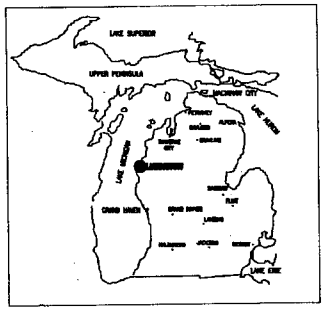
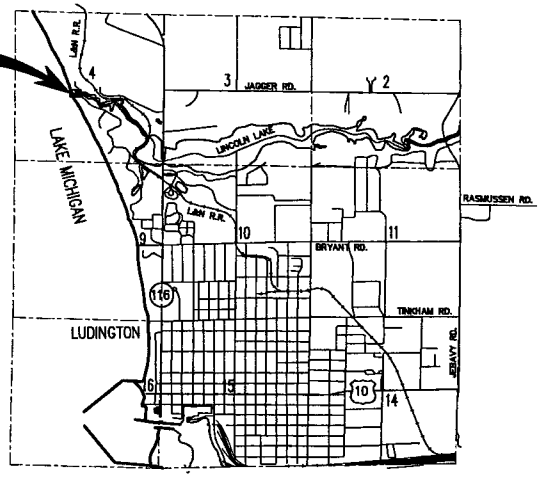
NUMBER: LRE-2001-2530000-S10, (10-53-34)
Lincoln River Outlet Repairs
BY: Epworth Assembly
Lincoln River
Ludington, Mason County, Michigan
SHEET 1 OF 10

CONSTRUCTION PLANS TO REBUILD THE OUTLET AT THE LINCOLN RIVER AND LAKE MICHIGAN FOR THE EPWORTH ASSEMBLY MASON COUNTY, MICHIGAN



LOCATION MAP
NOT TO SCALE

SITE LOCATION



VICINITY MAP
NOT TO SCALE

DRAWING INDEX

SHEET 1	TITLE SHEET
SHEET 2	EXISTING & REMOVAL
SHEET 3	SOIL BORINGS
SHEET 4	SITE PHOTOS (EXISTING CONDITIONS)
SHEET 5	OUTLET SITE PLAN
SHEET 6	DETAILS

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 (TOLL FREE)

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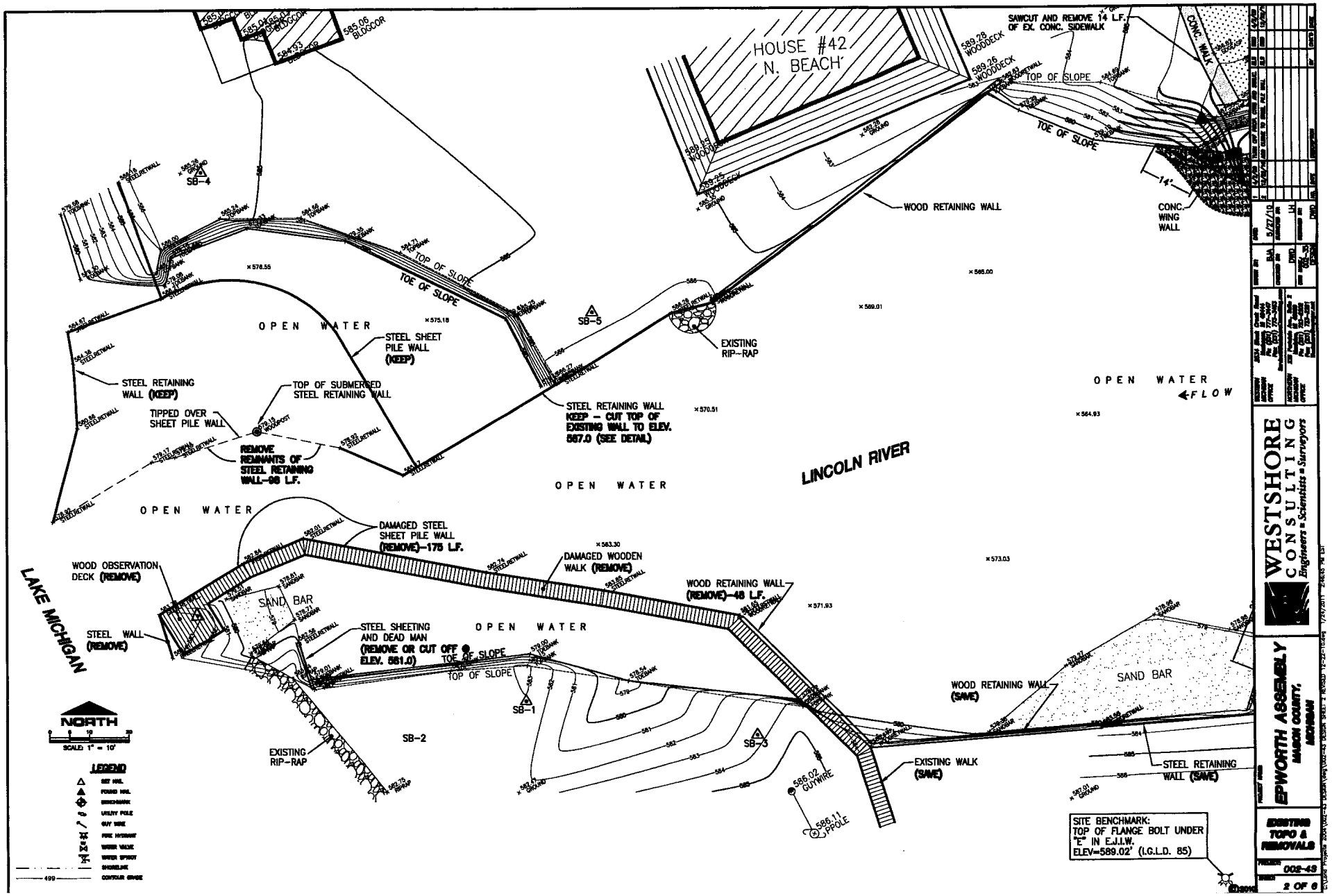
PROJECT NAME: EPWORTH ASSEMBLY MASON COUNTY, MICHIGAN

TITLE SHEET

PROJECT: 002-43
SHEET: 1 OF 6

DWN BY: BJA 5/27/10
CHECKED BY: DWD
DWG NAME: LH
DWG NO. | DATE | DESCRIPTION | BY | CHK'D | DATE

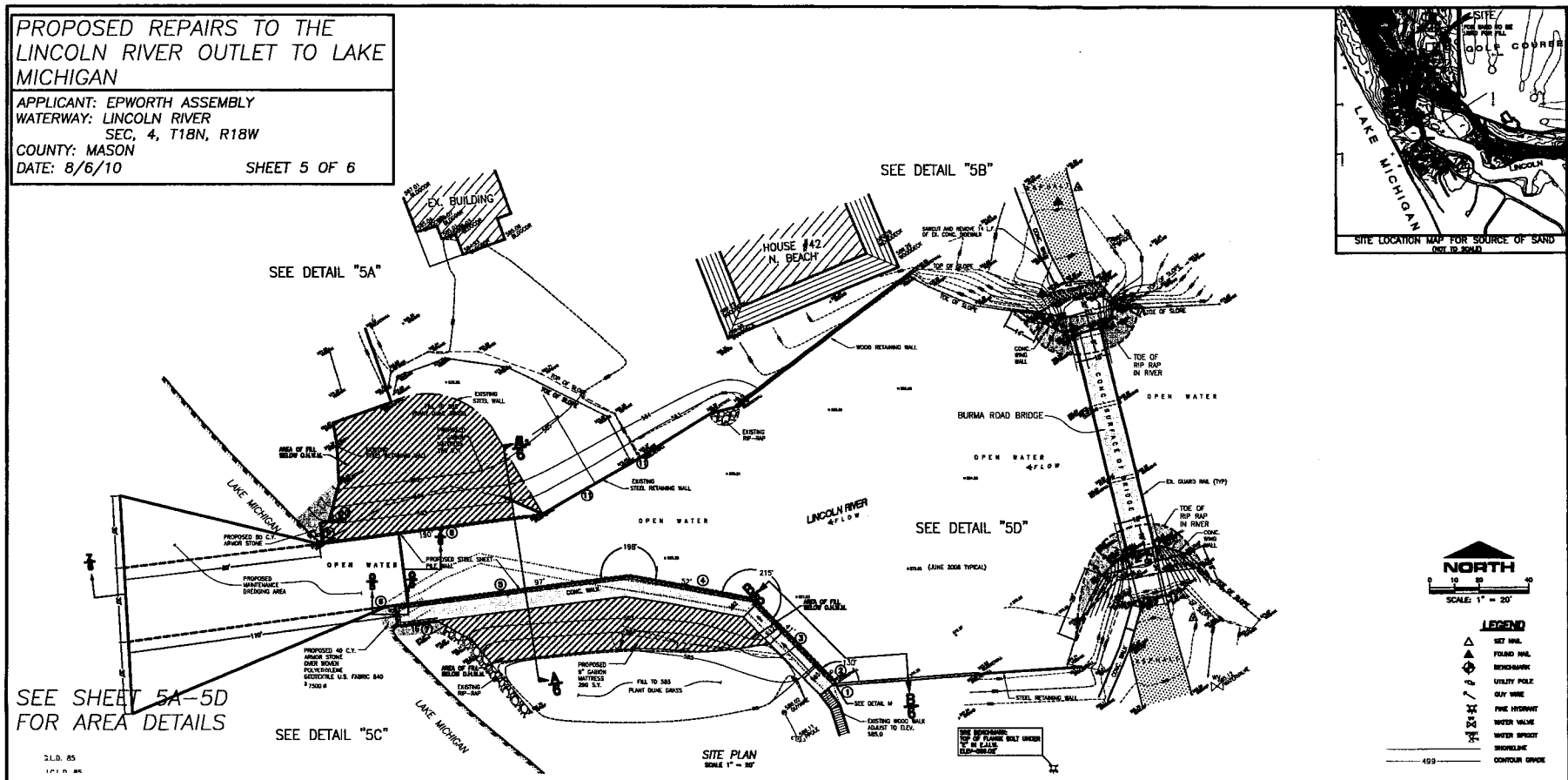
NUMBER: LRE-2001-2530000-S10, (10-53-34)
Lincoln River Outlet Repairs
BY: Epworth Assembly
Lincoln River
Ludington, Mason County, Michigan
SHEET 2 OF 10



NUMBER: LRE-2001-2530000-S10, (10-53-34)
Lincoln River Outlet Repairs
BY: Epworth Assembly
Lincoln River
Ludington, Mason County, Michigan
SHEET 3 OF 10

PROPOSED REPAIRS TO THE LINCOLN RIVER OUTLET TO LAKE MICHIGAN

APPLICANT: EPWORTH ASSEMBLY
WATERWAY: LINCOLN RIVER
SEC. 4, T18N, R18W
COUNTY: MASON
DATE: 8/6/10 SHEET 5 OF 6



SHEET PILE TABLE

Section	Length	Depth	Sq Ft	Comments
South				
1	21" - 24"	20'	40	"hair pin"
2	9'	20'	180	
3	41'	30'	1230	Cut on 1/12 slope
4	52'	35'	1820	
5	97'	35'	3395	
6	8'	30'	240	
7	16'	30'	480	Tie to 5, no dead-man
North				
8	190'	35'	6650	Connect to existing sheet pile wall
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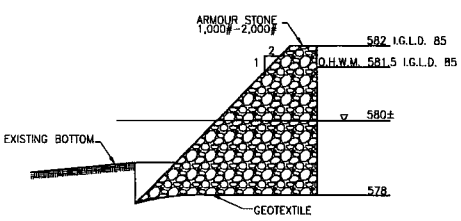
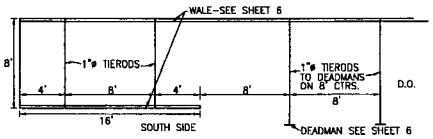
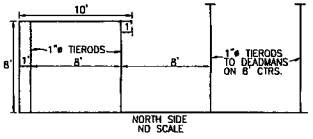
10	10'	30'	300	Tie to 8, no dead-man
11	92'	---	---	Cut top to be at Elevation 582 Cap with "_____"

SECTION Q-Q







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PROJECT NAME: EPWORTH ASSEMBLY
MASON COUNTY, MICHIGAN

OUTLET SITE PLAN

PROJECT: 002-43
SHEET: 5 OF 6

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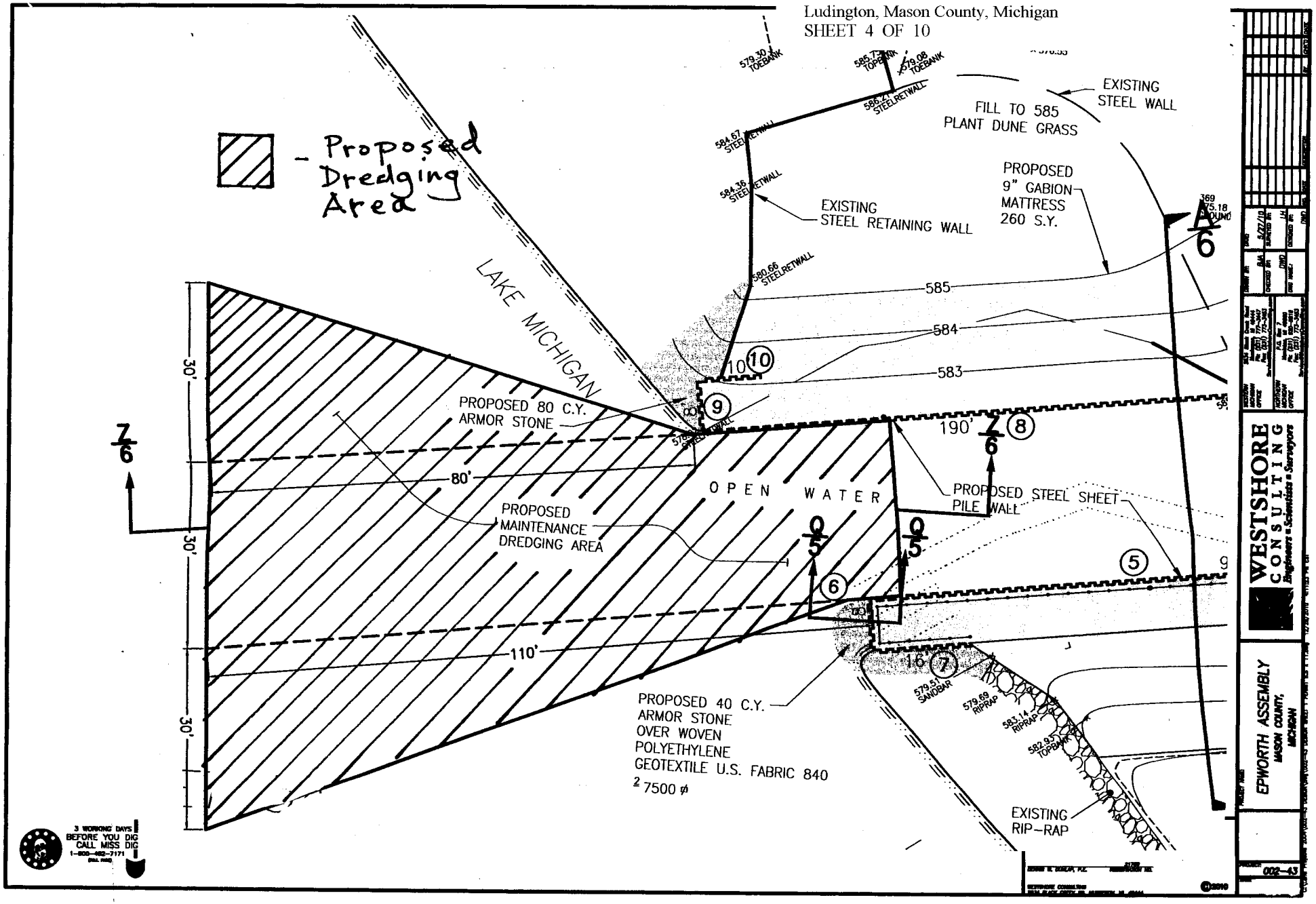
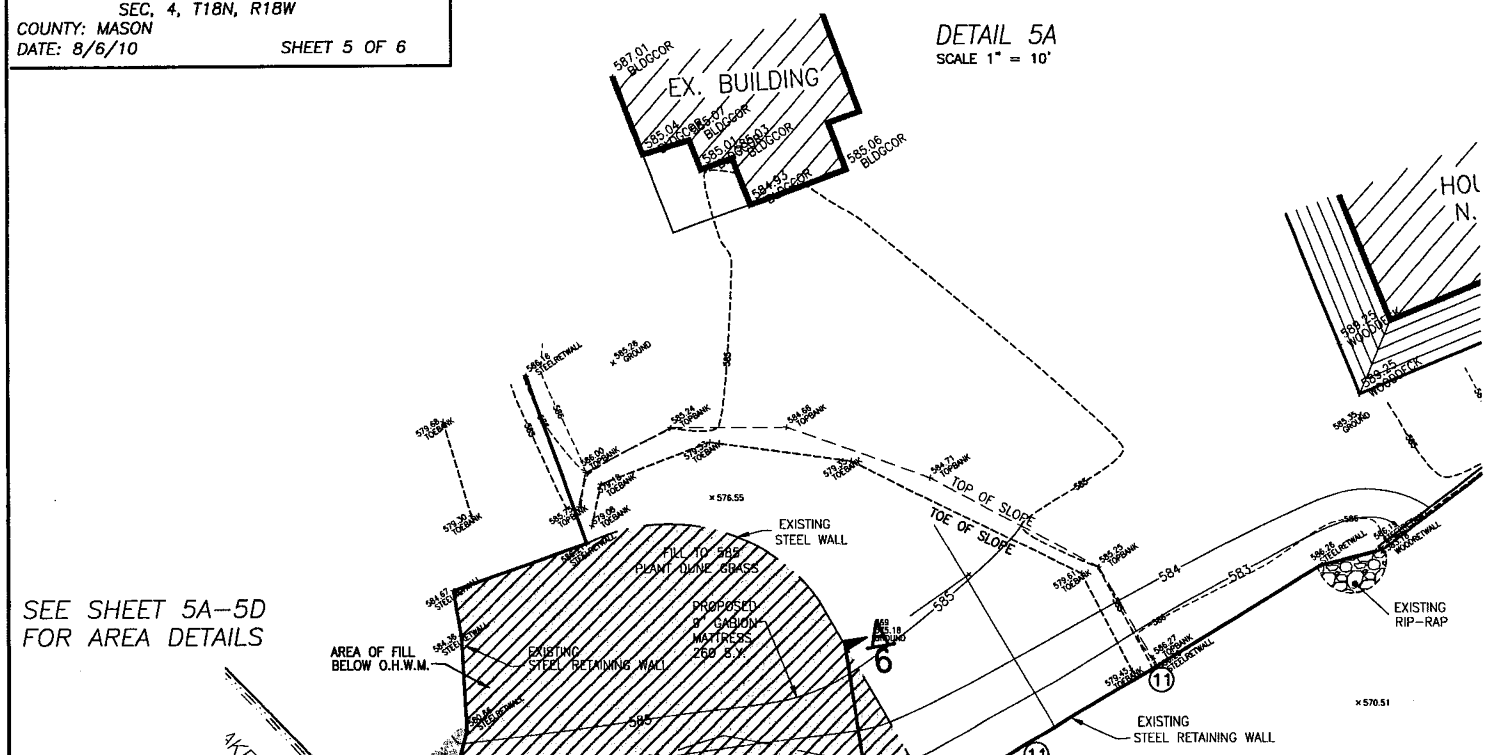
NUMBER: LRE-2001-2530000-S10, (10-53-34)
Lincoln River Outlet Repairs
BY: Epworth Assembly
Lincoln River
Ludington, Mason County, Michigan
SHEET 4 OF 10



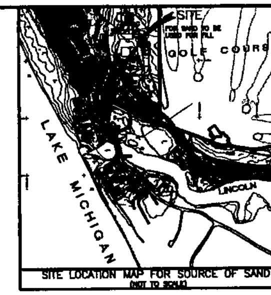
NUMBER: LRE-2001-2530000-S10, (10-53-34)
Lincoln River Outlet Repairs
BY: Epworth Assembly
Lincoln River
Ludington, Mason County, Michigan
SHEET 5 OF 10

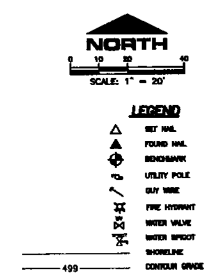
PROPOSED REPAIRS TO THE LINCOLN RIVER OUTLET TO LAKE MICHIGAN

APPLICANT: EPWORTH ASSEMBLY
WATERWAY: LINCOLN RIVER
SEC, 4, T18N, R18W
COUNTY: MASON
DATE: 8/6/10
SHEET 5 OF 6



SEE SHEET 5A–5D FOR AREA DETAILS





SHEET PILE TABLE

Section	Width	Depth	Sq Ft	Comments
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2	9'	20'	180	
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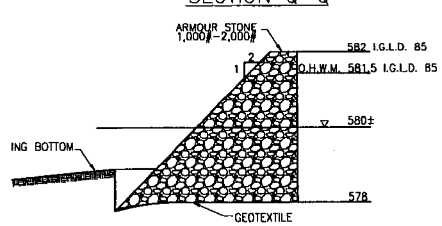
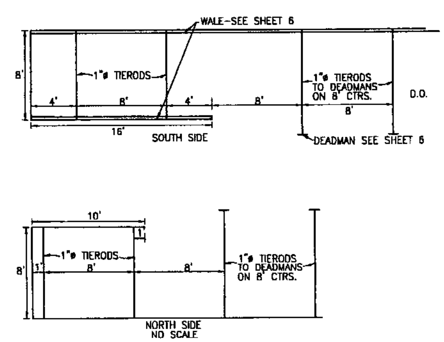
SECTION Q–Q





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NORTHERN MICHIGAN OFFICE: P.O. Box 7, Manistee, MI 49660, Ph: (231) 920-5818, Fax: (231) 773-3453, Service@WestshoreConsulting.com

DRAWN BY: BJA | DATE: 5/27/10
CHECKED BY: DWD | SURVEYED BY: LH
DWG NAME: | DESIGNED BY: DWD

NO.	DATE	DESCRIPTION	BY	CHK'D	DATE
1	08/04/10	REVISE DETAIL	ELS	DWD	08/04/10
2	01/24/11	ADD FILL AREA & GRADE NOTES	ELS	DWD	01/24/11

PROJECT NAME: EPWORTH ASSEMBLY, MASON COUNTY, MICHIGAN
OUTLET SITE PLAN
PROJECT: 002-43
SHEET: 5A

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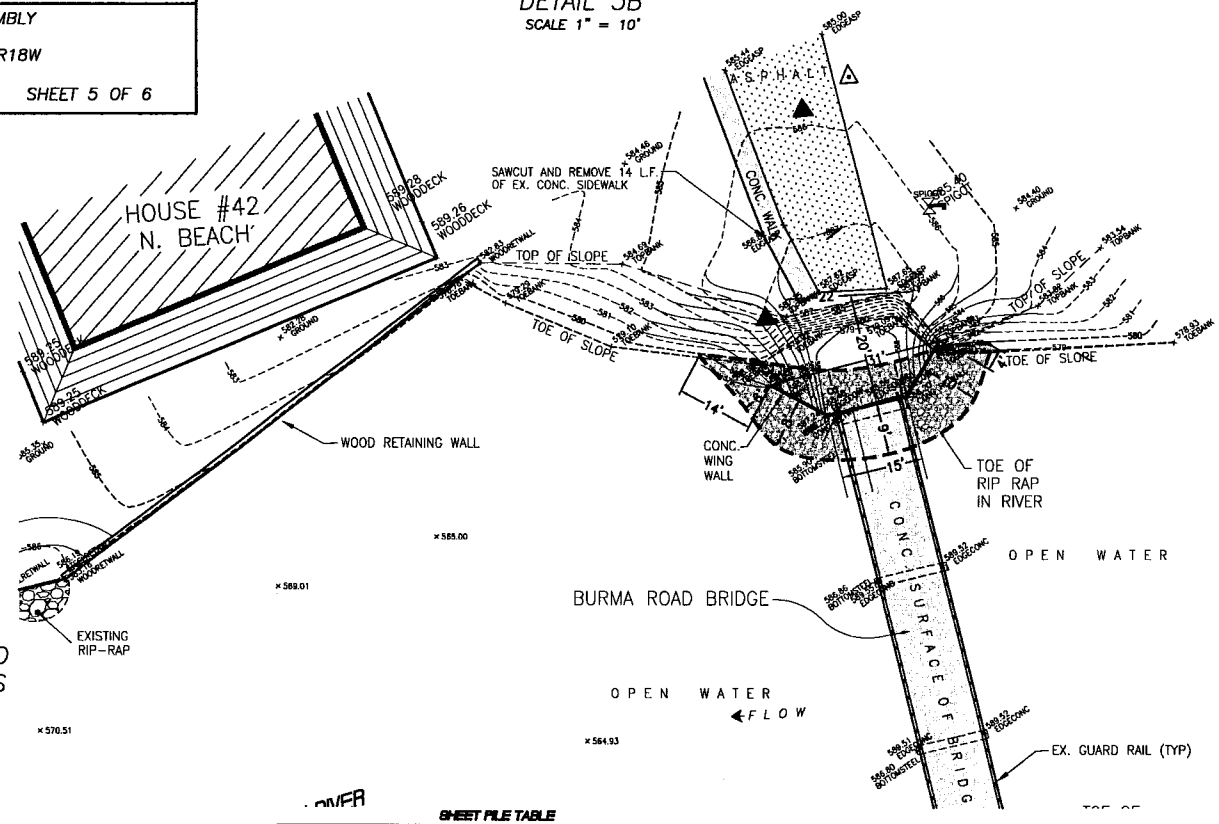
C:\Land Projects 2004\002-43 DESIGN\dwg\002-43 DESIGN SHEET 5 REVISED 12-22-10.dwg 1/24/2011 2:44:18 PM EST

NUMBER: LRE-2001-2530000-S10, (10-53-34)
Lincoln River Outlet Repairs
BY: Epworth Assembly
Lincoln River
Ludington, Mason County, Michigan
SHEET 6 OF 10

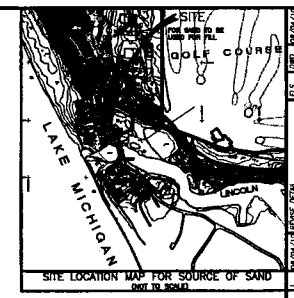
PROPOSED REPAIRS TO THE LINCOLN RIVER OUTLET TO LAKE MICHIGAN

APPLICANT: EPWORTH ASSEMBLY
WATERWAY: LINCOLN RIVER
SEC, 4, T18N, R18W
COUNTY: MASON
DATE: 8/6/10 SHEET 5 OF 6

DETAIL 5B
SCALE 1" = 10'



SEE SHEET 5A–5D FOR AREA DETAILS



SITE LOCATION MAP FOR SOURCE OF SAND (NOT TO SCALE)

NORTH
SCALE: 1" = 20'

LEGEND
SET NAIL
FOUND NAIL
BENCHMARK
UTILITY POLE
GUY WIRE
FIRE HYDRANT
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WATER SPIGOT
SHORELINE
CONTOUR GRADE

SHEET PILE TABLE

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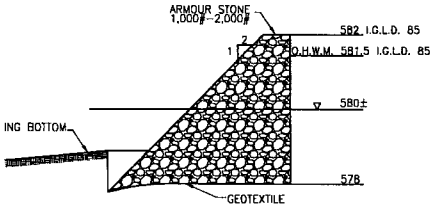
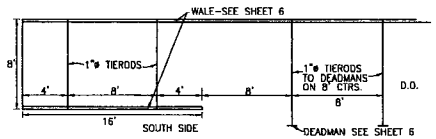
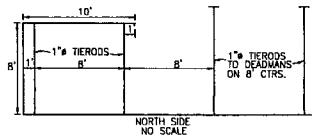
SECTION Q–Q







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PROJECT NAME: EPWORTH ASSEMBLY
MASON COUNTY, MICHIGAN

OUTLET SITE PLAN

PROJECT: 002-43
SHEET: 5B

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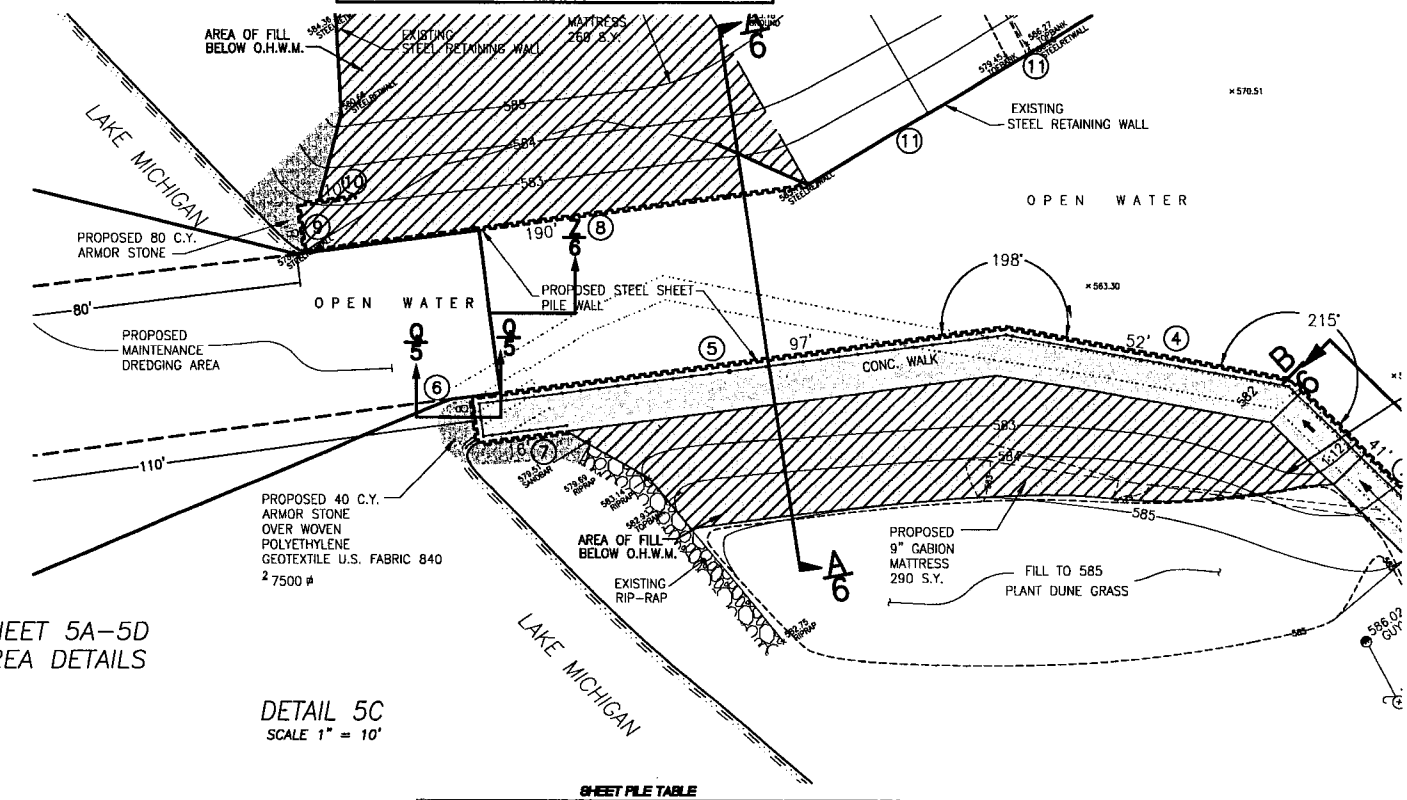
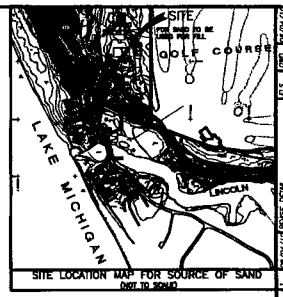
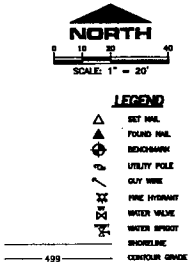
NUMBER: LRE-2001-2530000-S10, (10-53-34)
Lincoln River Outlet Repairs
BY: Epworth Assembly
Lincoln River
Ludington, Mason County, Michigan
SHEET 7 OF 10

PROPOSED REPAIRS TO THE LINCOLN RIVER OUTLET TO LAKE MICHIGAN

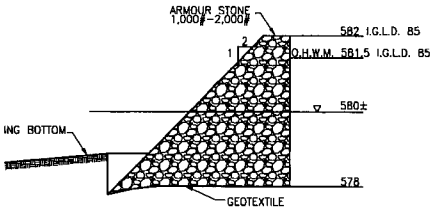
APPLICANT: EPWORTH ASSEMBLY
WATERWAY: LINCOLN RIVER
SEC. 4, T18N, R18W
COUNTY: MASON
DATE: 8/6/10 SHEET 5 OF 6







SECTION Q-Q



SHEET PILE TABLE

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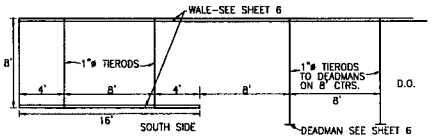

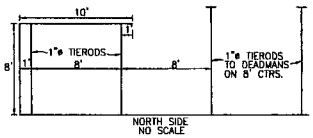

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EPWORTH ASSEMBLY
MASON COUNTY, MICHIGAN

OUTLET SITE PLAN

PROJECT: 002-43
SHEET: 5C

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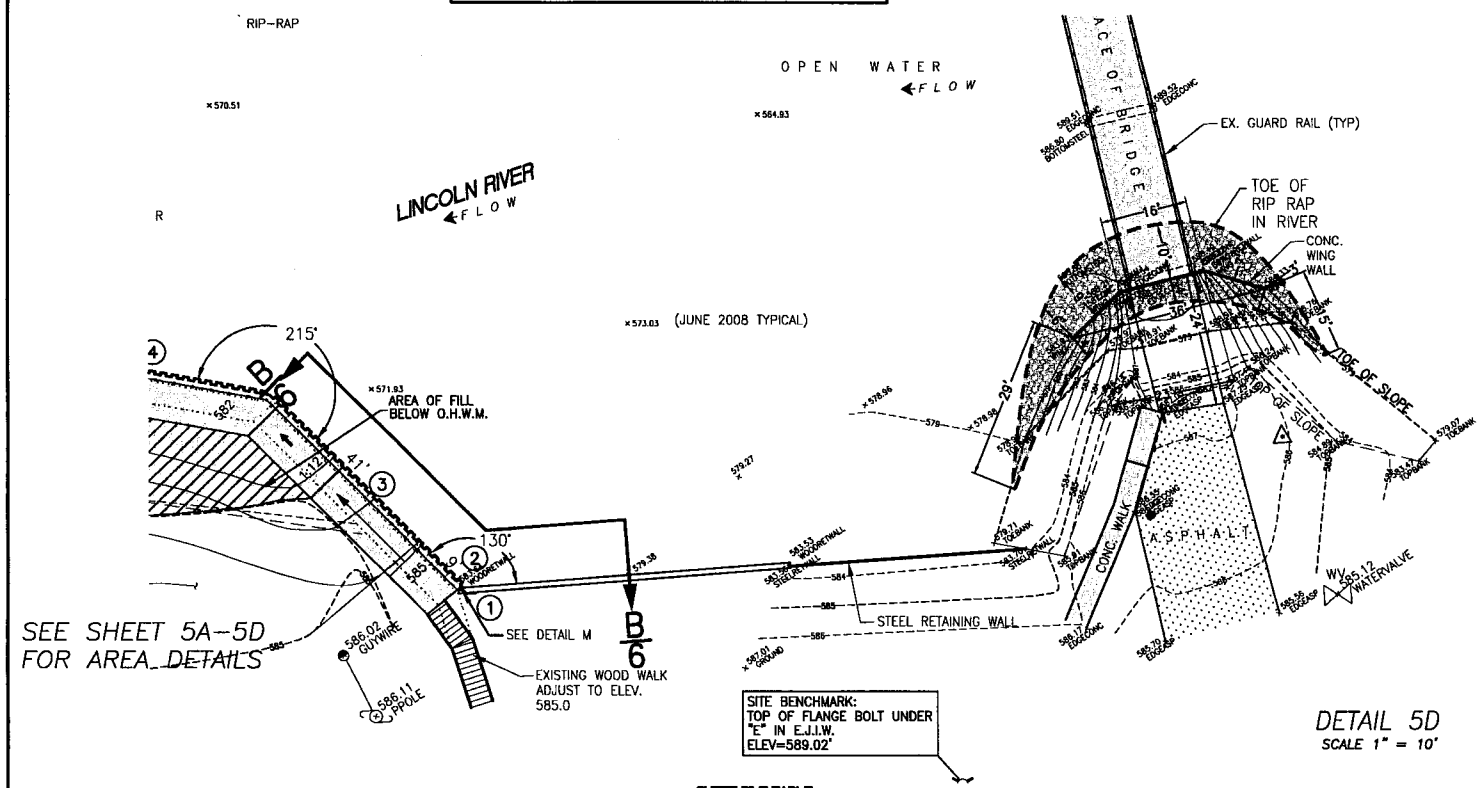
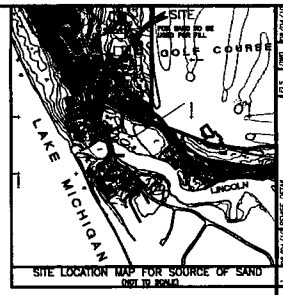
NUMBER: LRE-2001-2530000-S10, (10-53-34)
Lincoln River Outlet Repairs
BY: Epworth Assembly
Lincoln River
Ludington, Mason County, Michigan
SHEET 8 OF 10

PROPOSED REPAIRS TO THE LINCOLN RIVER OUTLET TO LAKE MICHIGAN

APPLICANT: EPWORTH ASSEMBLY
WATERWAY: LINCOLN RIVER
SEC. 4, T18N, R18W
COUNTY: MASON
DATE: 8/6/10 SHEET 5 OF 6





SITE LOCATION MAP FOR SOURCE OF SAND (NOT TO SCALE)

DETAIL 5D
SCALE 1" = 10'

NORTH
SCALE: 1" = 20'

LEGEND
SET NAIL
FOUND NAIL
BENCHMARK
UTILITY POLE
GUY WIRE
FIRE HYDRANT
WATER VALVE
WATER SPIGOT
SHORELINE
499 CONTOUR GRADE

SHEET PILE TABLE

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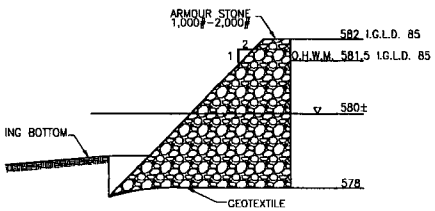
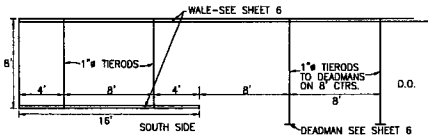
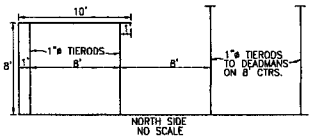
SECTION Q-Q







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PROJECT NAME: EPWORTH ASSEMBLY
MASON COUNTY, MICHIGAN

OUTLET SITE PLAN

PROJECT: 002-43
SHEET: 5D

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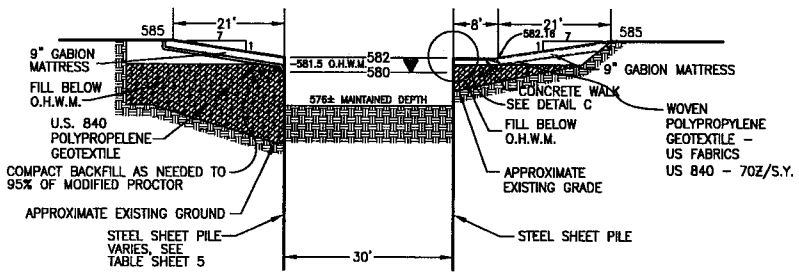
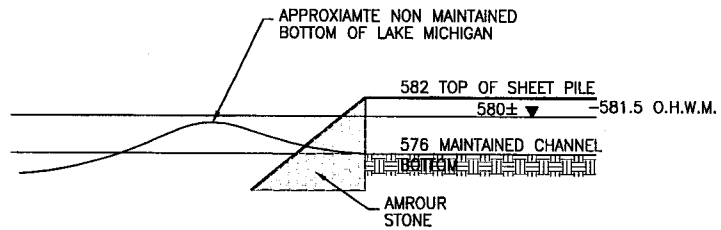
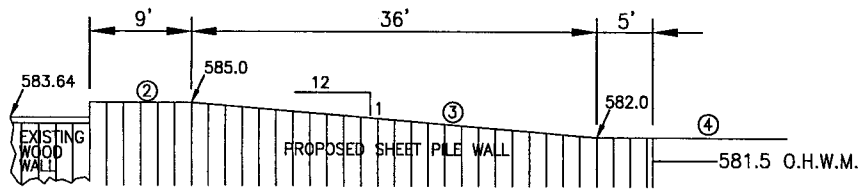
NUMBER: LRE-2001-2530000-S10, (10-53-34)
Lincoln River Outlet Repairs
BY: Epworth Assembly
Lincoln River
Ludington, Mason County, Michigan
SHEET 9 OF 10



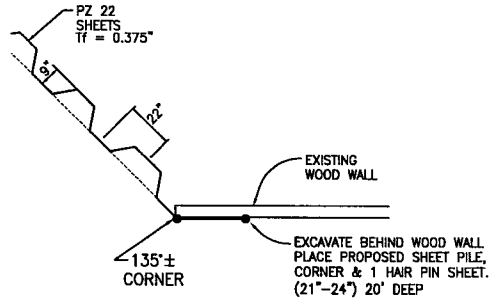
SECTION A-A
SCALE 1" = 10'



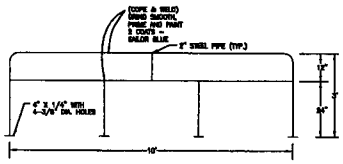
SECTION Z-Z
NO SCALE



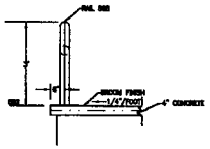
SECTION B-B
SCALE 1" = 5'



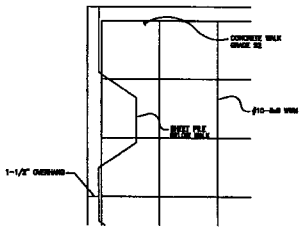
DETAIL M
NO SCALE



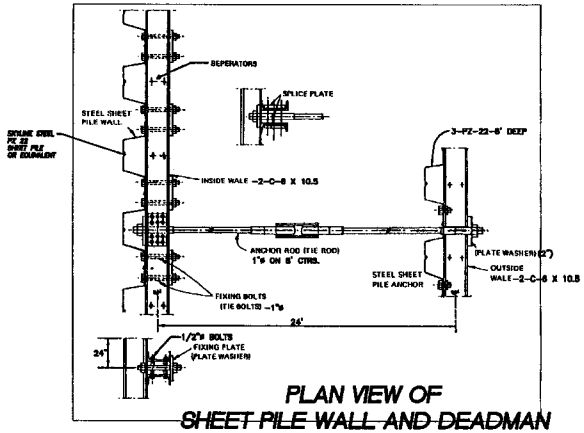
RAIL DETAIL
SCALE 1" = 2'



RAIL DETAIL
SCALE 1" = 2'



DETAIL C
NO SCALE



PLAN VIEW OF SHEET PILE WALL AND DEADMAN
NO SCALE

NORTH
SCALE: 1" = 20'

LEGEND
SET NAIL
FOUND NAIL
BENCHMARK
UTILITY POLE
GUY WIRE
FIRE HYDRANT
WATER VALVE
WATER SPIGOT
SHORELINE
499 CONTOUR GRADE

WESTSHORE CONSULTING
Engineers • Scientists • Surveyors

PROJECT NAME: EPWORTH ASSEMBLY
MASON COUNTY, LUDINGTON

OUTLET SITE PLAN

PROJECT 002-43
SHEET 6 OF 6

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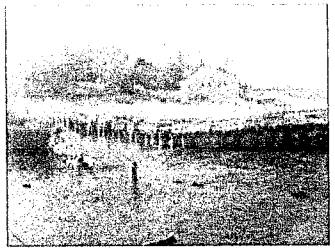
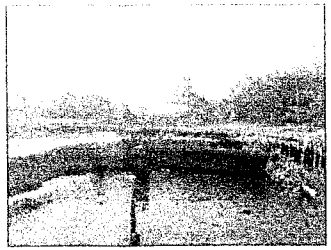


SCOUR DAMAGE



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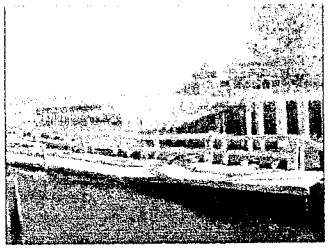
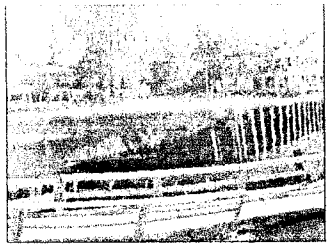


SHEET PILING/WALKWAY DAMAGE



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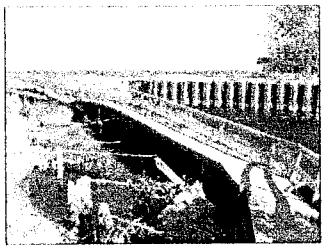
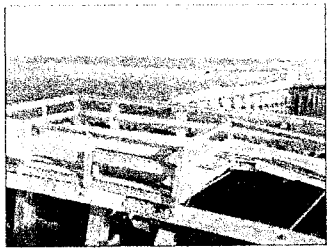


SHEET PILING/WALKWAY DAMAGE

SHEET PILING/WALKWAY DAMAGE



DECK DAMAGE

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Engineers • Scientists • Surveyors

EPWORTH ASSEMBLY
MASON COUNTY, MICHIGAN

EXISTING CONDITIONS

PROJECT: 002-43
SHEET: 4 OF 6

NUMBER: LRE-2001-2530000-S10, (10-53-34)
Lincoln River Outlet Repairs
BY: Epworth Assembly
Lincoln River
Ludington, Mason County, Michigan
SHEET 10 OF 10