JFNew
http://www.jfnew.com

Corporate/Northern Indiana
708 Roosevelt Road
Walkerton, Indiana 46574
574-586-3400 fax 574-586-3446

Ohio
11156 Luschek Drive
Cincinnati, Ohio 45241
513-489-2402 fax 513-489-2404

Illinois
6605 Steger Road, Unit A
Monee, Illinois 60449
708-534-3450 fax 708-534-3480

Central Indiana
3901 Industrial Boulevard
Indianapolis, Indiana 46254
317-388-1982 fax 317-388-1986

Eastern Michigan
605 S. Main Street, Suite 1
Ann Arbor, MI 48104
734-222-9690 fax 734-222-9655

Wisconsin
403 Venture Ct Unit 7
Verona, Wisconsin 53593
608-848-1789 fax 608-848-3013

Western Michigan
11181 Marwill Avenue
West Olive, Michigan 49460
616-847-1680 fax 616-847-9970

Grand Trunk Wetland Restoration

West Michigan Shoreline Regional Development Commission and the Muskegon Lake Watershed Partnership

Muskegon County, Michigan

OCTOBER 2009

AS-BUILT PLANS. APPROVED BY: SCOTT DIERKS, P.E.

SHEET INDEX

SHEET	DESCRIPTION
1	TITLE SHEET AND SHEET INDEX
2	GRAND TRUNK SITE OVERVIEW
3	SITE A EXISTING AND PROPOSED CONDITIONS
4	SITE A REVEGETATION PLAN
5	SITE B EXISTING AND PROPOSED CONDITIONS
6	SITE B REVEGETATION PLAN
7	SITE C EXISTING AND PROPOSED CONDITIONS
~~8~~	~~SITE D EXISTING AND PROPOSED CONDITIONS~~ (PERFORMED UNDER SEPARATE CONTRACT)
9	SITE E EXISTING AND PROPOSED CONDITIONS
10	EXISTING AND PROPOSED CROSS SECTIONS
11	NOTES AND DETAILS

SOURCE: http://www.mapquest.com/

SITE MAP
NOT TO SCALE

N
0 100'
SCALE IN FEET
GRAPHIC SCALE VERIFICATION
This bar measures 1" on 22"x34" or 1/2" on 11"x17" original. Adjust scale accordingly.

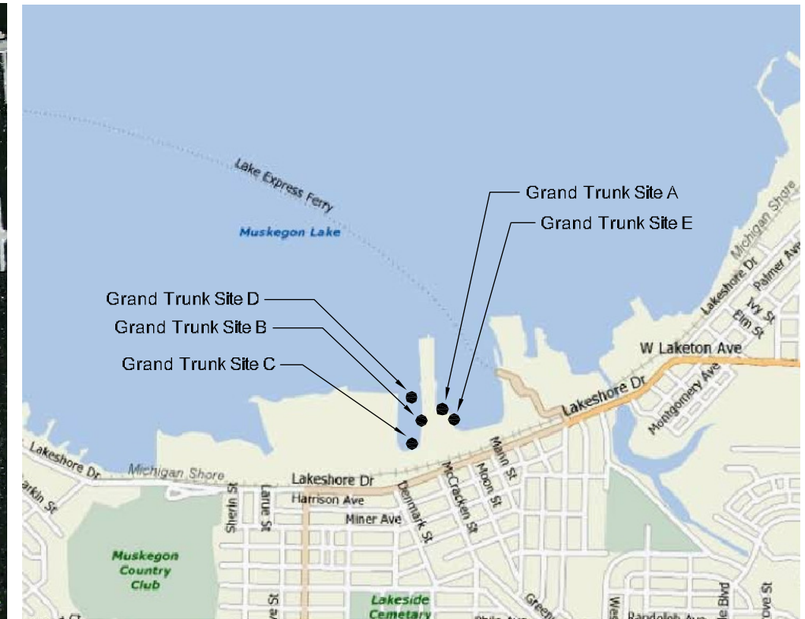
JFNew
Western Michigan
11181 Marwill Avenue
West Olive, Michigan 49460
616-847-1680

REVISION

Muskegon Lake Watershed Partnership
Grand Trunk
Title Sheet and Sheet Index

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

FIGURE
1
OF 11



RESTORATION SUMMARY: GRAND TRUNK

SITE	LINEAR FEET OF SHORELINE SOFTENING	OPEN WATER WETLAND (<576.0')	EMERGENT WETLAND (576.O TO 580.0)	WETLAND BUFFER (UPLAND) RESTORATION (580.0 AND UP)
GT SITE A	410	0.70 AC	0.71 AC	0.65 AC
GT SITE B	1,070	0.71 AC	0.74 AC	1.22 AC
GT SITE C	414	—	0.17 AC	—
GT SITE D	—	*4.75 AC	*** PERFORMED UNDER SEPARATE CONTRACT***	
GT SITE E	140	0.10 AC	0.14 AC	0.15 AC
GT RG SITE	—	—	—	0.11 AC
TOTAL	2,034	6.26 AC	1.76 AC	2.13 AC

* GRAND TRUNK SITE D HAS BEEN DREDGED AND RAKED TO REMOVE DEBRIS.

NOTE: QUANTITIES, AREAS, AND DISTANCES ARE BASED UPON FINAL DESIGN SPECIFICATIONS.

WMSRDC
WEST MICHIGAN SHORELINE REGIONAL DEVELOPMENT COMMISSION

MUSKEGON LAKE PUBLIC ADVISORY COUNCIL

N

0 80'

SCALE IN FEET

GRAPHIC SCALE VERIFICATION
This sheet measures 1" on 22"x36" or 1/2" on 11"x17" original. Adjust scale accordingly.

JFNew
Consulting Engineers, Indiana
708 Roosevelt Road
Walkerton, Indiana 46574
574-586-3400

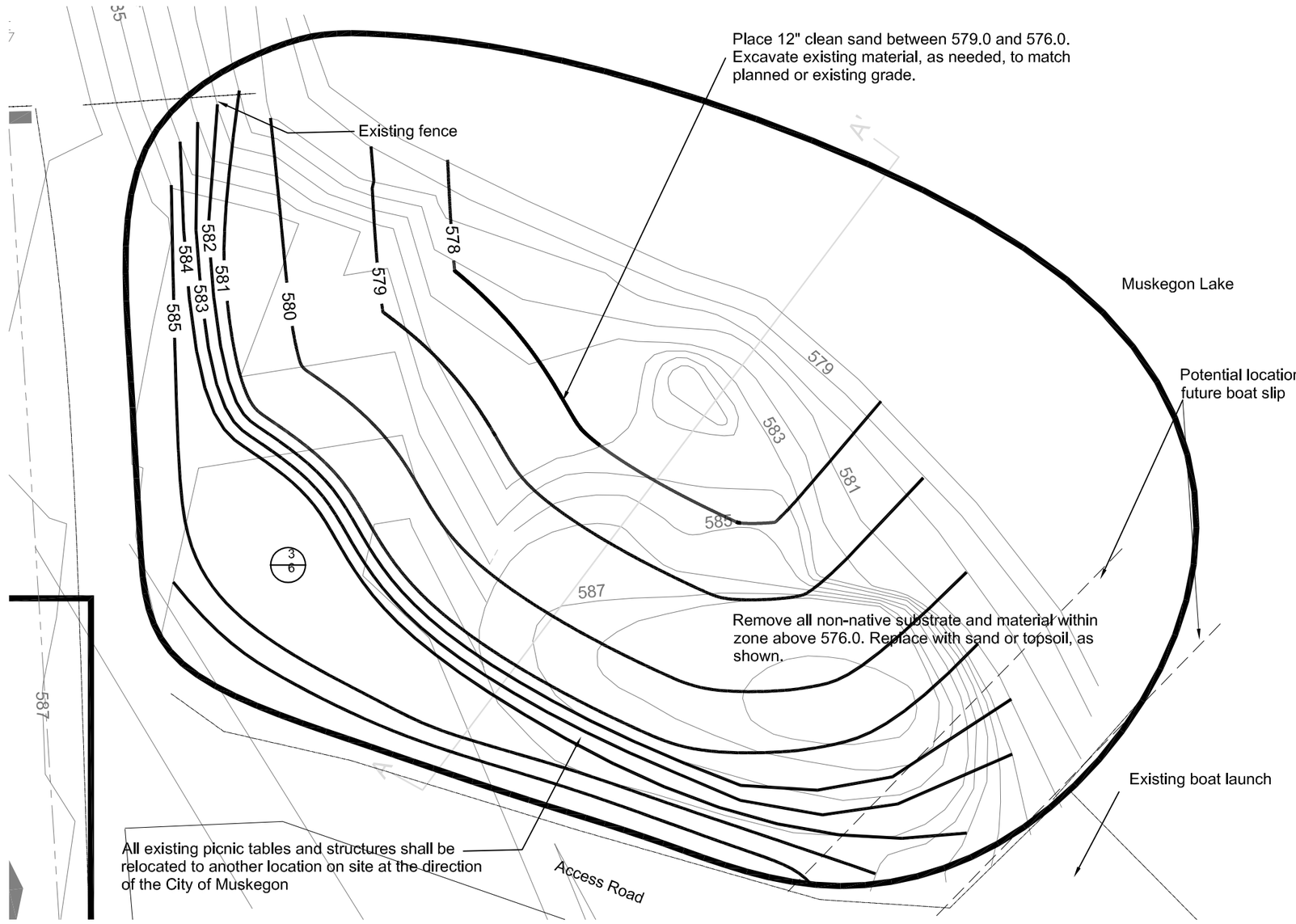
Western Michigan
11131 Marvell Avenue
Wyoming, Michigan 49460
616-247-1600

REVISION

Muskegon Lake Watershed Partnership
Grand Trunk
Grand Trunk Site Overview

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

FIGURE
2
OF 11



PLAN VIEW--GRAND TRUNK SITE A

NOTES:

A.) Selective cleared/grubbed woody material shall be placed randomly as habitat structures within wetland, at the direction of the Engineer.
B.) Over-excavate by 6", then place 6" clean topsoil over all disturbed areas above 579.0.
C). Over-excavated by 12" below 579.0 and replace with clean sand.
D.) Soils at this site have been sampled and have not shown high levels of contamination. Soils will be tested throughout construction. Clean soils may be disposed of at an off-site location of the Contractor's choice that has been approved by the Engineer. All non-clean soils shall be disposed of at a Type II landfill. Costs for landfill soil disposal shall be included as a Bid Alternate. All concrete and stone may be disposed of off-site at a location of the Contractor's choice that has been approved by the Engineer.
E.) Place North American Green SC-150BN or equivalent erosion control blanket over all disturbed areas above 579.0 following native seed installation (see sheet 4).
F.) Mean lake level=578.9 (IGLD1985)
G.) Total estimated cut for this zone is 6,700 CY.This is an estimate only and shall be verified by the contractor. Estimated does not account for post-excavation soil expansion.
H.) Estimated topsoil for A is 1,492 CY.
I.) Contractor shall verify all underground utilities by contacting MISS DIG prior to construction.

AREA A SUMMARY

Item	Unit	Qty
EXCAVATION	CY	6700
TOPSOIL	CY	1492
SAND BACKFILL	CY	535
NAG SC-150 ECB	SY	8300
COIR LOG	LF	335
NATIVE SEED MIX A	AC	1.15
NATIVE SEED MIX B	AC	0.70
NATIVE PLANTING	EA	2610

WASRDC
WEST MICHIGAN SHORELINE
REGIONAL DEVELOPMENT COMMISSION

MUSKEGON LAKE PUBLIC ADVISORY COUNCIL

N
0 20'
SCALE IN FEET
GRAPHIC SCALE VERIFICATION
This bar measures 1" on 22"x34" or 1/2" on 11"x17" original. Adjust scale accordingly.

JFNew
Corporate/Northern Indiana
708 Roosevelt Road
Walkerton, Indiana 46574
574-586-3400

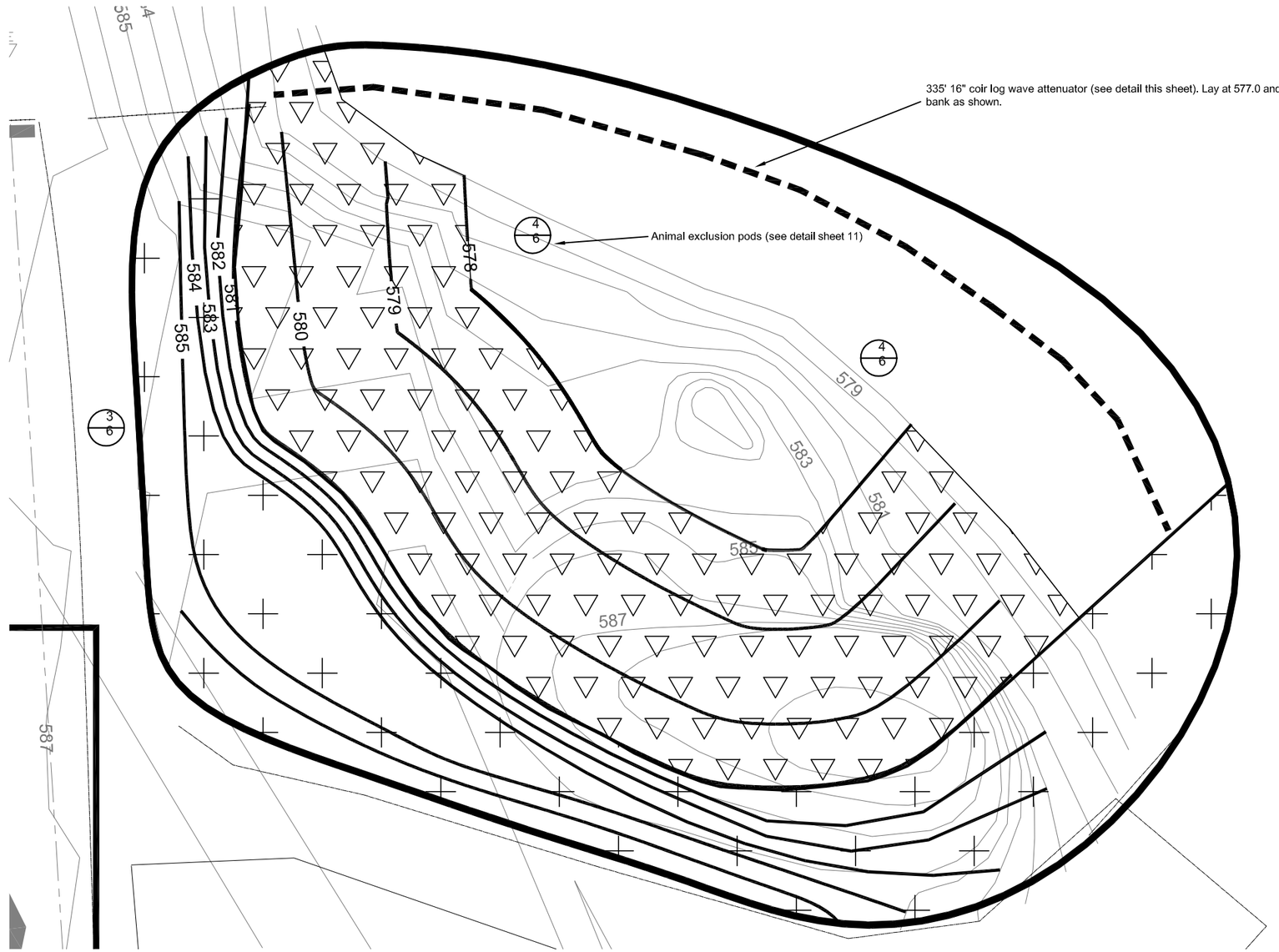
Western Michigan
11181 Marwill Avenue
West Olive, Michigan 49460
616-847-1680

REVISION

Muskegon Lake Watershed Partnership
Grand Trunk
Site A Existing and Proposed Conditions

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

FIGURE
3
OF 11



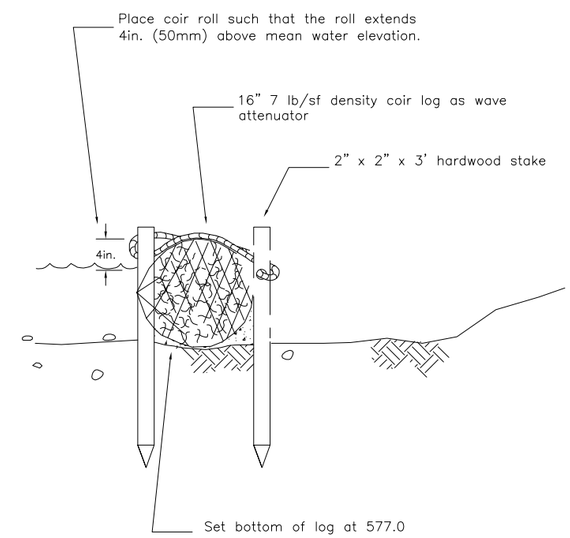
PLAN VIEW--GRAND TRUNK SITE A

NATIVE PLANT LIST

LATIN NAME	COMMON NAME	QUANTITY
Asclepias incarnata	Swamp milkweed	342
Iris virginica shrevii	Blue flag iris	342
Nuphar advena	Yellow pond lily	300
Nymphaea tuberosa	Sweet-scented waterlily	300
Pontederia cordata	Pickerelweed	300
Sagittaria latifolia	Common arrowhead	342
Schenoplectus validus	Softstem bulrush	342
Sparganium eurycarpum	Burreed	342

NOTES:

A.) Plant plugs to be installed randomly spaced 3' o.c.
B.) Plant plugs to be installed between the 581 and 577 contour.
C). Plants shall be 2" x 4" 38-cell size plants or bare-root
D.) All plants installed below the water line shall be secured with 6" x 1" wire sod staples placed through the plant root mass



COIR LOG WAVE ATTENUATOR
NOT TO SCALE

Native Seed Mix A (Emergent Wetland, See Sheet 11)--1.15 acres

Native Seed Mix B (Mesic Prairie, See Sheet 11)--0.70 acres

WMSRDC
WEST MICHIGAN SHORELINE
REGIONAL DEVELOPMENT COMMISSION

MUSKEGON LAKE PUBLIC ADVISORY COUNCIL

N
0 20'
SCALE IN FEET
GRAPHIC SCALE VERIFICATION
This bar measures 1" on 22"x34" or 1/2" on 11"x17" original. Adjust scale accordingly.

JFNew
Corporate/Northern Indiana
708 Roosevelt Road
Walkerton, Indiana 46574
574-586-3400

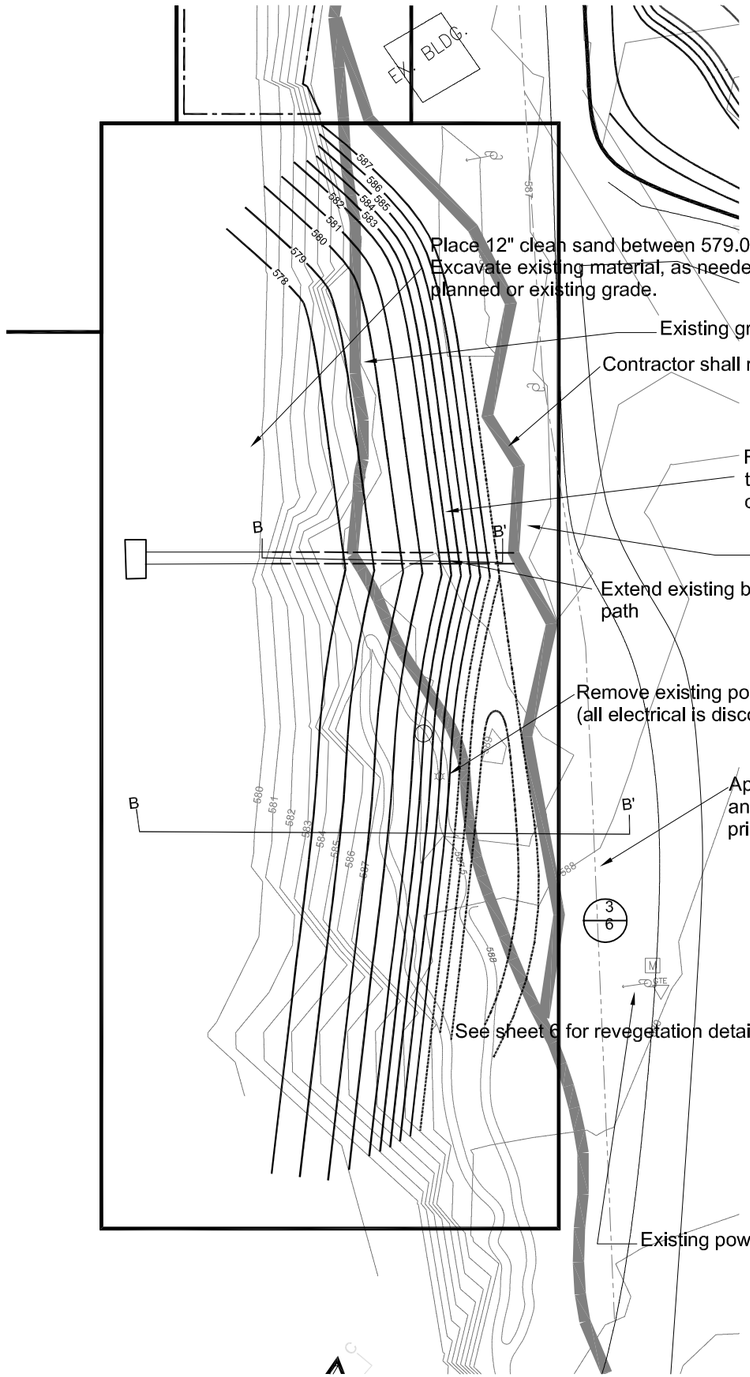
Western Michigan
11181 Marwill Avenue
West Olive, Michigan 49460
616-847-1680

REVISION

Muskegon Lake Watershed Partnership
Grand Trunk
Site A Revegetation Plan

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

FIGURE
4
OF 11



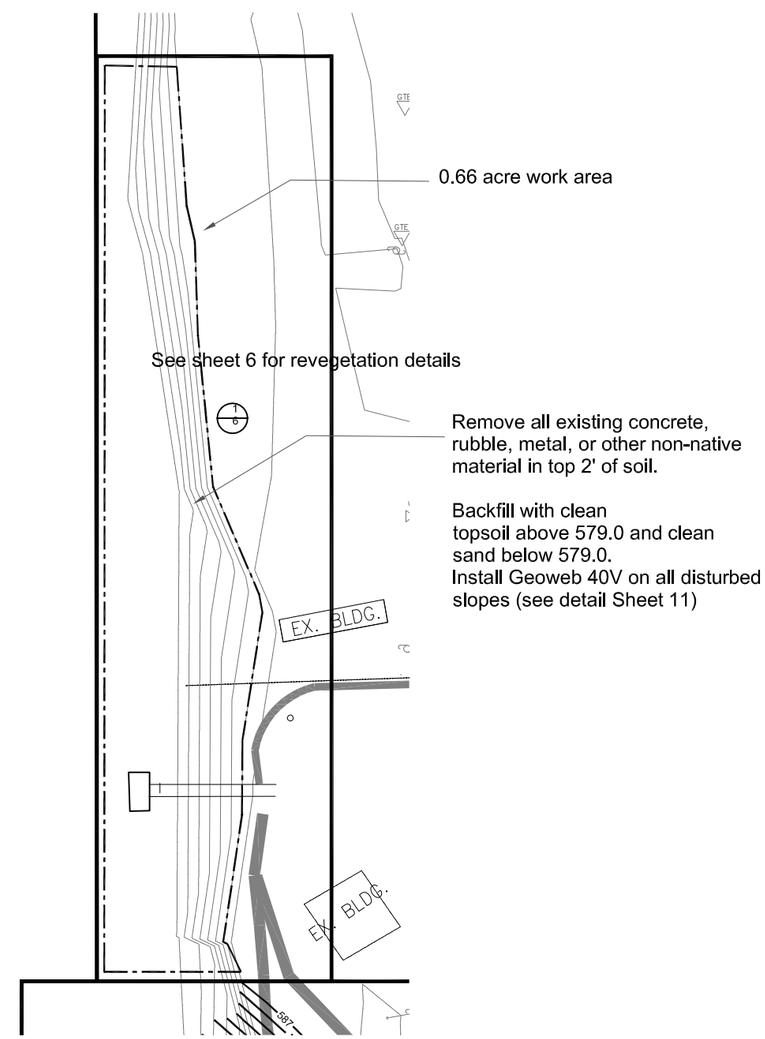
PLAN VIEW--GRAND TRUNK SITE B1

AREA B SUMMARY

Item	Unit	Qty
EXCAVATION	CY	10,389
TOPSOIL	CY	1936
SAND BACKFILL	CY	800
NAG SC-150 ECB	SY	8518
NATIVE SEED MIX A	AC	0.14
NATIVE SEED MIX B	AC	1.62
NATIVE PLANTING	EA	3970
TREE INSTALLATION	EA	45
GEOWEB INSTALLATION	SY	1630
BOARDWALK EXTENSIONS	EA	2

NOTES:

A.) Cleared/grubbed woody material shall be placed randomly as habitat structures within wetland.
B.) Over-excavate by 6", then place 6" clean topsoil over all disturbed areas above 579.0.
C). Over-excavate by 12" below 579.0 and replace with clean sand.
D.) Soils at this site have been sampled and have not shown high levels of contamination. Soils will be tested throughout construction. Clean soils may be disposed of at an off-site location of the Contractor's choice that has been approved by the Engineer. All non-clean soils shall be disposed of at a Type II landfill. Costs for landfill soil disposal shall be included as a Bid Alternate. All concrete and stone may be disposed of off-site at a location of the Contractor's choice that has been approved by the Engineer.
E.) Place North American Green SC-150BN or equivalent over all dissturbed areas following native seed installation (see Sheet 4).
F.) Mean lake level=579.0 (IGLD 1985)
G.) Estimated cut volume for area B1 is 10,592 CY. This is an estimate only and shall be verified by the contractor. Estimated does not account for post-excavation soil expansion.
H.) Estimated fill for B1 is 203 CY.
I.) Estimated topsoil for B1 is 1,404 CY.
J.) Estimated sand and topsoil needed for B2 is 532 CY.
K.) Contractor shall verify all underground utilities by contacting MISS DIG prior to construction.
L.) Contractor shall extend existing boardwalks to meet location of relocated path. Boardwalks shall be created with similar materials and construction methods as those utilized for the existing boardwalks.
M.) Contractor shall relocate existing walking path in B1. Path relocation shall be included in Excavation cost for this zone.



PLAN VIEW--GRAND TRUNK SITE B2

WMSRDC
WEST MICHIGAN SHORELINE
REGIONAL DEVELOPMENT COMMISSION

MUSKEGON LAKE PUBLIC ADVISORY COUNCIL

N
0 40'
SCALE IN FEET
GRAPHIC SCALE VERIFICATION
This bar measures 1" on 22"x34" or 1/2" on 11"x17" original. Adjust scale accordingly.

JFNew
Corporate/Northern Indiana
708 Roosevelt Road
Walkerton, Indiana 46574
574-586-3400

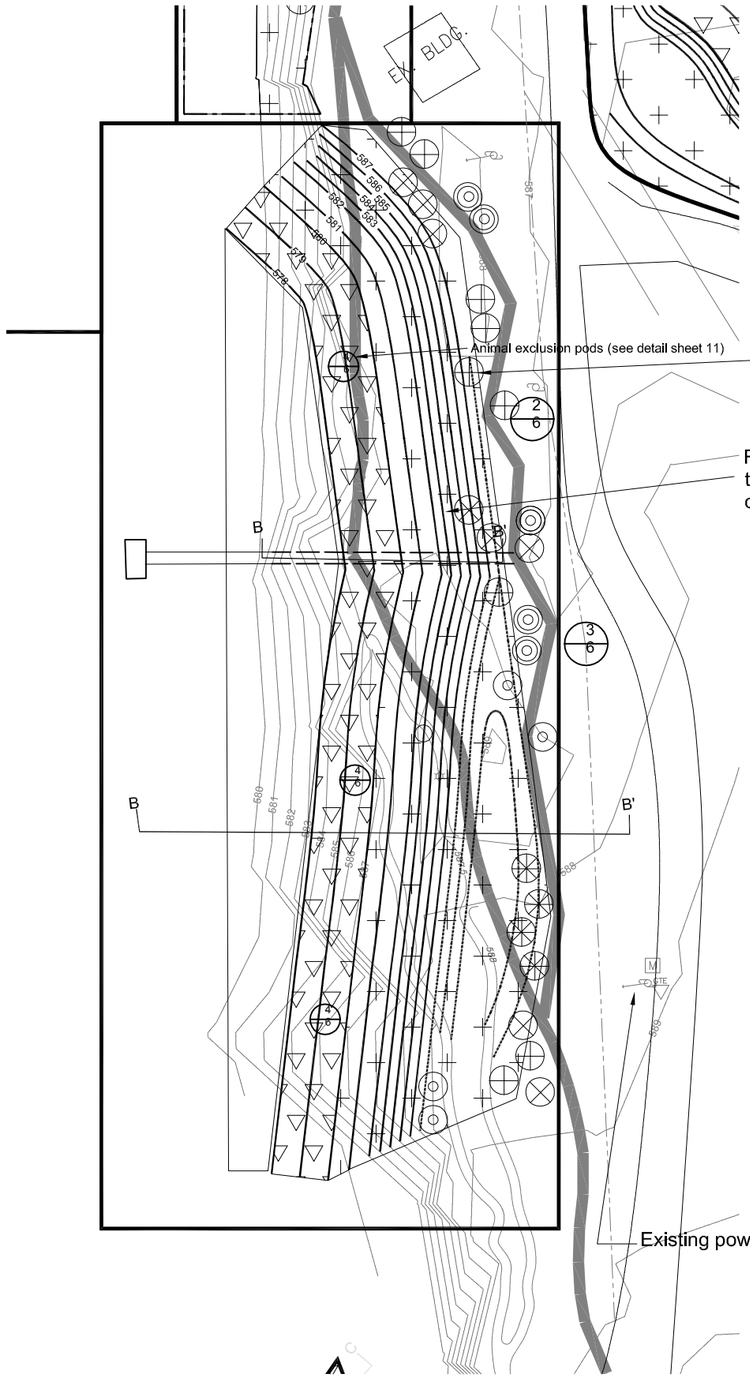
Western Michigan
11181 Marwill Avenue
West Olive, Michigan 49460
616-847-1680

REVISION

Muskegon Lake Watershed Partnership
Grand Trunk
Site B Existing and Proposed Conditions

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

FIGURE
5
OF 11



PLAN VIEW--GRAND TRUNK SITE B1

NOTES:

A.) Plant plugs to be installed randomly spaced 3' o.c.
B.) Plant plugs to be installed between the 581 and 578 contour.
C). Plants shall be 2" x 4" 38-cell size plants or bare-root
D.) All plants installed below the water line shall be secured with 6" x 1" wire sod staples placed through the plant root mass
E.) All plants shall be true to species. No cultivars or non-native species shall be allowed.
F.) All seeded areas shall be covered with North American Green SC-150BN or equivalent erosion control fabric.

NATIVE PLANT LIST

LATIN NAME	COMMON NAME	QUANTITY
Asclepias incarnata	Swamp milkweed	494
Iris virginica shrevii	Blue flag iris	494
Nuphar advena	Yellow pond lily	500
Nymphaea tuberosa	Sweet-scented waterlily	500
Pontederia cordata	Pickerelweed	500
Sagittaria latifolia	Common arrowhead	494
Schenoplectus validus	Softstem bulrush	494
Sparganium eurycarpum	Burreed	494

(11) 3" White pine (*Pinus strobus*)

(8) 3" Swamp white oak (*Quercus bicolor*)

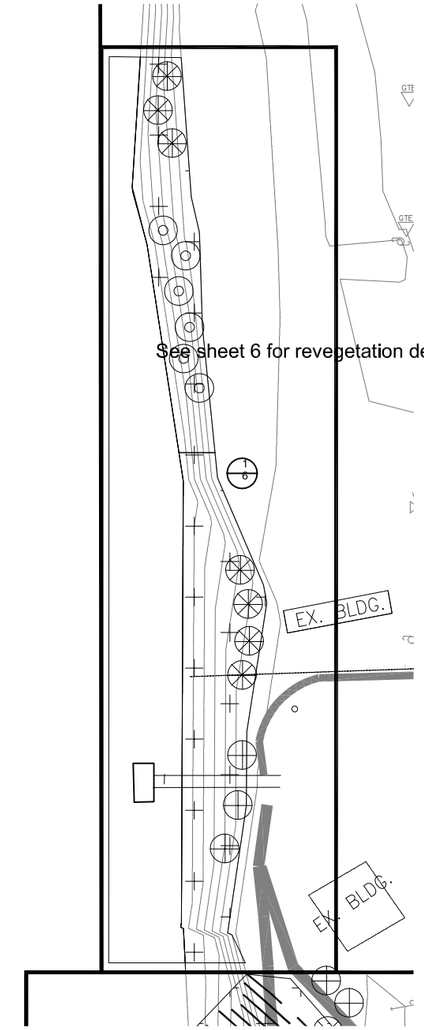
(11) 3" Red maple (*Acer rubrum*)

(10) 2" Pin oak (*Quercus palustris*)

(5) 8'-10' Serviceberry (*Amelanchier arborea*)

Native Seed Mix A (Emergent Wetland, See Sheet 11)--0.14 acres

Native Seed Mix B (Mesic Prairie, See Sheet 11)--1.62 acres



PLAN VIEW--GRAND TRUNK SITE B2

WMSRDC
WEST MICHIGAN SHORELINE
REGIONAL DEVELOPMENT COMMISSION

MUSKEGON LAKE PUBLIC ADVISORY COUNCIL

N
0 40'
SCALE IN FEET
GRAPHIC SCALE VERIFICATION
This bar measures 1" on 22"x34" or 1/2" on 11"x17" original. Adjust scale accordingly.

JFNew
Corporate/Northern Indiana
708 Roosevelt Road
Walkerton, Indiana 46574
574-586-3400

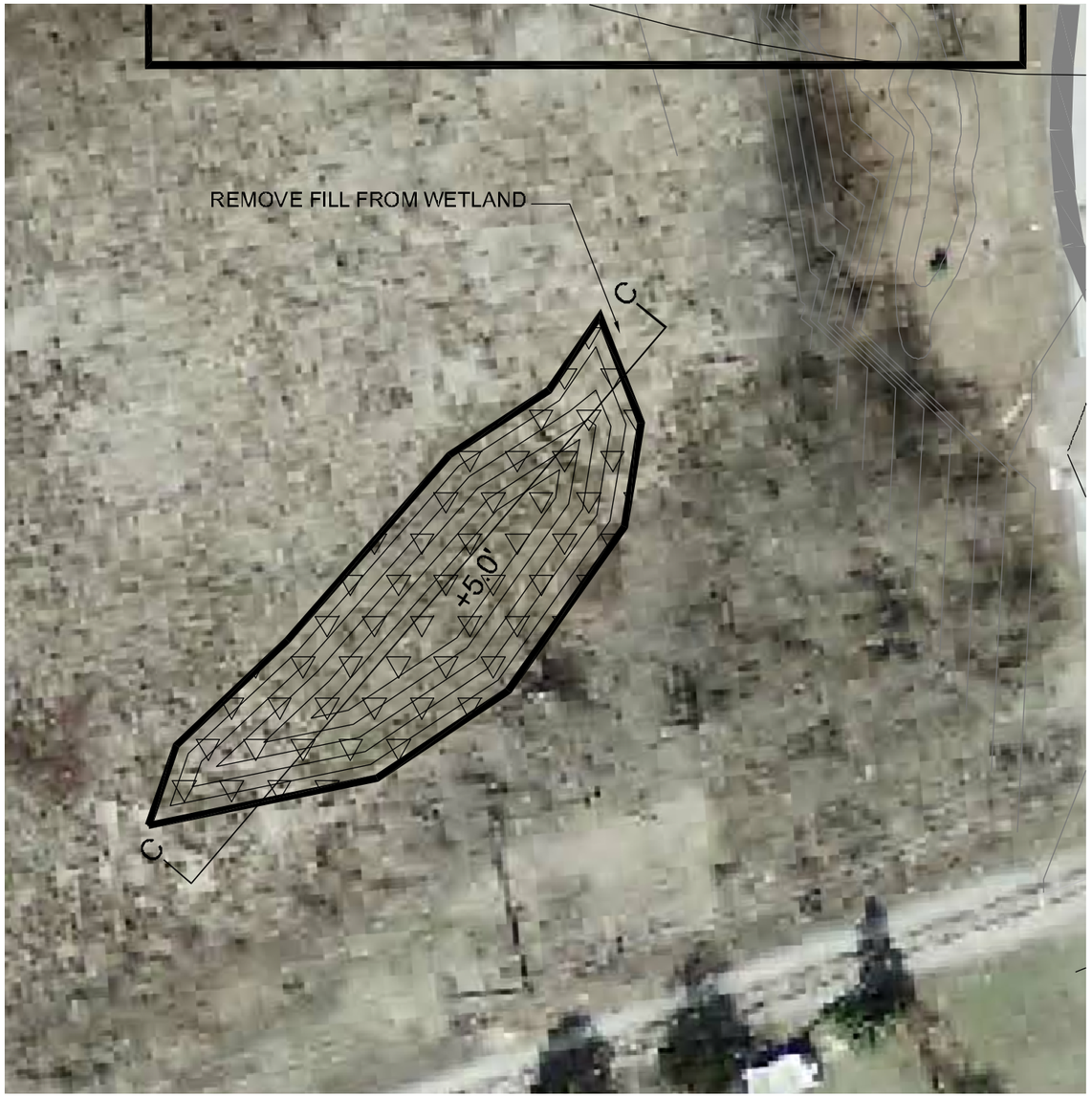
Western Michigan
11181 Marwill Avenue
West Olive, Michigan 49460
616-847-1680

REVISION

Muskegon Lake Watershed Partnership
Grand Trunk
Site B Revegetation Plan

DRAWN BY: ET
DESIGNED BY: BM
DATE: 09/26/2013
JOB NO: 0903138

FIGURE
6
OF 11



PLAN VIEW--GRAND TRUNK SITE C

NOTES:

A.) All contours are relative and do not represent a Professional Land Survey.
B.) Fill to be removed and matched to surrounding existing grade.
C.) Soils at this site have been sampled and have not shown high levels of contamination. Soils will be tested throughout construction. Clean soils may be disposed of at an off-site location of the Contractor's choice that has been approved by the Engineer. All non-clean soils shall be disposed of at a Type II landfill. Costs for landfill soil disposal shall be included as a Bid Alternate. All concrete and stone may be disposed of off-site at a location of the Contractor's choice that has been approved by the Engineer.
D.) Estimated cut volume for area C is 672 CY. This is an estimate only and shall be verified by the contractor. Estimated does not account for post-excavation soil expansion.
E.) Contractor shall verify all underground utilities by contacting MISS DIG prior to construction.

Native Seed Mix A (Emergent Wetland, See Sheet 11)--0.17 acres

AREA C SUMMARY

Item	Unit	Qty
EXCAVATION	CY	672
NATIVE SEEDING	AC	0.17

N

0 20'

SCALE IN FEET

GRAPHIC SCALE VERIFICATION
This sheet measures 1" on 22"x36" or 1/2" on 11"x17" original. Adjust scale accordingly.

JFNew
Corporate/Northern Indiana
708 Roosevelt Road
Walkerton, Indiana 46574
574-586-3400

Western Michigan
11131 Marvell Avenue
Wyoming, Michigan 49460
616-247-1630

REVISION

Muskegon Lake Watershed Partnership
Grand Trunk
Site C Existing and Proposed Conditions

DRAWN BY: EI
DESIGNED BY: BM
DATE: 08/26/2013
JOB NO: 0902035

FIGURE
7
OF 11

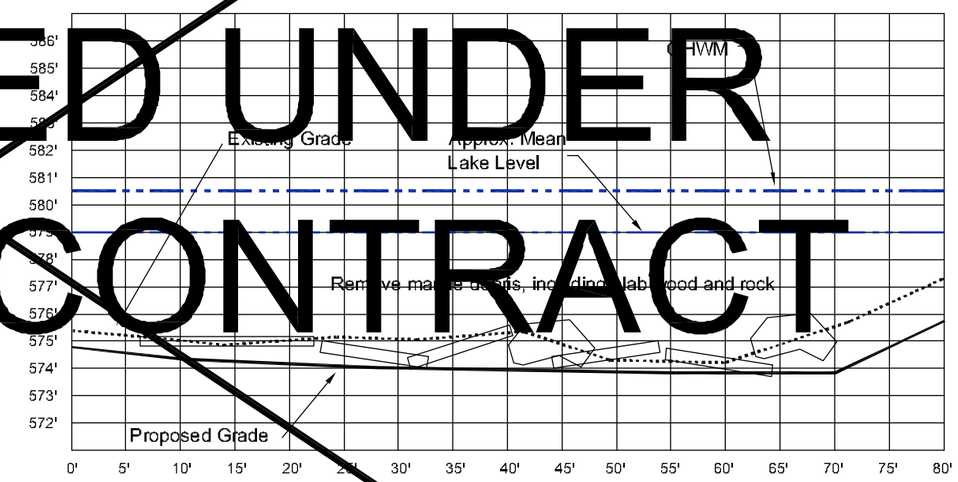
WMSRDC
WEST MICHIGAN SHORELINE
REGIONAL DEVELOPMENT COMMISSION

MUSKEGON LAKE PUBLIC ADVISORY COUNCIL

PLAN VIEW--GRAND TRUNK SITE D

NOTES:

A.) Cleared/grubbed woody material shall be placed randomly as habitat structures within wetland, at the direction of the Engineer.
B.) Soils at this site have been sampled and have not shown high levels of contamination. Soils will be tested throughout construction. Clean soils may be disposed of at an off-site location of the Contractor's choice that has been approved by the Engineer. All non-clean soils shall be disposed of at a Type II landfill. Costs for landfill soil disposal shall be included as a Bid Alternate. All concrete and stone may be disposed of off-site at a location of the Contractor's choice that has been approved by the Engineer.
C.) Mean lake level=579.0 (IGLD 1985)
D.) Approximately 4,000 CY of material are estimated to be removed from site
E.) Contractor shall verify all underground utilities by contacting MISS DIG prior to construction.
F.) Contractor shall install turbidity curtain in all work areas to minimize sediment transport into Muskegon Lake.
G.) Contractors shall be aware that this site has not been formally surveyed to quantify material. Contractor shall provide a cost to conduct a survey to quantify non-natural bottomland material prior to excavation.
H.) Total quantities of excavation and soil backfill shall be determined based on survey results.
I.) Area D dredge completed under separate contract.



TYPICAL CROSS SECTION
Scale (22"x34"): Horiz. 1" = 20'
Vert. 1" = 4'

PERFORMED UNDER SEPARATE CONTRACT

WMSRDC
WEST MICHIGAN SHORELINE
REGIONAL DEVELOPMENT COMMISSION

MUSKEGON LAKE PUBLIC ADVISORY COUNCIL

N
0 50'
SCALE IN FEET
GRAPHIC SCALE VERIFICATION
This sheet measures 1" on 22"x34" or 1/2" on 11"x17" original. Adjust scale accordingly.

JFNew
Corporate/Northern Indiana
708 Roosevelt Road
Walkerton, Indiana 46574
574-586-3400

Western Michigan
11131 Marvel Avenue
Wyoming, Michigan 49460
616-247-1630

REVISION

Muskegon Lake Watershed Partnership
Grand Trunk
Site D Plan View and Details

DRAWN BY: ET
DESIGNED BY: BM
DATE: 08/26/2013
JOB NO: 0952035

FIGURE
8
OF 11

PLAN VIEW--GRAND TRUNK SITE E

NOTES:

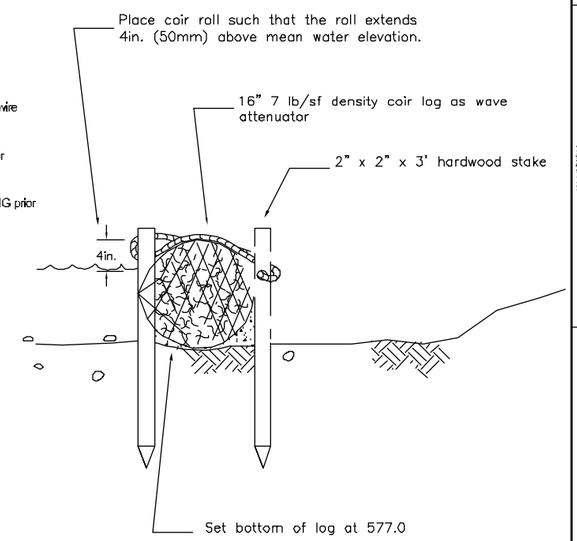
A.) Cleared/grubbed woody material shall be placed randomly as habitat structures within wetland, at the direction of the Engineer.
B.) Over-excavate by 6", then place 6" clean topsoil over all disturbed areas above 579.0.
C.) Over-excavate by 12" below 579.0 and replace with clean sand.
D.) Soils at this site have been sampled and have not shown high levels of contamination. Soils will be tested throughout construction. Clean soils may be disposed of at an off-site location of the Contractor's choice that has been approved by the Engineer. All non-clean soils shall be disposed of at a Type II landfill. Costs for landfill soil disposal shall be included as a Bid Alternate. All concrete and stone may be disposed of off-site at a location of the Contractor's choice that has been approved by the Engineer.
E.) Place North American Green SC-150BN or equivalent erosion control blanket over all disturbed areas above 579.0 following native seed installation (see sheet 4).
F.) Mean lake level=579.0 (IGLD 1985)
G.) A topographic survey has not been completed for Site E. Proposed contours are based on approximate site conditions and should be constructed to tie into existing grades. Construction staking will be completed by Fleis and VandenBrink Engineering.
H.) Plant plugs to be installed randomly spaced 3' o.c.
I.) Plant plugs to be installed between the 581 and 578 contour.
J.) Plants shall be 2" x 4" 38-cell size plants or bare-root
K.) All plants installed below the water line shall be secured with 6" x 1" wire sod staples placed through the plant root mass
L.) Estimated cut volume for area E is 3335 CY. This is an estimate only and shall be verified by the contractor. Estimated does not account for post-excavation soil expansion.
M.) Estimated topsoil needed for E is 508 CY.
N.) Contractor shall verify all underground utilities by contacting MISS DIG prior to construction.

NATIVE PLANT LIST

LATIN NAME	COMMON NAME	QUANTITY
Asclepias incarnata	Swamp milkweed	114
Iris virginica shrevii	Blue flag iris	114
Nuphar advena	Yellow pond lily	200
Nymphaea tuberosa	Sweet-scented waterlily	200
Pontederia cordata	Pickerelweed	200
Sagittaria latifolia	Common arrowhead	200
Schenoplectus validus	Softstem bulrush	114
Sparganium eurycarpum	Burreed	114

AREA E SUMMARY

Item	Unit	Qty
EXCAVATION	CY	3335
TOPSOIL	CY	508
NAG SC-150 ECB	SY	8300
COIR LOG	LF	200
NATIVE SEED MIX A	AC	0.23
NATIVE SEED MIX B	AC	0.40
NATIVE PLANTING	EA	1256



COIR LOG WAVE ATTENUATOR

NOT TO SCALE

Native Seed Mix A (Emergent Wetland, See Sheet 11)--0.23 acres

Native Seed Mix B (Mesic Prairie, See Sheet 11)--0.40 acres

WMSRDC
WEST MICHIGAN SHORELINE REGIONAL DEVELOPMENT COMMISSION

MUSKEGON LAKE PUBLIC ADVISORY COUNCIL

N

0 15'

SCALE IN FEET

GRAPHIC SCALE VERIFICATION
This sheet was originally 22"x36" or 1/2" on 11"x17" original. Adjust scale accordingly.

JFNew
Corporate/Northern Indiana
708 Roosevelt Road
Walkerton, Indiana 46574
574-586-3400

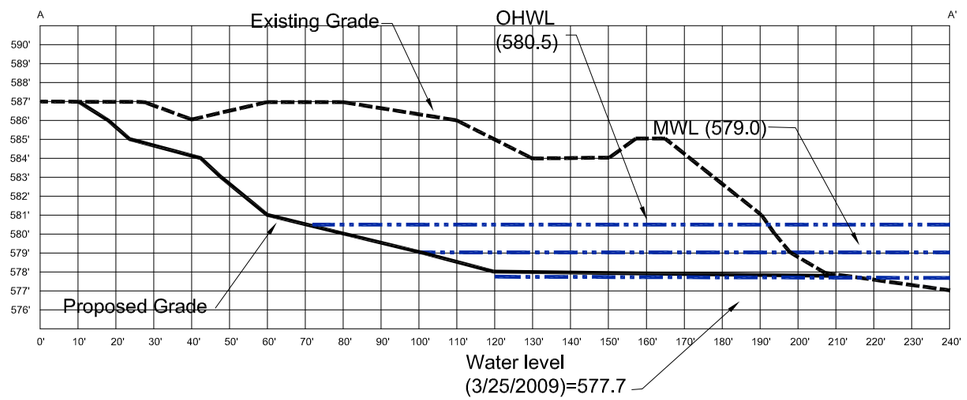
Western Michigan
11131 Marvel Avenue
West Olive, Michigan 49460
616-847-1630

REVISION

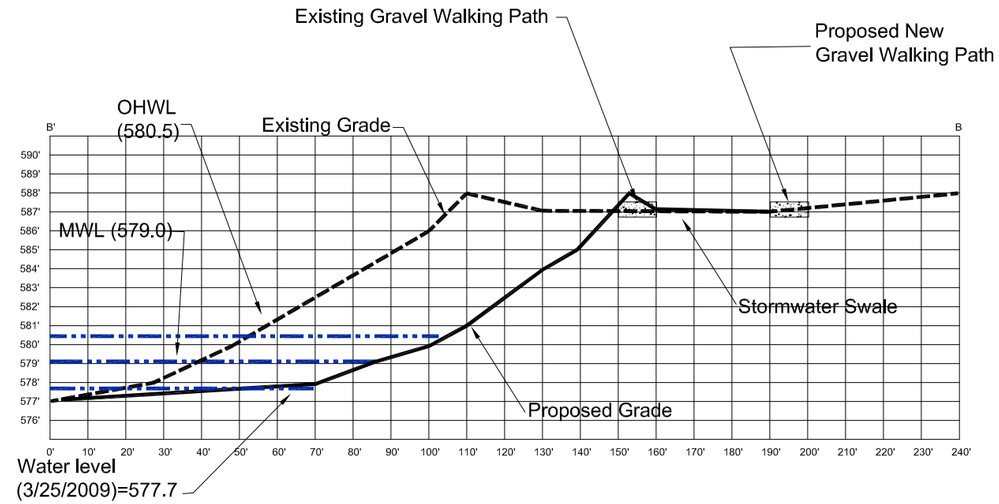
Muskegon Lake Watershed Partnership
Grand Trunk
Site E Existing and Proposed Conditions

DRAWN BY: EI
DESIGNED BY: BM
DATE: 08/25/2013
JOB NO: 0902035

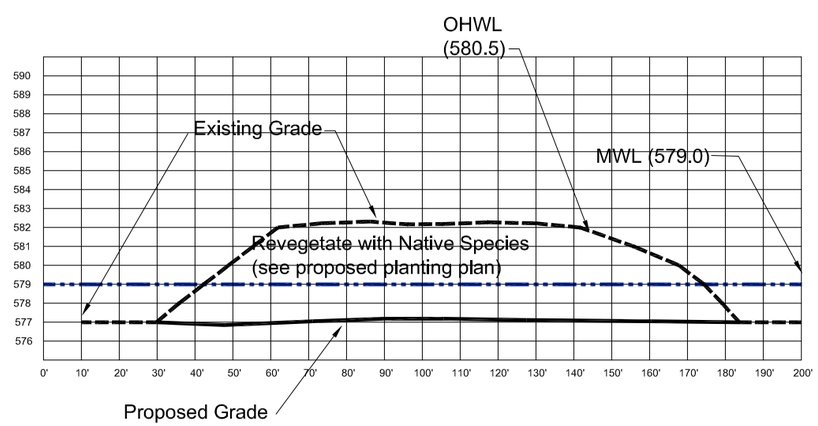
FIGURE
9
OF 11



CROSS SECTION--GRAND TRUNK SITE A



CROSS SECTION--GRAND TRUNK SITE B



CROSS SECTION--GRAND TRUNK SITE C

WATER LEVELS REFERENCED TO IGLD 1985

WMSRDC
WEST MICHIGAN SHORELINE
REGIONAL DEVELOPMENT COMMISSION

MUSKEGON LAKE
PUBLIC ADVISORY COUNCIL

N
0 20'
SCALE IN FEET

GRAPHIC SCALE VERIFICATION
This bar measures 1" on 22"x34"
or 1/2" on 11"x17" original.
Adjust scale accordingly.

JFNew
Corporate/Northern Indiana
708 Roosevelt Road
Walkerton, Indiana 46574
574-586-3400

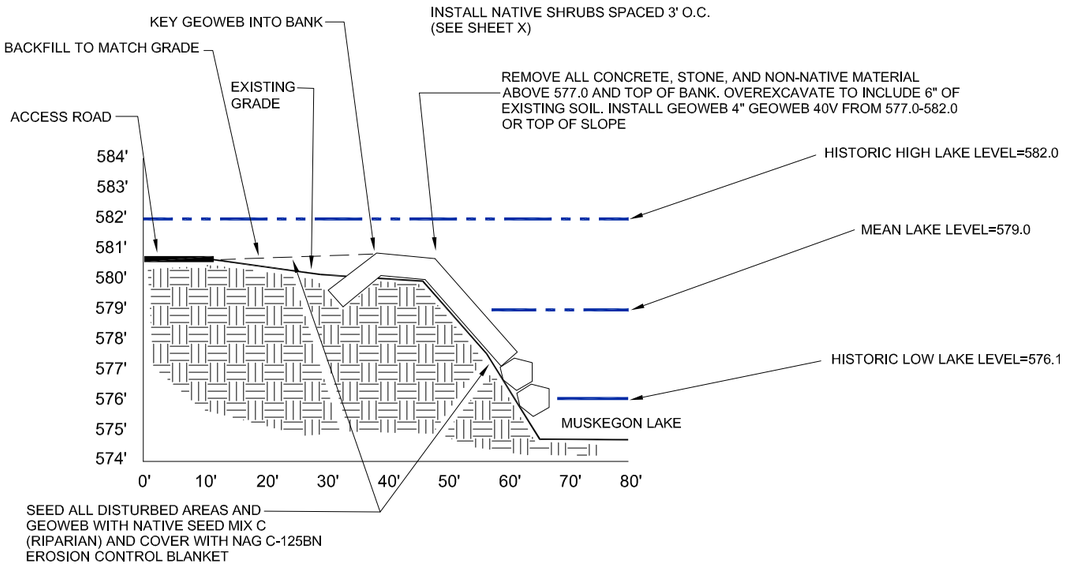
Western Michigan
11181 Marwill Avenue
West Olive, Michigan 49460
616-847-1680

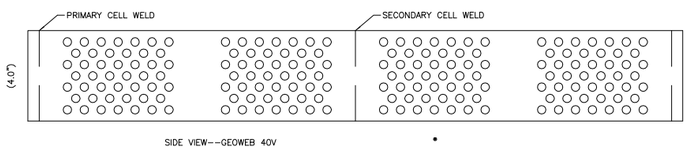
REVISION

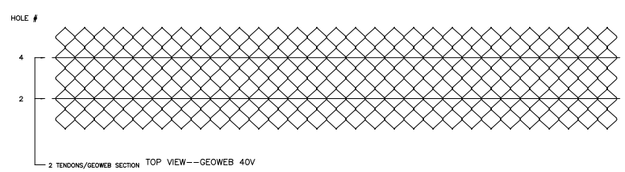
Muskegon Lake Watershed Partnership
Grand Trunk
Existing and Proposed Cross Sections

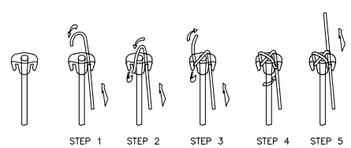
DRAWN BY: ET
DESIGNED BY: BM
DATE: 09/26/2013
JOB NO: 0902035

FIGURE
10
OF 11





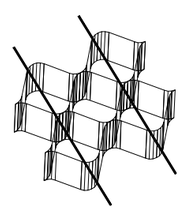




THE MOORE HITCH WITH THE ATRA® ANCHOR

STEP 1 PLACE THE TENDON UNDER ONE ARM OF THE ATRA® CLIP.
STEP 2 DIAGONALLY CROSS THE TENDON OVER THE TOP OF THE ATRA® CLIP.
STEP 3 PLACE THE TENDON UNDER THE OTHER ARM AND PULL TAUGHT TO REMOVE ANY SLACK.
STEP 4 DIAGONALLY CROSS THE TENDON BACK OVER THE TOP OF THE ATRA® CLIP AND PLACE THE TENDON UNDER THE FIRST ARM.
STEP 5 PULL THE TENDON TAUGHT TO REMOVE ANY SLACK. REPEAT THIS PROCESS IF THE TENDON SLIPS AROUND THE ATRA® CLIP.

TYPICAL TENDON AND ANCHORING



SITE B2 STABILIZATION DETAIL (1/6)

NOT TO SCALE

NOTES:

A.) Backfill geoweb with loose, friable topsoil.
B.) Install native seed mix after topsoil installation.
C.) Install NAG C-125BN over seeded topsoil.
D.) All excavated material shall be hauled off site to a Type II landfill
E.) Apply treatment to 110' section at end of access road, as per site plan
F.) Install Geoweb 4" 40V as per manufacturer's recommendation
F.) Listed lake levels assume Muskegon Lake and Lake Michigan are at equal elevations and are referenced to IGLD 1985

NATIVE SEED MIX A (EMERGENT WETLAND)

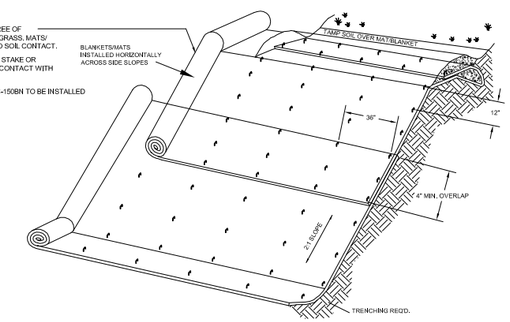
LATIN NAME	COMMON NAME	PLS Oz/Acre
Asclepias incarnata	Swamp milkweed	4
Avena sativa	Seed oats	512
Bidens cernua	Nodding Bur-marigold	2
Calamagrostis canadensis	Blue-joint grass	2
Carex comosa	Bristly sedge	2
Carex hystericina	Porcupine sedge	2
Carex stipata	Common fox sedge	2
Carex vulpinoidea	Brown fox sedge	6
Iris virginica shrevei	Blue flag iris	4
Juncus effusus	Common rush	2
Leersia oryzoides	Rice cut grass	4
Liatris spicata	Marsh blazing star	1
Lolium multiflorum	Annual rye	160
Mimulus ringens	Monkey flower	3
Sagittaria latifolia	Common arrowhead	8
Scirpus acutus	Hard-stemmed bulrush	3
Scirpus atrovirens	Dark green rush	3
Scirpus cyperinus	Wool grass	3
Scirpus fluviatalis	River bulrush	3
Scirpus pungens	Chairmaker's rush	3
Scirpus validus creber	Great bulrush	4
Sparganium eurycarpum	Common bur reed	12
Spartina pectinata	Prairie cord grass	4
Verbena hastata	Blue vervain	3

NATIVE SEED MIX B (MESIC PRAIRIE)

LATIN NAME	COMMON NAME	PLS Oz/Acre
Agastache scrophulariaefolia	Purple giant hyssop	2
Andropogon gerardii	Big bluestem grass	20
Anemone canadensis	Meadow anemone	1
Aquilegia canadensis	Wild columbine	1
Asclepias tuberosa	Butterfly weed	4
Aster laevis	Smooth blue aster	2
Aster novae-angliae	New England aster	4
Avena sativa	Seed Oats	512
Coreopsis lanceolata	Sand coreopsis	5
Coreopsis tripteris	Tall coreopsis	2
Echinacea pallida	Purple coneflower	4
Elymus canadensis	Canada wild rye	12
Elymus virginicus	Virginia wild rye	12
Heliopsis helianthoides	False sunflower	2
Koeleria pyramidata	June grass	2
Liatris aspera	Rough blazing star	2
Liatris spicata	Marsh blazing star	2
Lolium multiflorum	Annual rye	160
Monarda fistulosa	Wild bergamot	4
Panicum virgatum	Switch grass	5
Penstemon digitalis	Foxglove beard tongue	2
Penstemon hirsutus	Hairy beard tongue	2
Physostegia virginiana	Obedient plant	2
Pycnanthemum virginianum	Common mountain mint	2
Ratibida pinnata	Yellow coneflower	7
Rudbeckia hirta	Black-eyed susan	6
Rudbeckia subtomentosa	Sweet black-eyed susan	3
Rudbeckia triloba	Brown-eyed susan	3
Schizachyrium scoparium	Little bluestem grass	36
Solidago speciosa	Showy goldenrod	2
Spartina pectinata	Prairie cord grass	4
Tradescantia ohiensis	Common spiderwort	2
Vernonia missurica	Missouri ironweed	2
Veronicastrum virginicum	Culver's root	1
Zizia aurea	Golden Alexanders	2

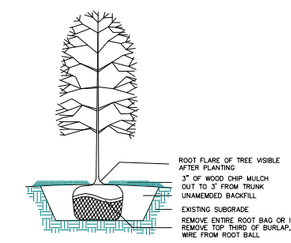
NOTES:

1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/ BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
3. NORTH AMERICAN GREEN SC-150BN TO BE INSTALLED ON ALL DISTURBED AREAS



TYPICAL NAG SC150BN BLANKET INSTALLATION- DETAIL (3/6)

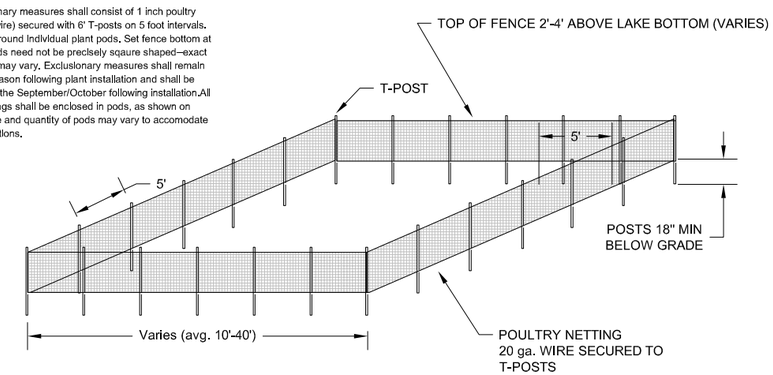
NOT TO SCALE



TREE AND SHRUB PLANTING DETAIL (2/6)

NOT TO SCALE

NOTE: Exclusionary measures shall consist of 1 inch poultry netting (20 ga. wire) secured with 6' T-posts on 5 foot intervals. Netting shall surround individual plant pods. Set fence bottom at river bottom. Pods need not be precisely sqaure shaped–exact size and shape may vary. Exclusionary measures shall remain for 1 growing season following plant installation and shall be removed during the September/October following installation.All emergent plantings shall be enclosed in pods, as shown on plans. Exact size and quantity of pods may vary to accomodate actual site conditions.



ANIMAL EXCLUSION PODS (4/6)

NOT TO SCALE

N

GRAPHIC SCALE VERIFICATION
This bar measures 1" on 22"x34" or 1/2" on 11"x17" original. Adjust scale accordingly.

JFNew
Corporate/Northern Indiana
708 Roosevelt Road
Walkerton, Indiana 46574
574-586-3400

Western Michigan
11181 Marwill Avenue
West Olive, Michigan 49460
616-847-1680

REVISION

Muskegon Lake Watershed Partnership
Grand Trunk
Notes and Details

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

STATE OF MICHIGAN SCOTT S. DIEKES ENGINEER No. 44041

FIGURE
11
OF 11