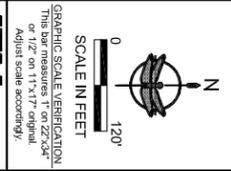


**MUSKEGON LAKE**  
WATER ELEV=578.5'  
(JULY, 2010)

- NOTES:**
1. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO EXISTING STRUCTURES INCLUDING BENCHES, ASPHALT PATH OR TURF GRASS.
  2. ALL DAMAGED TURF GRASS SHALL BE REPAIRED BY RE-SEEDING.
  3. CONTRACTOR MAY CONSTRUCT ONE TEMPORARY CROSSING ACROSS BIKE PATH NO WIDER THAN 15 FEET.
  4. CONTRACTOR SHALL POST SIGNAGE ON EITHER SIDE OF CROSSING NOTIFYING USERS OF THE CROSSING.
  5. DURING USE, THE CROSSING SHALL BE CLOSED ENTIRELY TO PEDESTRIAN TRAFFIC.
  6. CROSSING SHALL BE CLOSED FOR NO MORE THAN 30 MINUTES AT ONE TIME, AND MUST REMAIN OPEN FOR AT LEAST ONE HOUR BETWEEN CLOSINGS. ALTERNATIVELY, CONTRACTOR MAY CLOSE TRAIL ACCESS TEMPORARILY IF FLAGMEN ARE POSTED ON EITHER SIDE OF THE CROSSING.
  7. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR (TO PRE-CONSTRUCTION CONDITION) OF ALL DAMAGE TO TRAIL OR ADJACENT AREAS THAT OCCUR DURING CONSTRUCTION ACTIVITIES.
  8. CONTRACTOR MAY ELECT TO ACCESS SITE VIA BARGE OR BOAT IF DESIRED.
  9. CONTRACTOR SHALL MEET WITH CITY OF MUSKEGON STAFF AND LAND OWNERS PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR COMPLIANCE WITH ALL REQUIREMENTS ESTABLISHED BY THE CITY OR LAND OWNERS.



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616-941-1880

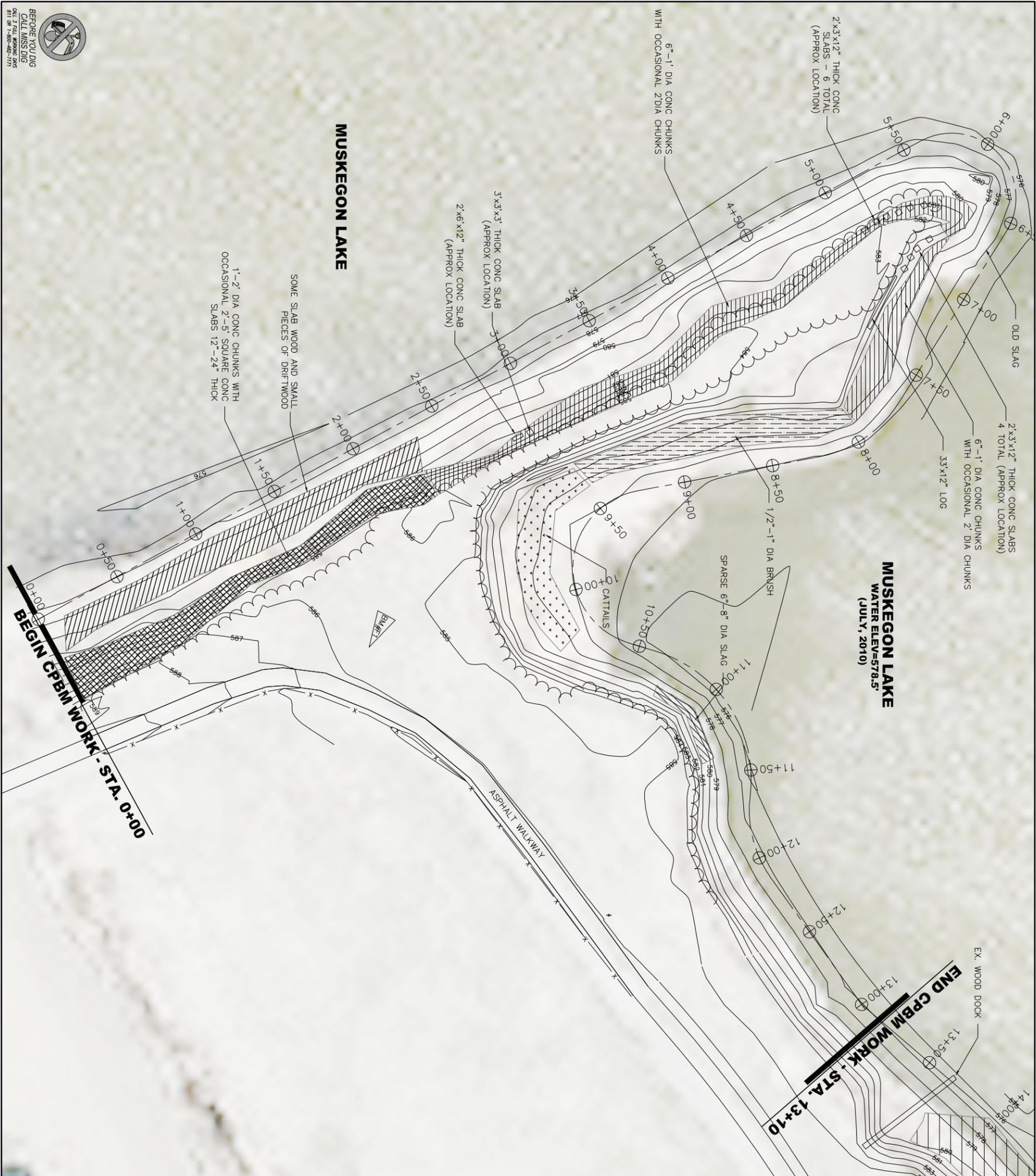
West Michigan Shoreline Regional  
Development Commission and the  
Muskegon Lake Watershed Partnership  
Center Pointe Bay Marina / Michigan Steel/Hartshorn  
Proposed Site Access Plan

DRAWN BY: RAB  
DESIGNED BY: BM  
DATE: 08/03/2010  
JOB NO.: 0902035



SHEET NO.  
**3**  
OF 23

**BEFORE YOU DIG  
CALL MISS DIG**  
CALL 3 FEET DEEP MISS DIG  
811 OR 1-800-482-7171



**MUSKEGON LAKE**

**MUSKEGON LAKE  
WATER ELEV.=578.5'  
(JULY, 2010)**

**BEGIN CPBM WORK - STA. 0+00**

**END CPBM WORK - STA. 13+10**

SOME SLAB WOOD AND SMALL  
PIECES OF DRIFTWOOD  
1'-2' DIA CONC CHUNKS WITH  
OCCASIONAL 2'-5' SQUARE CONC  
SLABS 12"-24" THICK

3'x3'x3' THICK CONC SLAB  
(APPROX LOCATION)  
2'x6'x12" THICK CONC SLAB  
(APPROX LOCATION)

6"-1' DIA CONC CHUNKS  
WITH OCCASIONAL 2 DIA CHUNKS

2'x3'x12" THICK CONC  
SLABS - 6 TOTAL  
(APPROX LOCATION)

2'x3'x12" THICK CONC SLABS  
4 TOTAL (APPROX LOCATION)  
6"-1' DIA CONC CHUNKS  
WITH OCCASIONAL 2 DIA CHUNKS  
33'x12" LOG

ASPHALT WALKWAY

SPARSE 6"-8" DIA SLAG  
1/2"-1" DIA BRUSH

10 CATTAILS

EX. WOOD DOCK

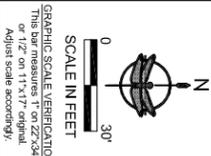
**LEGEND**

- ⊙ TEMP. SURVEY POINT
- ⊙ BENCHMARK
- ⊙ SECTION CORNER
- ⊙ FIRE HYDRANT
- ⊙ WATER VALVE
- ⊙ CURB STOP & BOX
- ⊙ CABLE BOX
- ⊙ TELEPHONE RISER
- ⊙ TELEPHONE MANHOLE
- ⊙ ELECTRICAL RISER
- ⊙ ELECTRICAL MANHOLE
- ⊙ POWER POLE
- ⊙ LIGHT POLE
- ⊙ YARD LIGHT
- ⊙ SIGN
- ⊙ GUARD POST
- ⊙ MONITORING WELL
- ▨ BRUSH
- ▨ CATTAILS
- ▨ 6-12" CONCRETE CHUNKS
- ▨ 12-24" CONCRETE CHUNKS
- ▨ SLAG MATERIAL
- ▨ CONCRETE SLABS
- ▨ WOOD/NON-NATIVE DEBRIS
- ⊕ STATIONING MARKER
- x — FENCE
- x — WOODLINE

**NOTES:**

1. ALL ITEMS LISTED ON THE LEGEND MAY NOT BE PRESENT ON THE DRAWING.
2. ALL PROPERTY AND/OR RIGHT-OF-WAY LINES SHOWN ARE APPROXIMATE.
3. ALL UNDERGROUND UTILITIES ARE APPROXIMATE BASED ON UTILITY PLANS, AS-BUILT PLANS OR FIELD OBSERVATIONS.

BM #F1 EL. 585.64'  
TOP OF SET 3/8" IRON ROD  
⊙ BEND IN BIT WALK @ APPROX  
INTERSECTION OF NORTH & WEST  
LINES OF WALK.  
(DATUM=NAVD88 VIA GPS & OPUS)  
SURVEY DATA PREPARED BY FLEIS &  
VANDENBRINK ENGINEERING, INC.  
(DEC., 2009)



**JFNEW**  
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NO.	REVISION

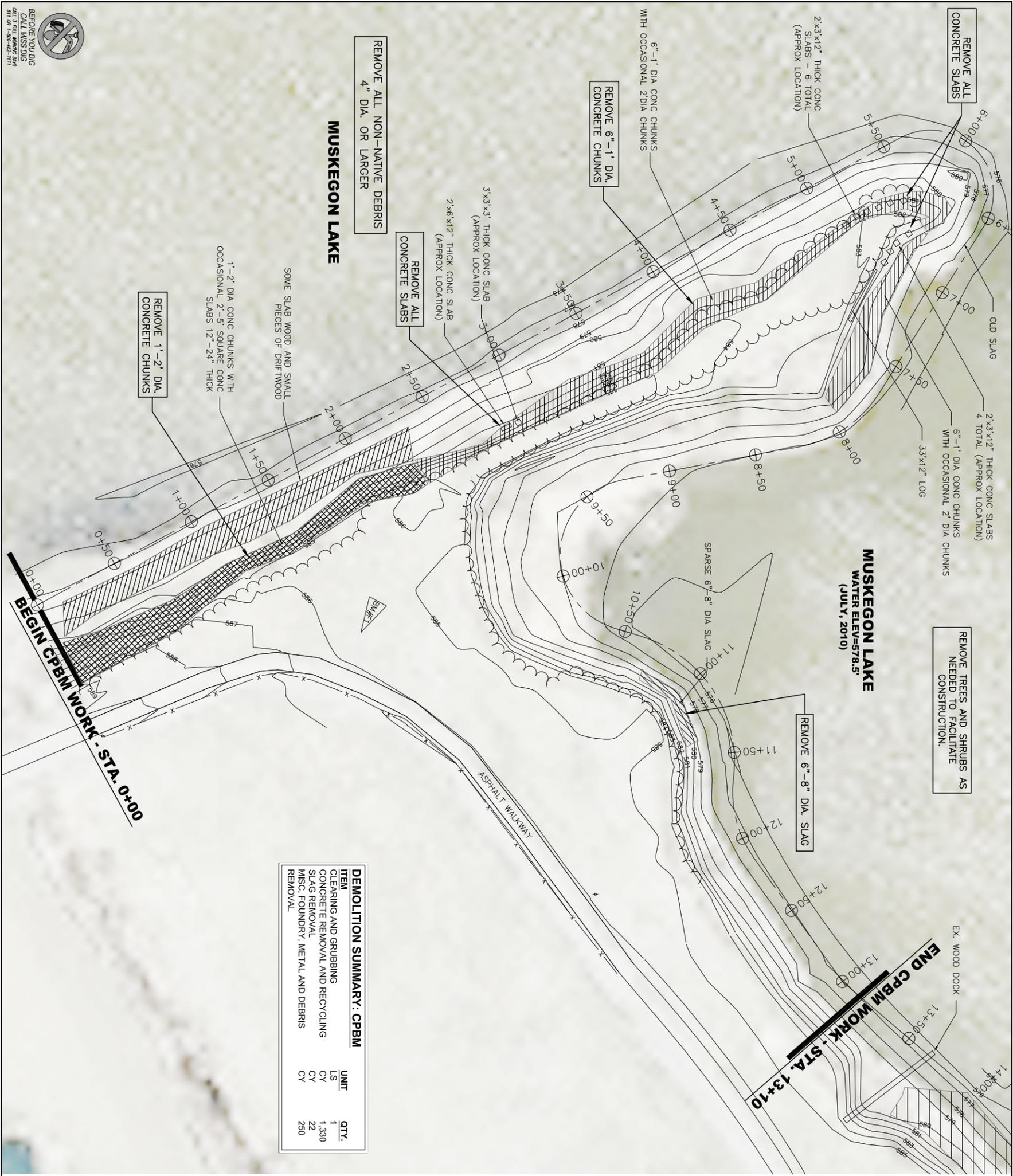
West Michigan Shoreline Regional  
Development Commission and the  
Muskegon Lake Watershed Partnership  
Center Pointe Bay Marina / Michigan Steel/Hartshorn  
Center Pointe Bay Marina Existing Conditions

DRAWN BY: RAB  
DESIGNED BY: BM  
DATE: 09/26/2013  
JOB NO.: 0902035



**SHEET NO.**  
**4**  
**OF 23**

**BEFORE YOU DIG  
CALL MISS DIG**  
CALL 3 FEET BEFORE DMS  
811 OR 1-800-482-7771



**DEMOLITION SUMMARY: CPBM**

ITEM	UNIT	QTY.
CLEARING AND GRUBBING	LS	1
CONCRETE REMOVAL AND RECYCLING	CY	1,330
SLAG REMOVAL	CY	22
MISC. FOUNDRY, METAL AND DEBRIS REMOVAL	CY	250

REMOVE TREES AND SHRUBS AS NEEDED TO FACILITATE CONSTRUCTION.

**MUSKEGON LAKE**  
WATER ELEV.=578.5'  
(JULY, 2010)

REMOVE ALL NON-NATIVE DEBRIS 4" DIA. OR LARGER

REMOVE 6"-1" DIA CONCRETE CHUNKS

REMOVE ALL CONCRETE SLABS

REMOVE 1"-2" DIA. CONCRETE CHUNKS

REMOVE 6"-8" DIA. SLAG

**BEGIN CPBM WORK - STA. 0+00**

**END CPBM WORK - STA. 13+10**

**LEGEND**

- ▲ TEMP. SURVEY Point
- △ BENCHMARK
- ⊕ SECTION CORNER
- ⊕ FIRE HYDRANT
- ⊕ WATER VALVE
- ⊕ CURB STOP & BOX
- ⊕ CABLE BOX
- ⊕ TELEPHONE RISER
- ⊕ TELEPHONE MANHOLE
- ⊕ ELECTRICAL RISER
- ⊕ ELECTRICAL MANHOLE
- ⊕ POWER POLE
- ⊕ LIGHT POLE
- ⊕ YARD LIGHT
- ⊕ SIGN
- ⊕ GUARD POST
- ⊕ MONITORING WELL
- ▨ BRUSH
- ▨ CATTAILS
- ▨ 6-12" CONCRETE CHUNKS
- ▨ 12-24" CONCRETE CHUNKS
- ▨ SLAG MATERIAL
- ▨ CONCRETE SLABS
- ▨ WOOD/NON-NATIVE DEBRIS
- ⊕ STATIONING MARKER
- x — FENCE — x —
- ⊕ WOODLINE

BM #E1 EL. 585.64'  
TOP OF SET 3/8" IRON ROD  
⊕ BEND IN BIT WALK ⊕ APPROX INTERSECTION OF NORTH & WEST LINES OF WALK  
(DATUM=NAVD88 VIA GPS & OPUS)  
SURVEY DATA PREPARED BY FLEIS & VANDENBRINK ENGINEERING, INC. (DEC., 2009).

**NOTES:**

1. ALL ITEMS LISTED ON THE LEGEND MAY NOT BE PRESENT ON THE DRAWING.
2. ALL PROPERTY AND/OR RIGHT-OF-WAY LINES SHOWN ARE APPROXIMATE.
3. ALL UNDERGROUND UTILITIES ARE APPROXIMATE BASED ON UTILITY PLANS, AS-BUILT PLANS OR FIELD OBSERVATIONS.
4. ALL REMOVED SOIL, STONE AND DEBRIS SHALL BE PLACED AT A TYPE II LANDFILL OR RECYCLED.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO EXISTING STRUCTURES, ASPHALT PATH OR TURF GRASS.
6. ALL DAMAGED TURF GRASS SHALL BE REPAIRED BY RE-SEEDING WITH PENNSYLVANIA SEED MIX 'B'.
7. ALL TREES GREATER THAN 12" DBH SHALL BE PLACED AT THE MSH SITE OR ANOTHER ON-SITE LOCATION AT THE DIRECTION OF THE ENGINEER.
8. REMOVE ALL NON-NATIVE MATERIAL 4" DIAMETER OR LARGER WITHIN 15 FEET OF WATERS EDGE AT THE TIME OF CONSTRUCTION. ALL METAL DEBRIS SHALL BE TRANSPORTED TO MICHIGAN STEEL FOR RECYCLING.
9. ALL QUANTITIES LISTED ARE APPROXIMATIONS. CONTRACTORS WILL BE PAID ON A PER-UNIT BASIS FOR MATERIAL ACTUALLY REMOVED.

GRAPHIC SCALE VERIFICATION:  
This drawing is based on a 1/2" = 10' original.  
Adjust scale accordingly.

SCALE IN FEET  
0 30'

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616-541-1880

REVISION

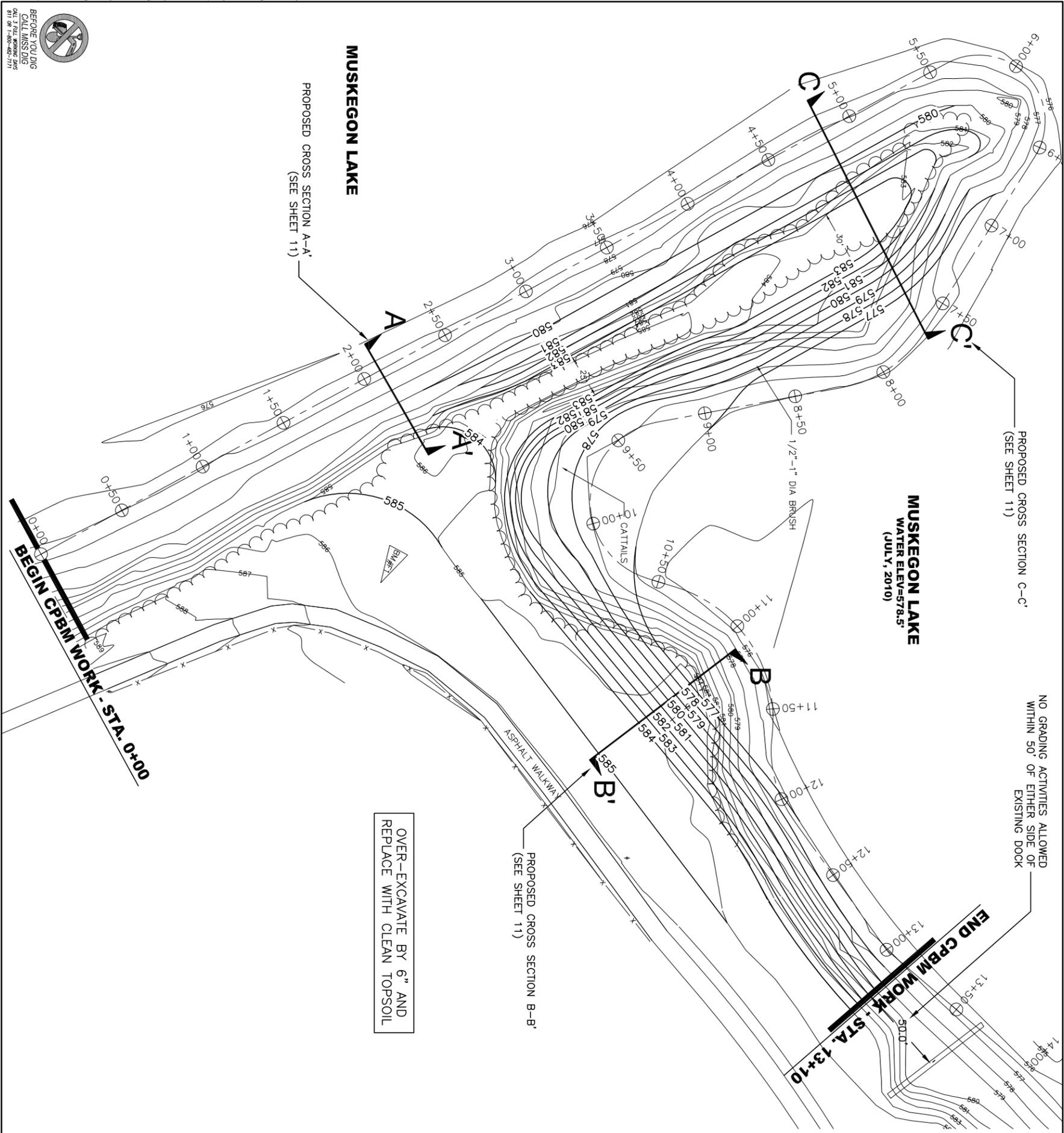
NO.	DESCRIPTION

West Michigan Shoreline Regional  
Development Commission and the  
Muskegon Lake Watershed Partnership  
Center Pointe Bay Marina / Michigan Steel/Hartshorn  
Center Pointe Bay Marina Demolition Plan

DRAWN BY: RAB  
DESIGNED BY: BM  
DATE: 09/26/2013  
JOB NO.: 0902035

**5**  
SHEET NO.  
OF 23

**BEFORE YOU DIG  
CALL MISS DIG**  
CALL 3 FEET BEFORE DMS  
811 OR 1-800-482-7171



NO GRADING ACTIVITIES ALLOWED  
WITHIN 50' OF EITHER SIDE OF  
EXISTING DOCK

PROPOSED CROSS SECTION C-C'  
(SEE SHEET 11)

**MUSKEGON LAKE**  
WATER ELEV=578.5'  
(JULY, 2010)

**MUSKEGON LAKE**

PROPOSED CROSS SECTION A-A'  
(SEE SHEET 11)

PROPOSED CROSS SECTION B-B'  
(SEE SHEET 11)

OVER-EXCAVATE BY 6" AND  
REPLACE WITH CLEAN TOPSOIL

**BEGIN CPBM WORK - STA. 0+00**

**END CPBM WORK - STA. 13+70**

**LEGEND**

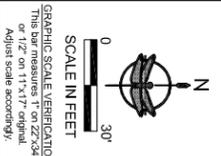
- 575 ——— EXISTING CONTOUR
- 582 ——— PROPOSED CONTOUR
- 2+50 ⊕ STATIONING MARKER

**GRADING SUMMARY: CPBM**

ITEM	UNIT	QTY.
GRADING / EXCAVATION (TOTAL CUT)	CY	3,034
GRADING / EXCAVATION (TOTAL FILL)	CY	1,153
6" TOPSOIL INSTALLATION	CY	1,154

**NOTES:**

1. CONTRACTOR SHALL EXCAVATE SITE TO PROPOSED GRADE AND PLACE SPOILS MATERIAL AT INDICATED SOIL STOCKPILE AREA (OR ALTERNATE AREA IF REQUIRED BY ONSITE ENGINEER).
2. CONTRACTOR SHALL EXCAVATE TOP 6" OF EXISTING SOIL FROM PROPOSED GRADE (ABOVE WATER LINE - 578.3'), THEN REPLACE WITH 6" OF CLEAN TOPSOIL (TO MEET PROPOSED GRADE).
3. NO GRADING IS TO BE PERFORMED WITHIN 50 FEET ON EITHER SIDE OF EXISTING DOCK AT STA. 13+60. CLEARING AND GRUBBING AND DEBRIS REMOVAL IS ALLOWED.
4. ALL METAL DEBRIS SHALL BE TRANSPORTED TO MICHIGAN STEEL FOR RECYCLING.
5. ALL REMOVED SOIL, STONE AND DEBRIS SHALL BE PLACED AT A TYPE II LANDFILL OR RECYCLED.
6. ALL GRADES SHOWN ON PLAN ARE FINAL, INCLUDING TOPSOIL.
7. SILT CURTAIN SHALL BE MAINTAINED AROUND ALL ACTIVE AREAS OF EXCAVATION.
8. QUANTITIES LISTED HAVE NOT ACCOUNTED FOR POST-EXCAVATION EXPANSION.



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West Michigan Shoreline Regional  
Development Commission and the  
Muskegon Lake Watershed Partnership  
Center Pointe Bay Marina / Michigan Steel/Hartshorn  
Center Pointe Bay Marina Grading Plan

DRAWN BY: RAB  
DESIGNED BY: BM  
DATE: 09/26/2013  
JOB NO.: 0902035

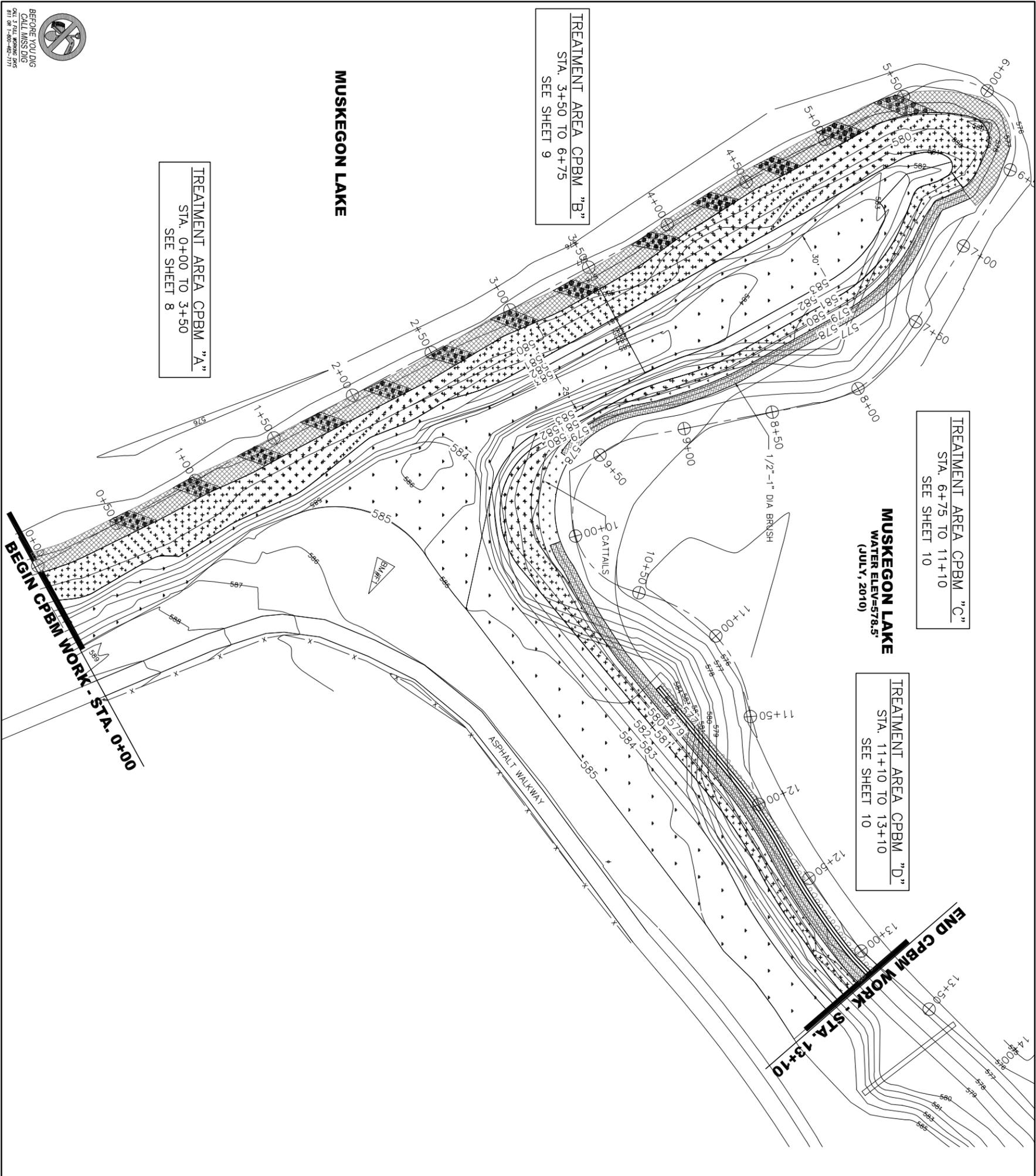


SHEET NO.

**6**

OF 23

BEFORE YOU DIG  
CALL MISS DIG  
CALL 3 FEET WORKING DAYS  
811 OR 1-800-482-7771



TREATMENT AREA CPBM "C"  
STA. 6+75 TO 11+10  
SEE SHEET 10

MUSKEGON LAKE  
WATER ELEV.=578.5'  
(JULY, 2010)

TREATMENT AREA CPBM "D"  
STA. 11+10 TO 13+10  
SEE SHEET 10

TREATMENT AREA CPBM "B"  
STA. 3+50 TO 6+75  
SEE SHEET 9

TREATMENT AREA CPBM "A"  
STA. 0+00 TO 3+50  
SEE SHEET 8

MUSKEGON LAKE

BEGIN CPBM WORK - STA. 0+00

END CPBM WORK - STA. 13+10

**LEGEND**

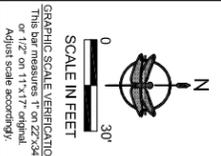
- 575 — EXISTING CONTOUR
- 582 — PROPOSED CONTOUR
- ⊕ 2+50 ⊕ STATIONING MARKER
- PENINSULA SHORELINE NATIVE SEED MIX "A" (SEE SHEET 21)
- PENINSULA SHORELINE NATIVE SEED MIX "B" (SEE SHEET 21)
- 18-24" BARE ROOT SHRUBS 3' O.C.
- PRE-VEGETATED COCONUT PILLOW
- ROCK TOE
- COIR LOG TREATMENT

**QUANTITY SUMMARY: CPBM**

ITEM	UNIT	QTY.
ROCK TOE INSTALLATION - 8'-18" STONE	CY	196
ROCK TOE INSTALLATION - 12-24" STONE	CY	180
BOULDER INSTALLATION - 24-36"	EA	226
PENINSULA SHORELINE NATIVE SEED MIX "A"	AC	0.65
PENINSULA SHORELINE NATIVE SEED MIX "B"	AC	0.80
18-24" BARE ROOT SHRUBS	EA	2,200
NAG C-125BN INSTALL	SY	3,936
NAG SC-250 INSTALL	SY	778
NAG C-350 INSTALL	SY	1,509
PRE-VEGETATED COCONUT PILLOW	LF	1,920
7 OZ. NONWOVEN GEOTEXTILE	SY	648
MISC. REPAIR-RESTORATION	LS	1
ARRA SIGNAGE INSTALLATION	LS	1
PLANT MATERIAL AND INSTALLATION	LS	1
TOPSOIL BACKFILL	CY	30
20" DIA. COIR LOG INSTALLATION	LF	400
1-GALLON POTTED SHRUBS	EA	135

**NOTES:**

1. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO EXISTING STRUCTURES; ASPHALT PATH OR TURF GRASS.
2. ALL DAMAGED TURF GRASS SHALL BE REPAIRED BY RE-SEEDING.
3. CONTRACTOR SHALL AVOID ALL EXISTING CONDUIT, PIPING, AND STRUCTURES WITHIN PROJECT AREA. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRS TO ANY STRUCTURES DAMAGED DURING CONSTRUCTION.

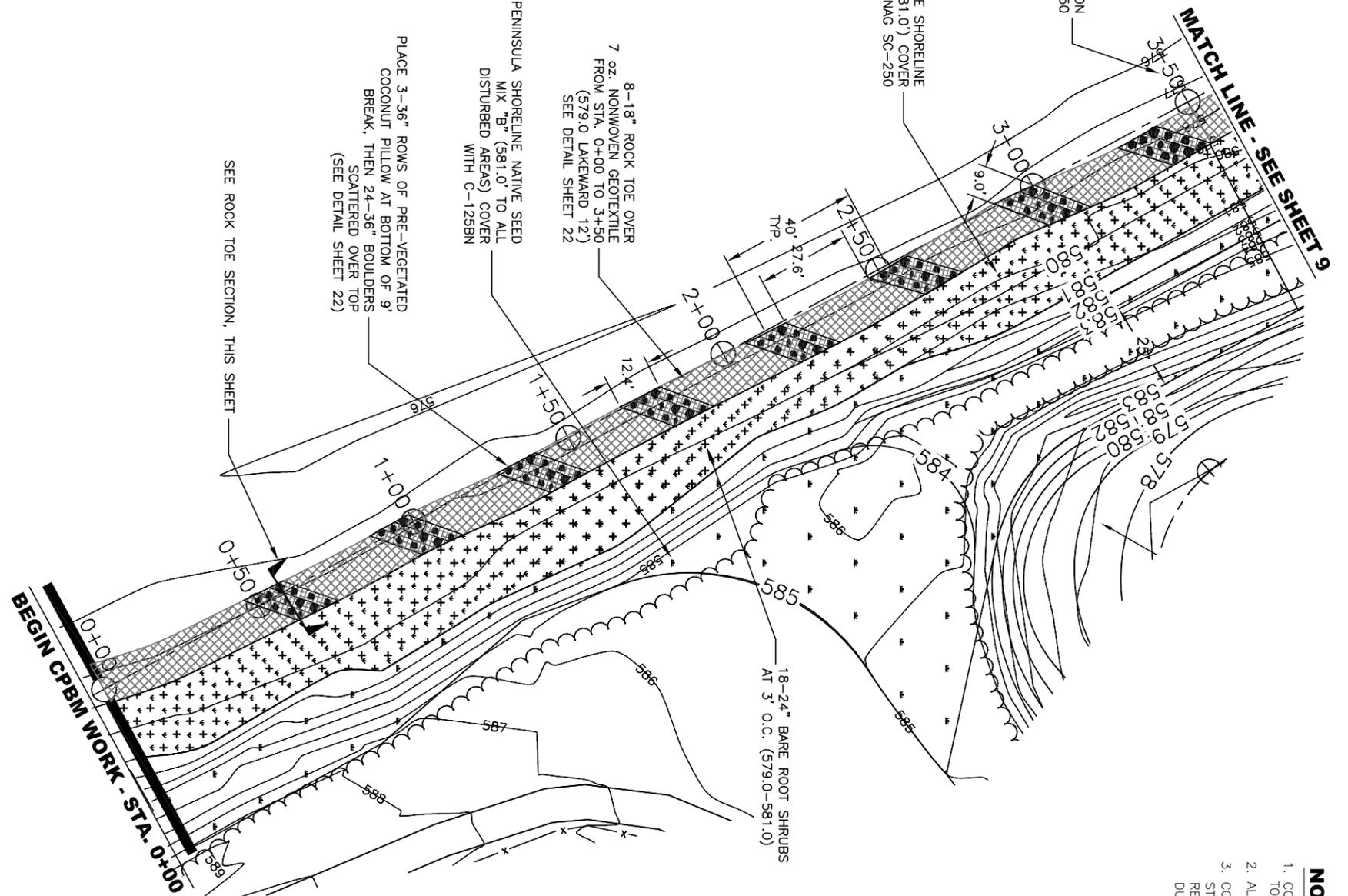


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West Michigan Shoreline Regional  
Development Commission and the  
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Center Pointe Bay Marina / Michigan Steel/Hartshorn  
Center Pointe Bay Marina Restoration Plan

DRAWN BY: RAB  
DESIGNED BY: BM  
DATE: 09/26/2013  
JOB NO.: 0902035

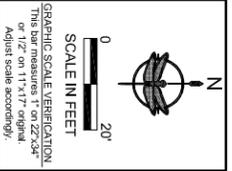
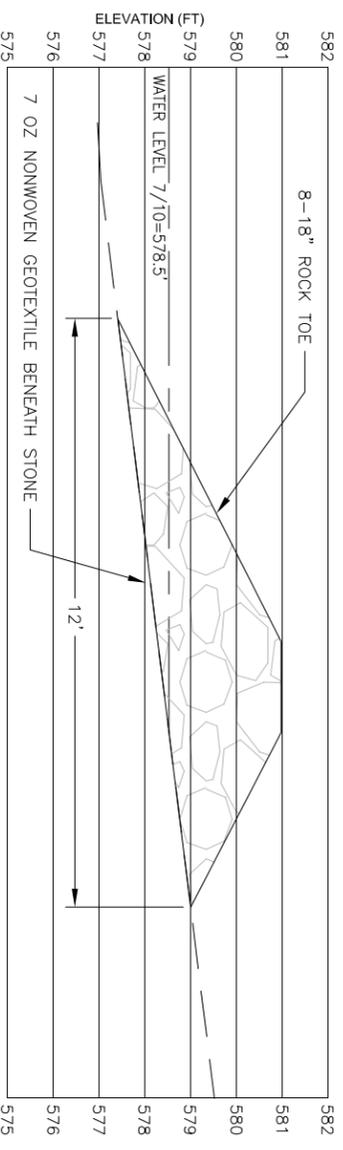
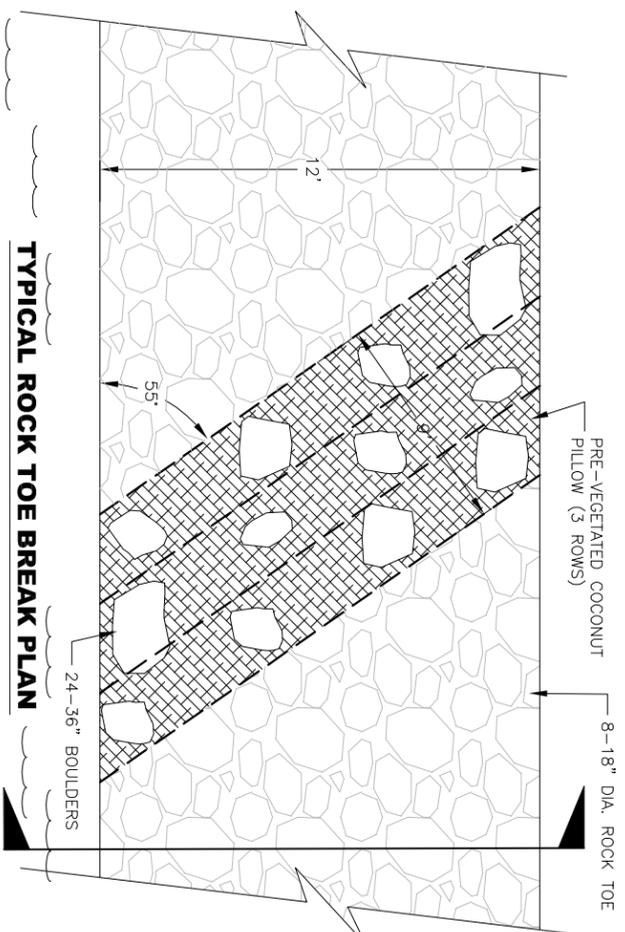
SHEET NO.  
**7**  
OF 23



- NOTES:**
1. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO EXISTING STRUCTURES, ASPHALT PATH OR TURF GRASS.
  2. ALL DAMAGED TURF GRASS SHALL BE REPAIRED BY RE-SEEDING.
  3. CONTRACTOR SHALL AVOID ALL EXISTING CONDUIT, PIPING, AND STRUCTURES WITHIN PROJECT AREA. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRS TO ANY STRUCTURES DAMAGED DURING CONSTRUCTION.

**LEGEND**

	EXISTING CONTOUR
	PROPOSED CONTOUR
	STATIONING MARKER
	PENINSULA SHORELINE NATIVE SEED MIX "A"
	PENINSULA SHORELINE NATIVE SEED MIX "B"
	18-24" BARE ROOT SHRUBS 3' O.C.
	PRE-VEGETATED COCONUT PILLOW
	ROCK TOE



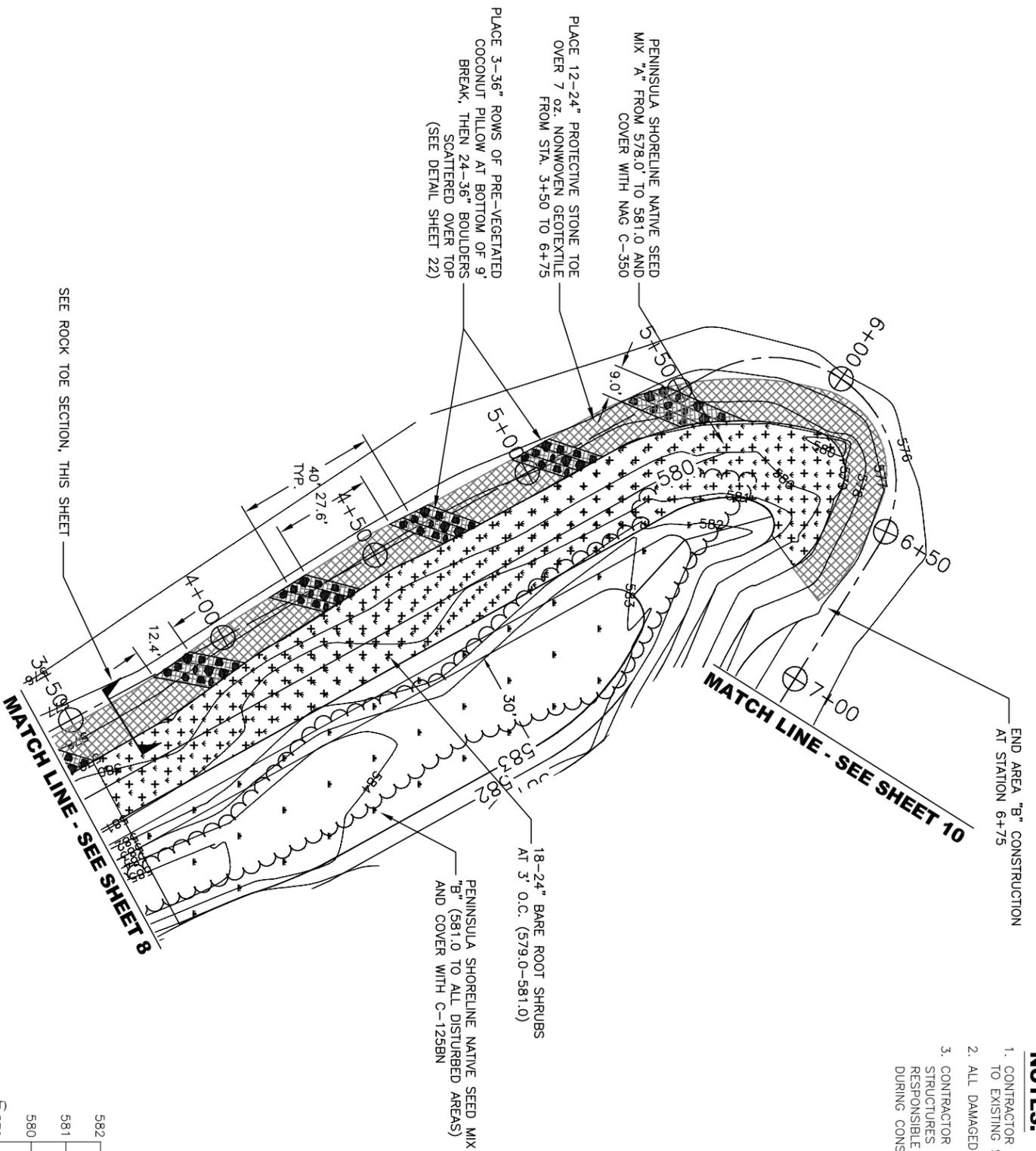
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 Western Michigan  
 11181 Laurel Avenue  
 West Olive, Michigan 49480  
 616-941-1880

West Michigan Shoreline Regional  
 Development Commission and the  
 Muskegon Lake Watershed Partnership  
 Center Pointe Bay Marina / Michigan Steel/Hartshorn  
 Center Pointe Bay Marina Treatment Area "A"

DRAWN BY: RAB  
 DESIGNED BY: BM  
 DATE: 09/26/2013  
 JOB NO.: 0902035

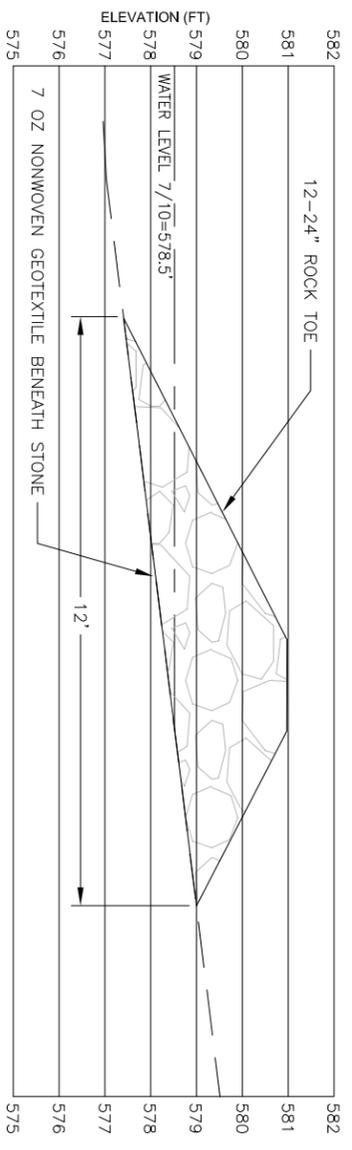
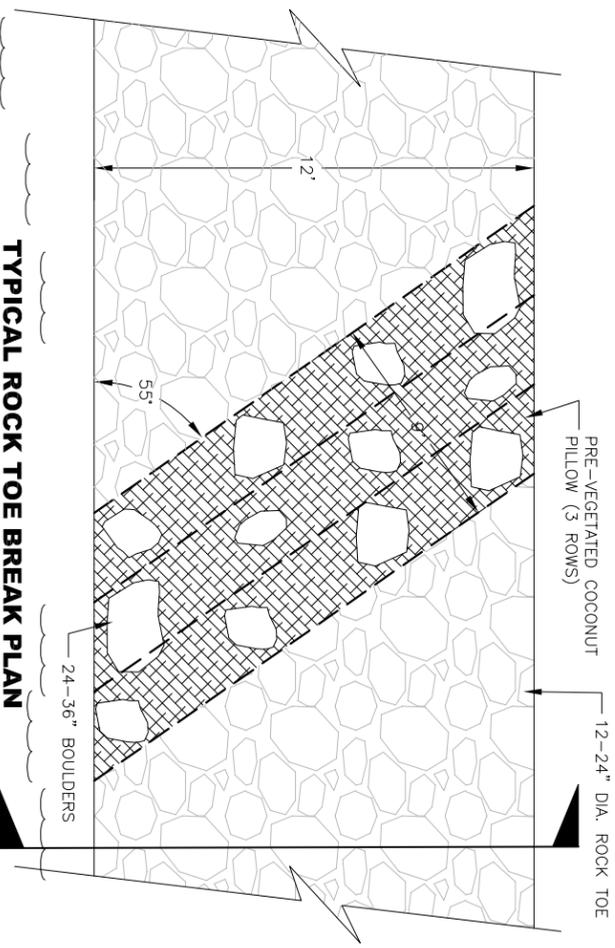


SHEET NO.  
**8**  
 OF 23



- NOTES:**
1. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO EXISTING STRUCTURES, ASPHALT PATH OR TURF GRASS.
  2. ALL DAMAGED TURF GRASS SHALL BE REPAIRED BY RE-SEEDING.
  3. CONTRACTOR SHALL AVOID ALL EXISTING CONDUIT, PIPING, AND STRUCTURES WITHIN PROJECT AREA. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRS TO ANY STRUCTURES DAMAGED DURING CONSTRUCTION.

- LEGEND**
- 575— EXISTING CONTOUR
  - 582— PROPOSED CONTOUR
  - ⊕ STATIONING MARKER
  - PENINSULA SHORELINE NATIVE SEED MIX "A"
  - PENINSULA SHORELINE NATIVE SEED MIX "B"
  - 18-24" BARE ROOT SHRUBS 3' O.C.
  - PRE-VEGETATED COCONUT PILLOW
  - PRE-VEGETATED COCONUT PILLOW (3 ROWS)
  - ROCK TOE



GRAPHIC SCALE VERIFICATION  
 This drawing is printed on a 24" x 36" sheet.  
 Adjust scale accordingly.

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 616-941-1880

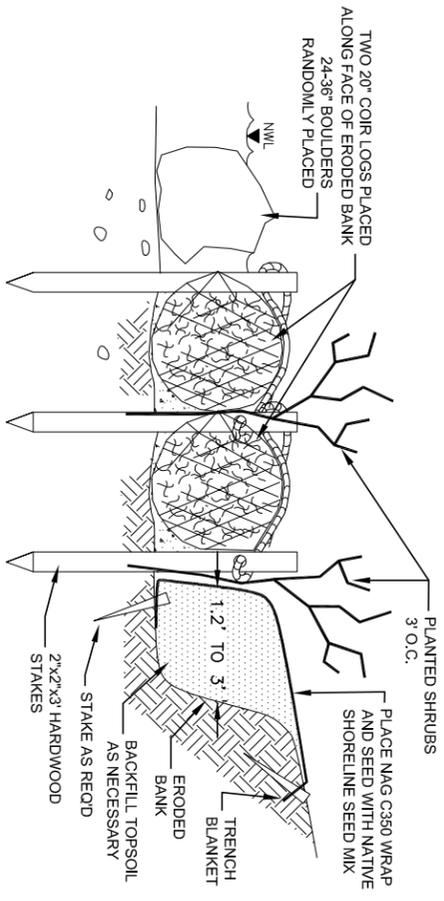
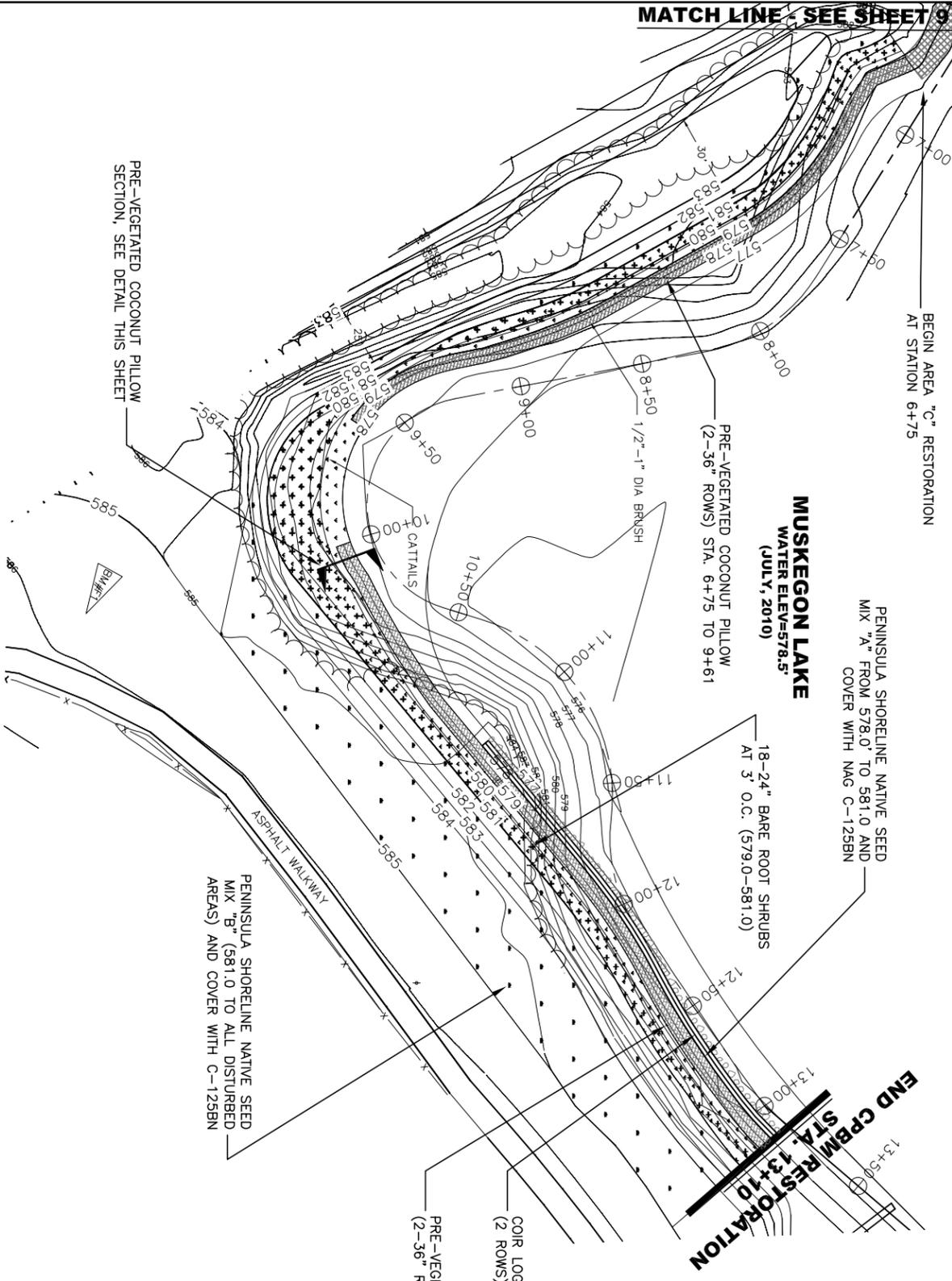
West Michigan Shoreline Regional  
 Development Commission and the  
 Muskegon Lake Watershed Partnership  
 Center Pointe Bay Marina / Michigan Steel/Hartshorn  
 Center Pointe Bay Marina Treatment Area "B"

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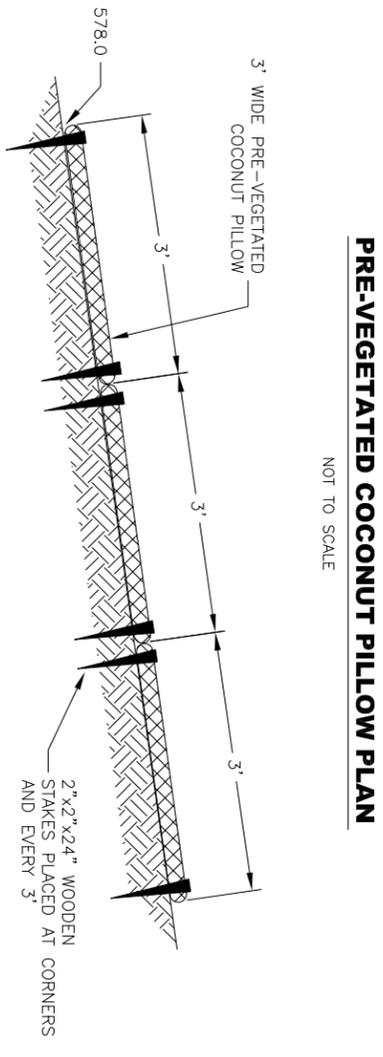
SHEET NO.  
**9**  
 OF 23

**BEFORE YOU DIG  
CALL MISS DIG**  
CALL 3 FEET BEFORE DMS  
811 OR 1-800-482-7171

**MATCH LINE - SEE SHEET 9**



**COIR LOG INSTALLATION**  
NOT TO SCALE



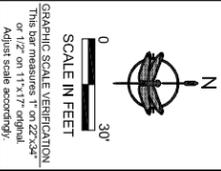
**PRE-VEGETATED COCONUT PILLOW PLAN**  
NOT TO SCALE

**PRE-VEGETATED COCONUT PILLOW SECTION**  
NOT TO SCALE

**LEGEND**

	EXISTING CONTOUR
	PROPOSED CONTOUR
	STATIONING MARKER
	PENINSULAR SHORELINE NATIVE SEED MIX "A"
	PENINSULAR SHORELINE NATIVE SEED MIX "B"
	18-24" BARE ROOT SHRUBS 3' O.C.
	PRE-VEGETATED COCONUT PILLOW
	COIR LOG TREATMENT

- NOTES:**
1. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO EXISTING STRUCTURES, ASPHALT PATH OR TURF GRASS.
  2. ALL DAMAGED TURF GRASS SHALL BE REPAIRED BY RE-SEEDING.
  3. CONTRACTOR SHALL AVOID ALL EXISTING CONDUIT, PIPING, AND STRUCTURES WITHIN PROJECT AREA. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRS TO ANY STRUCTURES DAMAGED DURING CONSTRUCTION.

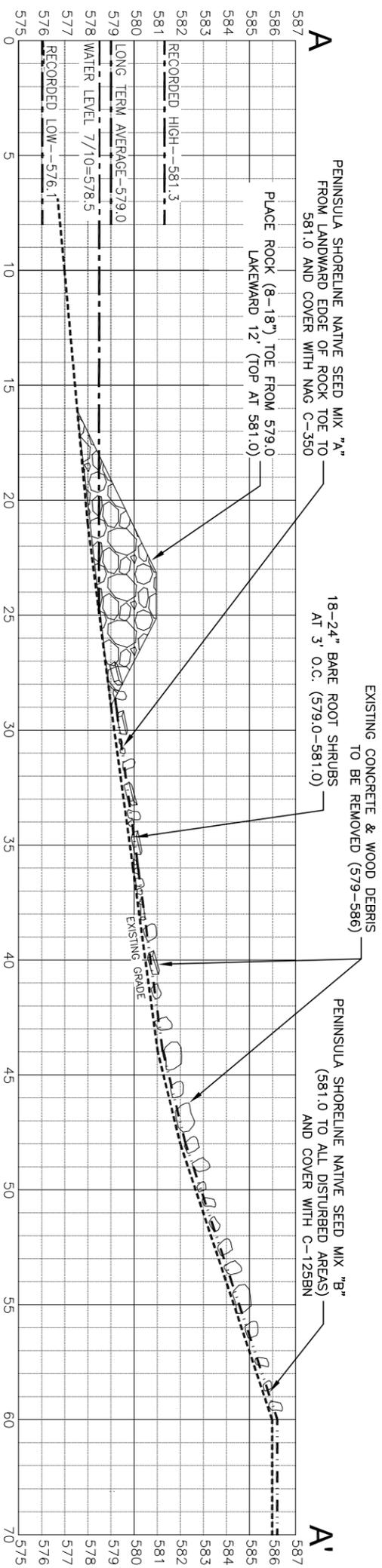


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West Michigan Shoreline Regional  
Development Commission and the  
Muskegon Lake Watershed Partnership  
Center Pointe Bay Marina / Michigan Steel/Hartshorn  
Center Pointe Bay Marina Treatment Area "C-D"

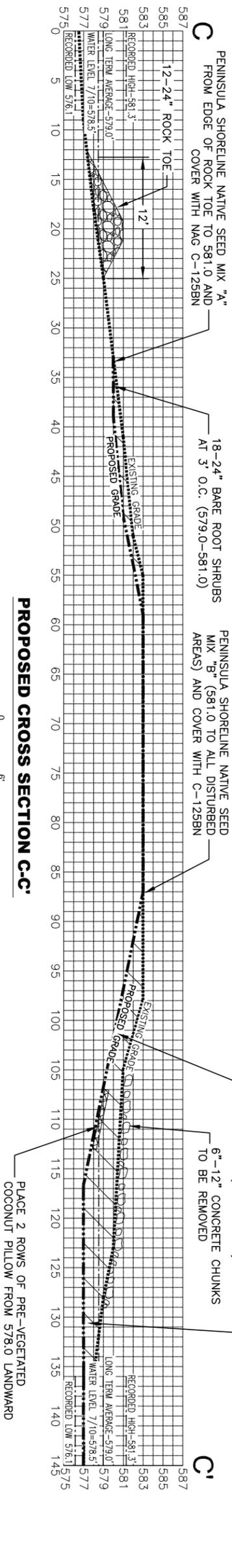
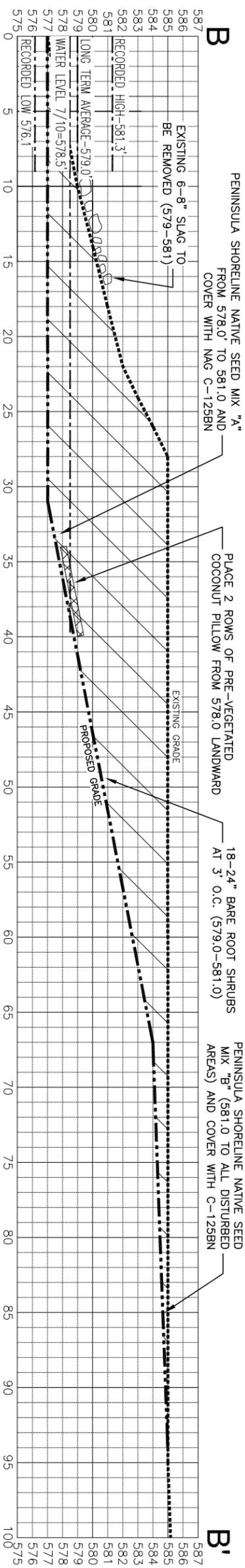
DRAWN BY: RAB  
DESIGNED BY: BM  
DATE: 09/26/2013  
JOB NO.: 0902035

SHEET NO.  
**10**  
OF 23



**LEGEND**

	EXCAVATED SOILS
	CLEAN SOIL BACKFILL



**JFNEW**  
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 709 Roosevelt Road  
 Walkerton, Indiana 46784  
 574-585-5400  
 Western Michigan  
 1181 Marvall Avenue  
 West Olive, Michigan 49880  
 616-941-1880

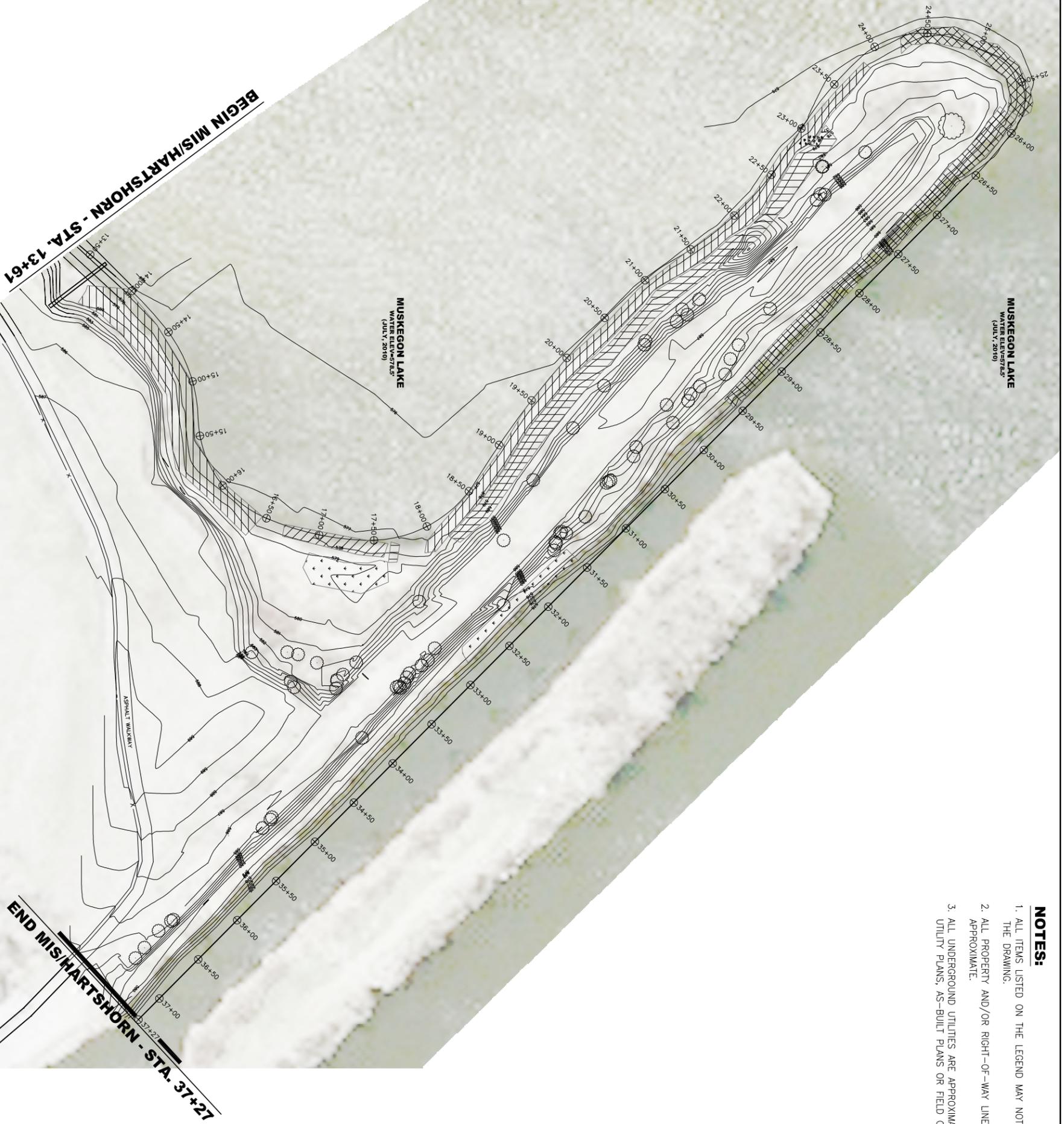
REVISION	DATE	BY

West Michigan Shoreline Regional  
 Development Commission and the  
 Muskegon Lake Watershed Partnership  
 Center Pointe Bay Marina / Michigan Steel/Hartshorn  
 Center Pointe Bay Marina Proposed Cross Sections

DRAWN BY:	RAB
DESIGNED BY:	RAM
DATE:	09/26/2013
JOB NO.:	0902035

**BEFORE YOU DIG  
 CALL MISS DIG**  
 CALL 3 FEET AHEAD 811  
 811 OR 1-800-482-7171

BEFORE YOU DIG  
CALL MISS DIG  
CALL 3 FEET WARNING SMS  
811 OR 1-800-482-7171

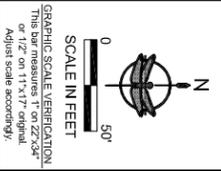


- NOTES:**
1. ALL ITEMS LISTED ON THE LEGEND MAY NOT BE PRESENT ON THE DRAWING.
  2. ALL PROPERTY AND/OR RIGHT-OF-WAY LINES SHOWN ARE APPROXIMATE.
  3. ALL UNDERGROUND UTILITIES ARE APPROXIMATE BASED ON UTILITY PLANS, AS-BUILT PLANS OR FIELD OBSERVATIONS.

**LEGEND**

	TEMP. SURVEY POINT
	BENCHMARK
	SECTION CORNER
	FIRE HYDRANT
	WATER VALVE
	CURB STOP & BOX
	CABLE BOX
	TELEPHONE RISER
	TELEPHONE MANHOLE
	ELECTRICAL RISER
	ELECTRICAL MANHOLE
	POWER POLE
	LIGHT POLE
	YARD LIGHT
	SIGN
	GUARD POST
	MONITORING WELL
	BRUSH
	CATTAILS
	6-12" CONCRETE CHUNKS
	12-24" CONCRETE CHUNKS
	SLAG MATERIAL
	CONCRETE SLABS
	WOOD/NON-NATIVE DEBRIS
	STATIONING MARKER
	FENCE
	WOODLINE

BM #F1 EL. 583.64'  
TOP OF SET 3/8" IRON ROD  
BEND IN BIT WALK @ APPROX  
INTERSECTION OF NORTH & WEST  
LINES OF WALK.  
(DATUM=NAVD88 VIA GPS & OPUS)  
SURVEY DATA PREPARED BY FLEIS &  
VANDEBRINK ENGINEERING, INC.  
(DEC., 2009)



**JFNEW**  
Western Michigan  
1181 Laurel Avenue  
West Olive, Michigan 49480  
616-941-1880

NO.	REVISION

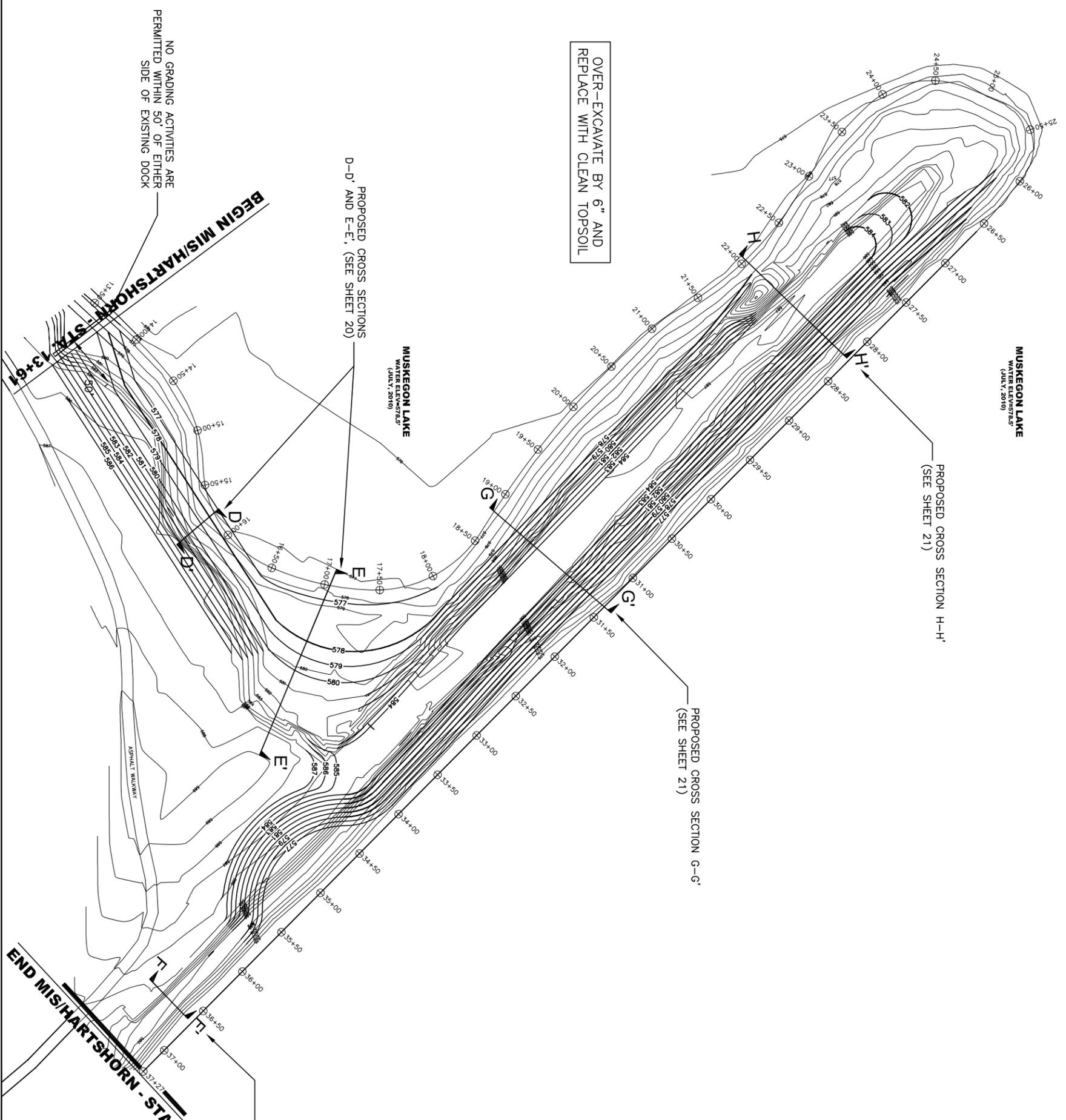
West Michigan Shoreline Regional  
Development Commission and the  
Muskegon Lake Watershed Partnership  
Center Pointe Bay Marina / Michigan Steel/Hartshorn  
Michigan Steel/Hartshorn Existing Conditions

DRAWN BY: RAB  
DESIGNED BY: BM  
DATE: 09/26/2013  
JOB NO.: 0902035

SHEET NO.  
**12**  
OF 23



**BEFORE YOU DIG  
CALL MISS DIG**  
CALL 3 FULL WORKING DAYS  
811 OR 1-800-482-7171



PROPOSED CROSS SECTION H-H'  
(SEE SHEET 21)

PROPOSED CROSS SECTION G-G'  
(SEE SHEET 21)

PROPOSED CROSS SECTION F-F'  
(SEE SHEET 20)

**LEGEND**

— 575 —	EXISTING CONTOUR
— 582 —	PROPOSED CONTOUR
⊕ 25+00	STATIONING MARKER

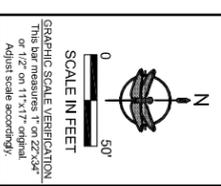
**RE-DESIGN GRADING SUMMARY: MIS / HARTSHORN**

ITEM	UNIT	QTY.
GRADING / EXCAVATION (TOTAL CUT)	CY	10,595
GRADING / EXCAVATION (TOTAL FILL)	CY	817
6" TOPSOIL INSTALLATION	CY	2,063

**NOTES:**

1. CONTRACTOR SHALL EXCAVATE SITE TO PROPOSED GRADE AND PLACE SPOILS MATERIAL AT INDICATED SOIL STOCKPILE AREA (OR ALTERNATE AREA IF REQUIRED BY ONSITE ENGINEER).
2. CONTRACTOR SHALL EXCAVATE TOP 6" OF EXISTING SOIL FROM PROPOSED GRADE (ABOVE WATER LINE - 578.3'), THEN REPLACE WITH 6" OF CLEAN TOPSOIL (TO MEET PROPOSED GRADE).
3. ALL METAL DEBRIS SHALL BE TRANSPORTED TO MICHIGAN STEEL FOR RECYCLING.
4. ALL REMOVED STONE AND DEBRIS SHALL BE PLACED AT A TYPE II LANDFILL OR RECYCLED.
5. ALL GRADES SHOWN ON PLAN ARE FINAL, INCLUDING TOPSOIL.
6. SILT CURTAIN SHALL BE MAINTAINED AROUND ALL ACTIVE AREAS OF EXCAVATION.

BM #1 EL. 585.64'  
TOP OF SET 3/8" IRON ROD  
@ BEND IN BIT WALK @ APPROX  
INTERSECTION OF NORTH & WEST  
LINES OF WALK.  
(DATUM=NAVD88 VIA GPS & OPUS)  
SURVEY DATA PREPARED BY FLEIS &  
VANDERBANK ENGINEERING, INC.  
(DEC., 2009).



**JFNEW**  
Western Michigan  
1181 Laurel Avenue  
West Olive, Michigan 49480  
616-941-1680

Corporate/Northern Indiana  
708 Roosevelt Road  
Walkerton, Indiana 46774  
317-585-5400

REVISION	DATE	BY

West Michigan Shoreline Regional  
Development Commission and the  
Muskegon Lake Watershed Partnership  
Center Pointe Bay Marina / Michigan Steel/Hartshorn  
Michigan Steel/Hartshorn Grading Plan

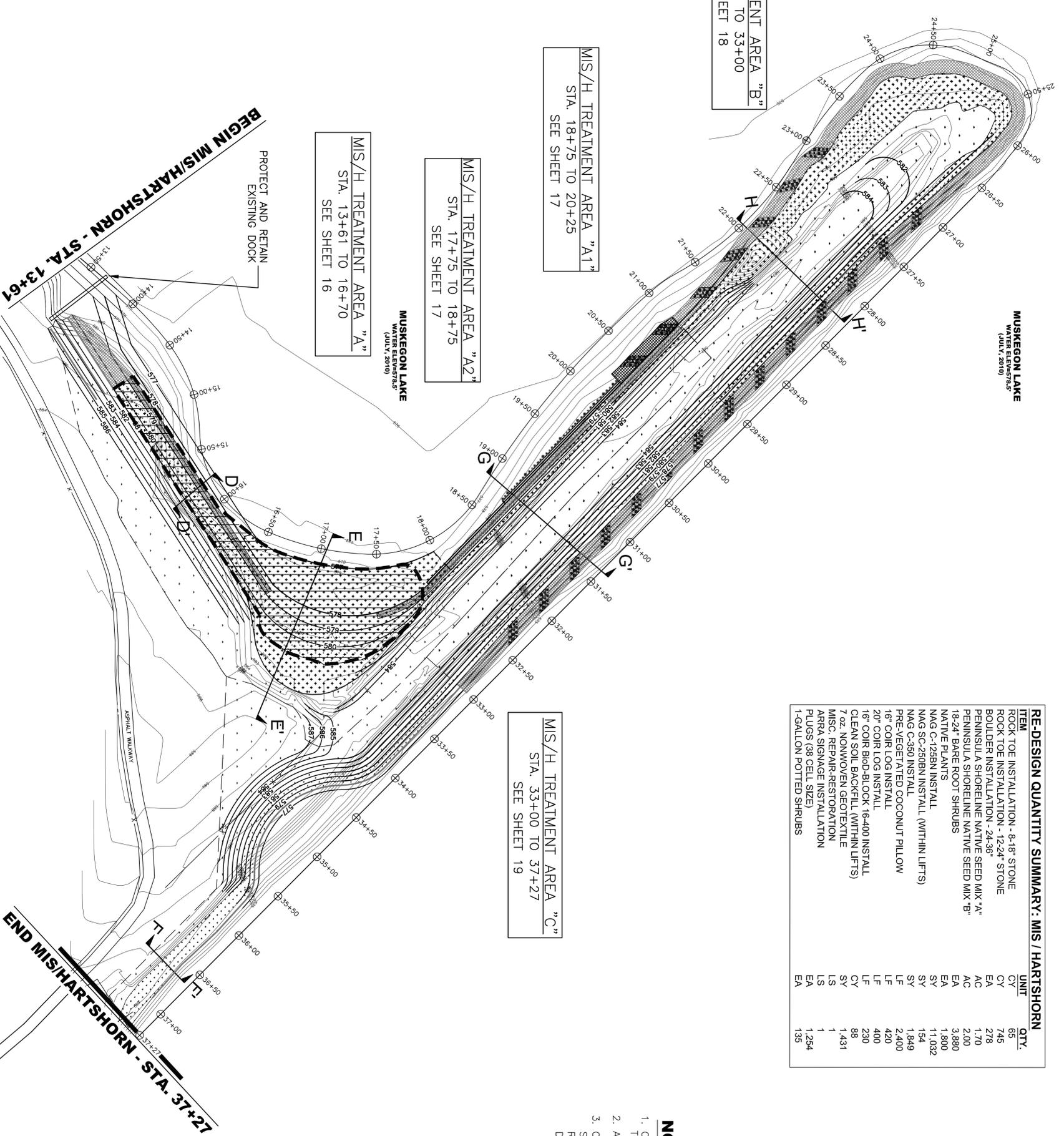
DRAWN BY: RAB  
DESIGNED BY: BM  
DATE: 09/26/2013  
JOB NO.: 0902035

RAB

SHEET NO.  
**14**  
OF 23



BEFORE YOU DIG  
CALL MISS DIG  
811 or 1-800-482-7171



**RE-DESIGN QUANTITY SUMMARY: MIS / HARTSHORN**

ITEM	UNIT	QTY.
ROCK TOE INSTALLATION - 8-18" STONE	CY	65
ROCK TOE INSTALLATION - 12-24" STONE	CY	745
BOULDER INSTALLATION - 24-36"	EA	278
PENINSULA SHORELINE NATIVE SEED MIX "A"	AC	1,70
PENINSULA SHORELINE NATIVE SEED MIX "B"	AC	2,00
18-24" BARE ROOT SHRUBS	EA	3,880
NATIVE PLANTS	EA	1,800
MAG C-128BN INSTALL	SY	11,032
MAG SC-280BN INSTALL (WITHIN LIFTS)	SY	154
MAG C-350 INSTALL	SY	1,849
PRE-VEGETATED COCONUT PILLLOW	LF	2,400
16" COIR LOG INSTALL	LF	420
20" COIR LOG INSTALL	LF	400
16" COIR BIOP-BLOCK 16-400 INSTALL	LF	230
CLEAN SOIL BACKFILL (WITHIN LIFTS)	CY	88
7oz. NONWOVEN GEOTEXTILE	SY	1,431
MISC. REPAIR-RESTORATION	LS	1
ARRA SIGNAGE INSTALLATION	LS	1
PLUGS (38 CELL SIZE)	EA	1,254
1-GALLON POTTED SHRUBS	EA	135

**LEGEND**

- 575 — EXISTING CONTOUR
- 582 — PROPOSED CONTOUR
- ⊕ STATIONING MARKER
- 16" COIR LOG
- PENINSULA NATIVE SHORELINE SEED MIX "A"
- PENINSULA NATIVE SHORELINE SEED MIX "B"
- 18-24" BARE ROOT SHRUBS 3' O.C.
- PRE-VEGETATED COCONUT PILLLOW
- ROCK TOE
- COIR LOG TREATMENT

**NOTES:**

1. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO EXISTING STRUCTURES, ASPHALT PATH OR TURF GRASS.
2. ALL DAMAGED TURF GRASS SHALL BE REPAIRED BY RE-SEEDING.
3. CONTRACTOR SHALL AVOID ALL EXISTING CONDUIT, PIPING, AND STRUCTURES WITHIN PROJECT AREA. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRS TO ANY STRUCTURES DAMAGED DURING CONSTRUCTION.

BM #E1  
TOP OF SET 3/8" IRON ROD  
@ BEND IN BIT WALK @ APPROX  
INTERSECTION OF NORTH & WEST  
LINES OF WALK  
(DATUM=NAVD88 VIA GPS & OPUS)  
SURVEY DATA PREPARED BY FLETS &  
VANDENBROEK ENGINEERING, INC.  
(DEC., 2009).



West Michigan Shoreline Regional  
Development Commission and the  
Muskegon Lake Watershed Partnership  
Center Pointe Bay Marina / Michigan Steel/Hartshorn  
Michigan Steel/Hartshorn Restoration Plan

DRAWN BY: RAB  
DESIGNED BY: BM  
DATE: 09/28/2013  
JOB NO.: 0902035

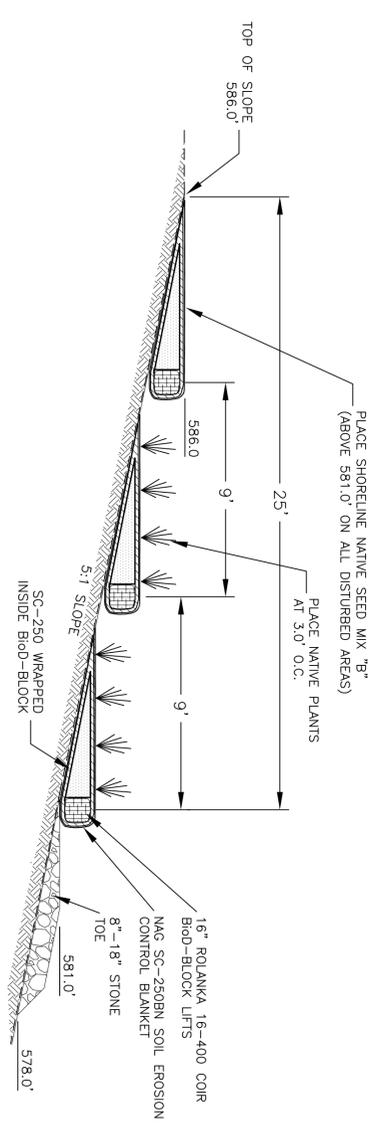
**JFNew**  
Corporate/Nonmember Indiana  
708 Roosevelt Road  
Wakarusa, Indiana 46574  
574-585-3400  
Western Michigan  
1181 Marcell Avenue  
West Olive, Michigan 49480  
616-941-1800

REVISION


GRAPHIC SCALE VERIFICATION  
This bar measures 1" on 25'x34"  
scale. All dimensions are in feet.  
Adjust scale accordingly.

SCALE IN FEET  
0 50'

SHEET NO.  
**15**  
OF 23



**SHORELINE TREATMENT "A" - STA. 13+61 TO 14+53**  
NOT TO SCALE

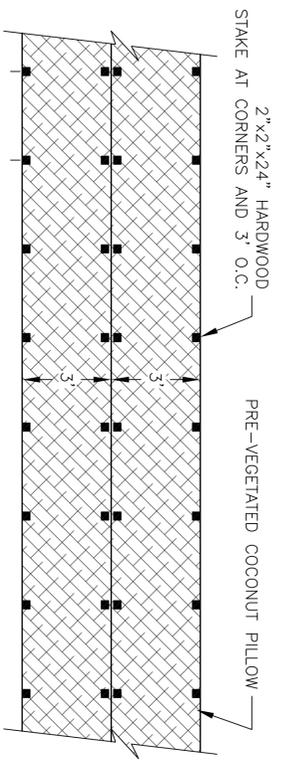
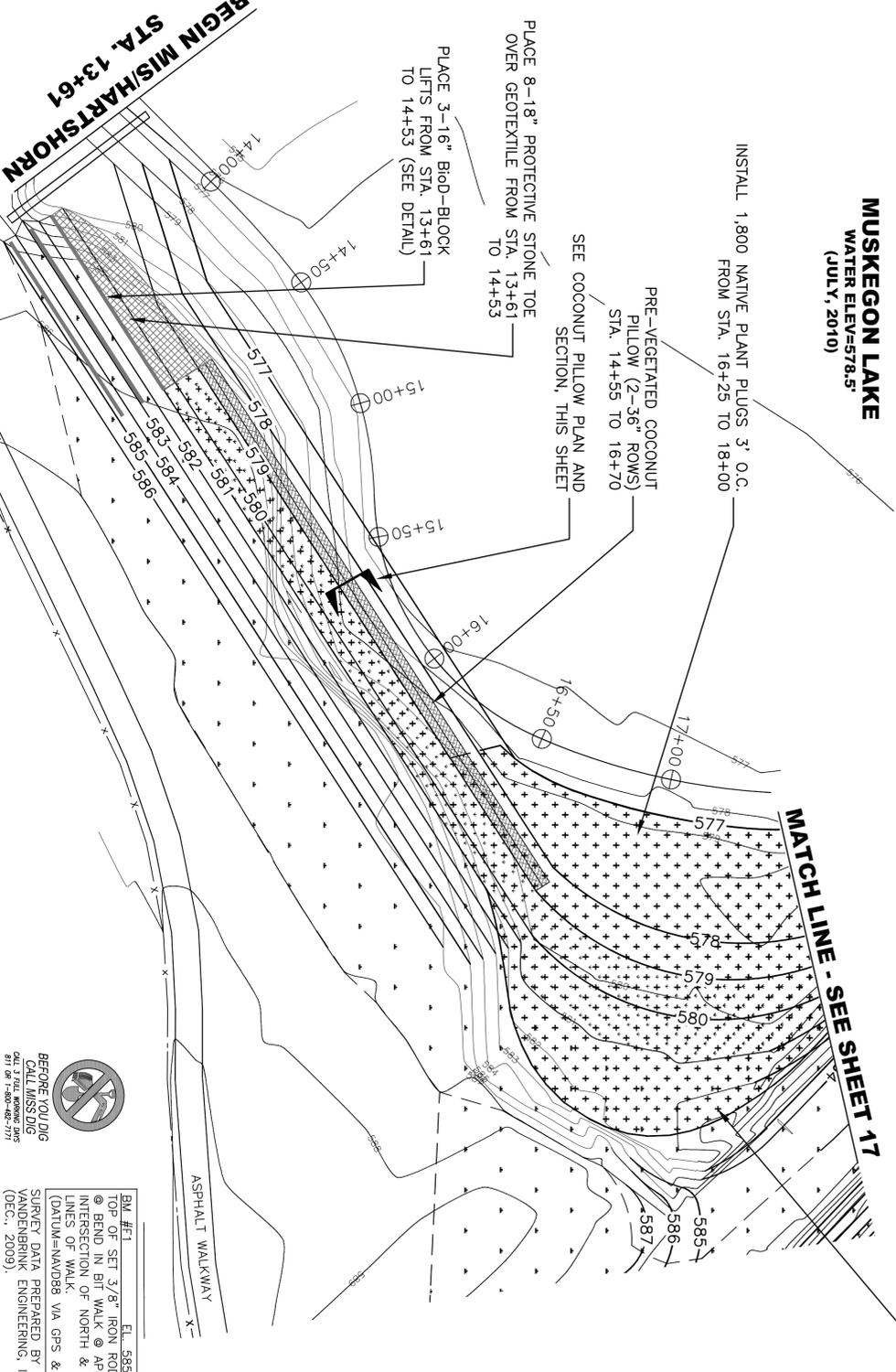
**LEGEND**

	EXISTING CONTOUR
	PROPOSED CONTOUR
	STATIONING MARKER
	PENINSULA NATIVE SHORELINE SEED MIX "A"
	PENINSULA NATIVE SHORELINE SEED MIX "B"
	18-24" BARE ROOT SHRUBS 3' O.C.
	PRE-VEGETATED COCONUT PILLOW

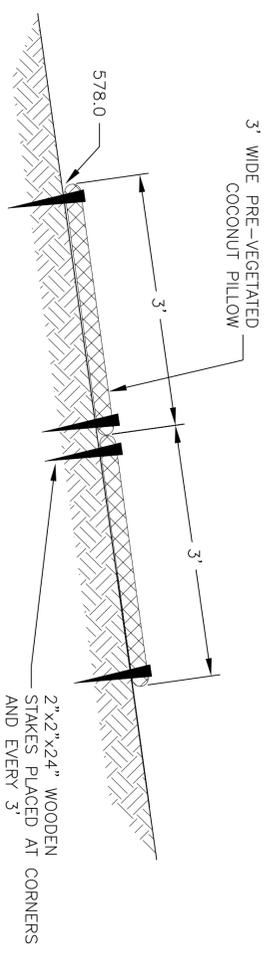
**NOTES:**

1. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO EXISTING STRUCTURES, ASPHALT PATH OR TURF GRASS.
2. ALL DAMAGED TURF GRASS SHALL BE REPAIRED BY RE-SEEDING.
3. CONTRACTOR SHALL AVOID ALL EXISTING CONDUIT, PIPING, AND STRUCTURES WITHIN PROJECT AREA. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRS TO ANY STRUCTURES DAMAGED DURING CONSTRUCTION.

**MUSKEGON LAKE**  
WATER ELEV=578.5'  
(JULY, 2010)



**PRE-VEGETATED COCONUT PILLOW PLAN**  
NOT TO SCALE

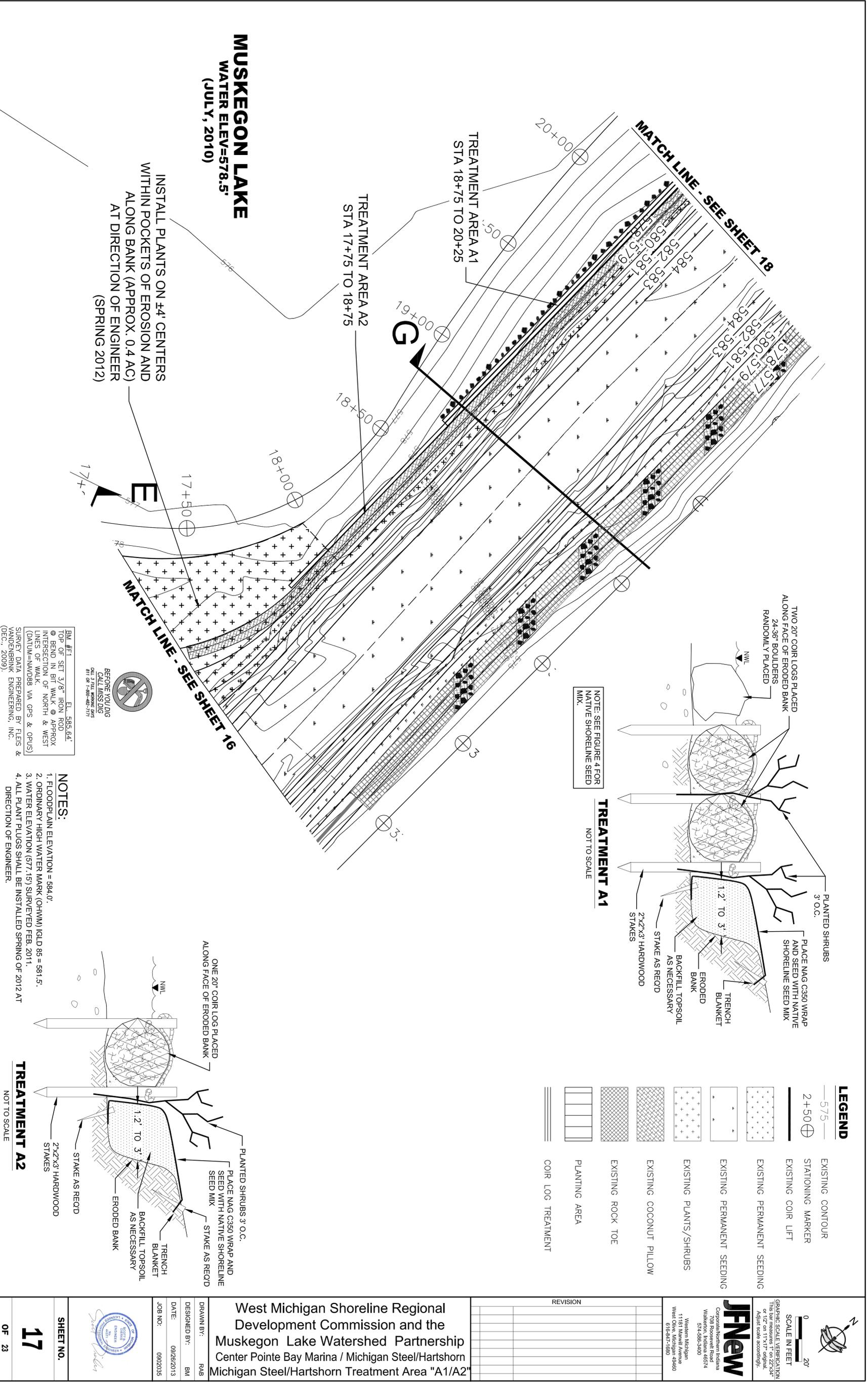


**PRE-VEGETATED COCONUT PILLOW SECTION**  
NOT TO SCALE

BEFORE YOU DIG  
CALL MISS DIG  
811 or 1-800-482-7179

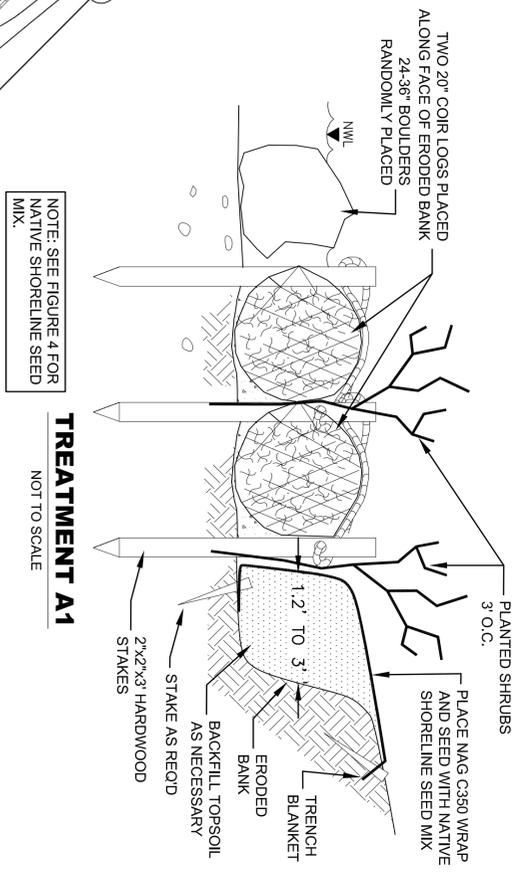
EL. 585.64'  
TOP OF SET 3/8" IRON ROD  
BEND IN BIT WALK @ APPROX  
INTERSECTION OF NORTH & WEST  
LINES OF WALK.  
(DATUM=NAVD88 VIA GPS & OPUS)  
SURVEY DATA PREPARED BY FLES &  
VANDENBRINK ENGINEERING, INC.  
(DEC., 2009).

 SCALE IN FEET 0 30' GRAPHIC SCALE VERIFICATION This bar measures 1" on 22x34" sheets of drawings. Actual scale according to drawing.	 JFNew Corporate/Nonprofit Indiana 708 Rosewell Road Walkerton, Indiana 46574 574-586-3400 Western Michigan 1181 Marcell Avenue West Olive, Michigan 49480 616-541-1800	REVISION
		West Michigan Shoreline Regional Development Commission and the Muskegon Lake Watershed Partnership Center Pointe Bay Marina / Michigan Steel/Hartshorn Michigan Steel/Hartshorn Treatment Area "A"
DRAWN BY: RAB DESIGNED BY: BM DATE: 09/28/2013 JOB NO: 0902035	SHEET NO. <b>16</b> OF 23	



**MUSKEGON LAKE**  
**WATER ELEV=578.5'**  
**(JULY, 2010)**

INSTALL PLANTS ON ±4' CENTERS WITHIN POCKETS OF EROSION AND ALONG BANK (APPROX. 0.4 AC) AT DIRECTION OF ENGINEER (SPRING 2012)



NOTE: SEE FIGURE 4 FOR NATIVE SHORELINE SEED MIX.

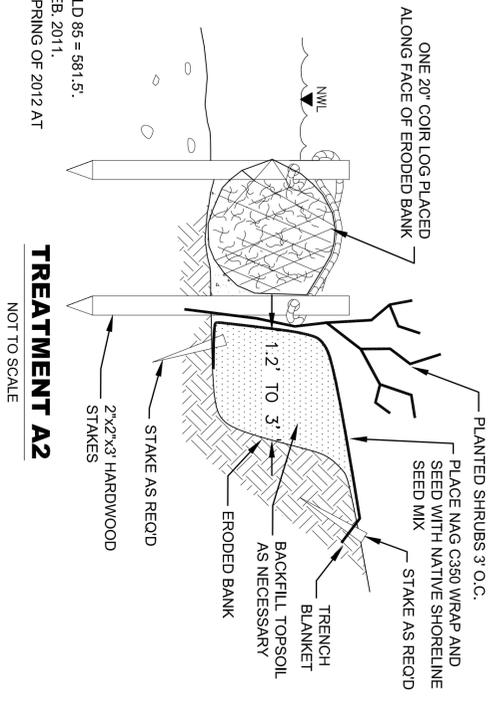
**TREATMENT A1**  
 NOT TO SCALE

BEFORE YOU DIG  
 CALL MISS DIG  
 811 OR 1-800-482-7171



BW #1 EL. 585.64'  
 TOP OF SET 3/8" IRON ROD  
 @ BEND IN BIT WALK @ APPROX INTERSECTION OF NORTH & WEST LINES OF WALK.  
 (DATUM=NAVD88 VIA GPS & OPUS)  
 SURVEY DATA PREPARED BY FLEIS & VANDERBRINK ENGINEERING, INC. (DEC., 2009).

- NOTES:**
1. FLOODPLAIN ELEVATION = 584.0'
  2. ORDINARY HIGH WATER MARK (OHWM) (GLD 85 = 581.5').
  3. WATER ELEVATION (577.15) SURVEYED FEB. 2011.
  4. ALL PLANT PLUGS SHALL BE INSTALLED SPRING OF 2012 AT DIRECTION OF ENGINEER.



**TREATMENT A2**  
 NOT TO SCALE

**LEGEND**

— 5.75 —	EXISTING CONTOUR
⊕ 2+50	STATIONING MARKER
—	EXISTING COIR LIFT
+	EXISTING PERMANENT SEEDING
•	EXISTING PERMANENT SEEDING
+	EXISTING PLANTS/SHRUBS
+	EXISTING COCONUT PILLOW
+	EXISTING ROCK TOE
+	PLANTING AREA
+	COIR LOG TREATMENT

<p><b>SHEET NO.</b>  <b>17</b>                  OF 23</p>		<p><b>West Michigan Shoreline Regional Development Commission and the Muskegon Lake Watershed Partnership</b>                  Center Pointe Bay Marina / Michigan Steel/Hartshorn                  Michigan Steel/Hartshorn Treatment Area "A1/A2"</p>	<p><b>REVISION</b></p> <table border="1"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>									<p><b>JFNew</b>                  Corporation/Nonprofit Indiana                  708 Roosevelt Road                  Walkerton, Indiana 46574                  574-585-3400                  Western Michigan                  1181 Newell Avenue                  West Olive, Michigan 49480                  616-541-1800</p>	<p><b>SCALE IN FEET</b>                  0 20'                  GRAPHIC SCALE VERIFICATION                  This bar measures 1" on 22x34" plot.                  Actual scale accordingly.</p>
<p>DRAWN BY: RAB                  DESIGNED BY: BM                  DATE: 09/28/2013                  JOB NO: 0902035</p>													

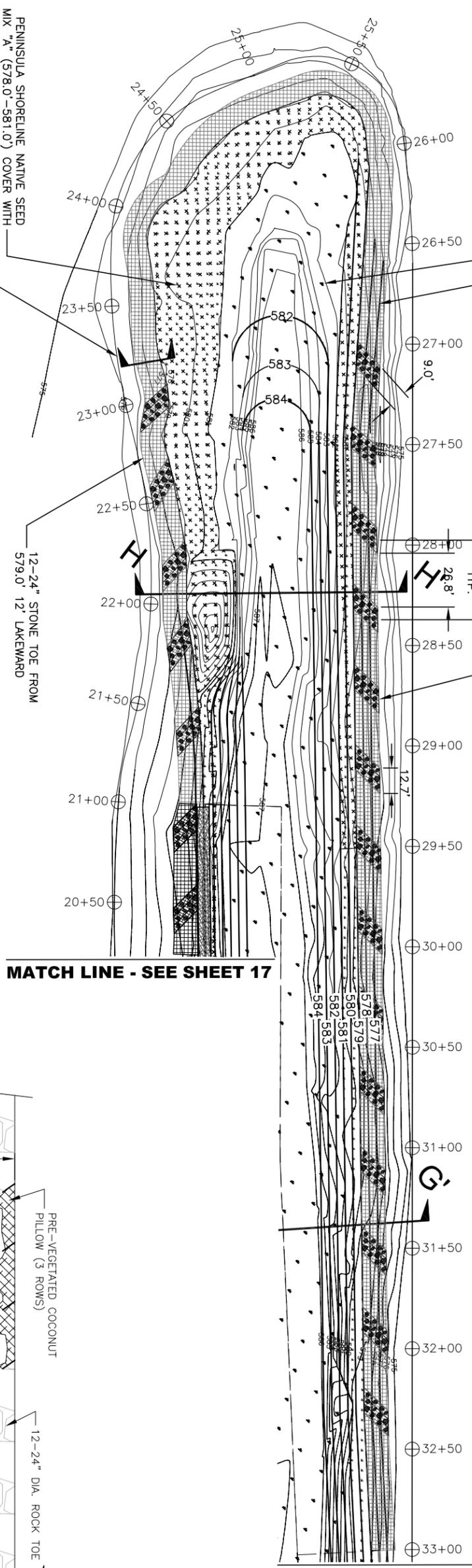
**MUSKEGON LAKE**  
WATER ELEV=578.5'  
(JULY, 2010)

PLACE 12-24" PROTECTIVE STONE TOE OVER GEOTEXTILE FROM STA. 21+00 TO 33+00

PENINSULA SHORELINE NATIVE SEED MIX "B" (ABOVE 581.0' ON ALL DISTURBED AREAS) COVER WITH C-125BN EROSION CONTROL BLANKET

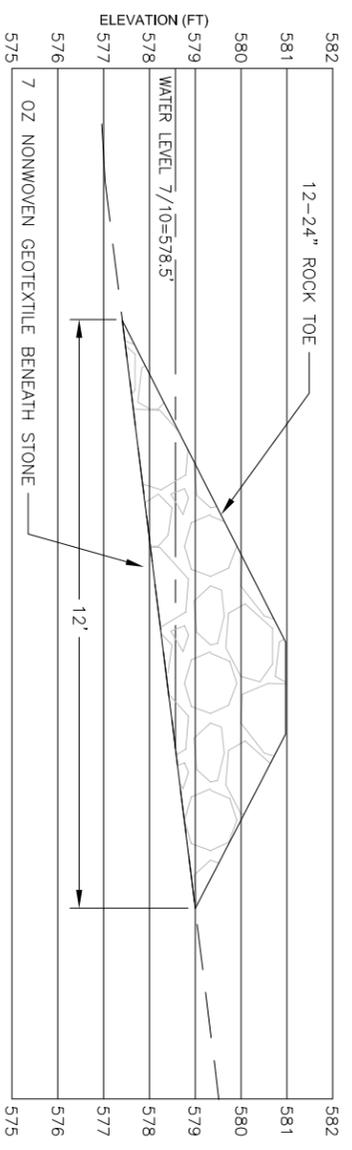
- NOTES:**
1. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO EXISTING STRUCTURES, ASPHALT PATH OR TURF GRASS.
  2. ALL DAMAGED TURF GRASS SHALL BE REPAIRED BY RE-SEEDING.
  3. CONTRACTOR SHALL AVOID ALL EXISTING CONDUIT, PIPING, AND STRUCTURES WITHIN PROJECT AREA. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRS TO ANY STRUCTURES DAMAGED DURING CONSTRUCTION.
  4. PRE-VEGETATED PILLOWS AND BOULDERS FROM STA. 29+50 TO 33+00 MAY BE PLACED IN SPRING OF 2011 DEPENDING ON MARKET AVAILABILITY OF MATERIALS.

- LEGEND**
- PENINSULA NATIVE SHORELINE SEED MIX "A"
  - PENINSULA NATIVE SHORELINE SEED MIX "B"
  - 18-24" BARE ROOT SHRUBS 3' O.C.
  - ROCK TOE
  - PRE-VEGETATED COCONUT PILLOW
- 575 ——— EXISTING CONTOUR  
582 ——— PROPOSED CONTOUR  
25+00 ⊕ STATIONING MARKER

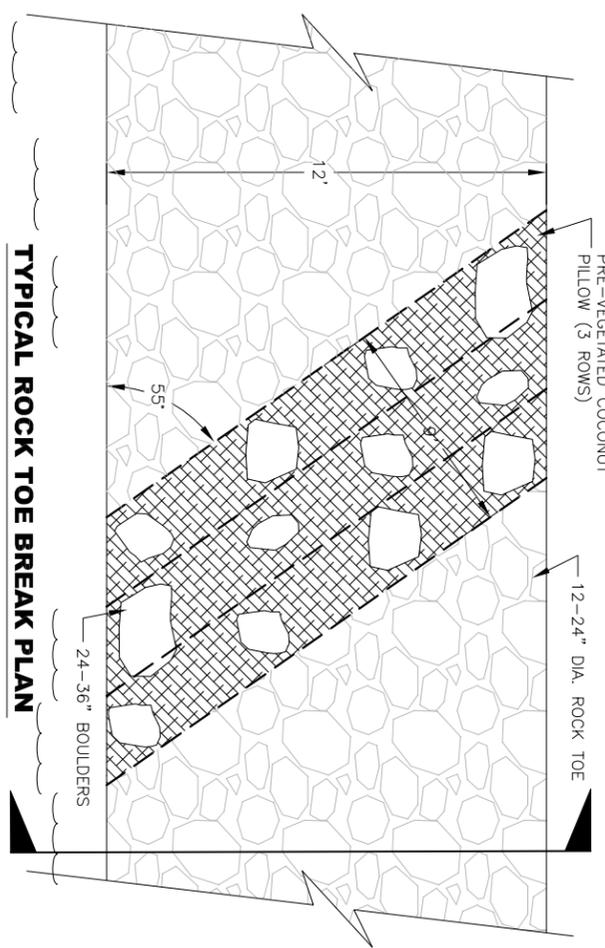


**MATCH LINE - SEE SHEET 17**

**MATCH LINE - SEE SHEET 19**



**ROCK TOE SECTION**



**TYPICAL ROCK TOE BREAK PLAN**



<p>West Michigan Shoreline Regional Development Commission and the Muskegon Lake Watershed Partnership Center Pointe Bay Marina / Michigan Steel/Hartshorn Michigan Steel/Hartshorn Treatment Area "B"</p>	<p>REVISION</p>	<p><b>JFNEW</b> Corporate/Northern Indiana 708 Roosevelt Road Wakarusa, Indiana 46774 317-585-5400 Western Michigan 11181 Marvell Avenue West Olive, Michigan 49480 616-541-1880</p>	<p>GRAPHIC SCALE VERIFICATION: This drawing is plotted at a scale of 1/2" on 11x17" original. Adjust scale accordingly.</p>
	<p>DRAWN BY: RAB DESIGNED BY: BM DATE: 09/26/2013 JOB NO: 0902035</p>		
<p>SHEET NO. <b>18</b> OF 23</p>	<p>West Michigan Shoreline Regional Development Commission and the Muskegon Lake Watershed Partnership Center Pointe Bay Marina / Michigan Steel/Hartshorn Michigan Steel/Hartshorn Treatment Area "B"</p>		

0  
30'  
SCALE IN FEET

GRAPHIC SCALE VERIFICATION  
This bar measures 1" on 22"x34"  
plots and is printed at 100%  
of full scale according to  
ANSI Z39-18.

Corporate/Nonprofit Indiana  
708 Roosevelt Road  
Walkerton, Indiana 46574  
574-585-3400

Western Michigan  
1181 Marwell Avenue  
West Olive, Michigan 49480  
616-941-1800

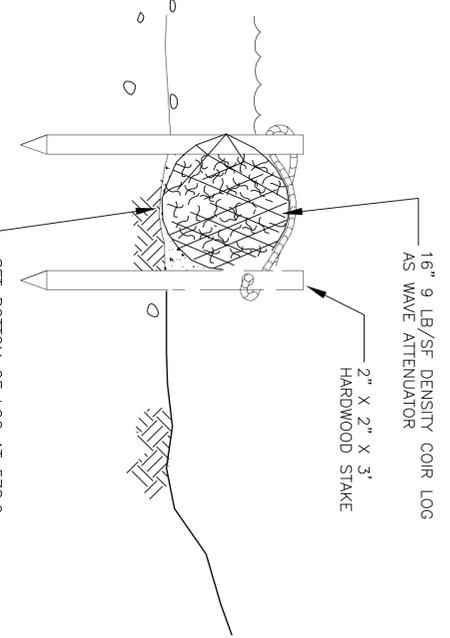
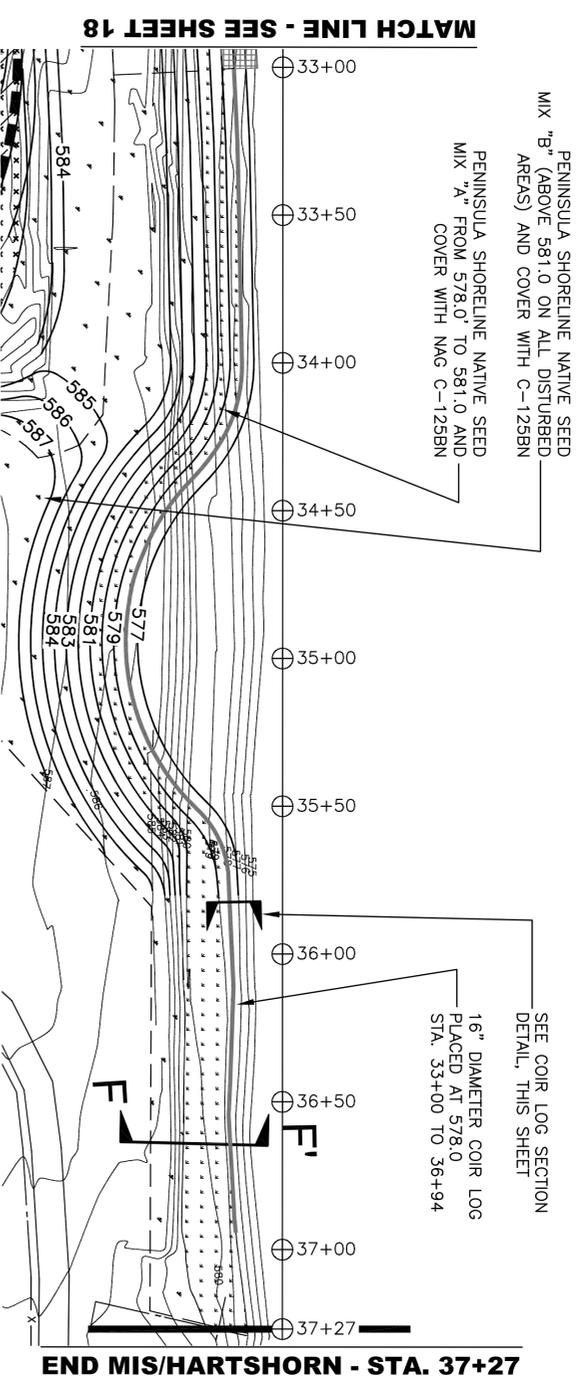
REVISION	DATE	BY

West Michigan Shoreline Regional  
Development Commission and the  
Muskegon Lake Watershed Partnership  
Center Pointe Bay Marina / Michigan Steel/Hartshorn  
Michigan Steel/Hartshorn Treatment Area "C"

DRAWN BY: RAB  
DESIGNED BY: BM  
DATE: 09/28/2013  
JOB NO: 0992035

ROBERT A. BRINK  
Professional Engineer  
No. 2411  
State of Michigan

SHEET NO.  
**19**  
OF 23



**TYPICAL 16" COIR LOG SECTION**  
NOT TO SCALE

**LEGEND**

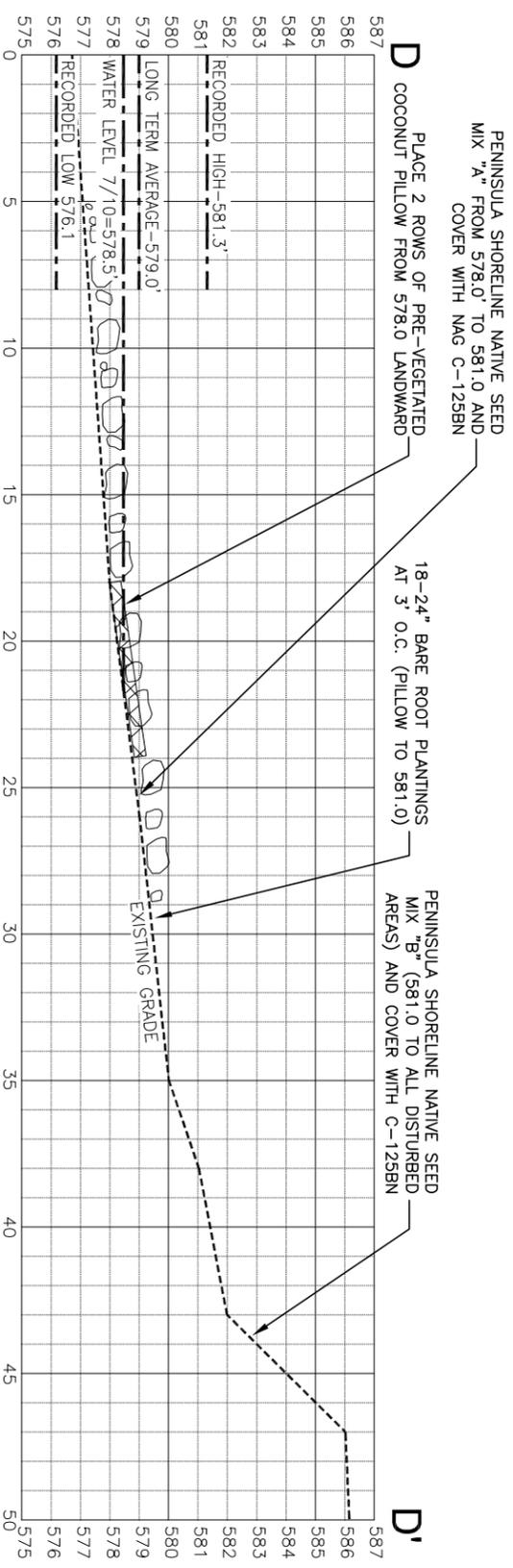
- 575 — EXISTING CONTOUR
- 582 — PROPOSED CONTOUR
- 25+00 ⊕ — STATIONING MARKER
- 16" COIR LOG
- PENNSILVA NATIVE SHORELINE SEED MIX "A"
- PENNSILVA NATIVE SHORELINE SEED MIX "B"
- XXXXXX 18"-24" BARE ROOT SHRUBS 3' O.C.

**NOTES:**

1. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING DAMAGE TO EXISTING STRUCTURES, ASPHALT PATH OR TURF GRASS.
2. ALL DAMAGED TURF GRASS SHALL BE REPAIRED BY RE-SEEDING.
3. CONTRACTOR SHALL AVOID ALL EXISTING CONDUIT, PIPING, AND STRUCTURES WITHIN PROJECT AREA. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRS TO ANY STRUCTURES DAMAGED DURING CONSTRUCTION.

BM #11 EL. 585.64'  
TOP OF SET 3/8" IRON ROD  
@ BEND IN BIT WALK @ APPROX  
INTERSECTION OF NORTH & WEST  
LINES OF WALK.  
(DATUM=NAVD88 VIA GPS & OPUS)  
SURVEY DATA PREPARED BY FLEIS &  
VANDEBRINK ENGINEERING, INC.  
(DEC., 2009).



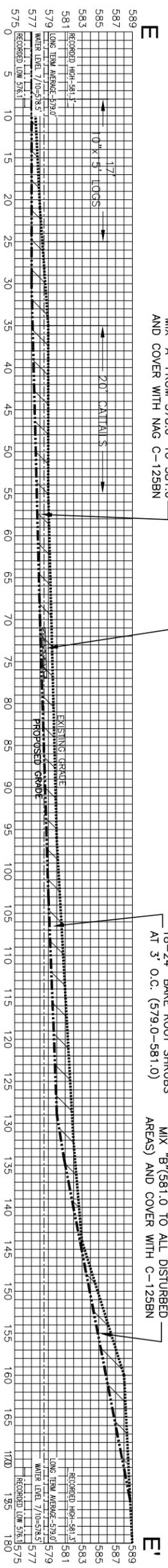


**PROPOSED CROSS SECTION D-D'**

0 3'  
SCALE IN FEET

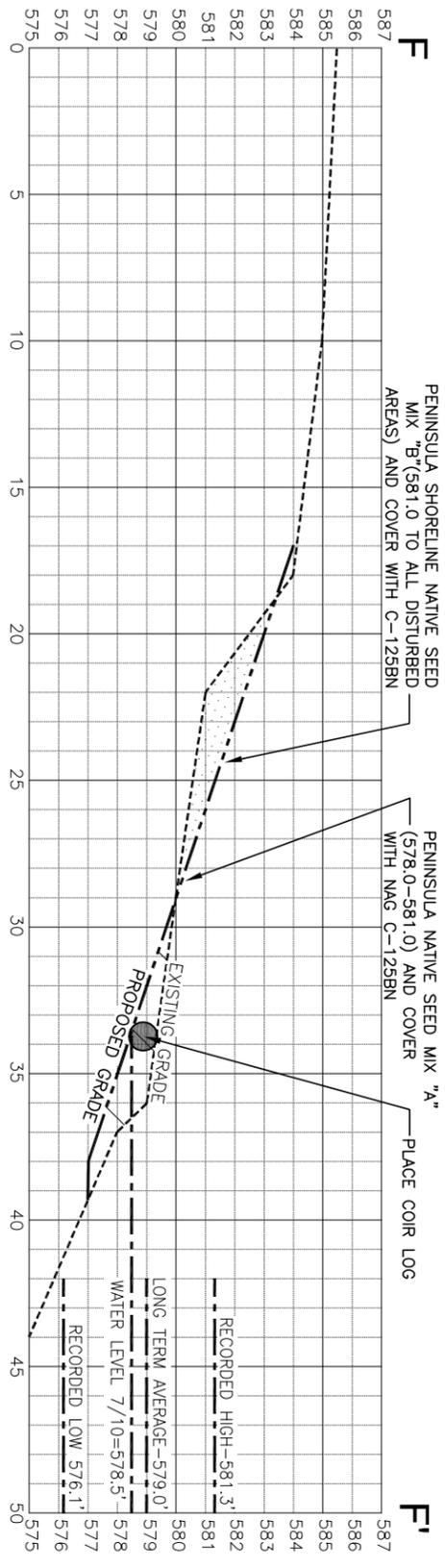
**LEGEND**

	EXCAVATED SOILS
	CLEAN SOIL BACKFILL



**PROPOSED CROSS SECTION E-E'**

0 7'  
SCALE IN FEET



**PROPOSED CROSS SECTION F-F'**

0 3'  
SCALE IN FEET

**JFNew**  
 Corporate/Northern Indiana  
 709 Roosevelt Road  
 Walkerton, Indiana 46774  
 317-585-5400  
 Western Michigan  
 1181 Marwell Avenue  
 West Olive, Michigan 49480  
 616-941-1680

REVISION


West Michigan Shoreline Regional  
 Development Commission and the  
 Muskegon Lake Watershed Partnership  
 Center Pointe Bay Marina / Michigan Steel/Hartshorn  
 Michigan Steel/Hartshorn Proposed Cross Sections

DRAWN BY: RAB  
 DESIGNED BY: BM  
 DATE: 09/26/2013  
 JOB NO.: 0902035



SHEET NO.  
**20**  
 OF 23

**BEFORE YOU DIG  
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 811 OR 1-800-482-7171



**PENINSULA SHORELINE SEED MIX "A"**

Scientific Name	Common Name	PLS Oz Per Acre
<i>Acorus calamus</i>	Sweet flag	2
<i>Alisma subcordatum</i>	Common water plantain	2
<i>Asclepias incarnata</i>	Swamp milkweed	4
<i>Aster novae-angliae</i>	New England aster	2
<i>Avena sativa</i>	Seed oats	840
<i>Calamagrostis canadensis</i>	Blue joint grass	2
<i>Carex comosa</i>	Bristly sedge	4
<i>Carex hystericina</i>	Porcupine sedge	4
<i>Carex lurida</i>	Bottlebrush sedge	4
<i>Carex vulpinoidea</i>	Brown fox sedge	4
<i>Elymus virginicus</i>	Virginia wild rye	16
<i>Eupatorium perforatum</i>	Spotted joe-pye weed	1
<i>Eupatorium purpureum</i>	Common boneset	1
<i>Glyceria striata</i>	Fowl manna grass	2
<i>Iris virginica shrevei</i>	Blue flag iris	8
<i>Juncus effusus</i>	Common rush	4
<i>Lolium multiflorum</i>	Annual rye	160
<i>Monardella fistulosa</i>	Monkey flower	3
<i>Monarda punctata</i>	Wild bergamot	2
<i>Panicum virgatum</i>	Switch grass	8
<i>Sagittaria latifolia</i>	Common arrowhead	8
<i>Scirpus acutus</i>	Hard-stemmed bulrush	6
<i>Scirpus atrovirens</i>	Dark green rush	3
<i>Scirpus cyperinus</i>	Wool grass	2
<i>Scirpus fluviatilis</i>	River bulrush	4
<i>Scirpus pungens</i>	Chairmaker's rush	4
<i>Scirpus validus crabber</i>	Great bulrush	8
<i>Spartanium eurycarpum</i>	Common bur reed	8
<i>Spartina pectinata</i>	Prairie cord grass	8
<b>Total PLS Ounces</b>		<b>1124.00</b>
<b>Total PLS Pounds</b>		<b>70.25</b>

**PENINSULA SHORELINE SEED MIX "B"**

Scientific Name	Common Name	PLS Oz Per Acre
<i>Agastache scrophulariifolia</i>	Purple giant hyssop	4
<i>Andropogon gerardi</i>	Big bluestem grass	32
<i>Aquilegia canadensis</i>	Wild columbine	0.5
<i>Asclepias tuberosa</i>	Butterfly weed	3
<i>Asclepias verticillata</i>	Whorled milkweed	1
<i>Aster laevis</i>	Smooth blue aster	2
<i>Aster novae-angliae</i>	New England aster	2
<i>Aster umbellatus</i>	Flat-top aster	2
<i>Avena sativa</i>	Seed oats	512
<i>Cinna arundinacea</i>	Common wood reed	2
<i>Coreopsis lanceolata</i>	Sand coreopsis	6
<i>Coreopsis tritervis</i>	Tall coreopsis	2
<i>Echinacea pallida</i>	Purple coneflower	4
<i>Elymus canadensis</i>	Canada wild rye	8
<i>Elymus virginicus</i>	Virginia wild rye	8
<i>Eupatorium maculatum</i>	Spotted joe-pye weed	1
<i>Helianthus autumnale</i>	Sneezeweed	2
<i>Helianthus giganteus</i>	Tall sunflower	2
<i>Helianthus grosseserratus</i>	Sawtooth sunflower	2
<i>Liatris aspera</i>	Rough blazing star	1
<i>Liatris spicata</i>	Marsh blazing star	2
<i>Labella siphilitica</i>	Great blue lobelia	2
<i>Monarda fistulosa</i>	Wild bergamot	4
<i>Monarda punctata</i>	Horse mint	2
<i>Panicum virgatum</i>	Switch grass	4
<i>Penstemon digitalis</i>	Foxglove beard tongue	4
<i>Penstemon hirsutus</i>	Hairy beard tongue	2
<i>Physostegia virginiana</i>	Obedient plant	1
<i>Pycnanthemum virginianum</i>	Common mountain mint	1
<i>Ratibida pinnata</i>	Yellow coneflower	6
<i>Rudbeckia hirta</i>	Black-eyed Susan	2
<i>Rudbeckia subtomentosa</i>	Sweet black-eyed Susan	2
<i>Schizachyrium scoparium</i>	Little bluestem grass	48
<i>Solidago speciosa</i>	Showy goldenrod	2
<i>Spartina pectinata</i>	Prairie cord grass	8
<i>Tradescantia ohioensis</i>	Common spiderwort	4
<i>Verbena hastata</i>	Blue vervain	3
<i>Verbesina alternifolia</i>	Wingstem	4
<i>Vernonia missurica</i>	Missouri ironweed	2
<i>Veronicastrum virginicum</i>	Culver's root	1
<i>Zizia aurea</i>	Golden Alexanders	4
<b>Total PLS Ounces</b>		<b>704.50</b>
<b>Total PLS Pounds</b>		<b>44.03</b>

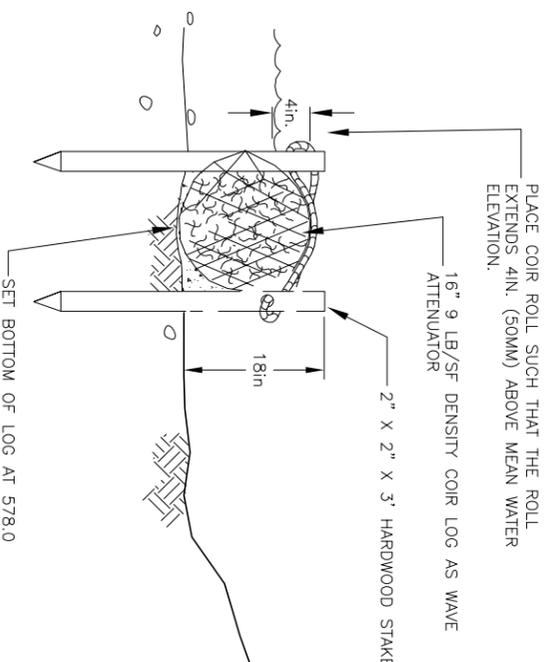
**CPBM SHRUB LIST**

Scientific Name	Common Name	Quantity (EA)
<i>Cornus sericea</i>	Red-osier dogwood	595
<i>Cornus amomum</i>	Silky dogwood	595
<i>Salix exigua</i>	Sandbar willow	550
<i>Sambucus canadensis</i>	Elderberry	595

Scientific Name	Common Name	Quantity (EA)
<i>Cornus sericea</i>	Red-osier dogwood	1,015
<i>Cornus amomum</i>	Silky dogwood	1,015
<i>Salix exigua</i>	Sandbar willow	970
<i>Sambucus canadensis</i>	Elderberry	1,015

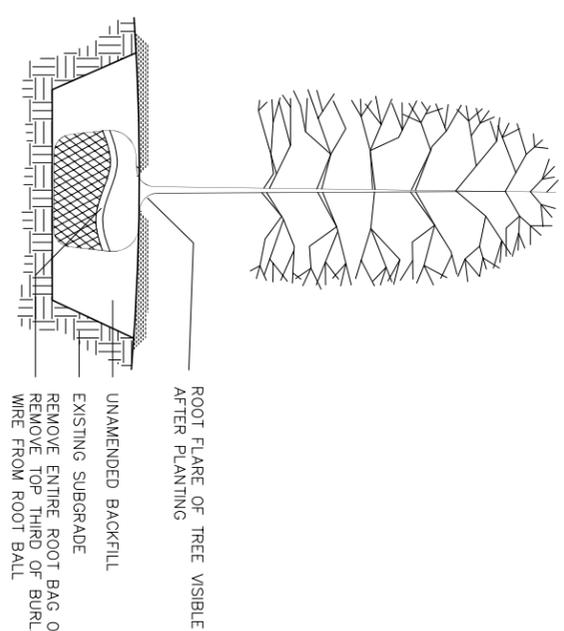
**MIS/H NATIVE PLANTINGS LIST**

Scientific Name	Common Name	Quantity (EA)
<i>Bolboschoenus fluviatilis</i>	River bulrush	190
<i>Iris virginica shrevei</i>	Blue flag iris	490
<i>Nuphar advena</i>	Spatterdock	300
<i>Peltandra virginica</i>	Arrow arum	490
<i>Pontederia cordata</i>	Pickereel weed	300
<i>Sagittaria latifolia</i>	Arrowhead	528
<i>Schoenoplectus pungens</i>	Threesquare bulrush	190
<i>Scirpus acutus</i>	Hardstem bulrush	452
<i>Spartanium eurycarpum</i>	Bur reed	152



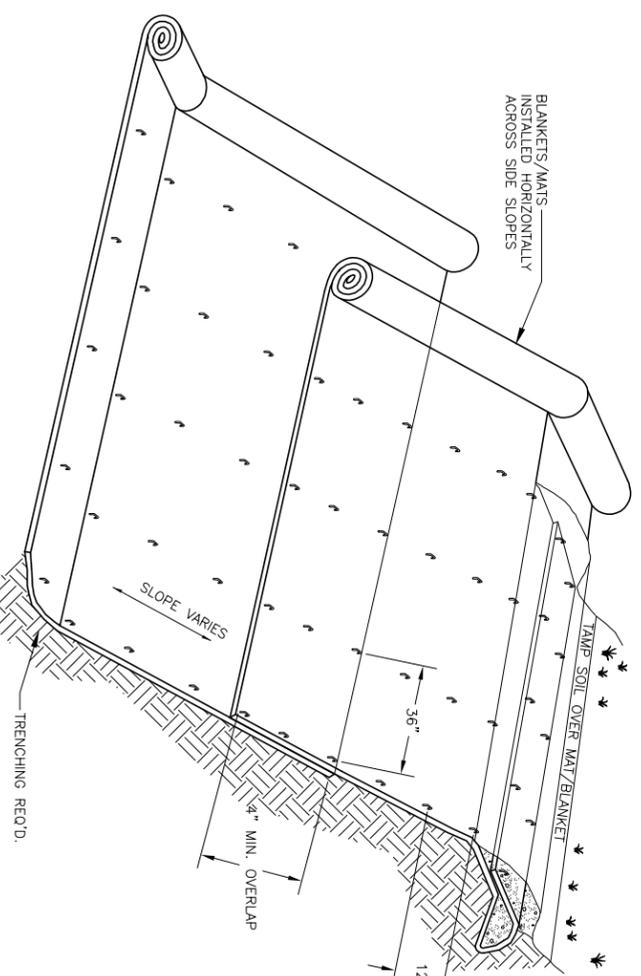
**COIR LOG WAVE ATTENUATOR**

NOT TO SCALE



**TREE AND SHRUB PLANTING DETAIL**

NOT TO SCALE



**TYPICAL EROSION CONTROL BLANKET INSTALLATION**

NOT TO SCALE

**NOTES:**

1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BANKETS SHALL HAVE GOOD SOIL CONTACT.
2. LAY BANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
3. BANKETS SHALL BE PINNED WITH 6" WIRE OR WOOD STAPLES INSTALLED AT 36" ON CENTER.

**JFNEW**  
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 574-585-5400

Western Michigan  
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West Michigan Shoreline Regional  
 Development Commission and the  
 Muskegon Lake Watershed Partnership  
 Center Pointe Bay Marina / Michigan Steel/Hartshorn  
 Details and Specifications

DRAWN BY:	RAM
DESIGNED BY:	BM
DATE:	09/26/2013
JOB NO.:	0902035
SHEET NO.	22
OF	23

