

LAKE ERIE METROPARK SHORELINE RESTORATION - PHASE II

Project No. 51218.239

NOAA Grant No. NA16NMF4630341

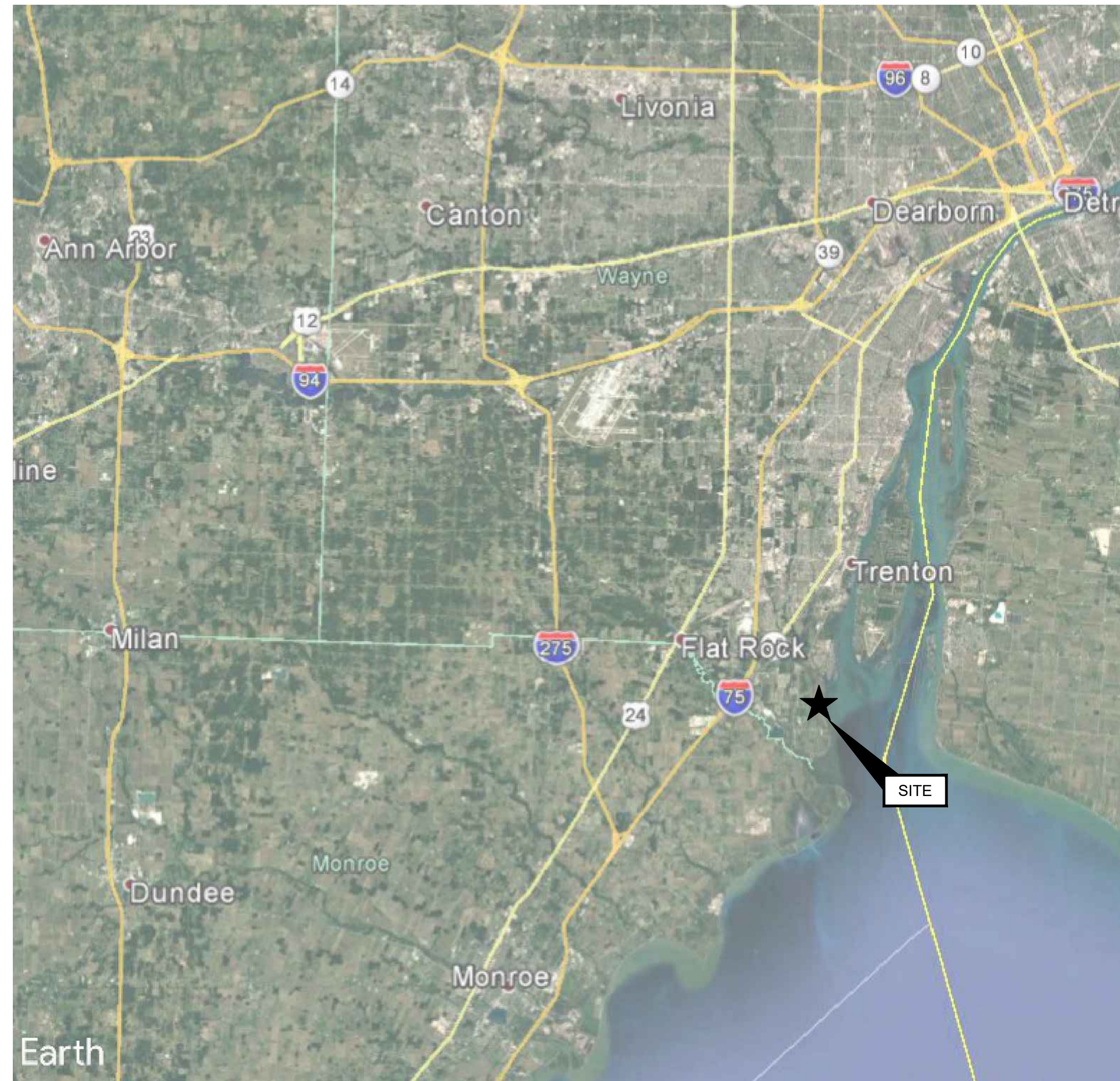
HURON-CLINTON METROPARK AUTHORITY

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OWNER CONTACT:
TYLER MITCHELL, CHIEF OF NATURAL RESOURCES AND
REGULATORY COMPLIANCE
HURON-CLINTON METROPARKS AUTHORITY, ADMINISTRATIVE
OFFICE
13000 HIGH RIDGE DRIVE
BRIGHTON, MI 48114-9058 USA
(808) 321-2634

ENGINEER CONTACT:
SCOTT DIERKS, PE
SENIOR WATER RESOURCE ENGINEER
GEI CONSULTANTS
9282 GENERAL DRIVE, SUITE 180
PLYMOUTH, MI 48170



VICINITY MAP

SCALE: N.T.S.



LOCATION MAP

SCALE: N.T.S.



FOR CONSTRUCTION



BEFORE YOU DIG
CALL MISS DIG
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Attention:



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2	7/1/2022	ISSUED FOR BIDDING	
3	10/10/2022	ISSUED FOR BIDDING	
NO.	DATE	ISSUE/REVISION	APP

<i>Designed:</i>	MS
<i>Checked:</i>	SD
<i>Drawn:</i>	MS, HC
<i>Submitted By:</i>	SD
<i>P.E. Number:</i>	44371



HURON-CLINTON METROPARK
AUTHORITY

GEI Project 1903754

LAKE ERIE METROPARK SHORELINE
RESTORATION

COVER SHEET

DWG. NO.

G1

SHEET NO.

1 OF 10

PROJECT, BASE BID AND ALTERNATE BID DESCRIPTIONS

1. SURVEY WAS COMPLETED BY SME; (11-1-2019). DRAWING BASED ON MICHIGAN STATE PLAN COORDINATES SYSTEM, SOUTH ZONE, INTERNATIONAL FEET. VERTICAL DATUM REFERENCED TO NAVD88. DRAWING BASED ON MICHIGAN STATE PLAN COORDINATES SYSTEM, SOUTH ZONE, INTERNATIONAL FEET. VERTICAL DATUM REFERENCED TO NAVD88. THIS SURVEY WILL NOT SHOW ALL EASEMENTS OF RECORD NO TITLE POLICY HAS BEEN FURNISHED TO THE SURVEYOR BY THE OWNER.
2. THIS IS THE SECOND PHASE OF A TWO-PHASE PROJECT. ORIGINALLY THERE WAS GOING TO BE APPROXIMATELY A YEAR BETWEEN THE CONCLUSION OF PHASE 1 AND INITIATION OF PHASE 2. DELAYS IN IMPLEMENTING PHASE ONE HAVE RESULTED IN THE PROJECTS OCCURRING BACK TO BACK. PHASE 1 CONSISTS PRIMARILY OF GRADING THE PROJECT SHORELINE BACK TO AN APPROXIMATELY 15:1 TO 20:1 GRADE, WHILE LEAVING THE EXISTING RIPRAP WALL IN PLACE.
3. FOR THIS PROJECT - PHASE 2 - THE CONTRACTOR SHALL EXCAVATE APPROXIMATELY 1,930-CY OF THE EXISTING RIPRAP BERM; STOCKPILE APPROXIMATELY 700-CY OF BERM RIPRAP AND GRAVEL WITH THE REMAINDER TO BE TRANSPORTED TO PARK SPOILS PILE AND ROUGH GRADED. ~~CONSTRUCT EIGHT OFFSHORE RUBBLE MOUND BREAKWATERS WITH 860 TONS OF ~2-FT DIAMETER LIMESTONE BOULDERS; 352 TONS OF ~1-FT DIAMETER LIMESTONE BOULDERS AND 333 CYD OF 3”-6” DIAMETER AGGREGATE.~~ SUITABLE STOCKPILED RIPRAP AND GRAVEL WILL BE USED TO MAKE UP SOME OF THIS TOTAL BREAKWATER STONE. ADDITIONALLY, PLACE AND CONSTRUCT 12 ROOTWAD HABITAT STRUCTURES AND 3 CONSTRUCTED DEPRESSIONS WITH APPROXIMATELY 4.5-TONS OF SLABSTONE FOR EACH DEPRESSION (18 TONS TOTAL) IN THE NEARSHORE AREA. CONSTRUCT 3 STONE LANDINGS WITH APPROXIMATELY 5.5 TONS OF MICHIGAN LIMESTONE LEDGESTONE PER LANDING (22 TONS TOTAL). ALL WORK AREAS, SPOIL PILE AND ACCESS AREAS SHALL BE LEVELED AND DISKED PRIOR TO COMPLETION. ALL SEEDING, PLANTING AND BLANKETING TO BE DONE BY THE OWNER.
4. THE PROJECT MUST BE COMPLETE AND THE CONTRACTOR FULLY DEMOBILIZED FROM THE SITE BY APRIL 30, 2023. THE COMPLETION DATE IS FIXED AND IS NOT NEGOTIABLE.
5. THE SITE SHALL BE AVAILABLE FOR WORK AFTER NOVEMBER 1, 2022 AND FOLLOWING COMPLETION OF PHASE 1 WORK. SEE PROJECT COORDINATION SECTION BELOW FOR MORE DESCRIPTION OF SITE COORDINATION BETWEEN PHASE 1 AND PHASE 2.
6. THE CONTRACTOR MUST PROVIDE 7-DAY NOTICE PRIOR TO STARTING WORK.
7. PERMITS SHALL BE ACQUIRED BY THE OWNER. WORK CANNOT START UNTIL ALL PERMITS ARE IN HAND; HOWEVER, OWNER SHALL NOT BE RESPONSIBLE FOR LATER PERMITS.
8. FOR THE BASE BID IT IS ASSUMED THAT THE CONTRACTOR SHALL ACCESS THE SITE WITH HEAVY EQUIPMENT AND BRING IN HEAVY MATERIALS, SUCH AS STONE, BY BARGE VIA THE WATER. THERE IS A BOAT LAUNCH JUST NORTH OF THE SITE THAT IS PART OF THE LAKE ERIE METROPARK. CONTRACTORS SHALL ASSUME FOR THEIR BID THAT THEY WILL BARGE OVER EQUIPMENT AND MATERIALS FROM THAT POINT OF ENTRY. ONCE EQUIPMENT AND MATERIALS ARE DELIVERED TO THE SITE CONTRACTOR WILL HAVE ACCESS AND STORAGE INSIDE THE SNOW FENCE AREA SHOWN ON THE PROJECT DRAWINGS. AS LONG AS THE TURBIDITY CURTAIN IS PROPERLY INSTALLED THE CONTRACTOR MAY WORK IN THE WATER DURING CONSTRUCTION.
9. FOR THE ALTERNATE THE CONTRACTOR SHALL ASSUME THEY WILL ACCESS THE SITE AND BRING IN HEAVY MATERIALS, SUCH AS STONE, OVERLAND VIA THE ACCESS ROUTES IDENTIFIED IN THE PROJECT DRAWINGS.

PROJECT COORDINATION NOTES

1. PHASE 1 CONTRACTOR IS RESPONSIBLE FOR EXCAVATING AND GRADING OUT THE NEW SHORELINE SLOPE BEHIND THE RIPRAP. THIS CONTRACTOR WILL ALSO BUILD AND MAINTAIN HAUL ROADS AND A SPOILS PILE ON PARK PROPERTY. THE PHASE 1 CONTRACTOR SHALL INSTALL AND MAINTAIN SNOW FENCE TO LIMIT CONSTRUCTION FOOTPRINT AND SILT FENCE TO LIMIT EROSION IMPACTS.
2. PHASE 1 CONTRACTOR SHALL LEAVE HAUL ROAD, SPOILS PILE, SNOW FENCE AND SILT FENCE IN PLACE AT THE CONCLUSION OF THEIR WORK. PHASE 1 CONTRACTOR WILL NOT BE RESPONSIBLE FOR RESTORATION OF THESE AREAS. CONTROL OF THE SITE SHALL PASS TO PHASE 2 CONTRACTOR AT THE CONCLUSION OF PHASE 1. ALL
3. AT THE CONCLUSION OF PHASE 1 HCMA AND THE ENGINEER SHALL ASSESS THE CONDITION OF THE SNOW FENCE, SILT FENCE AND HAUL ROAD. PHASE 1 CONTRACTOR SHALL PERFORM ANY NECESSARY REPAIRS TO LEAVE ALL MEASURES IN PLACE AND IN GOOD WORKING ORDER. IF THE CONTRACTOR HAS CAUSED DAMAGE TO INFRASTRUCTURE THE ENGINEER SHALL ASSESS AND DOCUMENT THE DAMAGE. PHASE 1 CONTRACTOR WILL EITHER REPAIR OR BE ASSESSED THE COST OF REPAIRS FOR ANY DAMAGE CAUSED BY THE CONTRACTOR OR SUBCONTRACTORS.
4. PHASE 2 CONTRACTOR SHALL ASSUME MAINTENANCE OF EXISTING SNOW FENCE AND SILT CURTAIN FOR WORK AREAS AFTER THE PHASE 1 CONTRACTOR HAS CONCLUDED WORK AND REMAINS RESPONSIBLE FOR ITS MAINTENANCE THROUGHOUT CONSTRUCTION. SNOW FENCE AND SILT FENCE SHALL BE LEFT IN PLACE THROUGH CONCLUSION OF PHASE 2 CONSTRUCTION.
5. PHASE 2 CONTRACTOR IS NOT RESPONSIBLE FOR SITE SEEDING AND PLANTING; HOWEVER, PHASE 2 CONTRACTOR WILL BE RESPONSIBLE FOR PLACING TOPSOIL OVER ALL DISTURBED AREAS AND SHALL DECOMPACT ALL WORK AREAS, INCLUDING HAUL ROADS TO THE SATISFACTION OF HCMA AND ENGINEER BEFORE MOBILIZING OFF-SITE.
6. REMOVAL OF SNOW FENCE AND SILT CURTAIN SHALL BE PERFORMED BY HCMA.

SOIL EROSION AND SEDIMENTATION CONTROL NOTES

1. THE CONTRACTOR SHALL PROVIDE SUPPLEMENTAL EROSION CONTROL MEASURES, AS NEEDED, TO PREVENT OFF-SITE TRANSPORT OF EARTH, SEDIMENT AND DEBRIS.
2. AREAS TO REMAIN UNSTABILIZED FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE TEMPORARILY SEEDED AND MULCHED. AREAS TO REMAIN UNSTABILIZED FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE TEMPORARILY SEEDED AND MULCHED.
3. PERMANENT SEEDING SHALL BE OCCUR BETWEEN MARCH 1 AND JUNE 15, OR BETWEEN AUGUST 15 AND OCTOBER 15.
4. ALL STOCKPILE AREAS SHALL BE SURROUNDED BY EROSION CONTROL BARRIERS UNTIL SUCH TIME AS THE MATERIAL IS RESPREAD AND STABILIZED OR TRANSPORTED OFF-SITE.
5. SOILS TO BE STOCKPILED FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE SURROUNDED BY EROSION CONTROLS, TEMPORARILY SEEDED AND MULCHED.
6. TEMPORARY STOCKPILES OF DREDGED/EXCAVATED MATERIAL SHALL BE LOCATED ON-SITE, WITHIN THE DESIGNATED AREA(S). ANY MATERIAL NOT RE-USED ON-SITE SHALL BE TRUCKED TO AN ACCEPTABLE OFF-SITE DISPOSAL LOCATION IN ACCORDANCE WITH THE PROJECTS PERMITS.
7. EROSION CONTROL MEASURES SHALL BE INSPECTED DAILY AND DURING AND AFTER EVERY RAIN EVENT. ANY NECESSARY REPLACEMENT OR REPAIR SHALL BE PERFORMED PROMPTLY BY THE CONTRACTOR.
8. DUST SHALL BE CONTROLLED IN ACCORDANCE WITH THE SPECIFICATIONS AND APPLICABLE REGULATIONS.
9. THE CONTRACTOR SHALL ENSURE THAT ALL ACTIVE SHORELINE CONSTRUCTION ACTIVITY IS COMPLETELY ENCLOSED WITH SUITABLE TURBIDITY CURTAIN.
- 10.THE SITE SHALL BE LEFT IN A STABLE CONDITION AT THE CLOSE OF EACH DAY. THE SITE SHALL BE LEFT IN A STABLE CONDITION AT THE CLOSE OF EACH DAY.

CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL NOTIFY ALL APPROPRIATE AGENCIES AND UTILITY COMPANIES, IN WRITING, 48 HOURS PRIOR TO ANY WORK WITHIN 15 FEET OF A UTILITY LINE.
2. THE CONTRACTOR SHALL, UNDER THE DIRECTION OF THE ENGINEER, ESTABLISH/MAINTAIN "CONSTRUCTION LIMITS" ON THE SITE BY ACCEPTABLE VISIBLE MARKERS ALL WORK AND EQUIPMENT SHALL BE CONFINED WITHIN THESE LIMITS, UNLESS OTHERWISE SPECIFICALLY AUTHORIZED.
3. NO CHANGES ARE TO BE MADE UNLESS AUTHORIZED BY ENGINEER AND/OR APPLICANT/OWNER.
4. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL SAFETY CODES, REGULATIONS, LEGAL REQUIREMENTS, PERMIT CONDITIONS, ETC.
5. THE CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS TO PROTECT ALL WALKS, STREETS, PAVEMENTS, HIGHWAY GUARDS, CURBING, EDGING, TREES, PLANTINGS, STRUCTURES, PIPES, ETC ON OR OFF THE PREMISES, AND SHALL REPAIR AND REPLACE OR OTHERWISE MAKE GOOD AT HIS/HER OWN EXPENSE AS REQUIRED BY THE ENGINEER OR OWNER ANY ITEMS DAMAGED AS A RESULT OF THE CONTRACTOR'S WORK.
6. THE CONTRACTOR SHALL DISPOSE OF ALL STUMPS, RUBBISH AND DEBRIS IN ACCORDANCE WITH THE SPECIFICATIONS AND ALL APPLICABLE CODES AND REGULATIONS. THE CONTRACTOR SHALL LEAVE THE PROJECT SITE IN SAFE AND CLEAN CONDITION UPON COMPLETION OF DREDGING OPERATIONS
7. THE CONTRACTOR SHALL PROVIDE ADEQUATE BRACING AND SHORING OF EXCAVATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING CODES AND REGULATIONS.
8. WORK SHALL COMPLY WITH APPLICABLE MUNICIPAL, STATE, AND FEDERAL PERMITS AND REQUIREMENTS.
9. THE CONTRACTOR SHALL OBTAIN AND COMPLY WITH ALL AUTHORIZATIONS NECESSARY FOR CONSTRUCTION AND SPOILS MATERIAL TRANSPORT VEHICLE ENTRY/EXIT/TRAVEL ON STATE AND LOCAL ROADS.

UTILITY NOTES

1. BEFORE COMMENCEMENT OF DREDGING, THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MAKING ALL NECESSARY ARRANGEMENTS AND AND FOR PERFORMING ANY NECESSARY WORK INVOLVED IN CONNECTION WITH THE DISCONTINUANCE OR JURISDICTION OF THE UTILITY COMPANIES, SUCH AS ELECTRICITY, TELEPHONE, WATER, GAS AND ANY SYSTEM OR SYSTEMS WHICH WILL BE AFFECTED BY THE WORK TO BE PERFORMED UNDER THIS CONTRACT.
2. UNLESS OTHERWISE NOTED OR APPROVED BY THE ENGINEER OR OWNER, THE CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITIES.
3. IF REQUIRED, OVERHEAD LINES SHALL BE RELOCATED BY THE UTILITY COMPANY AT THE CONTRACTOR'S EXPENSE.
4. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR AND THE INFORMATION FURNISHED TO THE ENGINEER AND OWNER FOR RESOLUTION OF THE CONFLICT.

FOR CONSTRUCTION



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<i>P.E. Number:</i>	44371



HURON-CLINTON METROPARK AUTHORITY
GEI Project 1903754

LAKE ERIE METROPARK SHORELINE RESTORATION
NOTES

DWG. NO. N1
SHEET NO. 2 OF 10



LEGEND

- WETLAND DELINEATION ——— WET ———
- OHWM — 573.67 ——— OHWM ———
- EX. MAJ. CONTOUR - - - - -
- EX. MIN. CONTOUR - - - - -

NOTE:
FOR MORE DETAIL ON PROJECT DESCRIPTION, PROJECT COORDINATION, CONDITIONS, AND EXPECTATIONS OF THE CONTRACTOR BASED ON THE TRANSITION FROM PHASE 1 OF THIS PROJECT TO THIS PHASE (PHASE 2), SEE SHEET N1.

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LAKE ERIE METROPARK SHORELINE
RESTORATION

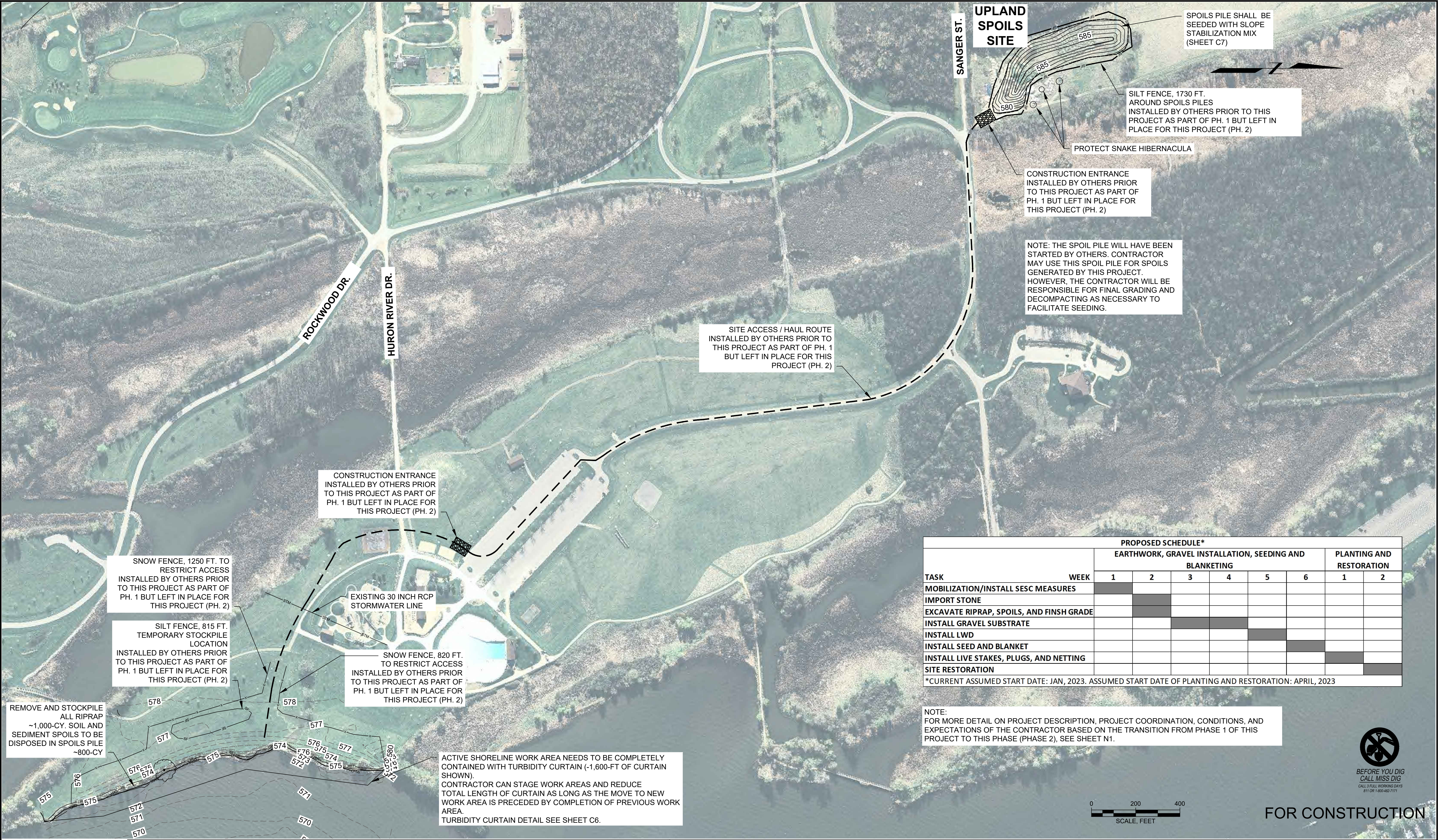
EXISTING CONDITIONS

DWG. NO.

C1

SHEET NO.

3 OF 10

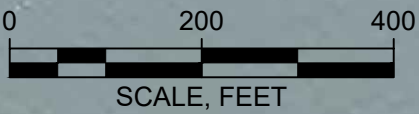


PROPOSED SCHEDULE*								
TASK	WEEK	EARTHWORK, GRAVEL INSTALLATION, SEEDING AND BLANKETING					PLANTING AND RESTORATION	
		1	2	3	4	5	6	
MOBILIZATION/INSTALL SESC MEASURES								
IMPORT STONE								
EXCAVATE RIPRAP, SPOILS, AND FINSH GRADE								
INSTALL GRAVEL SUBSTRATE								
INSTALL LWD								
INSTALL SEED AND BLANKET								
INSTALL LIVE STAKES, PLUGS, AND NETTING								
SITE RESTORATION								
*CURRENT ASSUMED START DATE: JAN. 2023. ASSUMED START DATE OF PLANTING AND RESTORATION: APRIL, 2023								

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LEGEND

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OHWM — 573.67 —OHWM—

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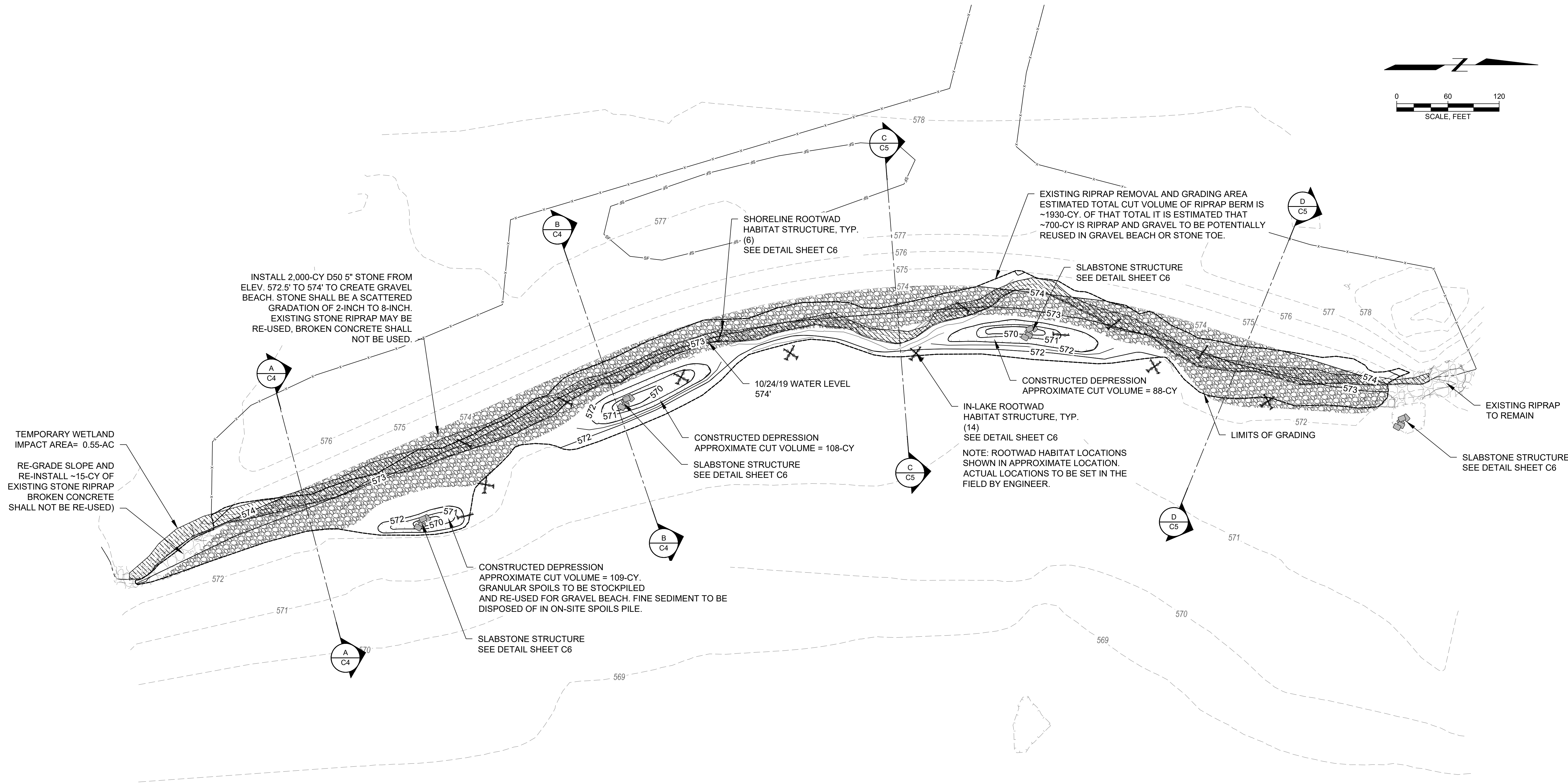
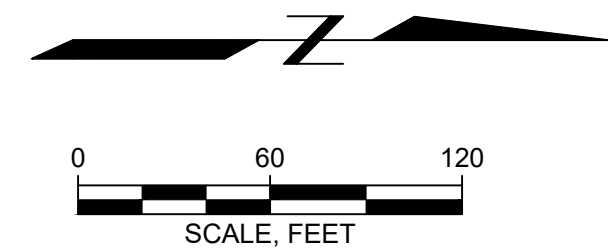
LAKE ERIE METROPARK SHORELINE RESTORATION

SHORELINE SESC PLAN

DWG. NO.
C2

SHEET NO.
4 OF 10

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LEGEND

EX. MAJ. CONTOUR	---	PR. MAJ. CONTOUR	---
EX. MIN. CONTOUR	---	PR. MIN. CONTOUR	---
		GRADING LIMITS	-----

EARTHWORK
CUT - 3,480 CY
FILL - 222 CY
NET - 3,258 CY CUT

FOR CONSTRUCTION

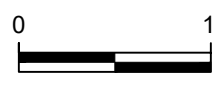


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LAKE ERIE METROPARK SHORELINE
RESTORATION

SHORELINE GRADING PLAN

DWG. NO.

C3

SHEET NO.

5 OF 10



EXISTING PRE-CONSTRUCTION GRADE
 EXISTING PHASE 1 GRADING
 PROPOSED PHASE 2 GRADING
 PHASE 2 EXCAVATION AREA
 D50 5-INCH STONE
 100 YEAR FLOOD ELEVATION
 OHWM
 SURVEYED WATER ELEVATION



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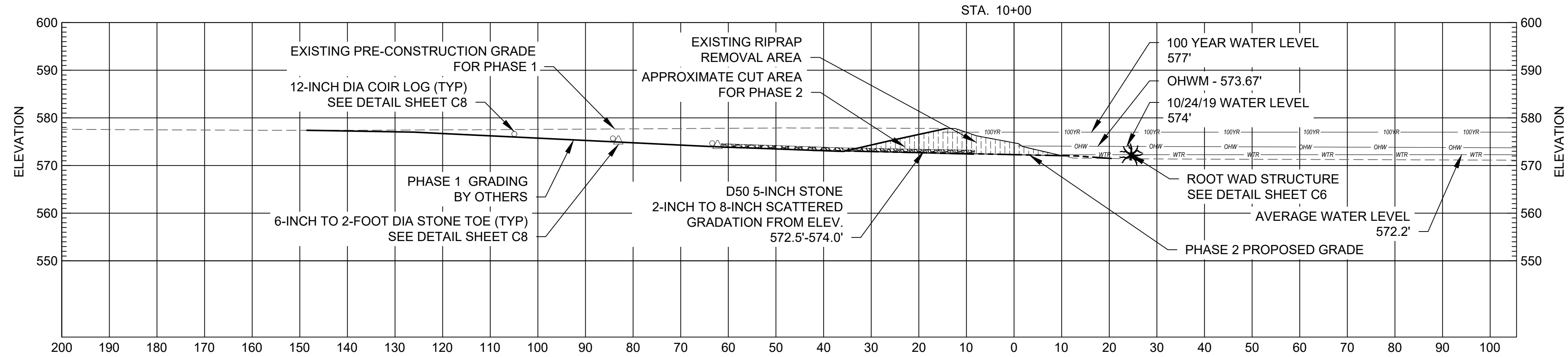
LAKE ERIE METROPARK SHORELINE RESTORATION

SHORELINE SECTIONS

C4

SHEET NO.

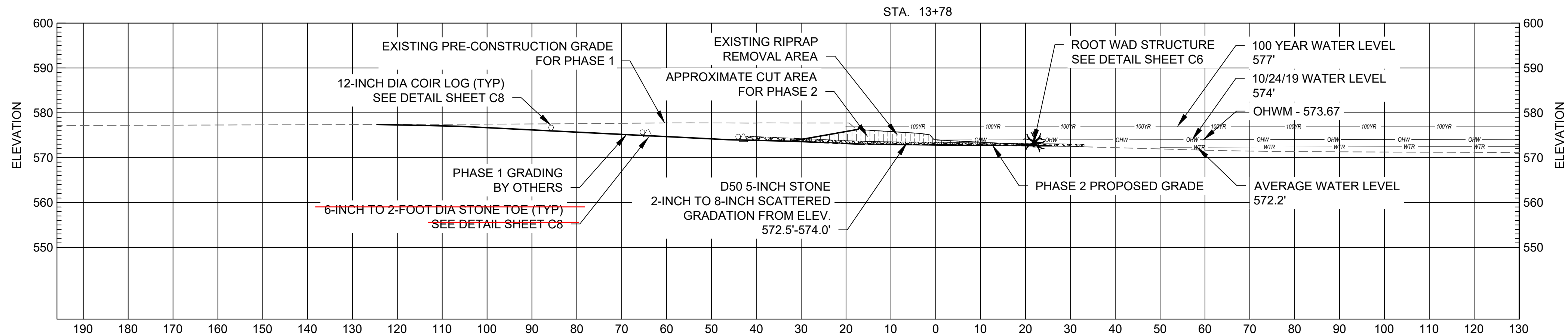
6 OF 10



LEGEND

- EXISTING PRE-CONSTRUCTION GRADE
- EXISTING PHASE 1 GRADING
- PROPOSED PHASE 2 GRADING
- PHASE 2 EXCAVATION AREA
- D50 5-INCH STONE
- 100 YEAR FLOOD ELEVATION
- OHWM
- SURVEYED WATER ELEVATION

C SECTION VIEW



D SECTION VIEW

FOR CONSTRUCTION



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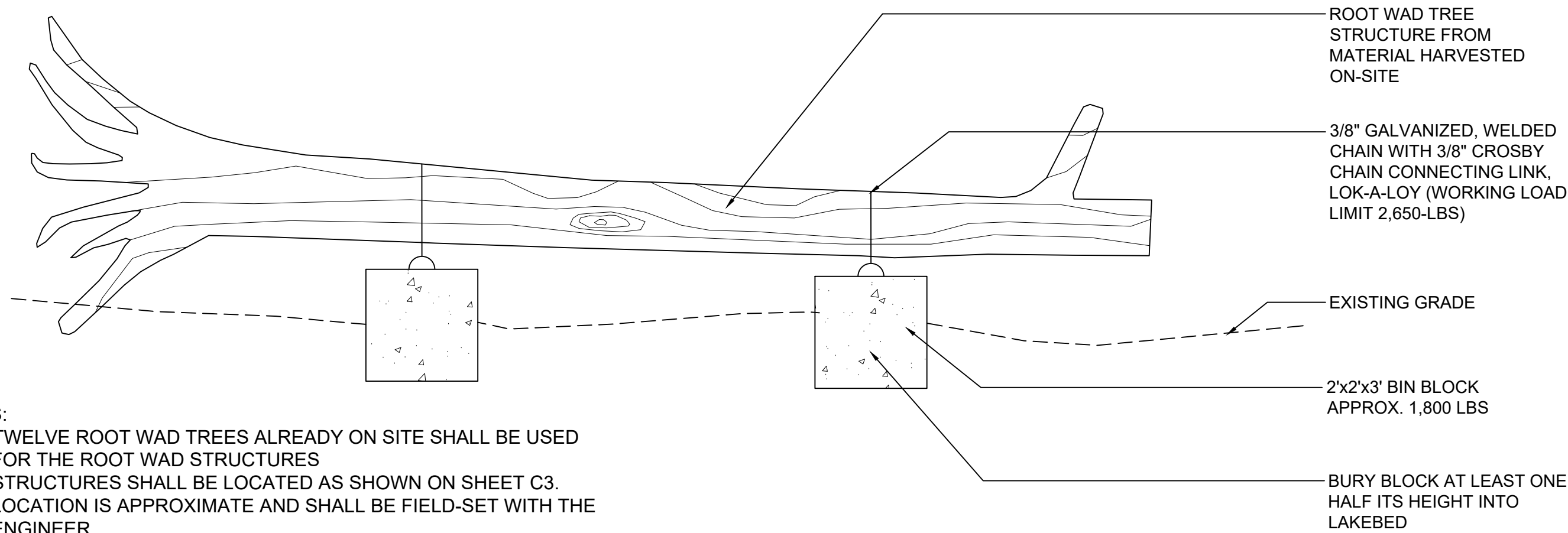
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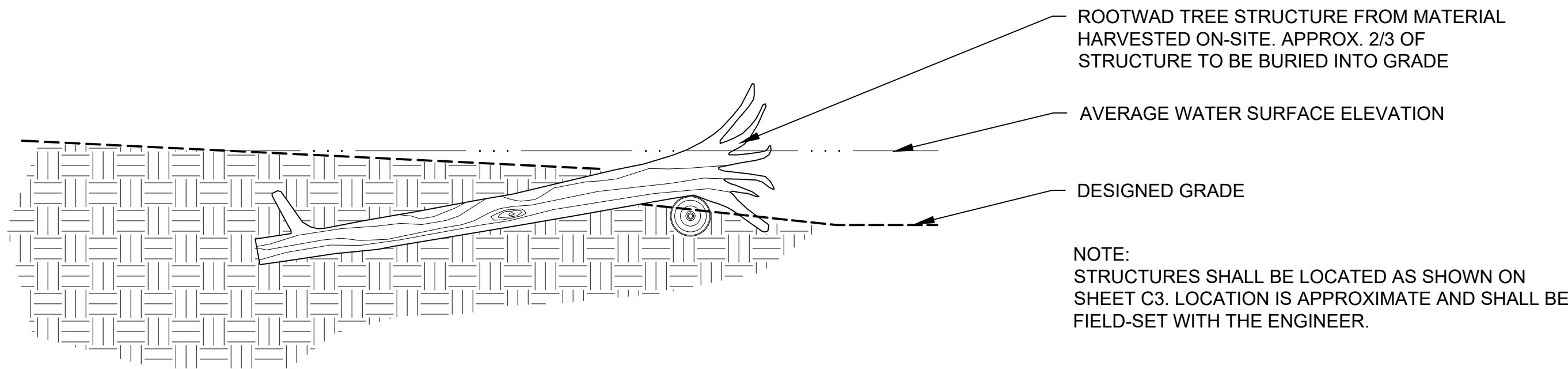
LAKE ERIE METROPARK SHORELINE
RESTORATION

SHORELINE
SECTIONS

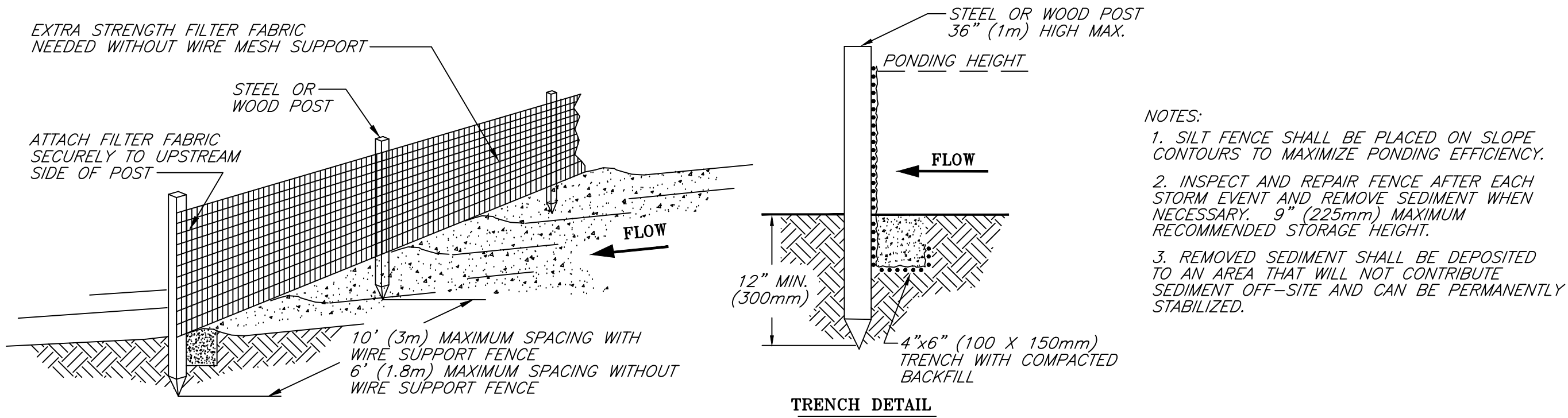
DWG. NO.
C5
SHEET NO.
7 OF 10



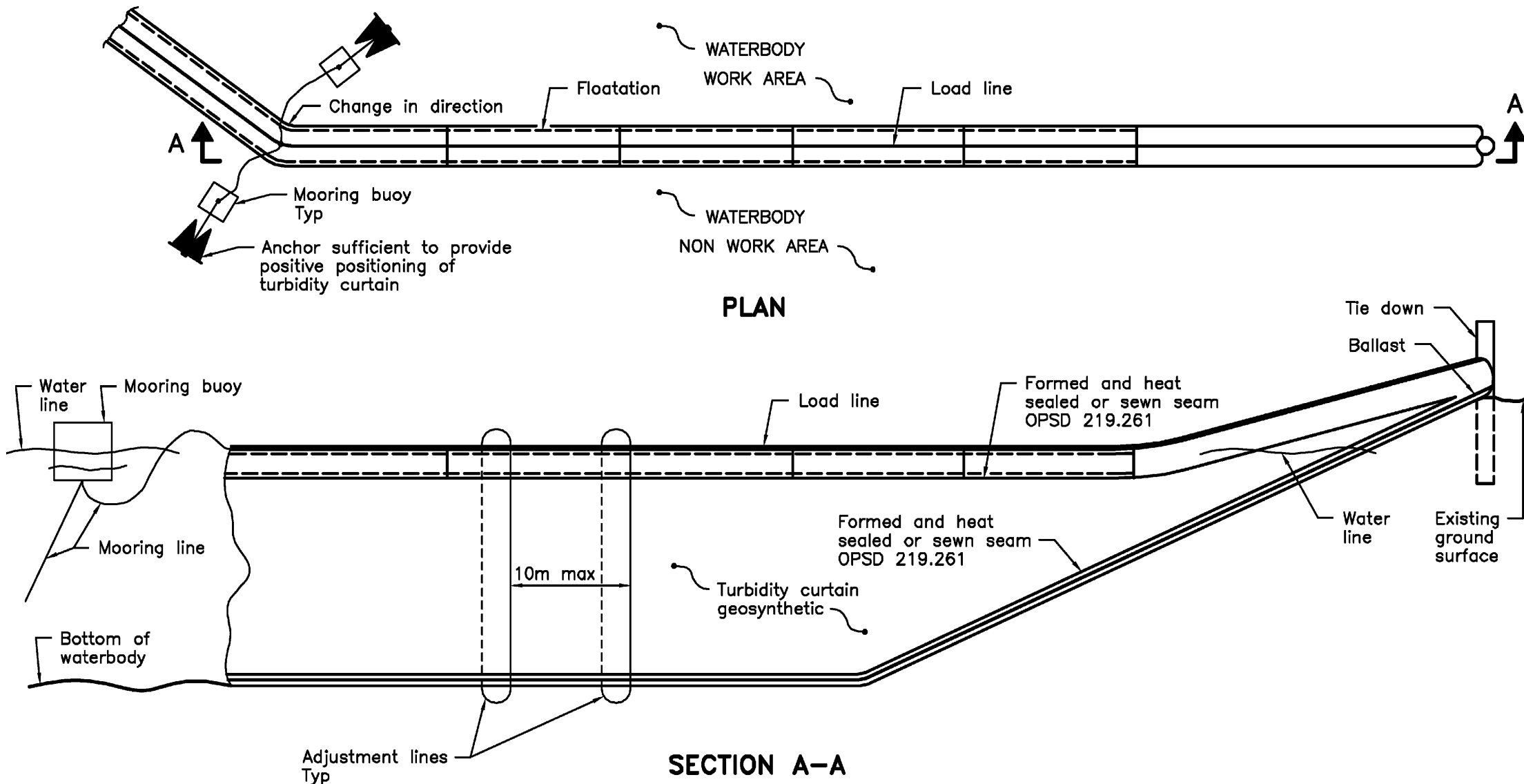
IN-LAKE ROOT WAD HABITAT STRUCTURE
NOT TO SCALE



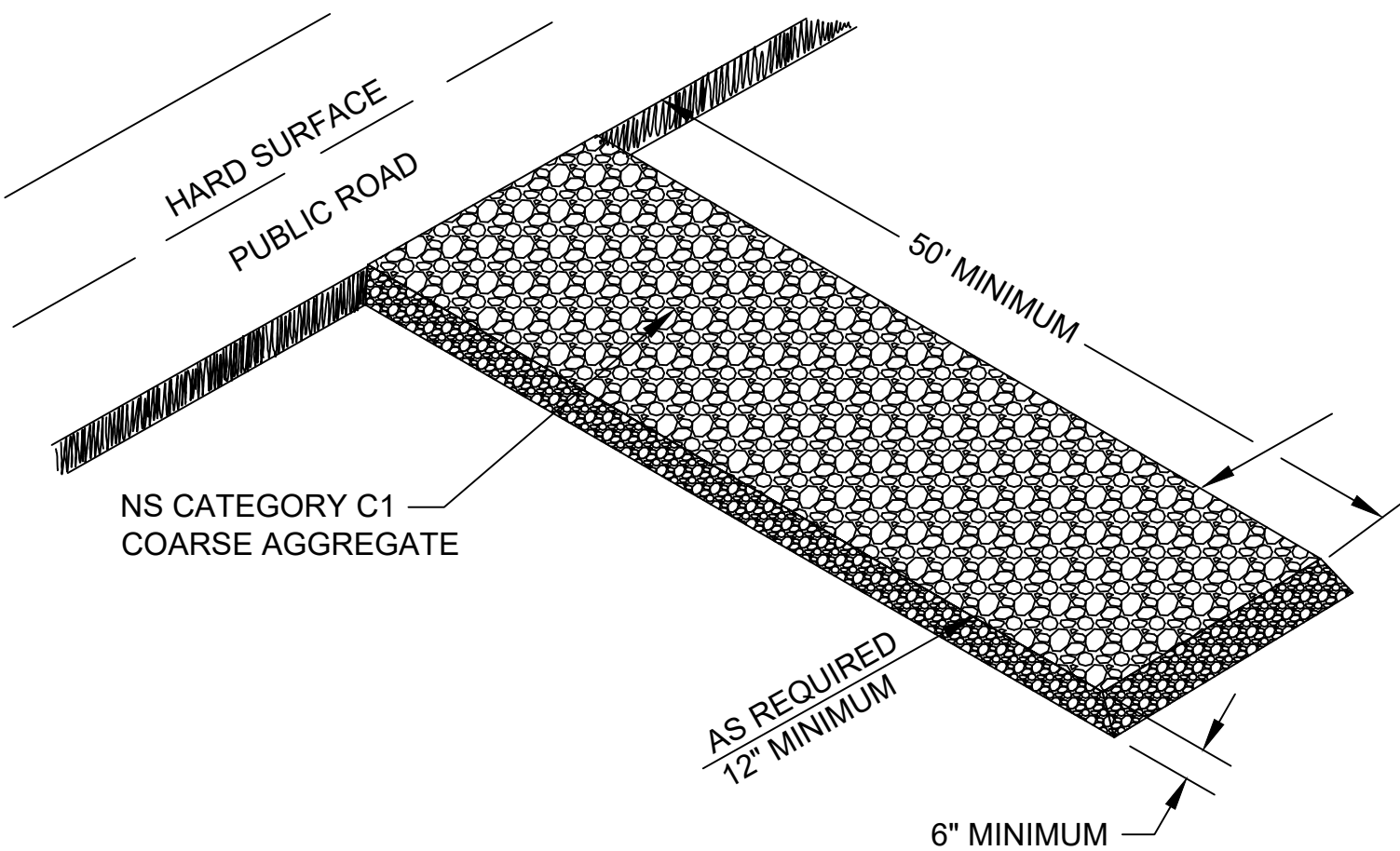
SHORELINE ROOT WAD HABITAT STRUCTURE
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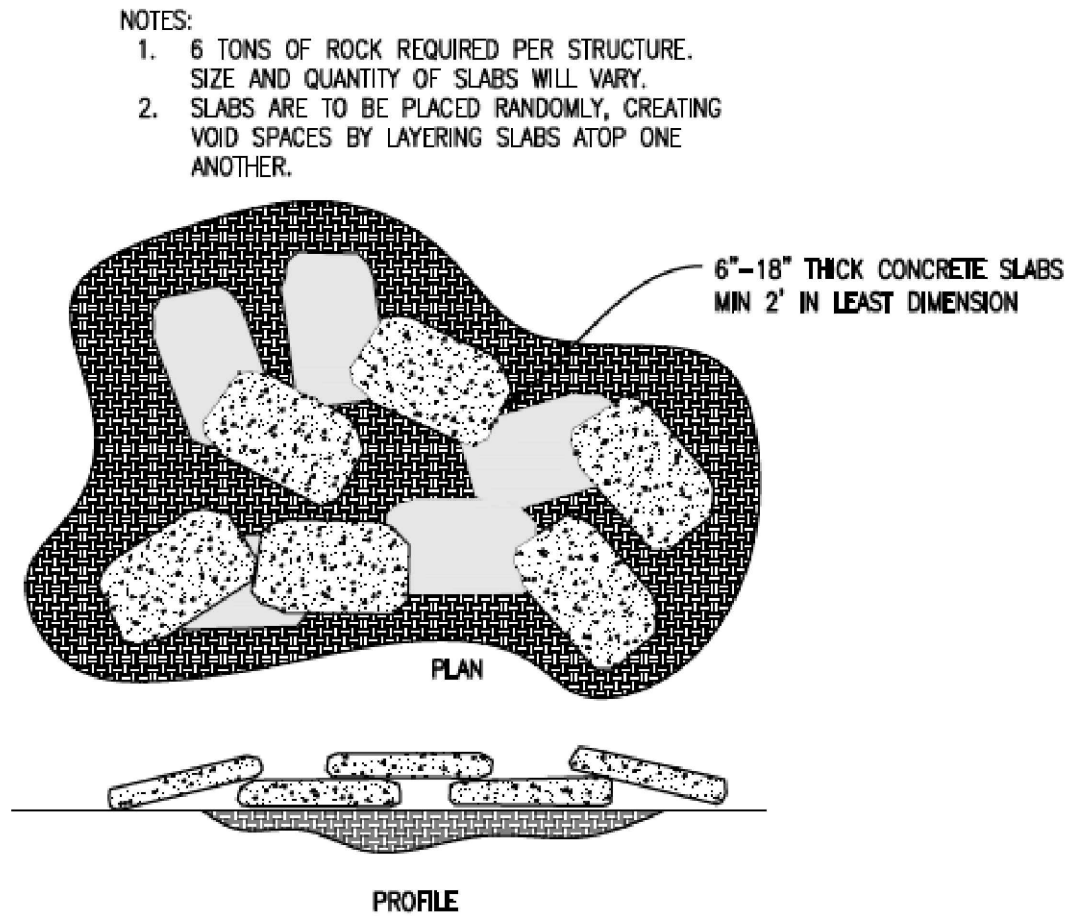
SILT FENCE
NOT TO SCALE



TURBIDITY CURTAIN
NOT TO SCALE



GRAVEL CONSTRUCTION ENTRANCE
NOT TO SCALE



SLABSTONE STRUCTURE
NOT TO SCALE
FOR CONSTRUCTION



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

1	6/2/2022	PERMIT SET	
2	7/1/2022	ISSUED FOR BIDDING	
3	10/10/2022	ISSUED FOR BIDDING	
NO.	DATE	ISSUE/REVISION	APP

<i>Designed:</i>	MS
<i>Checked:</i>	SD
<i>Drawn:</i>	MS, HC
<i>Submitted By:</i>	SD
<i>P.E. Number:</i>	44371



HURON-CLINTON METROPARK
AUTHORITY

GEI Project 1903754

LAKE ERIE METROPARK SHORELINE
RESTORATION

SITE DETAILS

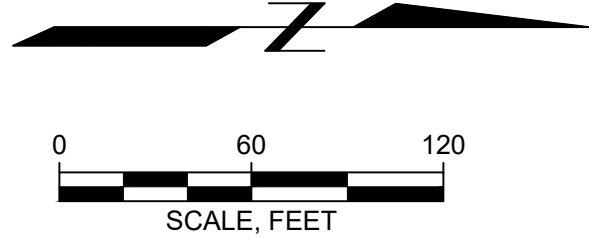
DWG. NO.
C6
SHEET NO.
8 OF 10

1. LEDGESTONE STEPS BY CONTRACTOR.
2. ALL PLANTING, SEEDING, AND BLANKETING BY OTHERS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR DECOMPACTING, FILLING, AND TOUCH-UP GRADING AS NEEDED TO PREPARE SEEDED/PLANTED AREAS THAT ARE DISTURBED BY CONSTRUCTION TRAFFIC.
4. DECOMPACTION SHALL BE DOWN TO A DEPTH OF ONE-FOOT.

LEDGESTONE STEPS AND
LANDING (TYP.):
5 STEPS AND LANDING
COMPOSED OF 10 STONES AS
SHOWN
(SEE SHEET C8)

BURY 6 ROOT WAD HABITAT STRUCTURES INTO SHORELINE

NOTE:
ROOT WAD HABITAT LOCATIONS SHOWN IN
APPROXIMATE LOCATION. ACTUAL LOCATIONS
TO BE SET IN THE FIELD BY ENGINEER.



~~1,308-LF 12-INCH DIA COIR LOG
PLACED AT GRADE LINE 576~~

12-INCH DIA COIR LOG PLACED BEHIND
STONE TOE AT GRADE LINES 575 AND 574
TOTAL LENGTH OF COIR LOG: 2,636-LF
~~TOTAL VOLUME OF STONE TOE: 830-CY~~

INSTALL 14 ROOT WAD HABITAT
STRUCTURES ANCHORED TO LAKE BOTTOM.

NOTE:
ROOT WAD HABITAT LOCATIONS SHOWN IN
APPROXIMATE LOCATION. ACTUAL
LOCATIONS TO BE SET IN THE FIELD BY
ENGINEER.

SLOPE STABILIZATION SEED MIX (3.2 ACRES)

BOTANICAL NAME	COMMON NAME	PLS Oz PER Acre
PERMANENT GRASSES/SEDGES		
<i>ANDROPOGON GERARDII</i>	BIG BLUESTEM	48.00
<i>BOUTELLOUA CURTIPENDULA</i>	SIDE-OATS GRAMA	16.00
<i>CAREX SPP.</i>	PRAIRIE SEDGE SPECIES	4.00
<i>ELYMUS CANADENSIS</i>	CANADA WILD RYE	32.00
<i>ELYMUS VIRGINICUS</i>	VIRGINIA WILD RYE	24.00
<i>PANICUM VIRGATUM</i>	SWITCH GRASS	12.00
<i>SCHIZACHYRIUM SCOPARIUM</i>	LITTLE BLUESTEM	32.00
<i>SORGHASTRUM NUTANS</i>	INDIAN GRASS	32.00
	TOTAL PLS OUNCES	640.00
	TOTAL PLS POUNDS	40.00
TEMPORARY COVER		
<i>AVENA SATIVA</i>	COMMON OAT	512.00
<i>LOLIUM MULTIFLORUM</i>	ANNUAL RYE	240.00
	TOTAL PLS OUNCES	2406.40
	TOTAL PLS POUNDS	150.40

EMERGENT MARSH SEED MIX (0.65 ACRES)

BOTANICAL NAME	COMMON NAME	PLS Oz PER Acre
ACORUS CALAMUS	SWEET FLAG	4.00
ASCLEPIAS INCARNATA	SWAMP MILKWEED	4.00
AVENA SATIVA	SEED OATS	512.00
BIDENS CERNUA	NODDING BUR MARIGOLD	2.00
CALAMAGROSTIS CANADENSIS	BLUE JOINT GRASS	2.00
CAREX VULPINOIDEA	BROWN FOX SEDGE	4.00
DECODON VERTICILLATUS	SWAMP LOOSESTRIFE	0.25
ELEOCHARIS ACICULARIS	NEEDLE SPIKE RUSH	0.50
ELEOCHARIS PALUSTRIS	GREAT SPIKE RUSH	1.00
GLYCERIA STRIATA	FOWL MANNA GRASS	1.00
HIBISCUS MOSCHEUTOS	SWAMP ROSE MALLOW	4.00
IRIS VIRGINICA SHREVEI	BLUE FLAG IRIS	6.00
JUNCUS CANADENSIS	CANADIAN RUSH	1.00
JUNCUS EFFUSUS	COMMON RUSH	3.00
JUNCUS TORREYI	TORREY'S RUSH	0.25
LEERSIA ORYZOIDES	RICE CUT GRASS	2.00
LOLIUM MULTIFLORUM	ANNUAL RYE	160.00
MIMULUS RINGENS	MONKEY FLOWER	1.00
PELTANDRA VIRGINICA	ARROW ARUM	6.00
PONTERDERIA CORDATA	PICKEREL WEED	4.00
RUMEX ORBICULATUS	GREAT WATER DOCK	1.00
SAGITTARIA LATIFOLIA	SAGITTARIA LATIFOLIA	2.00
SAURURUS CERNUUS	LIZARD'S TAIL	0.50
SCIRPUS ACUTUS	HARD-STEMMED BULRUSH	2.00
SCIRPUS ATROVIRENS	DARK GREEN RUSH	2.00
SCIRPUS CYPERINUS	WOOL GRASS	1.00
SCIRPUS FLUVIATILIS	RIVER BULRUSH	2.00
SCIRPUS PUNGENS	CHAIRMAKER'S RUSH	3.00
SCIRPUS VALIDUS	CREBER GREAT BULRUSH	4.00
SPARGANIUM EURYCARPUM	COMMON BUR REED	2.00
ZIZANIA AQUATICA	WILD RICE	32.00
TOTAL PLS OUNCES		923.40
TOTAL PLS POUNDS		57.70

LAKEPLAIN WET PRAIRIE SEED MIX (1.39 ACRES)

BOTANICAL NAME	COMMON NAME	PLS Oz PER Acre
ACORUS CALAMUS	SWEET FLAG	2.00
ANGELICA ATROPURPUREA	GREAT ANGELICA	2.00
ASCLEPIAS INCARNATA	SWAMP MILKWEED	6.00
ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	1.00
AVENA SATIVA	SEED OATS	512.00
BIDENS CERNUA	NODDING BUR MARIGOLD	2.00
BROMUS CILIATUS	FRINGED BROME	2.00
CALAMAGROSTIS CANADENSIS	BLUE JOINT	8.00
CAREX CRINITA	FRINGED SEDGE	2.00
CAREX VULPINOIDEA	BROWN FOX SEDGE	2.00
COREOPSIS TRIPTERIS	TALL COREOPSIS	1.00
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	16.00
EUPATORIUM MACULATUM	SPOTTED JOE-PYE WEED	2.00
EUPATORIUM PERFOLIATUM	COMMON BONESET	2.00
GLYCERIA STRIATA	FOWL MANNA GRASS	2.00
HIBISCUS MOSCHEUTOS	SWAMP ROSE MALLOW	2.00
IRIS VIRGINICA SHREVEI	BLUE FLAG IRIS	5.00
JUNCUS EFFUSUS	COMMON RUSH	2.00
LEERSIA ORYZOIDES	RICE CUT GRASS	2.00
LIATRIS SPICATA	MARSH BLAZING STAR	2.00
LOBELIA CARDINALIS	CARDINAL FLOWER	1.00
LOBELIA SIPHILITICA	GREAT BLUE LOBELIA	1.00
LOLIUM MULTIFLORUM	ANNUAL RYE	160.00
MIMULUS RINGENS	MONKEY FLOWER	2.00
MONARDA FISTULOSA	WILD BERGAMOT	2.00
PHYCANTHEMUM VIRGINIANUM	COMMON MOUNTAIN MINT	1.00
ROSA PALUSTRIS	SWAMP ROSE	1.00
SAGITTARIA LATIFOLIA	COMMON ARROWHEAD	1.00
SCIRPUS ATROVIRENS	DARK GREEN RUSH	1.00
SCIRPUS CYPERINUS	WOOL GRASS	1.00
SOLIDAGO OHIOENSIS	OHIO GOLDENROD	1.00
SPARTINA PECTINATA	PRAIRIE CORD GRASS	10.00
THALICTRUM DASYCARPUM	PURPLE MEADOW RUE	0.50
VERBENA HASTATA	BLUE VERVAIN	2.00
ZIZIA AUREA	GOLDEN ALEXANDERS	2.00
TOTAL PLS OUNCES		1446.85
TOTAL PLS POUNDS		90.43

LEGEND

WETLAND DELINEATION	PR. MAJ. CONTOUR	_____
OHWM - 573.67	PR. MIN. CONTOUR	_____
EX. MAJ. CONTOUR	GRADING LIMITS	-----
EX. MIN. CONTOUR	12" DIA COIR LOG	_____
	STONE TOE AND COIR LOG	=====

PLANTING LEGEND

EMERGENT MARSH SEED MIX AREA
ELEV. 574'-575'
(0.65 AC)

LAKEPLAIN WET PRAIRIE SEED MIX AREA
ELEV. >575'
(1.39 AC)

PLUG PLANTS AND LIVE STAKES
ELEV. 572.5'-574'
(1.58 AC)

PROPOSED TREE (18)

TREES

BOTANICAL NAME	COMMON NAME
<i>ACER RUBRUM</i>	RED MAPLE
<i>CARYA OVATA</i>	SHAGBARK HICKORY
<i>CELTIS OCCIDENTALIS</i>	HACKBERRY
<i>NYSSA SYLVESTICA</i>	BLACK GUM
<i>PLATANUS OCCIDENTALIS</i>	SYCAMORE
<i>QUERCUS BICOLOR</i>	SWAMP WHITE OAK

NOTES:

1. SEEDING AND PLANTING WILL BE SELF-PERFORMED BY HCMA. CONTRACTOR IS RESPONSIBLE FOR INSTALLING TOPSOIL AND DECOMPECTING ALL AREAS TO BE SEEDED AND PLANTED, INCLUDING ACCESS AREAS.
2. ALL SEEDED AREAS TO BE COVERED IN BIODEGRADABLE EROSION CONTROL BLANKET.
3. SEEDING AND BLANKETING PROJECTED DOWN TO ELEVATION ~ 574.0'
4. EMERGENT MARSH SEED MIX TO BE INSTALLED FROM ELEVATION 574.0' - 575.0'.
5. LAKEPLAIN WET PRAIRIE SEED MIX TO BE INSTALLED ABOVE ELEVATION 575.0'.
6. PLUGS AND LIVE STAKES TO BE INSTALLED FROM ELEVATION 572.5' - 574.0'. PLANTS TO BE INSTALLED INTO STONE MATRIX IN CLUSTERS OF 12" - 18" SPACING.
7. TREES TO BE SELECTED FROM THE TREE LIST TABLE OR AS APPROVED BY PROJECT ENGINEER. NO INDIVIDUAL SPECIES CAN ACCOUNT FOR MORE THAN 33% OF THE TREES PROVIDED. INDIVIDUAL SPECIES MAY BE GROUPED IN 2-3 PER PLANTING OF INDIVIDUALLY, AND GROUPS SHALL BE MIXED THROUGHOUT THE PLANTING AREA.
8. TREES TO BE MINIMUM 1.5" CAL. AT D.B.H. BALLED AND BURLAPPED.

PLUG PLANTS AND LIVE STAKES (1.58 ACRES)

BOTANICAL NAME	COMMON NAME	QTY
<i>SCHOENOPLECTUS ACUTUS</i>	HARDSTEM BULRUSH	1000
<i>SCHOENOPLECTUS PUNGENS</i>	THREESQUARE	1500
<i>SCHOENOPLECTUS TABERNAEMONTANI</i>	SOFTSTEM BULRUSH	1000
<i>CORNUS SERICEA</i>	RED OSIER DOGWOOD	750
<i>SALIX INTERIOR</i>	SANDBARK WILLOW	750
	TOTAL	5000

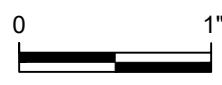


**BEFORE YOU DIG
CALL MISS DIG**
CALL 3 FULL WORKING DAYS
811 OR 1-800-482-7171

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MS

SD

MS, HC

SD

4437



HURON-CLINTON METROPARK
AUTHORITY

GEI Project 1903754

LAKE ERIE METROPARK SHORELINE
RESTORATION

SHORELINE PLANTING PLAN

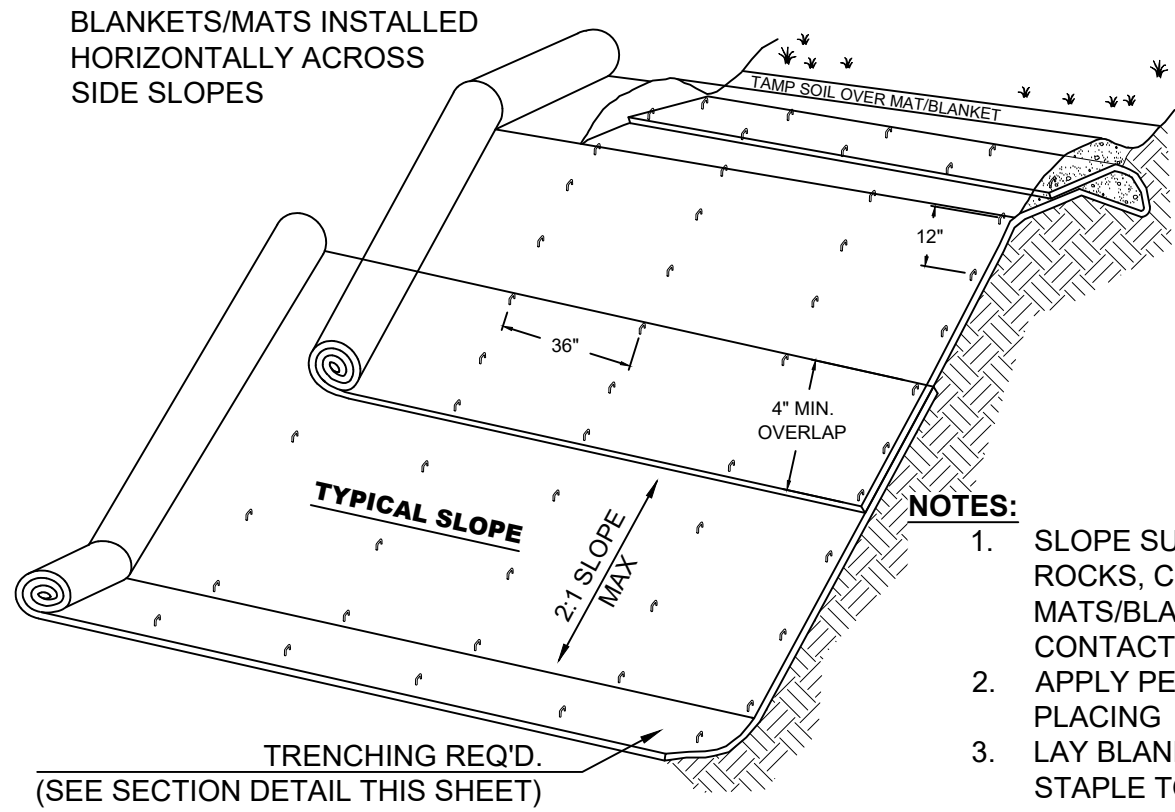
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C7

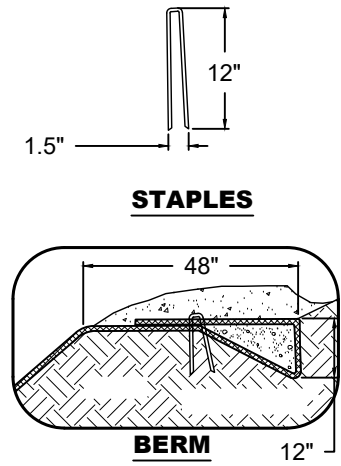
SHEET NO.

9 OF 10

\\ALL-PZCC-1\ K:\Huron-ClintonMetroAuthority\1903754 Lake Erie Shoreline Restoration\CAD\06012022 Shoreline Restoration Ph.2\20220630 ERIE PR.dwg - 10/10/2022

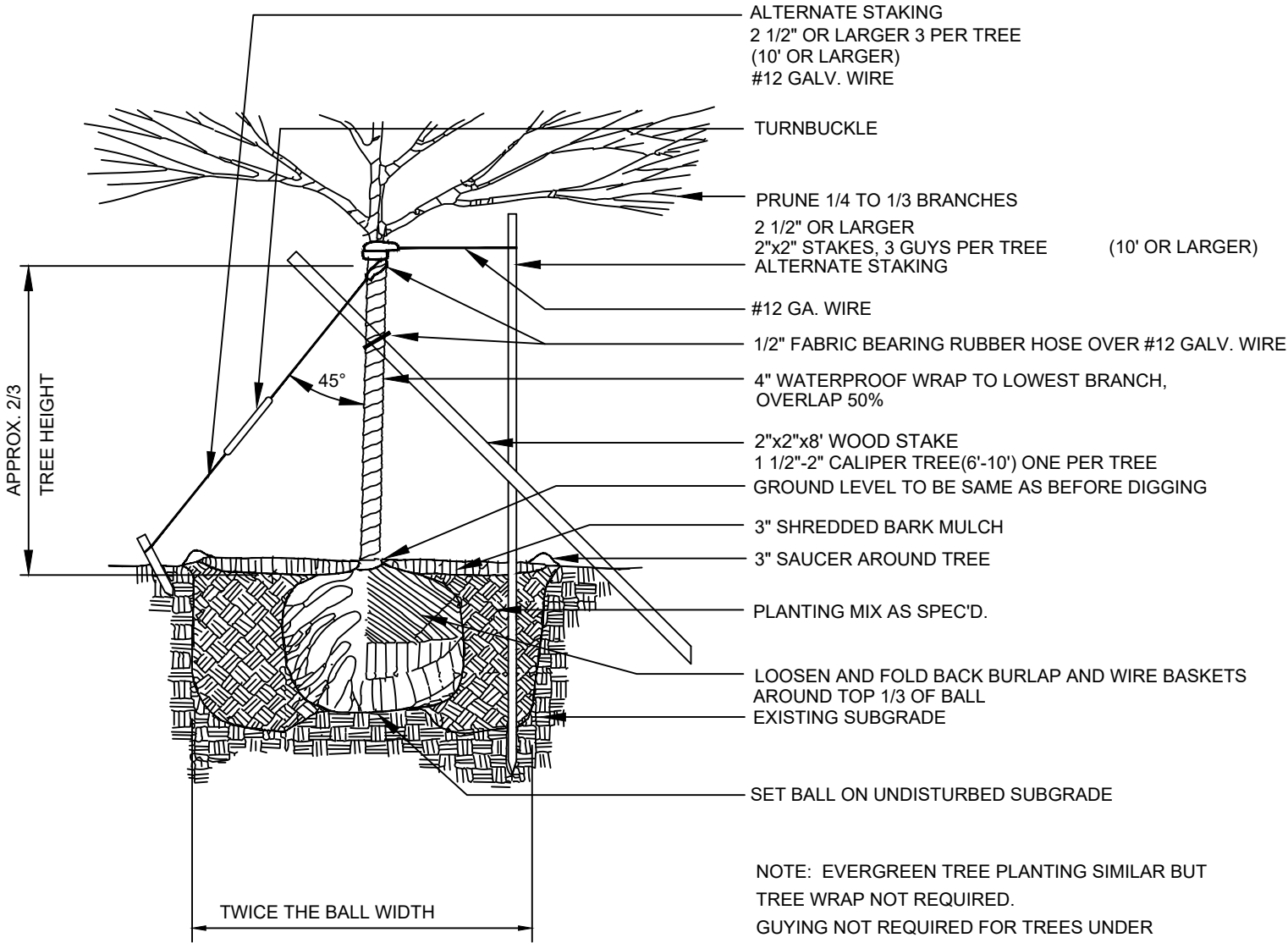


- NOTES:**
1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
 2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS
 3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.



EROSION CONTROL BLANKET

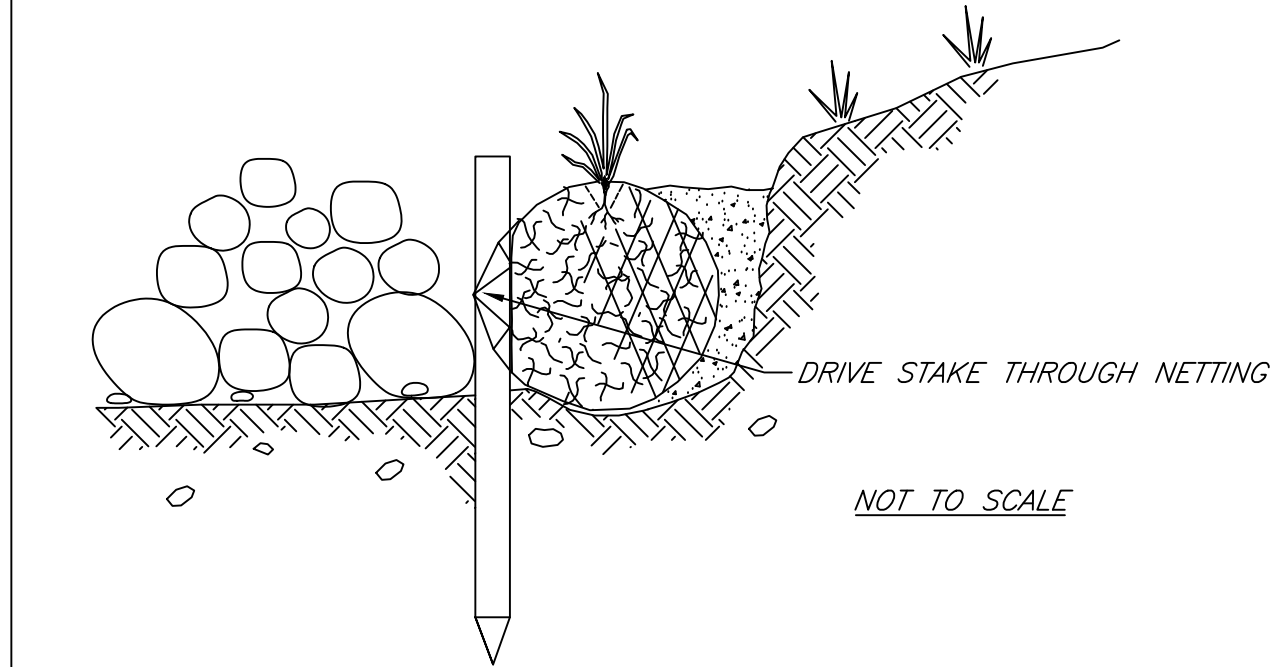
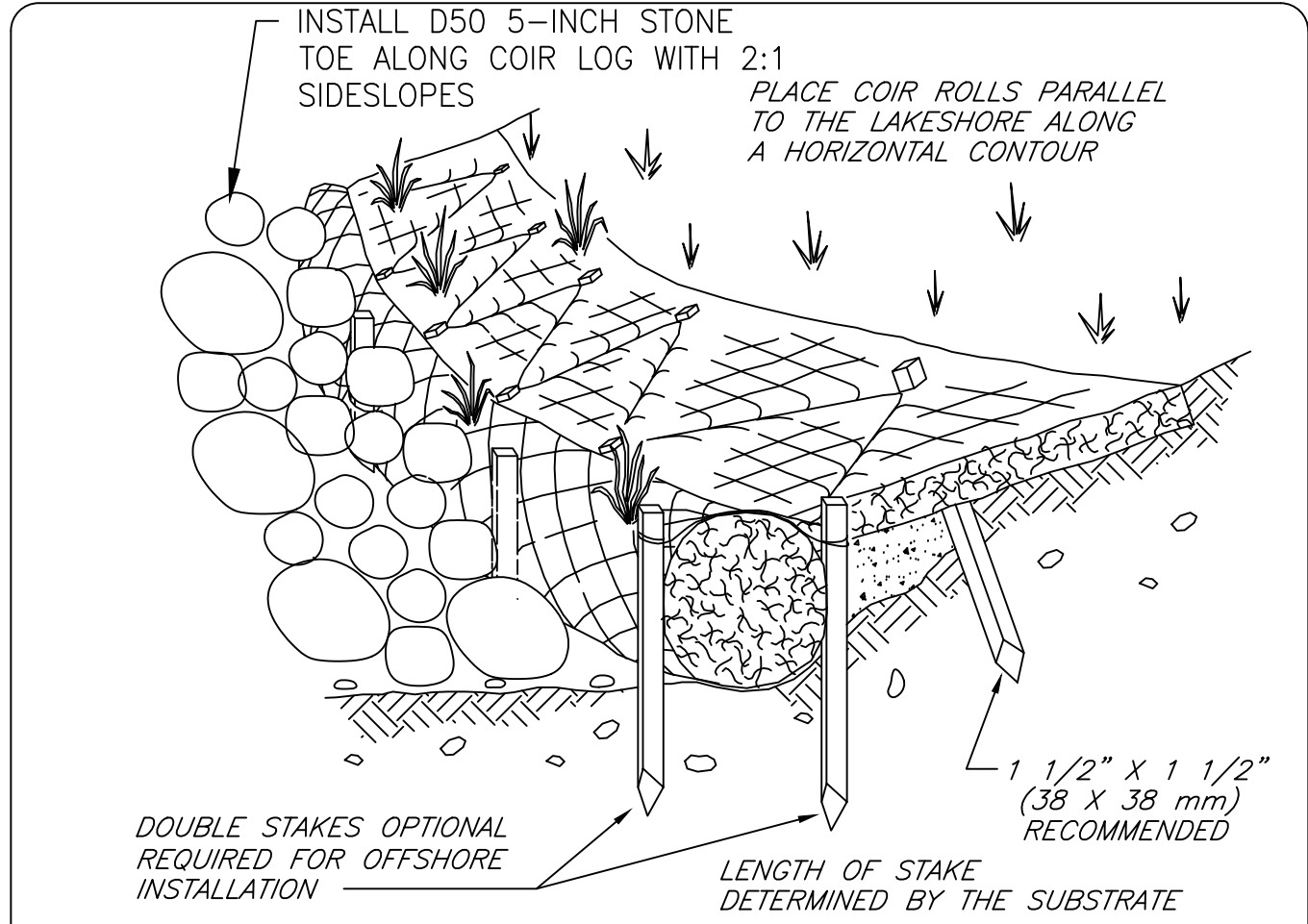
NOT TO SCALE
(BY OTHERS)



NOTE: EVERGREEN TREE PLANTING SIMILAR BUT TREE WRAP NOT REQUIRED. GUYING NOT REQUIRED FOR TREES UNDER 1 1/2" CALIPER (6' HEIGHT) REMOVE GUYING, TREE WRAP, ETC. AFTER ONE GROWING SEASON

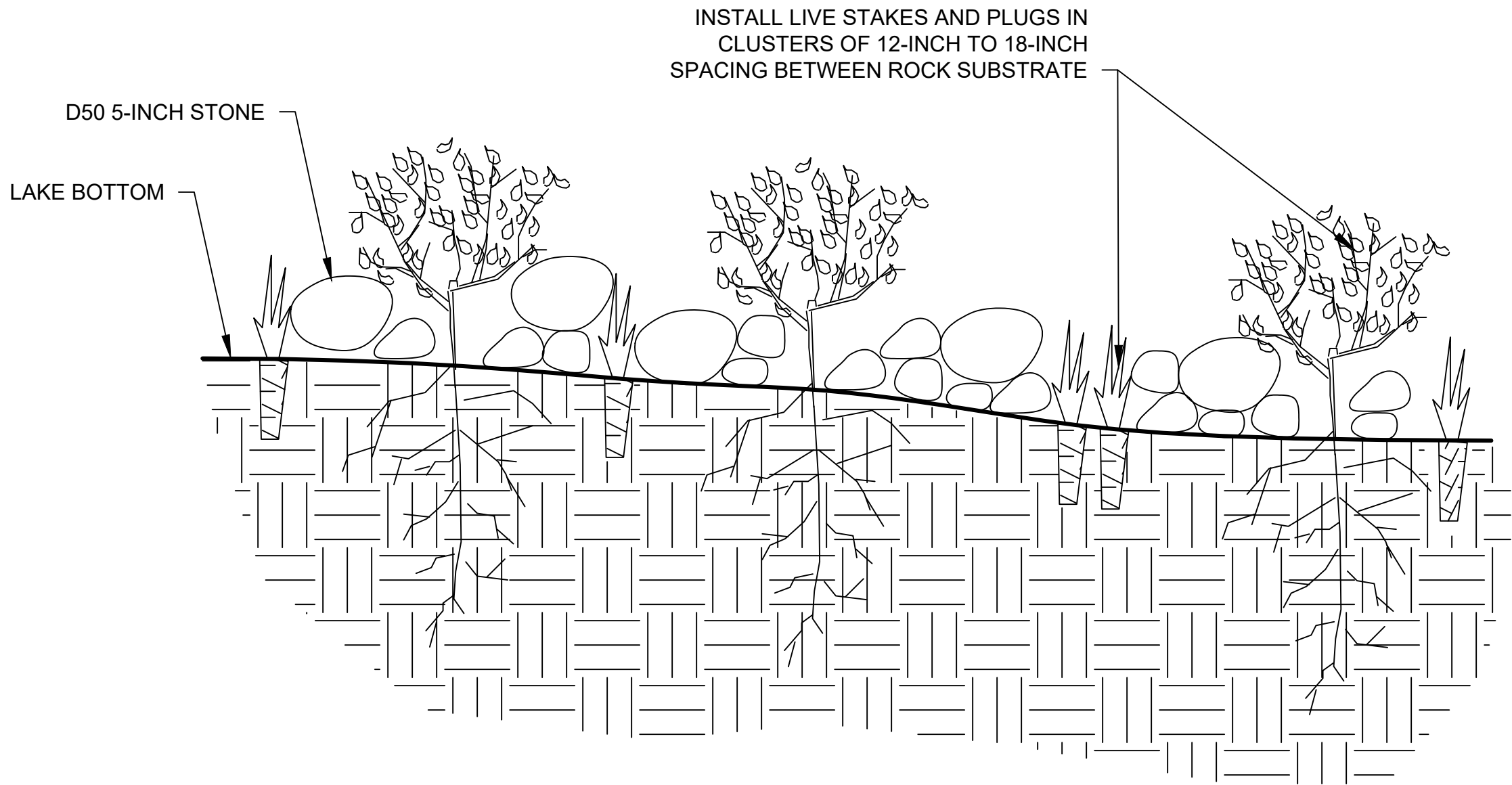
BALLED AND BURLAPPED (B&B) TREE PLANTING

NOT TO SCALE
(BY OTHERS)



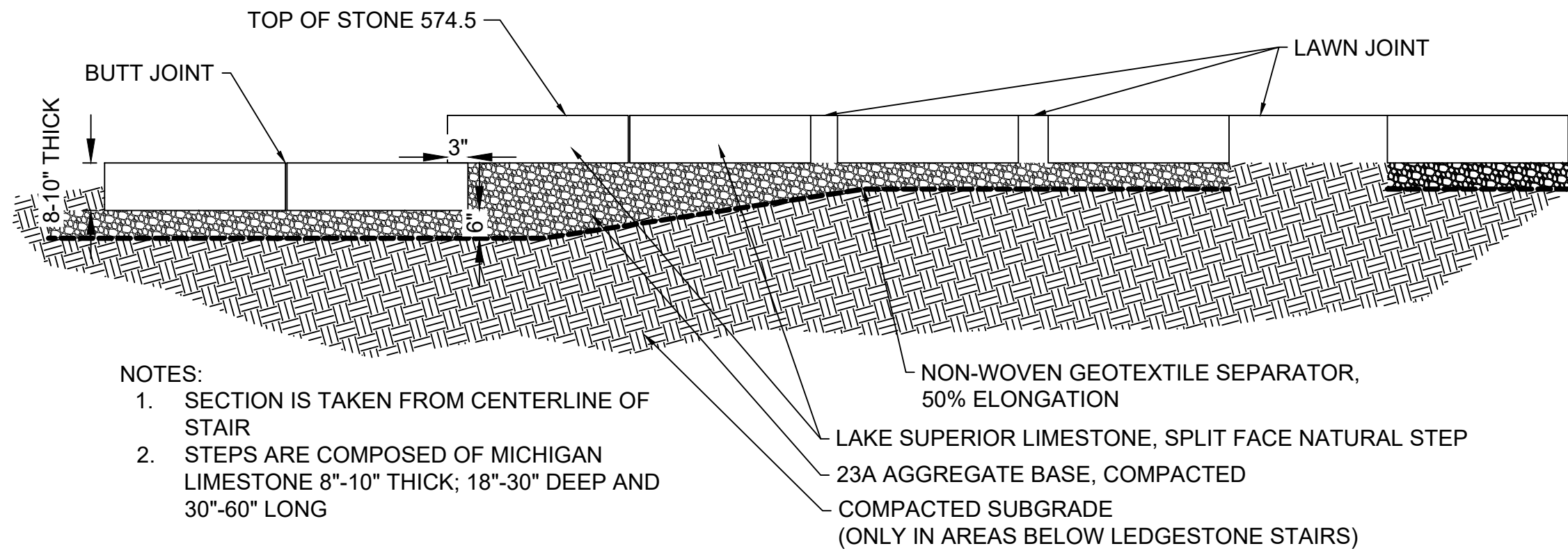
COIR LOG

NOT TO SCALE
(BY OTHERS)



PLUG AND LIVE STAKE PLANTING

NOT TO SCALE



LEDGESTONE STEPS AND LANDING

NOT TO SCALE

FOR CONSTRUCTION



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AUTHORITY

GEI Project 1903754

LAKE ERIE METROPARK SHORELINE
RESTORATION

LANDSCAPE DETAILS

DWG. NO.

C8

SHEET NO.

10 OF 10