and Facilities

MICHIGAN STATE UNIVERSITY

STORM SEWER - RIVER OUTFALL STRUCTURAL REPAIRS

Attention: 0 1"

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MSU PROJ. NO.
CP-21037

PR. MGR.	A. LINEBAUGH
ARCH.	N/A
MECH.	N/A
ELEC.	K. BEACH
CIVIL	T. OSMAN
L.A.	D. WILBER
INT. DES.	N/A
CONST. REP.	A. LINEBAUGH
APPR.	
DATE	
SCALE	AS SHOWN

NO.	DATE	ISSUE
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0	3/3/2025	30% REVIEW

P&P - 12576

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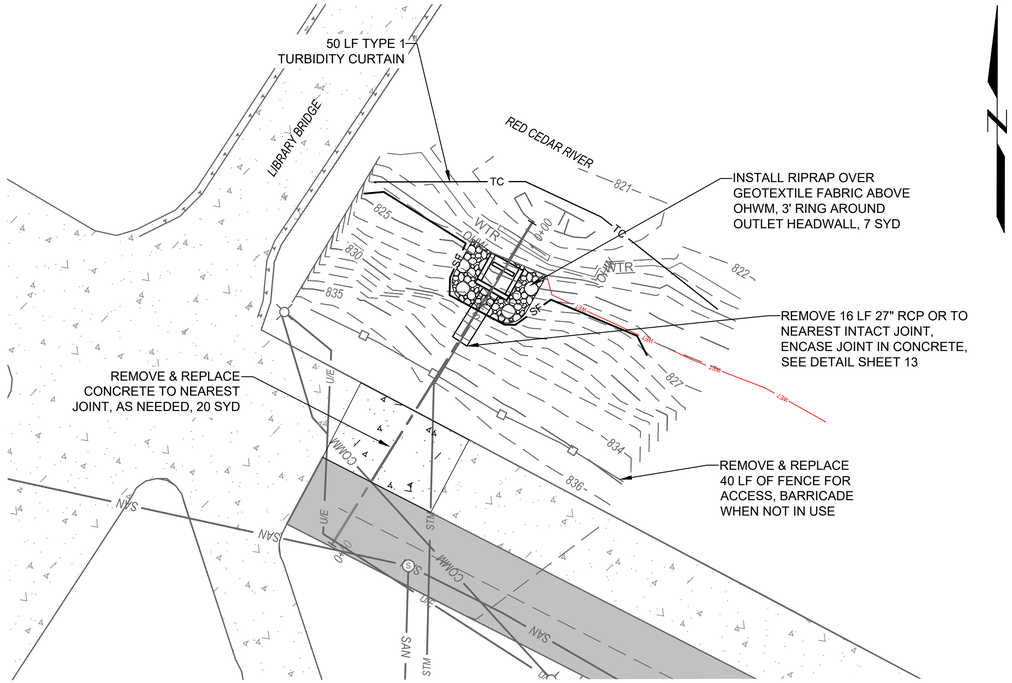


OUTFALL 12580 PLAN

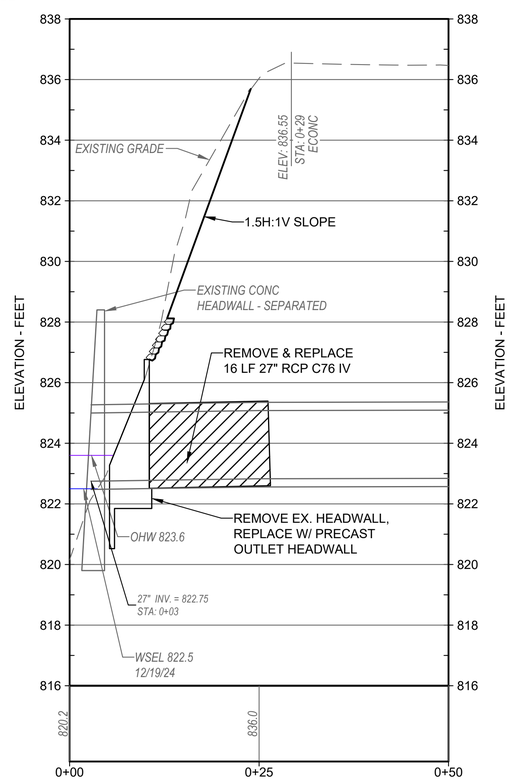
SCALE: 1" = 10'

0 10 20

SCALE, FEET

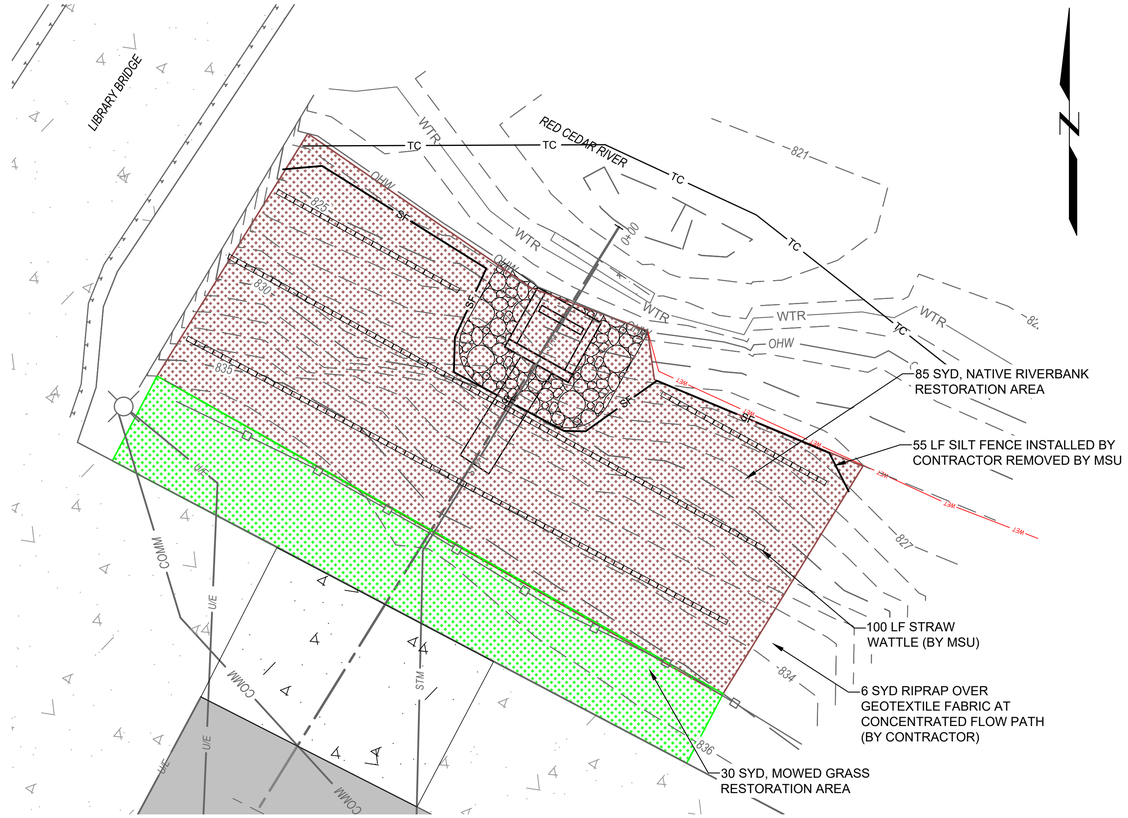
OUTFALL 12580 NOTES:

1. 27" RCP SEPARATED AT FIRST JOINT. HEADWALL IS LEANING TOWARDS THE RIVER.
2. SINKHOLE LOCATED ABOVE THE SECOND PIPE JOINT CAUSED BY JOINT SEPARATION.
3. TREES ON ADJACENT SLOPE HAVE PREVIOUSLY BEEN CLEARED.



OUTFALL 12580 PROFILE

SCALE: 1" = 10' H, 1" = 2.5' V



RESTORATION PLAN

SCALE: 1" = 5'

RESTORATION NOTES:

1. CONTRACTOR SHALL LOOSEN ANY COMPACTED SUBSOIL AND PLACE 6" OF TOPSOIL FOR ALL DISTURBED AREAS. CONTRACTOR SHALL INSTALL TOPSOIL AND PERFORM FINAL GRADING.
2. SEEDING, PLANTINGS, HYDROMULCH AND/OR STRAW BLANKET WILL BE PROVIDED AND INSTALLED BY MSU-LANDSCAPE SERVICES.
3. CONTRACTOR SHALL COORDINATE WITH MSU-LANDSCAPE SERVICES 3 DAYS PRIOR TO FINAL GRADING TAKING PLACE AT EACH OUTFALL.

MICHIGAN STATE UNIVERSITY
Infrastructure Planning and Facilities

STORM SEWER - RIVER OUTFALL STRUCTURAL REPAIRS

Attention:
0 1"
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MSU PROJ. NO.
CP-21037

PR. MGR.	A. LINEBAUGH
ARCH.	N/A
MECH.	N/A
ELEC.	K. BEACH
CIVIL	T. OSMAN
L.A.	D. WILBER
INT. DES.	N/A
CONST. REP.	A. LINEBAUGH
APPR.	
DATE	
SCALE	AS SHOWN

NO.	DATE	ISSUE
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0	3/3/2025	30% REVIEW

P&P - 12580

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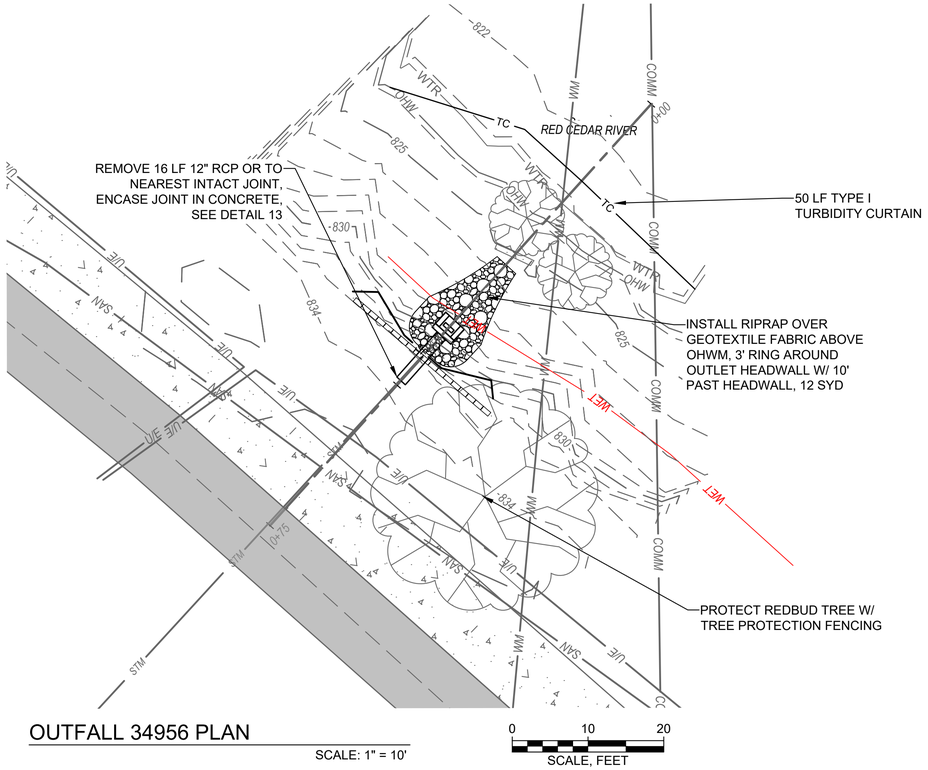
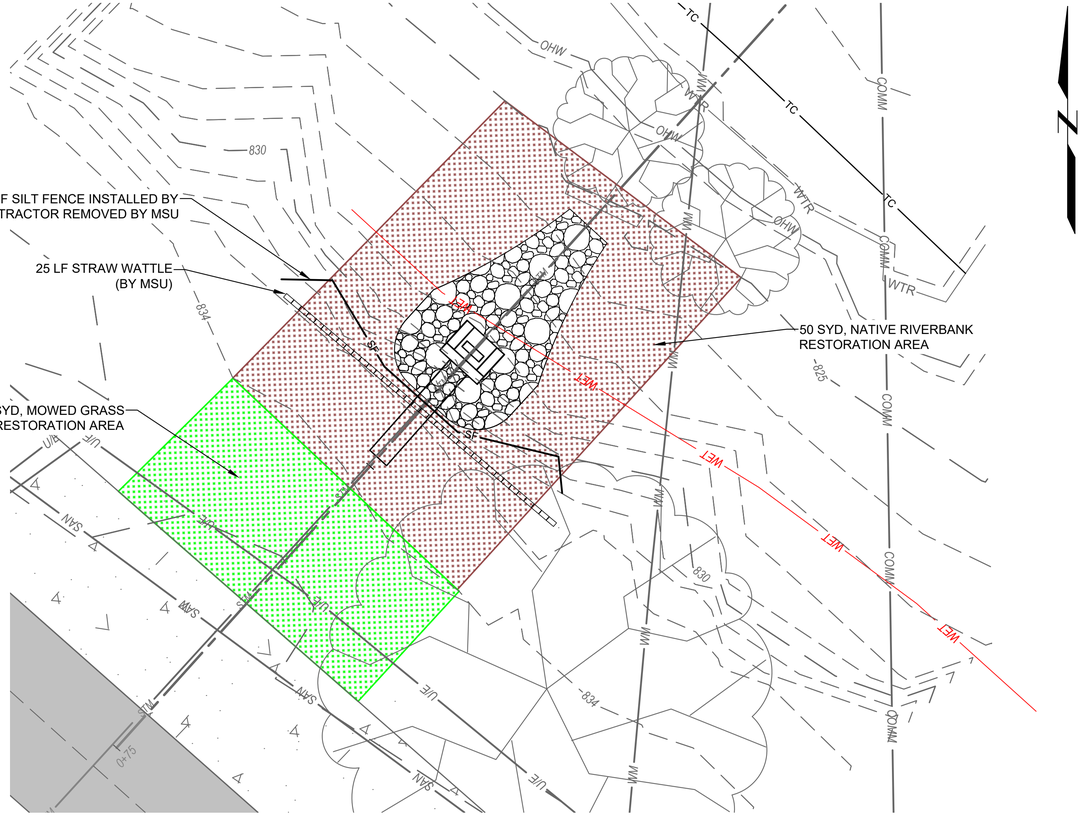


OUTFALL 34956 PLAN

SCALE: 1" = 10'

0 10 20

SCALE, FEET



RESTORATION PLAN

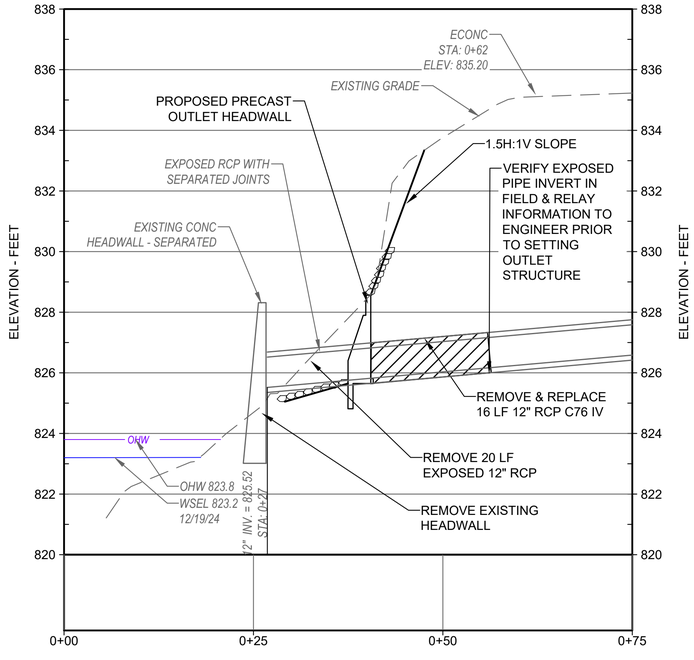
SCALE: 1" = 5'

RESTORATION NOTES:

1. CONTRACTOR SHALL LOOSEN ANY COMPACTED SUBSOIL AND PLACE 6" OF TOPSOIL FOR ALL DISTURBED AREAS. CONTRACTOR SHALL INSTALL TOPSOIL AND PERFORM FINAL GRADING.
2. SEEDING, PLANTINGS, HYDROMULCH AND/OR STRAW BLANKET WILL BE PROVIDED AND INSTALLED BY MSU-LANDSCAPE SERVICES.
3. CONTRACTOR SHALL COORDINATE WITH MSU-LANDSCAPE SERVICES 3 DAYS PRIOR TO FINAL GRADING TAKING PLACE AT EACH OUTFALL.

OUTFALL 34956 NOTES:

1. APPROXIMATELY 20' OF EXPOSED 12" RCP FROM HEADWALL TO SLOPE OF BANK. ALL EXPOSED PIPE HAS SEVERE JOINT SEPARATION.



OUTFALL 34956 PROFILE

SCALE: 1" = 10' H, 1" = 2.5' V

MICHIGAN STATE UNIVERSITY
Infrastructure Planning and Facilities

STORM SEWER - RIVER OUTFALL STRUCTURAL REPAIRS

Attention:
0 1"
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MSU PROJ. NO.
CP-21037

PR. MGR.	A. LINEBAUGH
ARCH.	N/A
MECH.	N/A
ELEC.	K. BEACH
CIVIL	T. OSMAN
L.A.	D. WILBER
INT. DES.	N/A
CONST. REP.	A. LINEBAUGH
APPR.	
DATE	
SCALE	AS SHOWN

NO.	DATE	ISSUE
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1	4/7/2025	60% REVIEW
0	3/3/2025	30% REVIEW

P&P - 34956

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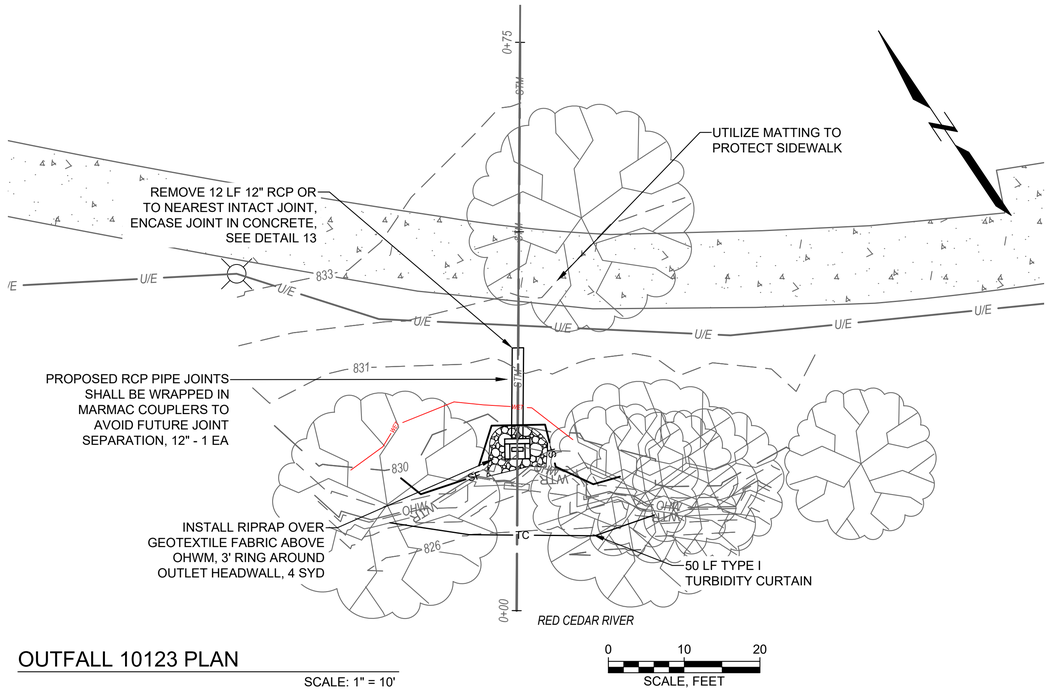
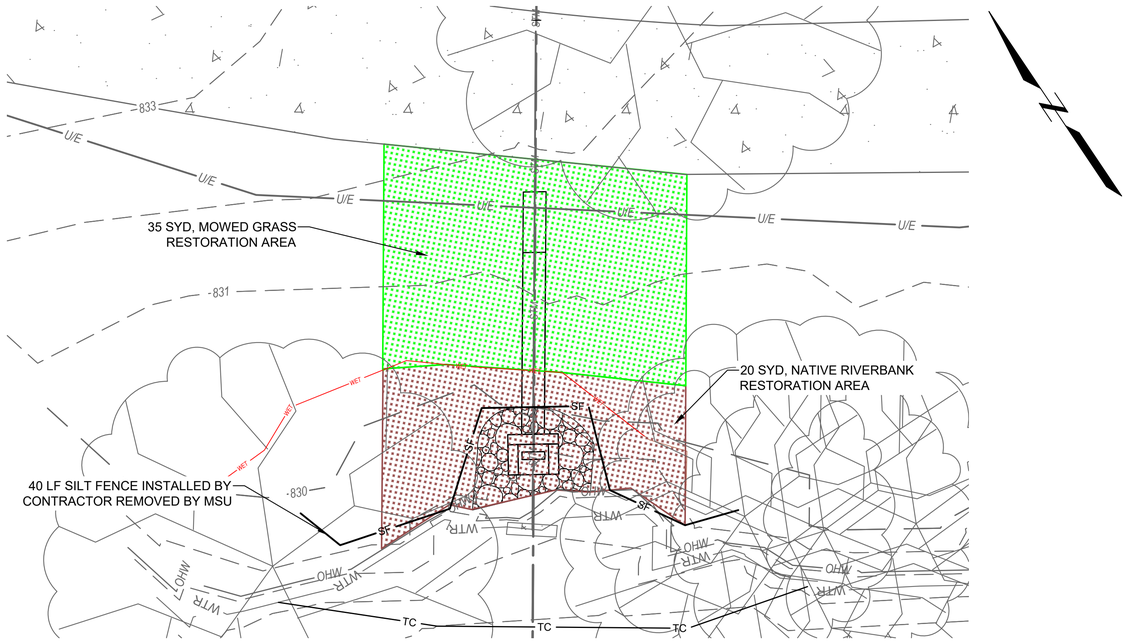


OUTFALL 10123 PLAN

SCALE: 1" = 10'



RESTORATION PLAN

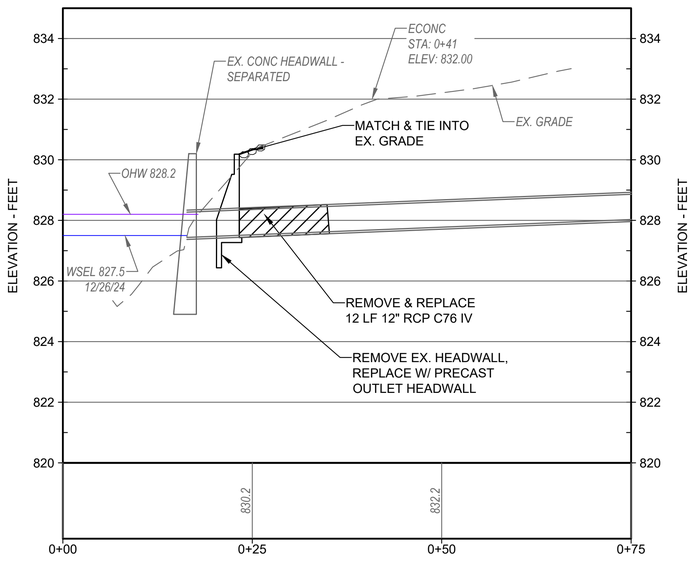
SCALE: 1" = 5'

RESTORATION NOTES:

1. CONTRACTOR SHALL LOOSEN ANY COMPACTED SUBSOIL AND PLACE 6" OF TOPSOIL FOR ALL DISTURBED AREAS. CONTRACTOR SHALL INSTALL TOPSOIL AND PERFORM FINAL GRADING.
2. SEEDING, PLANTINGS, HYDROMULCH AND/OR STRAW BLANKET WILL BE PROVIDED AND INSTALLED BY MSU-LANDSCAPE SERVICES.
3. CONTRACTOR SHALL COORDINATE WITH MSU-LANDSCAPE SERVICES 3 DAYS PRIOR TO FINAL GRADING TAKING PLACE AT EACH OUTFALL.

OUTFALL 10123 NOTES:

1. HEADWALL LEANING INTO RIVER. JOINT SEPARATION AT FIRST JOINT.



OUTFALL 10123 PROFILE

SCALE: 1" = 10' H, 1" = 2.5' V

Infrastructure Planning and Facilities

MICHIGAN STATE UNIVERSITY

STORM SEWER - RIVER OUTFALL STRUCTURAL REPAIRS

Attention:
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MSU PROJ. NO.
CP-21037

PR. MGR.	A. LINEBAUGH
ARCH.	N/A
MECH.	N/A
ELEC.	K. BEACH
CIVIL	T. OSMAN
L.A.	D. WILBER
INT. DES.	N/A
CONST. REP.	A. LINEBAUGH
APPR.	
DATE	
SCALE	AS SHOWN

NO.	DATE	ISSUE
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1	4/7/2025	60% REVIEW
0	3/3/2025	30% REVIEW

P&P - 10123

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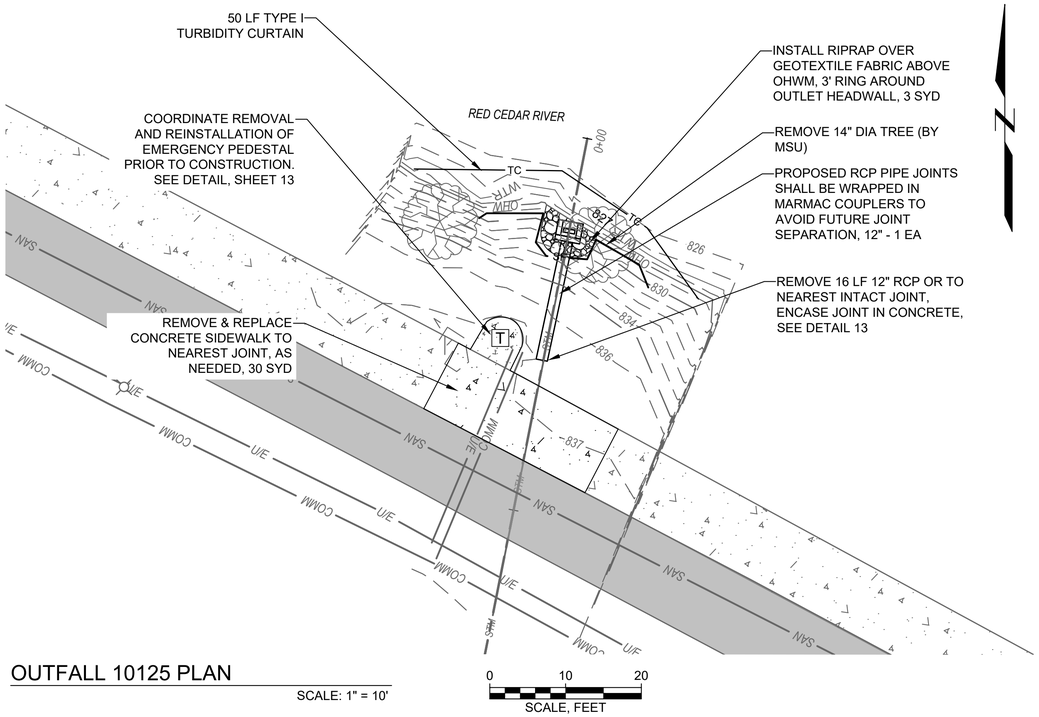
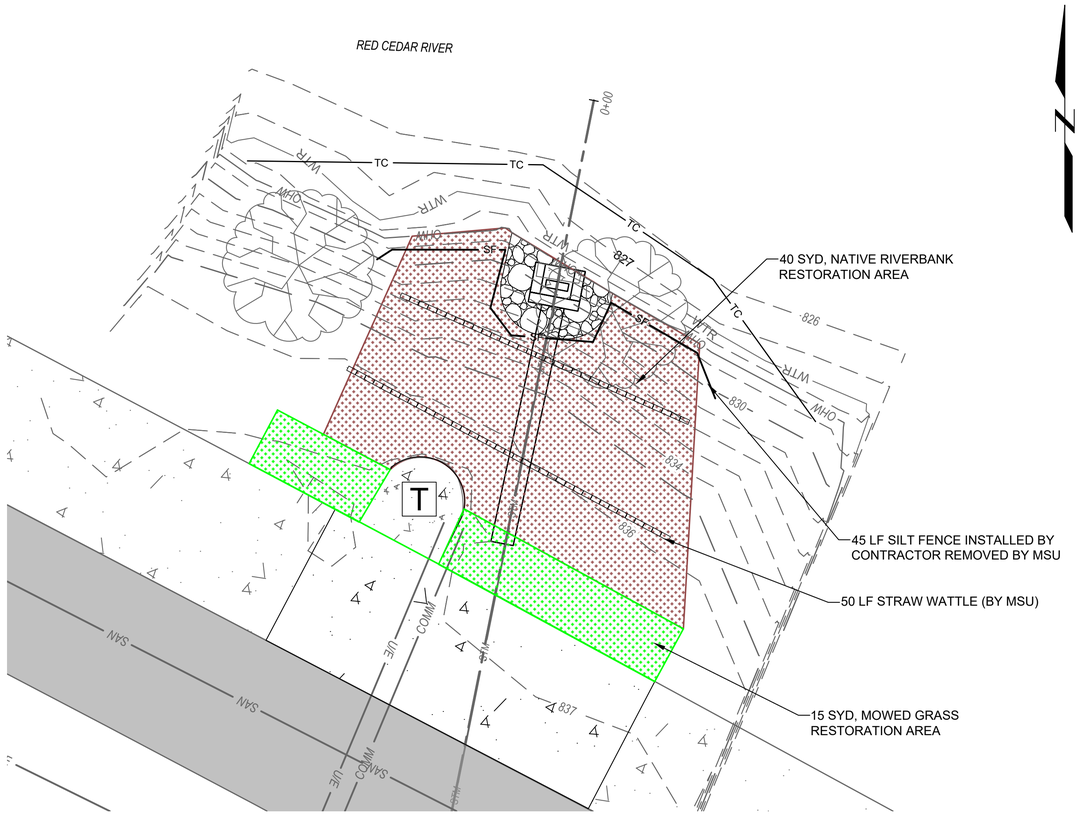


OUTFALL 10125 PLAN

SCALE: 1" = 10'



RESTORATION PLAN

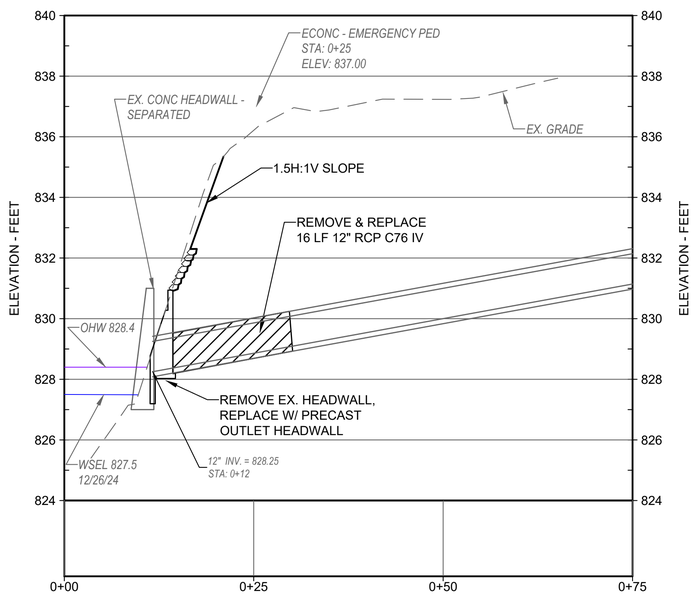
SCALE: 1" = 5'

RESTORATION NOTES:

1. CONTRACTOR SHALL LOOSEN ANY COMPACTED SUBSOIL AND PLACE 6" OF TOPSOIL FOR ALL DISTURBED AREAS. CONTRACTOR SHALL INSTALL TOPSOIL AND PERFORM FINAL GRADING.
2. SEEDING, PLANTINGS, HYDROMULCH AND/OR STRAW BLANKET WILL BE PROVIDED AND INSTALLED BY MSU-LANDSCAPE SERVICES.
3. CONTRACTOR SHALL COORDINATE WITH MSU-LANDSCAPE SERVICES 3 DAYS PRIOR TO FINAL GRADING TAKING PLACE AT EACH OUTFALL.

OUTFALL 10125 NOTES:

1. HEADWALL HAS FALLEN INTO RIVER.
2. FIRST TWO PIPES HAVE SEPARATED AT THEIR JOINTS.
3. EMERGENCY CONTACT STATION ADJACENT TO EXISTING HEADWALL OVER TOP STORM DRAIN.
4. SEVERE BANK EROSION UPSTREAM AND DOWNSTREAM OF OUTFALL.



OUTFALL 10125 PROFILE

SCALE: 1" = 10' H, 1" = 2.5' V

MICHIGAN STATE UNIVERSITY
Infrastructure Planning and Facilities

STORM SEWER - RIVER OUTFALL STRUCTURAL REPAIRS

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CP-21037

PR. MGR.	A. LINEBAUGH
ARCH.	N/A
MECH.	N/A
ELEC.	K. BEACH
CIVIL	T. OSMAN
L.A.	D. WILBER
INT. DES.	N/A
CONST. REP.	A. LINEBAUGH
APPR.	
DATE	
SCALE	AS SHOWN

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P&P - 10125

10

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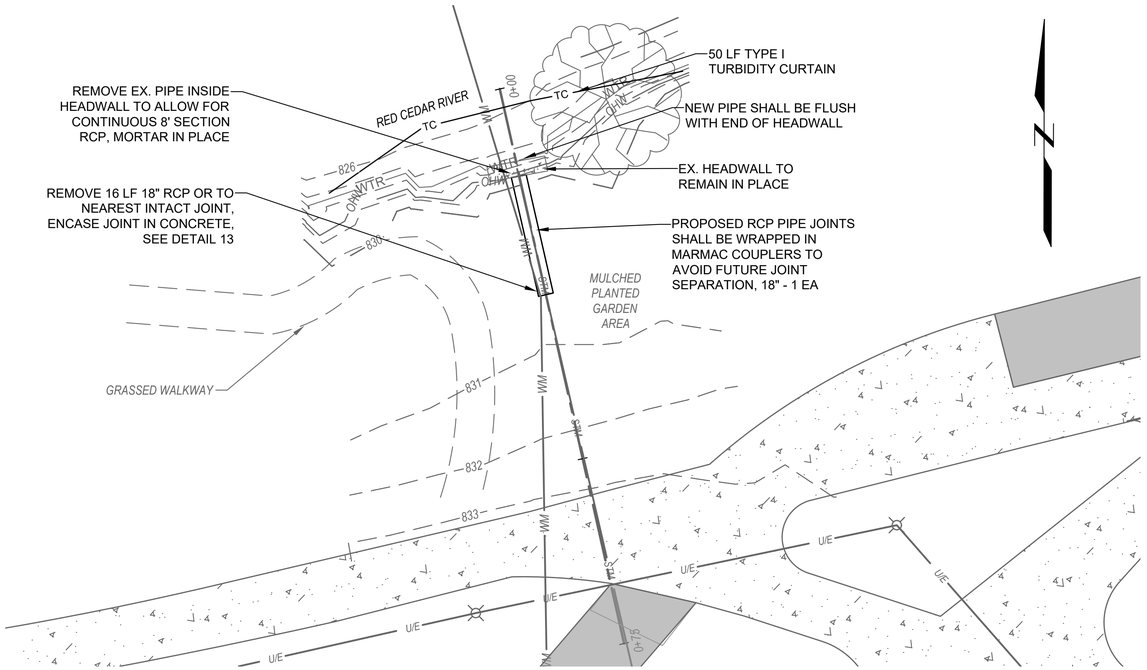


OUTFALL 13269 PLAN

SCALE: 1" = 10'

RESTORATION PLAN

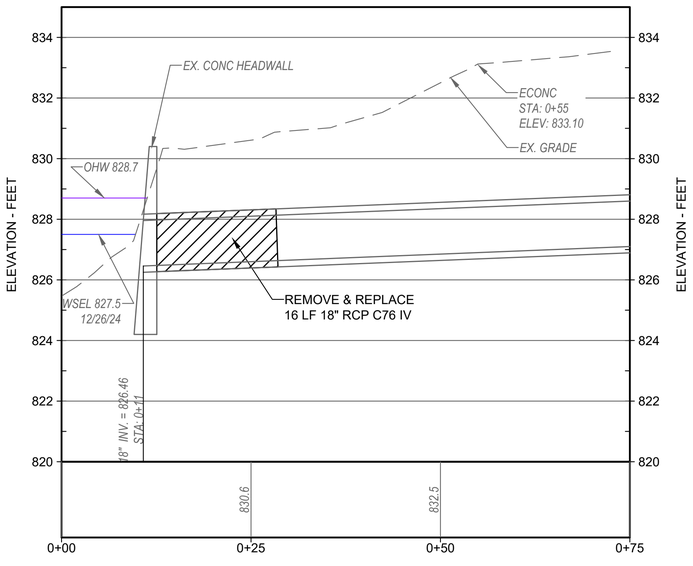
SCALE: 1" = 6'

RESTORATION NOTES:

1. CONTRACTOR SHALL LOOSEN ANY COMPACTED SUBSOIL AND PLACE 6" OF TOPSOIL FOR ALL DISTURBED AREAS. CONTRACTOR SHALL INSTALL TOPSOIL AND PERFORM FINAL GRADING.
2. SEEDING, PLANTINGS, HYDROMULCH AND/OR STRAW BLANKET WILL BE PROVIDED AND INSTALLED BY MSU-LANDSCAPE SERVICES.
3. CONTRACTOR SHALL COORDINATE WITH MSU-LANDSCAPE SERVICES 3 DAYS PRIOR TO FINAL GRADING TAKING PLACE AT EACH OUTFALL.

OUTFALL 13269 NOTES:

1. HEADWALL APPEARS TO BE IN GOOD CONDITION.
2. PIPE JOINTS HAVE SEPARATED UPLAND OF HEADWALL.
3. WATERMAIN RUNNING ADJACENT TO STORM DRAIN. DEPTH OF WATERMAIN UNKNOWN.



OUTFALL 13269 PROFILE

SCALE: 1" = 10' H, 1" = 2.5' V

MICHIGAN STATE UNIVERSITY
Infrastructure Planning and Facilities

STORM SEWER - RIVER OUTFALL STRUCTURAL REPAIRS

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MSU PROJ. NO.
CP-21037

PR. MGR.	A. LINEBAUGH
ARCH.	N/A
MECH.	N/A
ELEC.	K. BEACH
CIVIL	T. OSMAN
L.A.	D. WILBER
INT. DES.	N/A
CONST. REP.	A. LINEBAUGH
APPR.	
DATE	
SCALE	AS SHOWN

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P&P - 13269

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SOIL EROSION AND SEDIMENTATION CONTROL NOTES

1. TURBIDITY CURTAIN AND TEMPORARY MEASURES SHALL BE INSTALLED PRIOR TO OR UPON COMMENCEMENT OF EARTH CHANGE ACTIVITY. MEASURES SHALL ONLY BE PAID FOR ONCE.
2. THE CONTRACTOR SHALL CONFORM TO SOIL EROSION AND SEDIMENTATION CONTROL ACT, PART 91 OF ACT 451 OF 1994 AND MUST PROVIDE NOTICE TO THE CEA PRIOR TO THE START OF CONSTRUCTION.
3. ALL SOIL EROSION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED DAILY BY THE CONTRACTOR. THE CONTRACTOR SHALL INSPECT AFTER EACH RAIN EVENT TO ENSURE PROPER MAINTENANCE OF THE SOIL EROSION CONTROL MEASURES. ANY DEFICIENCIES OR REPAIRS TO SOIL EROSION CONTROL MEASURES ARE TO BE CORRECTED IMMEDIATELY.
4. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT MEASURES ARE INSTALLED IN COMPLIANCE WITH THE MANUFACTURERS RECOMMENDATIONS, AND THE PLANS. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THE SESC MEASURES ARE MONITORED AND MAINTAINED UNTIL ALL DISTURBED AREAS ARE STABILIZED AND TEMPORARY MEASURES ARE REMOVED. THE CONTRACTOR ACKNOWLEDGES THAT SESC MEASURES MAY NEED TO BE ADAPTED, ADJUSTED, OR ADDED BASED ON SITE CONDITIONS IN ORDER TO REMAIN IN COMPLIANCE WITH PART 91 REQUIREMENTS.
3. THE CONTRACTOR SHALL INSTALL SILT FENCE WITHIN 48 HOURS OF FINAL GRADE IN ANY AREA (GRADE LISTED ON PLANS) UNLESS SPECIFIED OTHERWISE BY ENGINEER.
4. WEEKLY INSPECTIONS OF SEEDED AREAS SHALL BE COMPLETED TO VERIFY GRASS GROWTH. ANY AREAS NOT ESTABLISHED SHALL BE FERTILIZED, SOILS AMENDED AND RE-SEEDED AS NECESSARY BY OWNER.
5. THE OWNER SHALL REMOVE TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES WITHIN 45 DAYS AFTER PERMANENT SOIL EROSION MEASURES ARE IN PLACE AND THE AREA IS STABILIZED ("STABILIZED" MEANS THE ESTABLISHMENT OF VEGETATION OR THE PROPER PLACEMENT, GRADING, OR COVERING OF SOIL TO ENSURE ITS RESISTANCE TO SOIL EROSION, SLIDING, OR OTHER EARTH MOVEMENT).
6. REMOVAL OF TEMPORARY MEASURES IS THE RESPONSIBILITY OF THE OWNER.
7. THE CONTRACTOR IS RESPONSIBLE FOR CLEANUP & RESTORATION INCLUDING PROGRESS CLEANING. PROGRESS CLEANING INCLUDES BUT IS NOT LIMITED TO REMOVAL OF WASTE MATERIALS, DEBRIS, RUBBISH, AND EXCESS SPOILS, COMPLETE LEVELING AND DAMAGE RESTORATION AT REGULAR INTERVALS DURING CONSTRUCTION.
8. SEDIMENTS CAUSED BY ACCELERATED SOIL EROSION SHALL BE REMOVED FROM RUNOFF WATER BEFORE IT LEAVES THE SITE OF THE EARTH CHANGE.
9. PLACE TURF ESTABLISHMENT ITEMS AS SOON AS POSSIBLE ON POTENTIAL ERODABLE SLOPES AS DIRECTED BY THE ENGINEER. CRITICAL DITCH GRADES SHALL BE PROTECTED WITH SOD OR SEED/MULCH OR MULCH BLANKET AS DIRECTED BY THE ENGINEER.
10. IF NECESSARY A TEMPORARY CONTROL MEASURE SHALL BE DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF WATER AROUND, THROUGH OR FROM THE EARTH CHANGE AREA TO LIMIT WATER FLOW TO A NON-EROSIVE VELOCITY.
11. MAINTAIN ON SITE OR HAVE READILY AVAILABLE SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS TO CONTAIN AND CLEAN UP FUEL OR CHEMICAL SPILLS AND LEAKS. NO SPILLED CHEMICALS OR PETROLEUM OR VEHICULAR FLUIDS ARE TO COME INTO CONTACT WITH DRAINAGE DITCHES, WETLAND OR WATERS OF THE STATE.
12. ALL SLOPES AND AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED AND FOUR INCHES OF TOPSOIL APPLIED. EXISTING TOPSOIL MAY BE USED FOR RESTORATION OF THIS ACTIVITY. ALL TOPSOIL SHALL BE PROVIDED BY THE OWNER.
13. THE CONTRACTOR WILL WATCH FOR WEATHER CHANGES THAT WILL CREATE EROSION CONDITIONS AND WILL APPLY EROSION CONTROL MEASURES BEFORE A STORM HITS THE SITE.
14. STOCKPILES OF MATERIALS SHALL BE COVERED AND PROTECTED IN A MANNER TO PREVENT SILTATION OF SURROUNDING SITE OR EROSION FROM OCCURRING ON THE STOCKPILE.
15. NO WORK THAT REQUIRES DEWATERING SHALL COMMENCE WITHOUT APPROVAL FROM THE ENGINEER.
16. THE CONTRACTOR IS RESPONSIBLE FOR THE SESC PERMIT AT ANY SPOIL DEPOSIT LOCATIONS. LOCATIONS MUST BE APPROVED BEFORE DEPOSITION.

MAINTENANCE PROGRAM FOR SESC MEASURES

SEEDING AND MULCHING

- INSPECT NEWLY SEEDED AND MULCHED AREAS SUBSEQUENT TO ANTICIPATED GERMINATION DATE AND AFTER EACH SIGNIFICANT RAINFALL EVENT THAT PRODUCES RUNOFF UNTIL AREAS ARE STABILIZED AND TO CHECK FOR MOVEMENT OR EROSION UNTIL AREAS ARE STABILIZED. IF WASHOUTS OR EROSION OCCUR, REPAIR THE SURFACE, RE-SEED AND RE-MULCH. CONTINUE INSPECTIONS AS NECESSARY UNTIL VEGETATION IS FIRMLY ESTABLISHED.
- REPAIR ERODED AREAS, APPLYING SUPPLEMENTAL SEED, MULCH, AND WATER AS NEEDED.
- IF SEED DOES NOT ESTABLISH, CONDUCT SOIL TESTS, AMEND SOILS AS NEEDED, AND REAPPLY SEED AND/OR MULCH DURING THE RECOMMENDED GROWING SEASON.
- TO ASSIST IN THE ESTABLISHMENT OF NATIVE SPECIES, REMOVE UNWANTED COMPETING VEGETATION IN THE FIRST YEAR.
- MOWING DURING ESTABLISHMENT CAN BE USED PERIODICALLY TO DISCOURAGE WEEDS.

PERIMETER SEDIMENT CONTROL MEASURES

- INSPECT SILT FENCE ROUTINELY TO ASSURE IT HAS NOT BEEN KNOCKED DOWN AND FOLLOWING A PRECIPATION EVENT THAT RESULTS IN RUNOFF. REMOVE ALL SEDIMENT WHEN IT REACHES 50 PERCENT OF ITS CAPACITY AND MAKE REPAIRS PROMPTLY.
- MAINTAIN UNTIL THE DISTURBED AREA IS COMPLETELY STABILIZED WITH AN EFFECTIVE VEGETATIVE COVER.
- REMOVE ACCUMULATED SEDIMENT AND SILT FENCE AND VEGETATE THE DISTURBED AREAS.
- REMOVE SILT FENCE WHEN PERMANENT SESC MEASURES ARE IN PLACE AND VEGETATION IS ESTABLISHED.

STORM DRAIN INLET PROTECTION

- INSPECT ROUTINELY AND FOLLOWING A PRECIPITATION EVENT THAT RESULTS IN RUNOFF UNTIL SEDIMENT FILTER IS REMOVED.
- ROUTINELY REMOVE SEDIMENT ACCUMULATION.
- REPAIR AND/OR REPLACE CONTROL MEASURES AS NEEDED.

SOIL BINDING POLYMERS

- APPLY EVERY TIME SEED IS PLACED
- VISUALLY INSPECT ALL AREAS WHERE THE POLYMER HAS BEEN APPLIED WITHOUT WALKING OR TRAVELING OVER THE AREA FOLLOWING EACH SIGNIFICANT PRECIPITATION OR WIND EVENT AND PRIOR TO EXPECTED EVENTS. REAPPLY IF SOIL AREAS INDICATED DISTURBANCE BY EROSIVE FORCES, OR IF DEEMED NECESSARY, REAPPLY IN CONJUNCTION WITH ADDITIONAL MANAGEMENT PRACTICES.
- REAPPLY IF TREATED AREA IS DISRUPTED OR SHOWS SIGNS OF DISTURBANCE FROM EROSION FORCES.

DEWATERING

DISCHARGE BAG DEWATERING (TYP)

- CHECK PUMP DISCHARGE BAG FOR ANY HOLES OR NOTICEABLE DETERIORATION.
- INSPECT DEWATERING DISCHARGE POINTS DAILY FOR SIGNS OF SCOUR AND EROSION.
- DEWATERING DISCHARGE POINT TO BE PLACED AT A LOCATION APPROVED BY ENGINEER.

TURBIDITY CURTAIN

- INSPECT CURTAIN DAILY AND MAKE REQUIRED ADJUSTMENTS TO ENSURE THAT ANCHORS, TIE-DOWNS, OR OTHER MECHANISMS ARE SUFFICIENTLY ISOLATING CONSTRUCTION ACTIVITIES FROM THE WATERBODY.

MAINTENANCE PROGRAM FOR SESC MEASURES

GENERAL MAINTENANCE

- TEMPORARY SESC MEASURES SHALL BE INSTALLED, MAINTAINED, AND REMOVED BY THE OWNER.
- TEMPORARY SESC MEASURES SHALL BE INSTALLED PRIOR TO OR UPON COMMENCEMENT OF ANY EARTH DISTURBANCE.
- TEMPORARY MEASURES MUST BE MAINTAINED AND IN PLACE UNTIL AREAS ARE PERMANENTLY STABILIZED.
- TEMPORARY SESC MEASURES SHALL BE REMOVED AT THE END OF THE PROJECT ONCE PERMANENT MEASURES ARE IN PLACE AND DISTURBED AREAS ARE STABILIZED.
- DAILY MAINTENANCE IS THE CONTRACTORS RESPONSIBILITY.

CONTINUED MAINTENANCE PLAN

- THE OWNER WILL MAINTAIN THE SITE FOLLOWING FINAL COMPLETION

PROXIMITY TO LAKES AND STREAMS

- EARTH CHANGE IS 0 FEET FROM RED CEDAR RIVER.

PROPOSED EARTH CHANGE

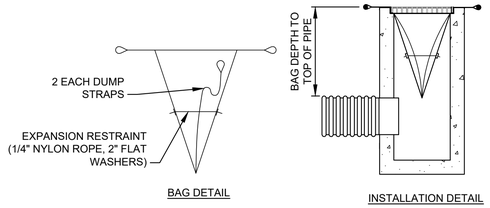
- EARTH CHANGE INCLUDES REPLACING FAILING OUTFALL STRUCTURES ALONG THE BANKS OF THE RED CEDAR RIVER. LANDS UPLAND OF THE EXISTING HEADWALLS WILL BE DISTURBED WITH MINIMAL DISTURBANCE BELOW THE OHWM.

LEGAL DESCRIPTION

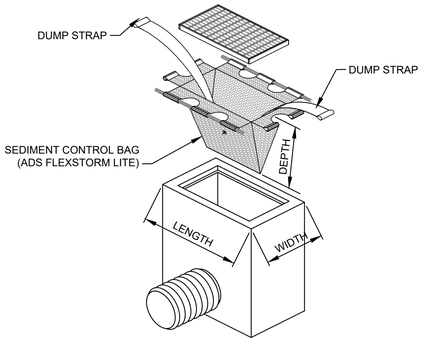
- PART OF SECTION 13 & 18, TOWN 4 NORTH, RANGE 2 WEST, INGHAM COUNTY, MI.

COMPLIANCE WITH PART 91 OF PA 451

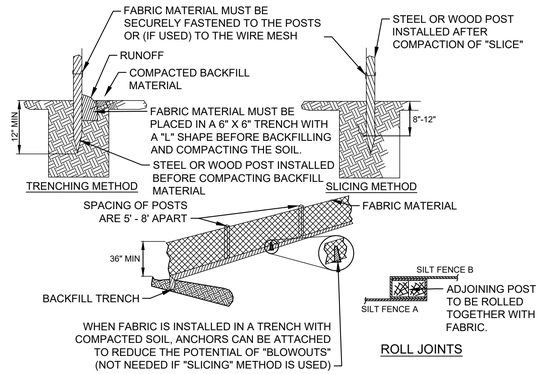
1. ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED WITH AN EARTH DISTURBANCE ACTIVITY SHALL BE PROVIDED A COPY OF THIS SOIL EROSION CONTROL PLAN AND STRICTLY ADHERE TO ITS REQUIREMENTS.
2. THE CONTRACTOR IS RESPONSIBLE TO INSTALL AND MAINTAIN APPLICABLE SOIL EROSION AND SEDIMENTATION CONTROL MEASURES IN ACCORDANCE WITH THE APPROVED PLANS PRIOR TO COMMENCEMENT OF CONSTRUCTION, MASS GRADING, OR STAGING WORK. THE CONTRACTOR SHALL CONFORM TO SOIL EROSION AND SEDIMENTATION CONTROL ACT, PART 91 OF ACT 451 OF 1994.
3. INSPECTION BY A CERTIFIED STORM WATER OPERATOR FOR CONSTRUCTION SITES WILL TAKE PLACE WEEKLY AND AFTER EACH RAINFALL EVENT THAT PRODUCES RUNOFF FROM THE SITE. PROPER DOCUMENTATION OF THE INSPECTIONS WILL BE MAINTAINED AS PER PART 91 OF PA 451 OF 1994.
4. RESPOND IMMEDIATELY TO STORMWATER OPERATOR AND/OR SOIL EROSION AND SEDIMENTATION CONTROL INSPECTOR CONCERNS. MAKE CORRECTIVE MEASURES AS REQUIRED IMMEDIATELY.
5. IF FOR ANY REASON THE OWNER IS FOUND TO BE IN VIOLATION OF PART 91 DUE TO CONTRACTOR'S NONCOMPLIANCE, THE CONTRACTOR AGREES TO PAY ALL FINES AND COSTS INCURRED BY THE OWNER INCLUDING ALL LEGAL COSTS IN THE DEFENSE OF THE OWNER.



BAG DETAIL — INSTALLATION DETAIL



SILT-SACK INLET PROTECTION
NOT TO SCALE



SILT FENCE DETAIL
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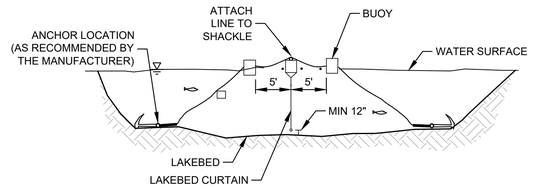

NOTES:
1. FLOATING TURBIDITY BARRIER CONSTRUCTION SHALL CONFORM WITH RELEVANT LOCAL AND STATE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL.
2. FLOATING TURBIDITY BARRIER WILL BE INSPECTED AND MAINTAINED DAILY.

TURBIDITY CURTAIN
SCALE: NTS

SESC SCHEDULE

DISTURBANCE/MEASURE	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11	WEEK 12	WEEK 13	WEEK 14	WEEK 15
INSTALL AND MAINTAIN TEMPORARY SESC MEASURES															
OUTFALL REPLACEMENTS															
RESTORATION															
REMOVE TEMPORARY CONTROL MEASURES															

NOTES:
1. SCHEDULE IS TENTATIVE AND SUBJECT TO CHANGE UNTIL CONTRACTOR SUBMITS APPROVED SCHEDULE
2. CONSTRUCTION START DATE = MAY 4TH, 2026
3. SUBSTANTIAL COMPLETION DATE = AUGUST 21ST, 2026

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MICHIGAN STATE UNIVERSITY

STORM SEWER - RIVER OUTFALL STRUCTURAL REPAIRS

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MSU PROJ. NO.
CP-21037

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ARCH.	N/A
MECH.	N/A
ELEC.	K. BEACH
CIVIL	T. OSMAN
L.A.	D. WILBER
INT. DES.	N/A
CONST. REP.	A. LINEBAUGH
APPR.	
DATE	
SCALE	AS SHOWN

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SESC

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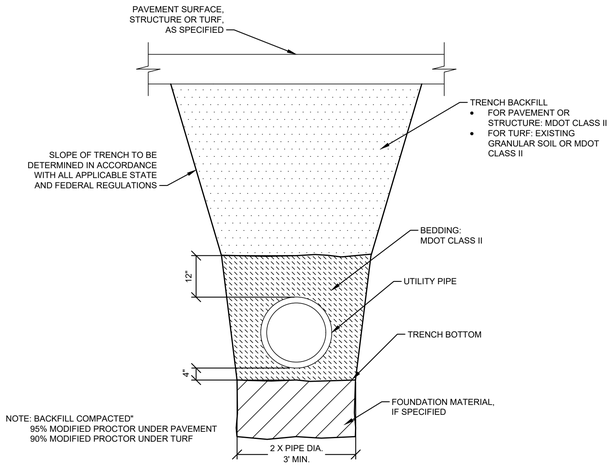
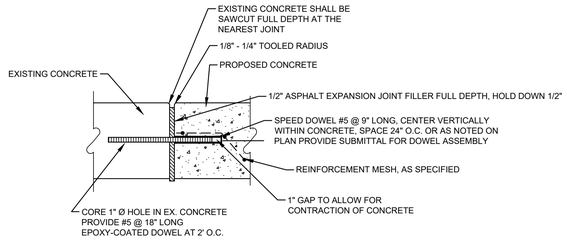


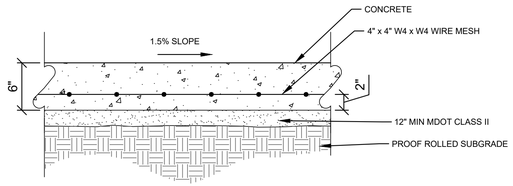
UTILITY TRENCH

NOT TO SCALE



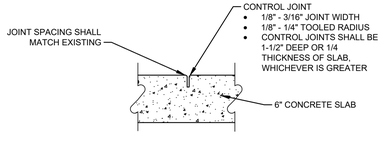
CONCRETE SIDEWALK TIE-IN JOINT

NOT TO SCALE



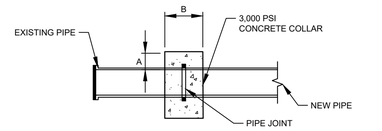
6" REINFORCED CONCRETE SIDEWALK

NOT TO SCALE

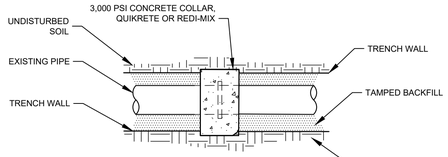


CONCRETE CONTROL JOINT

NOT TO SCALE



PROFILE VIEW

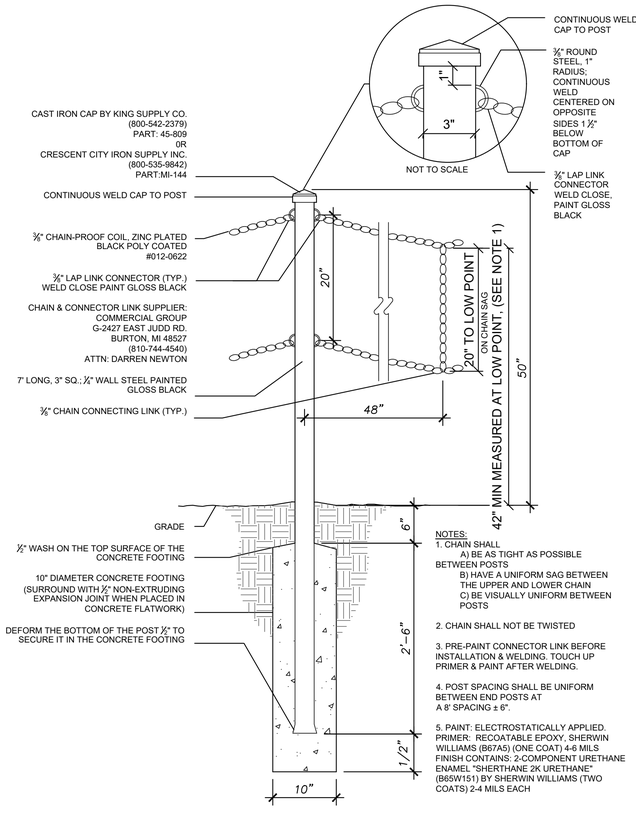


PLAN VIEW

SCHEDULE		
PIPE DIA.	CONCRETE COLLAR	
	A	B
12"	1'-0"	1'-0"
18"	1'-4"	1'-0"
27"	1'-4"	1'-2"

CONCRETE PIPE COLLAR

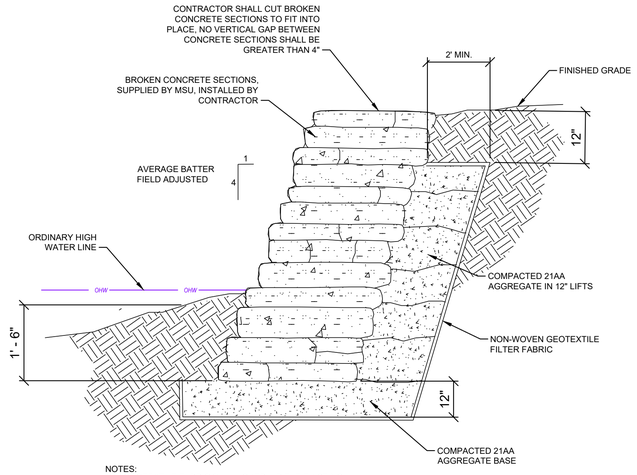
NOT TO SCALE



NOTES:
1. CHAIN SHALL
   A) BE AS TIGHT AS POSSIBLE BETWEEN POSTS
   B) HAVE A UNIFORM SAG BETWEEN THE UPPER AND LOWER CHAIN
   C) BE VISUALLY UNIFORM BETWEEN POSTS
2. CHAIN SHALL NOT BE TWISTED
3. PRE-PAINT CONNECTOR LINK BEFORE INSTALLATION & WELDING. TOUCH UP PRIMER & PAINT AFTER WELDING.
4. POST SPACING SHALL BE UNIFORM BETWEEN END POSTS AT A 8' SPACING ± 6".
5. PAINT: ELECTROSTATICALLY APPLIED. PRIMER: RECOATABLE EPOXY, SHERWIN WILLIAMS (B67A5) (ONE COAT) 4-6 MILS FINISH CONTAINS: 2-COMPONENT URETHANE ENAMEL "SHERTHANE 2K URETHANE" (B65W151) BY SHERWIN WILLIAMS (TWO COATS) 2-4 MILS EACH

POST AND CHAIN - PEDESTRIAN BARRIER

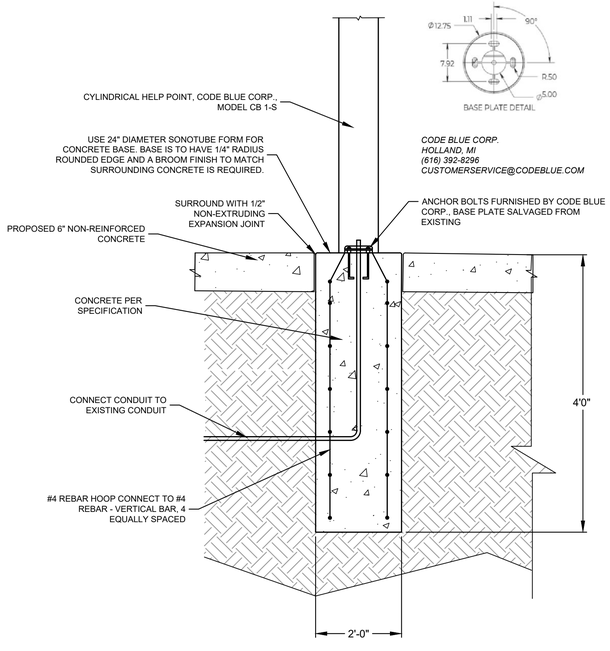
NOT TO SCALE



NOTES:
1. GEOTEXTILE FABRIC SHALL OVERLAP THE EXISTING HEADWALL BY 1" MINIMUM.
2. CONTRACTOR SHALL REMOVE ALL SECTIONS OF FAILING RETAINING WALL AND START REBUILD FROM STABLE CONDITIONS.
3. CONTRACTOR SHALL REMOVE TREE AND ROOTS GROWING INTO FAILING RETAINING WALL SECTION.

URBANITE RETAINING WALL REPAIR

NOT TO SCALE



EMERGENCY PEDESTAL CONCRETE BASE

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STORM SEWER - RIVER OUTFALL STRUCTURAL REPAIRS

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DETAILS

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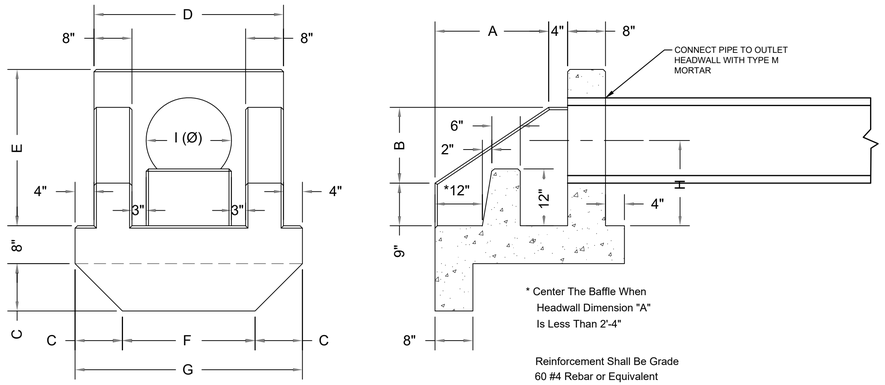


* Center The Baffle When Headwall Dimension "A" Is Less Than 2'-4"

Reinforcement Shall Be Grade 60 #4 Rebar or Equivalent WWF per MDOT Standard Detail R-85-D.

Contractor To Complete Connection Between Pipe and Outlet Headwall w/ Type M Mortar Meeting MDOT 2020 Standard Specification for Construction, Section 702.

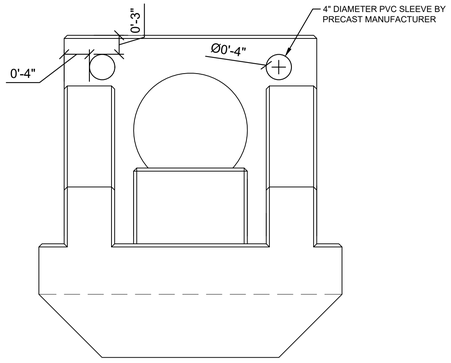
Exposed Edges To Be Chamfered 1/2".

Outfall Label To Be Used Only Where Stormwater Will Discharge Directly To The Waters Of The State.

Outlet Headwall Dimensions

Dia	A	B	C	D	E	F	G	H	I (Ø)	Weight
12"	2'-0"	1'-4"	10"	3'-4"	2'-9"	2'-4"	4'-0"	1'-6"	20"	3,240
15"	2'-4"	1'-7"	11"	3'-7"	3'-0"	2'-5"	4'-3"	1'-7"	24"	3,760
18"	2'-9"	1'-10"	1'-0"	3'-10"	3'-3"	2'-6"	4'-6"	1'-9"	26"	4,600
24"	3'-6"	2'-4"	1'-1"	4'-4"	3'-9"	2'-10"	5'-0"	2'-0"	34"	5,940
30"	4'-3"	2'-10"	1'-4"	4'-10"	4'-3"	2'-10"	5'-6"	2'-3"	42"	7,380
36"	5'-0"	3'-4"	1'-4"	5'-4"	4'-9"	3'-4"	6'-0"	2'-6"	48"	9,520
42"	5'-0"	5'-9"	1'-4"	7'-6"	7'-2"	5'-6"	8'-2"	3'-5"	54"	15,900
48"	5'-0"	5'-9"	1'-4"	7'-6"	7'-2"	5'-6"	8'-2"	3'-5"	60"	15,900

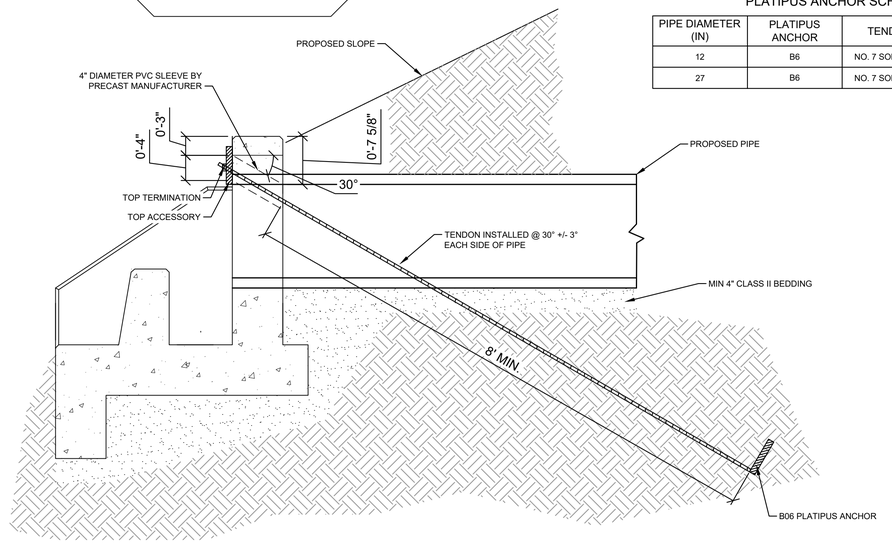
OUTLET HEADWALL DETAIL
NOT TO SCALE



NOTES:
1. PROVIDE (2) PLATIPUS B6 ANCHORS AT EACH OUTLET HEADWALL LOCATION. ANCHORS SHALL BE IN STRICT ACCORDANCE WITH THE LATEST SPECIFICATIONS FURNISHED BY PLATIPUS.
2. PROVIDE PVC SLEEVES PRECAST INTO EACH OUTLET HEADWALL AS SHOWN. PRECAST SHOP DRAWINGS INCLUDING REBAR AND SLEEVE FOR EACH PIPE DIAMETER SHALL BE PROVIDED TO ENGINEER FOR REVIEW PRIOR TO PRECASTING OUTFALLS.
3. INSTALL ANCHORS PER MANUFACTURERS RECOMMENDATIONS AND PROCEDURES.
4. ANCHOR HEAD ASSEMBLY PER MANUFACTURER RECOMMENDATIONS. CONTRACTOR SHALL SUBMIT ANCHOR HEAD ASSEMBLY DETAIL TO ENGINEER PRIOR TO CONSTRUCTION FOR APPROVAL.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE QUANTITIES SHIPPED AND CONDITIONS OF MATERIALS.
6. ALL MATERIAL HANDLING AND STORAGE SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.
7. TENDON SOLID BAR SHALL BE GRADE 75.

PLATIPUS ANCHOR SCHEDULE

PIPE DIAMETER (IN)	PLATIPUS ANCHOR	TENDON	LOCK OFF LOAD
12	B6	NO. 7 SOLID BAR	1.3 kip
27	B6	NO. 7 SOLID BAR	3.8 kip



OUTLET HEADWALL ANCHOR DETAIL
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OUTLET HEADWALL DETAILS

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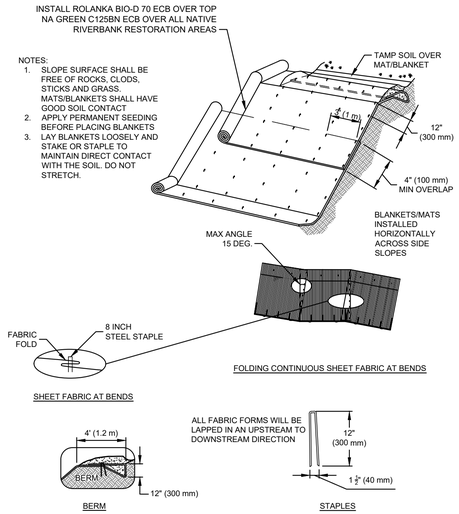
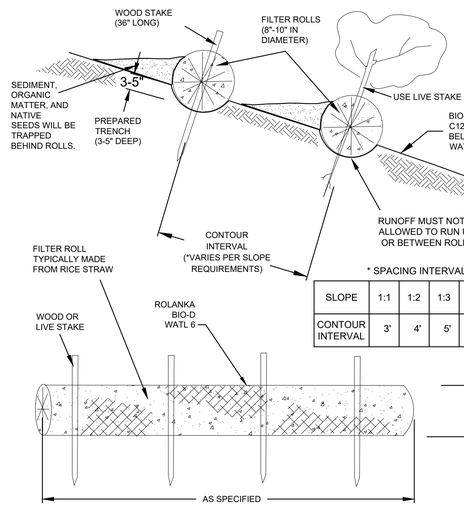


EROSION CONTROL BLANKET

NOT TO SCALE

Riverbank Native Seed Mix		
Scientific name	**Common Name**	**PLS Oz Per Acre**
Asclepias incarnata	Swamp milkweed	2
Calamagrostis canadensis	Blue-joint	2
Campanulastrum americanum	Tall bellflower/ American bellflower	0.5
Carex grayi	Common bur sedge	1
Carex muskingumensis	Swamp oval sedge	1
Cinna arundinacea	Wood reedgrass/ common wood reed	2
Elymus hystrix	Bottlebrush grass	6
Elymus riparius	Riverbank wild rye	48
Elymus virginicus	Virginia wild rye	48
Eutrochium maculatum	Spotted joe-pye weed/ joe-pye weed	1
Iris virginica	Southern blue flag/ blue flag iris	1
Lobelia cardinalis	Red lobelia/ cardinal flower	1
Lobelia siphilitica	Great blue lobelia	1
Monarda fistulosa	Wild bergamot	3
Rudbeckia laciniata	Wild golden glow/ cut-leaf coneflower	3
Symphyotrichum lateriflorum	Calico aster/ side-flowering aster	1
Symphyotrichum novae-angliae	New England aster	1
Zizia aurea	Golden Alexanders	2
	Total PLS Ounces Per Acre	124.5
	Total PLS Pounds Per Acre	7.8
Avena Sativa	Seed oats	512
Lolium multiflorum	Annual Rye	80

NATIVE SEEDING NOTES:
1. SEED SHALL BE FRESH, CLEAN, NEW SEED OF NATIVE PLANT MATERIAL TO MICHIGAN, AND FROM A RECOGNIZED NURSERY OF THIS REGION.
2. NATIVE SEED AREA SHALL BE SEEDED AFTER MAY 1, (WHEN SOIL IS FREE OF FROST AND IN WORKABLE CONDITION), BUT BEFORE JUNE 30 OR AFTER OCTOBER 1, BUT BEFORE DEEP FREEZE. IF SEEDING IN SUMMER MONTHS MAKE SURE TO PROVIDE A MINIMUM 1" OF WATER WEEKLY.
3. SEEDBED PREPARATION: PRIOR TO SOWING NATIVE SEED, LIGHTLY SCARIFY UNGRADED AREA SO THAT THE BED IS SMOOTH AND FREE OF LARGE CLUMPS. SEED BED SHALL BE FIRM, BUT NOT COMPACT. SEED IMMEDIATELY AFTER SCARIFYING AND ENSURE GOOD SOIL TO SEED CONTACT. DO NOT FERTILIZE.
4. HYDROMULCHING NATIVE SEED MIX SHALL NOT BE PERMITTED.
5. DO NOT SOW SEED WHERE STANDING WATER IS PRESENT OR BELOW OHWM.
6. LIGHTLY RAKE TO INCORPORATE SEED INTO SOIL. DO NOT COVER SEED MORE THAN 1/4 INCH WITH SOIL.



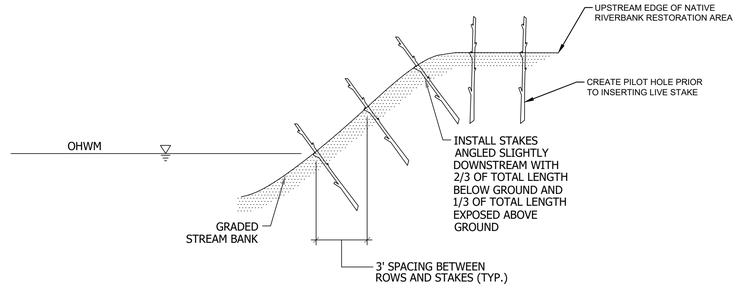
* SPACING INTERVAL

SLOPE	1:1	1:2	1:3	1:4	1:6
CONTOUR INTERVAL	3'	4'	5'	6'	8'

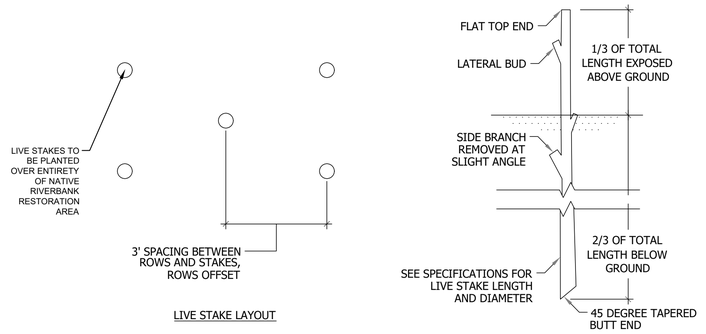
FILTER ROLL NOTES:
1. LAY OUT CONTOUR INTERVAL ON SLOPE. ROLL SHOULD NOT CROSS CONTOURS.
2. START AT SLOPE BASE, HAND DIG TRENCH 3 INCH TO 5 INCH DEEP ALONG LEVEL CONTOUR, WIDE ENOUGH TO ACCOMMODATE THE FILTER ROLL DIAMETER.
3. PLACE FILTER ROLL IN PREPARED TRENCH.
4. DRIVE 2-INCH BY 2-INCH BY 36-INCH WOOD STAKES DIRECTLY INTO FILTER ROLL AT 4 FOOT ON CENTER, ALONG ITS ENTIRE LENGTH. DRIVE LIVE STAKES AT 4 FOOT INTERVALS, 2' OFFSET WOOD STAKES.
5. THE ENDS OF ADJACENT FILTER ROLL SHALL BE ABUTTED TO EACH OTHER SNUGLY. RUNOFF SHALL NOT RUN UNDER OR AROUND ROLL.
6. STRAW FROM ROLL MAY BE USED AS MULCH WHEN CONTROL MEASURE IS COMPLETE.
7. ALL INSTALLATIONS SHALL BE INSPECTED REGULARLY AND PROVISIONS MADE FOR PROMPT REPAIR AS NEEDED.

STRAW WATTLE

NOT TO SCALE



BANK INSTALLATION (SECTION VIEW)



LIVE STAKE LAYOUT

LIVE STAKE DETAIL

LIVE STAKES, 18-24" BARE-ROOT, OR 38-CELL SIZE SHRUB PLANTINGS SHALL BE USED UP TO THE DISCRETION OF MSU LANDSCAPE SERVICES.

LIVE STAKE PLANTING DETAIL

NOT TO SCALE

SHRUB PLANTING LIST	
Scientific Name	**Common Name**
Cornus sericea	Red-osier dogwood
Ilex verticillata	Winterberry
Rosa palustris	Swamp rose
Salix exigua	Sandbar willow
Sambucus canadensis	Elderberry

TOTAL SHRUB QUANTITY NEEDED IS 400. MSU LANDSCAPE SERVICES MAY CHOOSE THE NUMBER PER SPECIES BASED ON THE SHRUB PLANTING LIST

MICHIGAN STATE UNIVERSITY
Infrastructure Planning and Facilities

STORM SEWER - RIVER OUTFALL STRUCTURAL REPAIRS

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

MSU PROJ. NO.
CP-21037

PR. MGR.	A. LINEBAUGH
ARCH.	N/A
MECH.	N/A
ELEC.	K. BEACH
CIVIL	T. OSMAN
L.A.	D. WILBER
INT. DES.	N/A
CONST. REP.	A. LINEBAUGH
APPR.	
DATE	
SCALE	AS SHOWN

NO.	DATE	ISSUE
4	02/05/2026	FOR BIDDING
3	11/6/2025	FINAL REVIEW
2	6/4/2025	60% EGLE REV
1	4/7/2025	60% REVIEW
0	3/3/2025	30% REVIEW

RESTORATION DETAILS

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