ROUGE RIVER AOC - NANKIN LAKE RESTORATION PROJECT

WAYNE COUNTY, MICHIGAN

GLRI EPA AWARD NO. GL-00E02040-0

FOR CONSTRUCTION - JUNE 2021

PREPARED BY:

Environmental Consulting & Technology, Inc.

Environmental Consulting & Technology, Inc.
2200 Commonwealth Boulevard, Suite 300
Ann Arbor, Michigan 48105
Phone: 734.769.3004
Fax: 734.769.31664

WITH:

Sonat Engineering
Midwestern Consulting
Applied Science, Inc.

ADDITIONAL PLANS FOR "ANN ARBOR TRAIL CONNECTOR" PARKING LOT (15 SHEETS)

PROJECT LOCATION MAP
NOT TO SCALE

PROJECT VICINITY MAP
NOT TO SCALE

PROJECT DESIGN AND IMPLEMENTATION FUNDED BY THE ENVIRONMENTAL PROTECTION AGENCY THROUGH A GREAT LAKE RESTORATION INITIATIVE GRANT. GLRI EPA AWARD NO. GL-00E02040-0
EXISTING SITE CONDITIONS:

1. CONTRACTOR SHALL BECOME FAMILIAR WITH ALL EXISTING SITE CONDITIONS PRIOR TO STARTING WORK.

2. THE CONTRACTOR UNDERSTANDS AND ACKNOWLEDGES THAT THE PERFORMANCE OF THE WORK IS REQUIRED WITHIN THE ROUGE RIVER SYSTEM AND FLOODPLAIN AND THAT THE ROUGE RIVER WATER LEVELS FLUCTUATE.

3. THE CONTRACTOR UNDERSTANDS AND ACKNOWLEDGES THAT THEY HAVE TAKEN INTO ACCOUNT THE POTENTIAL FOR ANY WATER LEVEL CHANGES THAT MAY OCCUR DURING SCHEDULING, AND THAT IT IS THE CONTRACTOR'S RESPONSIBILITY TO TAKE THESE INTO ACCOUNT AND MANAGE THEM TO ENSURE THE WORK IS COMPLETED TO THE CONTRACTOR'S SATISFACTION.

4. CONTRACTOR UNDERSTANDS AND ACKNOWLEDGES THAT ANY FLUCTUATION IN WATER LEVELS IS FLOORING OR FLOODING DURING THE COURSE OF THE PROJECT AND THAT THE CONTRACTOR SHALL HAVE NO CLAIM FOR DAMAGES.

5. THE CONTRACTOR ACKNOWLEDGES THAT DELAYS IN THE START OF OR COMPLETION OF WORK DUE TO FLUCTUATIONS IN WATER LEVELS THROUGHOUT THE DURATION OF THE PROJECT SHALL NOT CONSTITUTE A CHANGE IN CONDITIONS NOR SHALL BE A BASIS FOR ANY EXTENSION OF TIME OR DAMAGES. IF THE CONTRACTOR IS IN ANY WAY IMPACTED OR RECIPROCAL TO ANY EXTENSION OF TIME OR DAMAGES, THE CONTRACTOR SHALL HAVE NO CLAIM FOR DAMAGES BUT INSTEAD SUCH CLAIMS MUST BE ADJUSTED TO EXTENSION OF TIME AS THE CONTRACTOR SHALL ALLEGED TO BE JUST AND REASONABLE, PROVIDED THAT FORMAL CLAIM FOR AN EXTENSION OF TIME IS MADE IN WRITING BY THE CONTRACTOR WITHIN 14 DAYS OF THE ALLEGED DELAY.

6. THE CONTRACTOR ACKNOWLEDGES THAT DELAYS IN THE START OF, OR COMPLETION OF WORK DUE TO FLUCTUATIONS IN WATER LEVELS, THROUGHOUT THE DURATION OF THE PROJECT SHALL NOT CONSTITUTE A CHANGE IN CONDITIONS NOR SHALL BE A BASIS FOR ANY EXTENSION OF TIME OR DAMAGES. IF THE CONTRACTOR IS IN ANY WAY IMPACTED OR RECIPROCAL TO ANY EXTENSION OF TIME OR DAMAGES, THE CONTRACTOR SHALL HAVE NO CLAIM FOR DAMAGES BUT INSTEAD SUCH CLAIMS MUST BE ADJUSTED TO EXTENSION OF TIME AS THE CONTRACTOR SHALL ALLEGED TO BE JUST AND REASONABLE, PROVIDED THAT FORMAL CLAIM FOR AN EXTENSION OF TIME IS MADE IN WRITING BY THE CONTRACTOR WITHIN 14 DAYS OF THE ALLEGED DELAY.

7. THE CONTRACTOR UNDERSTANDS THAT THE CONTRACTOR IS RESPONSIBLE FOR ANY IMPACT TO THE ROUGE RIVER SYSTEM DURING THE COURSE OF THE PROJECT AND THAT THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO Minimize ANY IMPACT TO THE ROUGE RIVER SYSTEM.

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EDWARD HINES DR
STARK RD
ANN ARBOR TRAIL
WAYNE RD

A LINE PROFILE
B LINE PROFILE
C LINE PROFILE
D LINE PROFILE
E LINE PROFILE
F LINE PROFILE
G LINE PROFILE
H LINE PROFILE
I LINE PROFILE
J LINE PROFILE
K LINE PROFILE

BEFORE YOU DIG
CALL MISS DIG
0 40' 80' 160'

SCALE: 1" = 80' @ 22" x 34"

EXISTING CONDITIONS - CROSS-SECTION LOCATIONS

BASE SURVEY CONDUCTED BY MIDWESTERN CONSULTING, INC., OCTOBER 2018
AGENCY REVIEW 09-2019
95% DESIGN 08-2020
FOR BIDDING 06-2021
FOR CONSTRUCTION

DESIGNED BY
DRAWN BY
CHECKED BY
APPROVED BY

WAYNE COUNTY, MICHIGAN

ROUGE RIVER AOC - NANKIN LAKE RESTORATION PROJECT

NANKIN LAKE

NORTH

SHEET NUMBER

2200 Commonwealth Blvd, Suite 300
Ann Arbor, Michigan 48105
734.769.3004
734.769.3164 fax
www.ectinc.com
H LINE PROFILE
NORTH

SHEET NUMBER

5+66
5+00
3+00
2+00
0+00

EDGE OF PAVEMENT

SCALE AS SHOWN

SCALE - HORIZONTAL: 1" = 100', VERTICAL: 1" = 10'

TOP PAV.

AOC - NANKIN

RESTORATION PROJECT

WAYNE COUNTY,
MICHIGAN

www.ectinc.com

734.769.3164 fax

Ann Arbor, Michigan 48105

2200 Commonwealth Blvd, Suite 300
CONTRACTOR TO PROVIDE AND INSTALL CONSTRUCTION SIGN.

BEFORE YOU DIG

NORTH

SHEET NUMBER

CONTRACT DOCUMENTS.

#1  testing temporary construction pad

STAGING AREA PREP. - WEST

STAGING AREA PREP. - EAST

REMOVING OF BUILT-UP SEDIMENT

contractor shall remove any portion of the

construction to be restored

NOTE: CONTRACTOR TO COMPLETE TURBIDITY SAMPLING AS PART OF THE

PROJECT. REFER TO THE TURBIDITY SAMPLING PLAN INCLUDED IN THE

CONTRACT DOCUMENTS.

LEGEND:

existing contour

existing boundaries

existing easements

EXISTING STILE BOUNDARY

silt fence

access route

construction fence

staging area

PROPOSED TURBIDITY CURTAIN

catch basin insert

chain link fence

note: chain link fence to be used for access road

note: silt fence at site edge to secure staging area, contractor to determine time and extent for access needs.

note: contractor to provide and install construction sign.

LOCATION TO BE DETERMINED WITH OWNER PRIOR TO CONSTRUCTION.

SIGN DIMENSIONS TO BE APPROXIMATELY 5’ x 6’

SIGN TO BE PAINTED WHITE, RED BACKGROUND.

FENCING TO BE INSTALLED AT LOCATIONS TO BE DETERMINED IN THE FIELD WITH OWNER.

CONTRACTOR TO SUPPLY A "NO WORK LIMIT" SIGN TO BE INSTALLED AT LOCATIONS TO BE DETERMINED IN THE FIELD WITH OWNER.

NOTE: PEDESTRIAN PATH-DETOUR PLAN TO BE PROVIDED TO THE

ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

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TREE REMOVAL - EAST

1. Trees to be indicated on the list on this sheet have been flagged. Flagged trees to be removed and disposed of off site.
2. All trees to be removed. All clearing and tree protection to be field verified by engineer prior to work activities.
3. Some trees may be salvaged for use as proposed habitat. Log within Nankin Lake as shown on sheets 15, 16, and 17.
4. All access roadway debris to be disposed of legally off site.
5. For areas to be cleared, trees, stumps and roots to be removed and disposed of off site.
6. Holes and trenches remaining after grubbing to be graded or filled in.
7. Any merchantable timber may be considered property of the contractor.
8. Any trees 3 inches DBH or larger to be considered bat habitat. No trees of this size to be cut between April 1 and September 30 in any year to avoid take of Myotis sodalis, a Federally Listed Endangered Species unless the tree is certified by a biologist to be not applicable habitat.

EASTERN MASSASAUGA RATTLESNAKE (EMR) NOTES:

1. Construction fencing shall be installed specifi cally for erosion control and site restoration materials that do not incorporate plastic mesh or other similar material that could entangle EMR.
2. Contractors and subcontractors on site should watch the Eastern Massasauga Rattlesnake Video and review the USFWS EMR Factsheet.
3. Contractors and subcontractors shall notify the Wayne County Parks Department of observation of any other listed threatened or endangered species prior to project implementation to prevent take.
4. Incorporate wildlife-safe materials for erosion control and site restoration.

EXISTING SIGNS AND BOULDERS:

1. Existing signs shall be removed, stocked and replaced at locations identified by the owner. Signs to be protected from damage during removal, stockpiling and replacement.
2. All boulders to be stocked and relocated as directed by the owner.

TREE REMOVAL - WEST

1. Trees to be indicated on the list on this sheet have been flagged. Flagged trees to be removed and disposed of off site.
2. All trees to be removed. All clearing and tree protection to be field verified by engineer prior to work activities.
3. Some trees may be salvaged for use as proposed habitat. Log within Nankin Lake as shown on sheets 15, 16, and 17.
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PROPOSED DEEP WATER HABITAT
PROPOSED OPEN WATER HABITAT
PROPOSED RIPARIAN HABITAT
PROPOSED EMERGENT HABITAT
PROPOSED NATURAL SAND SPAWNING HABITAT
PROPOSED BIOSWALE
RESTORED GRAVEL PARKING LOT
SLAB STONE BANK STABILIZATION
PROPOSED PLAN - OVERVIEW

LEGEND:
EXISTING CONTOUR
EXISTING WALK/DRIVE
EXISTING WETLAND BOUNDARY
PR. NATURAL SAND SPAWNING HABITAT
PR. EMERGENT HABITAT
PR. RIPARIAN HABITAT
PR. EMERGENT HABITAT
PR. CONTOURS
PR. TEMPORARY WILDLIFE BARRIER
PR. RIP RAP AT STORMWATER OUTFALL
PR. RESTORED GRAVEL PARKING LOT
EDWARD N. HINES DRIVE CENTERLINE
EDWARD N. HINES DRIVE RIGHT-OF-WAY

DREDGING NOTES:
1. SEE SHEET 10 FOR DREDGING NOTES
2. HYDRAULIC DREDGING TOLERANCES: +/-0.5 FEET

GENERAL NOTES:
1. GENERAL SEQUENCING SHOULD INCLUDE DEEP WATER AND OPEN WATER HABITAT AREAS TO BE CREATED BEFORE EMERGENT HABITAT ZONES.
2. THE PERIMETER OF ALL PR. EMERGENT HABITAT AND PR. PIKE SPAWNING HABITAT TO RECEIVE TEMPORARY WILDLIFE BARRIER.
3. GENERAL WORK ACTIVITIES INCLUDE:
   - PR. NATURAL SAND SPAWNING HABITAT:
     · GRADE TO ELEVATIONS SHOWN ON PLAN
     · PLACE 12" OF NATURAL SAND (MDOT CLASS II)
     · INSTALL HABITAT LOGS AND BOULDER CLUSTERS PER PLAN
   - PR. EMERGENT HABITAT:
     · GRADE TO ELEVATIONS SHOWN ON PLAN
     · INSTALL NATIVE PLANTINGS AS SHOWN ON SHEET 17 AND 18
     · INSTALL TEMPORARY WILDLIFE BARRIER AS SHOWN IN DETAIL 8/20
   - PR. RIPARIAN HABITAT:
     · REMOVE INVASIVE SPECIES AS SHOWN ON SHEET 16
     · INSTALL NATIVE PLANTINGS AS SHOWN ON SHEETS 17 AND 18
     · 9' STABILIZATION ZONES AS SHOWN ON DETAIL 10 ON SHEET 20. LOCATIONS TO BE FIELD VERIFIED PRIOR TO CONSTRUCTION
   - PR. DEEP WATER HABITAT:
     · GRADE TO ELEVATIONS SHOWN ON PLAN
     · INSTALL ROCK PILES
   - PR. OPEN WATER HABITAT:
     · GRADE TO ELEVATIONS SHOWN ON PLAN
     · INSTALL ROCK FILL

08-02-19
AGENCY REVIEW

09-2019
95% DESIGN
08-2020
FOR BIDDING
09-23-20
REVISED FOR CONSTRUCTION
06-2021
PROPOSED ROCK PILE

SEE SHEET 16 FOR INVASIVE SPECIES REMOVAL PLAN

PROPOSED RIPARIAN HABITAT

1.00 ACRE

PROPOSED DEEP WATER HABITAT (10 FT OF DREDGING)

1.06 ACRES

PROPOSED RIPARIAN HABITAT

EXISTING CONCRETE WALL NOT TO BE DISTURBED

PROPOSED RIPARIAN HABITAT

EXISTING NANKIN DRIVE

EXISTING MOUNTAIN BIKE TRAIL

PROPOSED BIOSWALE

EXISTING CONTOUR

EXISTING WALK/DRIVE

EXISTING WETLAND BOUNDARY

EXISTING STORM SEWER

EXISTING SANITARY SEWER

PR. EMERGENT HABITAT

PR. RIPARIAN HABITAT

PR. ROCK PILE

PR. CONTOUR

PR. RIP RAP AT STORMWATER OUTFALL

PR. RESTORED ASPHALT PARKING LOTS

PR. TEMPORARY WILDLIFE BARRIER

EXISTING NANKIN DRIVE CENTERLINE

EXISTING NANKIN DRIVE RIGHT-OF-WAY

NOTES:

1. SEE SHEET 10 FOR DREDGING NOTES
2. HYDRAULIC DREDGING TOLERANCES: +/-0.5 FEET
3. THE PERIMETER OF ALL PR. EMERGENT HABITAT AND PR. PIKE SPAWNING HABITAT TO RECEIVE TEMPORARY WILDLIFE BARRIER

09-23-20 REVISED FOR CONSTRUCTION

06-2021

PROPOSED PLAN - SOUTH

ROUGE RIVER AOC - NANKIN LAKE RESTORATION PROJECT

WAYNE COUNTY, MICHIGAN

PROPOSED PARKING LOT RESTORATION WEST

PROPOSED PARKING LOT

PROPOSED ROCK PILE

PROPOSED RIP RAP AT STORMWATER OUTFALL

- EXISTING CONCRETE WALL NOT TO BE DISTURBED

PROPOSED EMERGENT HABITAT

1.06 ACRES

PR. EMERGENT HABITAT (CONSTRUCTION FENCE WITH STRINGS AND RIBBON) AROUND EMERGENT HABITAT

PROPOSED RIP RAP AT STORMWATER OUTFALL

PROPOSED EMERGENT HABITAT

0.26 ACRES

08-02-19 AGENCY REVIEW

09-2019 95% DESIGN

08-2020 FOR BIDDING

09-2020 REVISED FOR CONSTRUCTION...
EXISTING SEDIMENT LEVEL

PROPOSED GRADE: 632'

WATER SURFACE AT TIME OF SURVEY: 636.6'

UNDISTURBED SUBGRADE (TYP.)

PR. VEGETATION. SEE SHEET 17

PR. EMERGENT HABITAT

PR. OPEN WATER HABITAT

WATER SURFACE AT TIME OF SURVEY: 636.6'

EXISTING SEDIMENT LEVEL

NOTE: PLANTINGS TO OCCUR AT LOCATIONS SHOWN ON SHEETS 17 AND 18. SPECIES AS SHOWN ON SHEET 17 TO BE PLANTED IN WATER DEPTHS AS SPECIFIED. WATER DEPTHS DETERMINED AT TIME OF PLANTING.

PROPOSED CROSS SECTION - OPEN WATER HABITAT

VERTICAL SCALE: 1" = 10' @ 22" x 34" 

HORIZONTAL SCALE: 1" = 20' @ 22" x 34"

PROPOSED CROSS SECTION - DEEP WATER HABITAT

VERTICAL SCALE: 1" = 20' @ 22" x 34" 

HORIZONTAL SCALE: 1" = 40' @ 22" x 34"
BUTTONBUSH CLUMPS
ABOVE ELEV. 635'
PROPOSED HABITAT LOG FROM ELEV. 631' TO 634'
MINIMUM BASE DIAMETER OF 6"
TREE LENGTH VARIES 20' TO 40'
EMERGENT FRINGE, FLUCTUATING WATER LEVELS
EMERGENT FRINGE, ALWAYS INUNDATED
12" OF NATURAL SAND (MDOT CLASS II)
UNDISTURBED SUBGRADE (TYP.)
PR. VEGETATION
SEE SHEET 17
PR. EMERGENT HABITAT
PR. NATURAL SAND SPAWNING HABITAT
SPAWNING HABITAT (DETAIL ASSOCIATED WITH 1/14)
NOTE:
PLANTINGS TO OCCUR AT LOCATIONS SHOWN ON SHEETS 17 AND 18. SPECIES AS SHOWN ON SHEET 17 TO BE PLANTED IN WATER DEPTHS AS SPECIFIED. WATER DEPTHS DETERMINED AT TIME OF PLANTING.

SOUTH
INVASIVE SPECIES REMOVAL PLAN

INVASIVE SPECIES TREATMENT NOTES:

1. THE INVASIVE SPECIES TREATMENT WORK ASSOCIATED WITH THIS PROJECT INCLUDES FOUR GENERAL ACTIVITIES:
   - INVASIVE SPECIES LOCATED WITHIN THE "INVASIVE SPECIES REMOVAL AREA"
   - PHRAGMITES TREATMENT
   - PERIWINKLE (VINCA MINOR) REMOVAL
   - STARK ROAD TREE OF HEAVEN REMOVAL

2. FOLLOW UP TREATMENTS ARE INCLUDED IN THIS PROJECT WORK. SEE SPECIFICATIONS.

3. "INVASIVE SPECIES REMOVAL AREA" IS PREDOMINANTLY A WOODED AREA WITH NATIVE, NON-INVASIVE AND INVASIVE SPECIES. WITHIN THIS AREA, THE FOLLOWING SPECIES WILL BE TARGETED:
   - BLACKHORN
   - HONEYSUCKLE
   - AUTUMN OLIVE
   - RUSSIAN OLIVE
   - TREE OF HEAVEN
   - GARLIC MUSTARD

4. CONTRACTOR AND ENGINEER/ECOLOGIST TO WALK THE INVASIVE SPECIES REMOVAL AREA TO IDENTIFY PLANTS TO BE REMOVED. ENGINEER/ECOLOGIST TO PROVIDE APPRAISAL FOR REMOVAL.

5. ALL PERMITS FOR INVASIVE SPECIES WORK TO BE ACQUIRED BY THE CONTRACTOR PRIOR TO START OF WORK.

6. AREAS OF REMOVAL WITHIN "INVASIVE SPECIES REMOVAL AREA" MUST BE REVEGETATED. SEE REVEGETATION PLANS, SEE SHEETS 17 AND 18.

7. ALL SITE IMPROVEMENTS, EXISTING VEGETATION TO REMAIN SHALL BE PROTECTED DURING INVASIVE TREATMENT WORK.

PHRAGMITES TREATMENT AREA
0.72 ACRES

INVASIVE SPECIES REMOVAL AREA
0.44 ACRES

INVASIVE SPECIES REMOVAL PLAN
16
EXISTING GRADE

LIMESTONE SLAB PLACED HORIZONTAL, WITH 1% SLOPE TOWARD LAKE FOR POSITIVE DRAINAGE, IN RANDOM ARRANGEMENT. OVERLAPPED GAPS TO BE FINISHED WITH EARTH MORTAR. APPROX. 4' WIDTH TO BE FIELD VERIFIED WITH ENGINEER PRIOR TO PLACEMENT.

WATER SURFACE AT TIME OF SURVEY: 636.6'

APPROX. ELEVATION 638

FILLED EDDIED BETWEEN FENCEPOSTS

STIRRUP/YELLOW CORD BETWEEN FENCEPOSTS

FENCE POST

EMERGENT HABITAT ZONE

EXISTING OPERATIONAL UPCONTOUR FENCE

EXISTING STORMWATER OUTFALL

DISTURBED SUBGRADE

FABRIC

ETERS A DOUGWOOD

SALE EQUIN

SALE GLOUCER

SALE WERK

NOTES:
1. INSTALL AS DIRECTED BY ENGINEER, DURING FIRST DORMANT SEASON FOLLOWING SEEDING.
2. ROOTED/LEAFED CONDITION OF THE LIVING PLANT MATERIAL IS NOT REPRESENTED AT THE TIME OF INSTALLATION.
3. INSTALL LIVE STAKES AT RIGHT ANGLES TO BE VERTICAL. ALL CORD TO BE MAINTAINED TO BE HORIZONTAL AND TAUGHT. ACCUMULATED DEBRIS AND MAINTENANCE TO INCLUDE REPAIR, REPLACE, REINSTALL FENCE ELEMENTS. ALL FENCE POSTS TO BE MAINTAINED TO BE O.C. 6' MIN. TOPSOIL TO BE PLACED IN GROUPS 2'-3' MIN. DISTANCE TO BE PLACED HORIZONTAL, WITH 1% SLOPE TOWARDS LAKE FOR POSITIVE DRAINAGE, IN RANDOM ARRANGEMENT. OVERLAPPED GAPS TO BE FINISHED WITH EARTH MORTAR.
4. UTILIZE METAL FENCE POSTS OR SIMILAR MATERIAL (2" MIN. Ø) AND INSTALL LIVE STAKES AT APPROX. 3' SPACING ALONG FENCES, 7'-8' SPACING BETWEEN LINES AT THE TOP AND 2'-3' ABOVE FINISH GRADE.
5. FIX ALL BCE FENCE POSTING - LIGHTWEIGHT 1" OPENING MESH PLASTIC FENCING X 4' MIN. HEIGHT, 6' OR OTHER SIMILAR MATERIAL (2" MIN. Ø) IN OPEN WATER.
6. STRING/YELLOW CORD BETWEEN FENCEPOSTS.

LIVE STAKE SPECIES LIST:

NOTE: SPECIES LIST ON THIS SHEET

CREATE TRIANGULAR SPACING PATTERN.

NOT TO SCALE
1. TREES, SHRUBS, AND PLUGS SHALL BE OF NATIVE PLANT MATERIAL OF GENOTYPES FROM THE NORTH CENTRAL STATES ONLY (IL, IN, IA, MI, OH) AND FROM A RECOGNIZED NURSERY OF THIS REGION.

2. ALL ASPECTS OF THE SOIL EROSION AND SEDIMENT CONTROL PERMIT SHALL BE ADHERED TO THROUGHOUT THE DURATION OF THE PROJECT.

3. THE SOIL LOG INFORMATION REPRESENTS POINT INFORMATION. PRESENTATION OF THIS INFORMATION IN NO WAY INFERS THAT THE SUBSURFACE CONDITIONS ARE THE SAME OTHER THAN THE EXACT LOCATION OF THE BORINGS OR SEDIMENT SAMPLE LOCATIONS.

4. HYDRO-AND SOIL CLEARING EQUIPMENT SHALL NOT BE PERMITTED ON SITE.

5. ALL UTILITIES, CULVERTS AND BENCHMARKS SHALL BE PRESERVED DURING CONSTRUCTION ACTIVITIES UNLESS OTHERWISE SHOWN ON THE PLANS, UNLESS OTHERWISE APPROVED BY ENGINEER AND AT THE CONTRACTOR’S RISK.

6. INCORRECT MATERIALS: DURING WARRANTY PERIOD, REPLACE AT NO COST TO OWNER ALL PLANTS REVEALED AS BEING UNTRUE TO NAME.

7. TRANSPORTATION OF EQUIPMENT AND MATERIALS TO THE SITE ON STATE HIGHWAYS AND TRUNK LINES SHALL CONFORM TO ALL LOCAL, STATE AND FEDERAL REQUIREMENTS AND REGULATIONS (IN CONFORMITY WITH APPROPRIATE SURFACE OR TRANSPORTATION AGENCIES). KERNS SHALL BE LABELLED WITH APPROPRIATE SIGNAGE.

8. EROSION SHALL BE REPAIRED BY THE CONTRACTOR.

9. If erosion control blanket is needed in areas where plugs are present, install erosion control blanket after seeding, but to keep plugs adequately watered, if necessary, to ensure their survival.

10. NOTIFY THE OWNER PRIOR TO AND FOLLOWING ANY MAINTENANCE ACTIVITY.

11. MULCH FOR TREES AND SHRUBS SHALL BE COARSE GRADE OAK OR MAPLE BARK AGED AT LEAST ONE YEAR AND UNIFORM IN COLOR AND TEXTURE.

12. MIKE REPAIRS shall be permitted as required for the project. The planting of soil sediments being made or be in progress, all such soil shall be set aside for incorporation into the soil. NO ADDITIONAL VEGETATION CLEARING FOR ACCESS OR STAGING IS PERMITTED WITHOUT THE APPROVAL OF THE OWNER.

13. FURNISH PLANT SPECIES AND SIZES AS INDICATED ON THE PLANS. PLANT STOCK SHALL BE TRUE TO THEIR NAME (GENUS AND SPECIES), AS DRAWN BY THE ENGINEER.

14. CONTRACTOR TO REPLACE DAMAGED UTILITIES, CULVERTS OR BENCHMARKS AT OWN EXPENSE.

15. ALL MATERIALS, CультivarS AND SPECIMENS SHALL NOT BE USED WITHOUT PRIOR APPROVAL BY CONSULTANT.

16. ALL DELAYS IN COMPLETION OF PLANTING OPERATIONS WHICH EXTEND THE PLANTING INTO MORE THAN ONE PLANTING SEASON SHALL EXTEND THE WARRANTY PERIOD CORRESPONDINGLY.

17. ALL UTILITIES, CULVERTS AND BENCHMARKS SHALL BE PRESERVED DURING CONSTRUCTION ACTIVITIES UNLESS OTHERWISE SHOWN ON THE PLANS, UNLESS OTHERWISE APPROVED BY ENGINEER AND AT THE CONTRACTOR’S RISK.

18. ALL MATERIbALS SHALL CONFORM TO DETAILS AND SPECIFICATIONS IN THE DRAWINGS.

19. IN THE EVENT OF CONSTRUCTION RELATED DEBRIS ON LOCAL ROADWAYS, CONTRACTOR SHALL CLEAN AND MAINTAIN THE ROAD.

20. PROMPTLY REMOVE EQUIPMENT AND UNUSED MATERIALS AT COMPLETION OF ACTIVITIES.

21. SUBMITTALS FOR APPROVAL BY ENGINEER ARE REQUIRED FOR ALL MATERIALS PRIOR TO MOBILIZATION. ALL ERECTIONS REQUIRED BY CONTRACTOR PRIOR TO ENGINEER’S APPROVAL SHALL NOT BE PERMITTED.

22. THE WARRANTY PERIOD CORRESPONDINGLY. THERE SHALL BE NO VALID CLAIM FOR DAMAGES, BUT HE SHALL IN SUCH CASE BE ENTITLED TO AN EXTENSION OF THE WARRANTY PERIOD FOR THE TIME THE WORK WAS INTERNED BY THE CONTRACTOR WITHIN THE ONE YEAR AFTER THE DATE OF SUBMISSION.

23. NOTIFY THE OWNER PRIOR TO AND FOLLOWING ANY MAINTENANCE ACTIVITY.

24. SITE RESTORATION AND CLEAN-UP:

1. SUBMITTALS FOR APPROVAL BY ENGINEER ARE REQUIRED FOR ALL MATERIALS PRIOR TO MOBILIZATION. ALL ERECTIONS REQUIRED BY CONTRACTOR PRIOR TO ENGINEER’S APPROVAL SHALL NOT BE PERMITTED.

2. ALL DELAYS IN COMPLETION OF PLANTING OPERATIONS WHICH EXTEND THE PLANTING INTO MORE THAN ONE PLANTING SEASON SHALL EXTEND THE WARRANTY PERIOD CORRESPONDINGLY.

3. ALL UTILITIES, CULVERTS AND BENCHMARKS SHALL BE PRESERVED DURING CONSTRUCTION ACTIVITIES UNLESS OTHERWISE SHOWN ON THE PLANS, UNLESS OTHERWISE APPROVED BY ENGINEER AND AT THE CONTRACTOR’S RISK.

4. ALL MATERIALS SHALL CONFORM TO DETAILS AND SPECIFICATIONS IN THE DRAWINGS.

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18. ALL MATERIbALS SHALL CONFORM TO DETAILS AND SPECIFICATIONS IN THE DRAWINGS.

19. IN THE EVENT OF CONSTRUCTION RELATED DEBRIS ON LOCAL ROADWAYS, CONTRACTOR SHALL CLEAN AND MAINTAIN THE ROAD.
NOTES:

1. SET ALL PLANTS AT THE PROPER DEPTH. PLANT ALL TRUNKS PLUMB.
2. PLANTS LOOKING WEST AT BEAUTIFICATION.
3. WIND, WIND DRIFT OR WEATHER MAY BE IMPACTING ALL Site.
4. SET PLANTS WITH A SPACE OF NOT LESS THAN THREE TIMES THE TRANSCREATIONS FOR ALL STAKING MATERIALS AFTER PLANTING.
5. SET THE TRUNKS OF BARE PLANTED TREES UNDERGROUND TO INCORPORATE THE DEPTH.
6. REFER TO SPECIFICATIONS FOR ADDITIONAL PROJECT INFO.
7. WIND PLANTED TREES UNDERGROUND TO 3X THE DIAM. OF ROOT BALL

DECIDUOUS TREE PLANTING WITH TREE STAKES - BARE ROOT

1. SET ALL PLANTS AT THE PROPER DEPTH. PLANT ALL TRUNKS PLUMB.
2. PLAINT LOOKING WEST AT BEAUTIFICATION.
3. WIND, WIND DRIFT OR WEATHER MAY BE IMPACTING ALL Site.
4. SET PLANTS WITH A SPACE OF NOT LESS THAN THREE TIMES THE TRANSCREATIONS FOR ALL STAKING MATERIALS AFTER PLANTING.
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6. REFER TO SPECIFICATIONS FOR ADDITIONAL PROJECT INFO.

MULTI STEM TREE WITH BELOW GRADE STABILIZATION

1. SET ALL PLANTS AT THE PROPER DEPTH. PLANT ALL TRUNKS PLUMB.
2. PLANTS LOOKING WEST AT BEAUTIFICATION.
3. WIND, WIND DRIFT OR WEATHER MAY BE IMPACTING ALL Site.
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5. SET THE TRUNKS OF BARE PLANTED TREES UNDERGROUND TO INCORPORATE THE DEPTH.
6. REFER TO SPECIFICATIONS FOR ADDITIONAL PROJECT INFO.

GROUNDCOVER/PERENNIAL PLANTING

1. SET ALL PLANTS AT THE PROPER DEPTH. PLANT ALL TRUNKS PLUMB.
2. PLANTS LOOKING WEST AT BEAUTIFICATION.
3. WIND, WIND DRIFT OR WEATHER MAY BE IMPACTING ALL Site.
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5. SET THE TRUNKS OF BARE PLANTED TREES UNDERGROUND TO INCORPORATE THE DEPTH.
6. REFER TO SPECIFICATIONS FOR ADDITIONAL PROJECT INFO.

SHRUB PLANTING - BARE ROOT OR CONTAINER

1. SET ALL PLANTS AT THE PROPER DEPTH. PLANT ALL TRUNKS PLUMB.
2. PLANTS LOOKING WEST AT BEAUTIFICATION.
3. WIND, WIND DRIFT OR WEATHER MAY BE IMPACTING ALL Site.
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5. SET THE TRUNKS OF BARE PLANTED TREES UNDERGROUND TO INCORPORATE THE DEPTH.
6. REFER TO SPECIFICATIONS FOR ADDITIONAL PROJECT INFO.
EXHIBIT B  
STORM WATER MANAGEMENT SYSTEM LONG-TERM MAINTENANCE SCHEDULE

PROPERTY INFORMATION: Edward N. Hines Drive Parking Lot / Nankin Lake Drive Parking Lot  
Nankin Lake, Livonia, MI 48150  
Contact: Mr. John Gundry  
734-466-3504

WAYNE COUNTY DPS PERMIT NO. / REVIEW NO.: R 19-997  
A. PHYSICAL LIMITS OF THE STORM WATER MANAGEMENT SYSTEM

The storm water management system (SWMS) subject to this Long-Term Maintenance Plan (Plan) is depicted on Exhibit A to this Permit and includes without limitation bioretention areas, overflow structures and outlet. For purposes of this Plan, the storm water management system and all of its components as shown in Exhibit A is referred to as "Edward N. Hines Drive Parking Lot and Nankin Lake Drive Parking Lot SWMS".

B. TIME FRAME FOR LONG-TERM MAINTENANCE RESPONSIBILITY

Wayne County Department of Public Services Parks Department has assumed responsibility for maintaining the Edward N. Hines Drive Parking Lot and Nankin Lake Drive Parking Lot SWMS, including compliance with applicable requirements until Wayne County releases the construction period Long-Term Maintenance Responsibility (LTM) to the Edward N. Hines Drive Parking Lot and Nankin Lake Drive Parking Lot SWMS. Following the release, the Edward N. Hines Drive Parking Lot and Nankin Lake Drive Parking Lot SWMS is subject to LTM provided for in the Edward N. Hines Drive Parking Lot and Nankin Lake Drive Parking Lot SWMS until Wayne County releases the SWMS to the Property Owner.

C. MANNER OF ENSURING MAINTENANCE RESPONSIBILITY

Wayne County Department of Public Services Parks Department has assumed responsibility for long-term maintenance of the Edward N. Hines Drive Parking Lot and Nankin Lake Drive Parking Lot SWMS. As a condition of the permit, the Edward N. Hines Drive Parking Lot and Nankin Lake Drive Parking Lot SWMS is subject to LTM provided for in the Edward N. Hines Drive Parking Lot and Nankin Lake Drive Parking Lot SWMS until Wayne County releases the SWMS to the Property Owner.

D. LONG-TERM MAINTENANCE PLAN AND SCHEDULE

Maintenance activities to be performed include drainage, erosion control measures, sediment trapping, and water quality enhancement. Maintenance activities are outlined below and in Exhibit B. Maintenance activities are outlined below and in Exhibit B.

PROPERTY INFORMATION: Edward N. Hines Drive Parking Lot / Nankin Lake Drive Parking Lot  
Nankin Lake, Livonia, MI 48150  
Contact: Mr. John Gundry  
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WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES  
PARKS DEPARTMENT  
NANKIN LAKE HABITAT RESTORATION PROJECT

LEGEND
WAYNE COUNTY PARKS DEPARTMENT  
MAINTENANCE RESPONSIBILITY
0 75' 150' 225'
SCALE: 1" = 150' @ 8.5X11

EXHIBIT A
PHYSICAL LIMITS OF STORM MANAGEMENT SYSTEM

EXHIBIT B
STORM WATER MANAGEMENT SYSTEM LONG-TERM MAINTENANCE SCHEDULE

TABLE 1. STORM WATER MANAGEMENT SYSTEM LONG-TERM MAINTENANCE SCHEDULE

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- Monitoring or inspection: Aerial survey and/or inspection conducted annually.
- Inspect for sediment, debris, and other obstructions, and general maintenance of the storm water management system.
- Records maintained at the Wayne County Parks Department office and on file at the property owner.

WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES  
PARKS DEPARTMENT  
NANKIN LAKE HABITAT RESTORATION PROJECT

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- Maintenance activities performed at least annually.
- Inspect for sediment, debris, and other obstructions, and general maintenance of the storm water management system.
- Records maintained at the Wayne County Parks Department office and on file at the property owner.

WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES  
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NANKIN LAKE HABITAT RESTORATION PROJECT

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PARKS DEPARTMENT  
NANKIN LAKE HABITAT RESTORATION PROJECT

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WAYNE COUNTY PARKS DEPARTMENT  
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- Maintenance activities performed at least annually.
- Inspect for sediment, debris, and other obstructions, and general maintenance of the storm water management system.
- Records maintained at the Wayne County Parks Department office and on file at the property owner.
This and the sheets that follow are select plan sheets from a project completed for the Ann Arbor Trail Connector. The full parking lot was not constructed due to funding. The bidder is to bid on completing the parking lot and associated bioswale as a part of the scope of work for this project.
This sheet is from the project that was completed. Therefore, this plan depicts existing conditions. Existing conditions, however, shall be field verified prior to construction.
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### Storm Sewer Notes

1. **Concrete Joint Spacing:** Vertical joints shall be spaced 4 feet (minimum) along the length of the integral concrete apron. The integral concrete apron shall be a minimum of (Length) + (2) (8") + (a) (24") + (b) (24") total. The maximum joint spacing shall be 24" (8") + (a) (24") + (b) (24") total.

2. **Storm Sewer Configurations:** All storm sewer configurations shall be continuous integral concrete aprons. The entire integral concrete apron shall be molded as one unit. The maximum joint spacing shall be 24" (8") + (a) (24") + (b) (24") total.

3. **Structural Components:** All structural components of storm structures shall be placed and molded as a single unit. The maximum joint spacing shall be 24" (8") + (a) (24") + (b) (24") total.

4. **Structural Components:** Storm structures shall be field verified prior to the project.

### Plant List

For Information Only

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Symbol</th>
<th>Botanical Name</th>
<th>Common Name</th>
<th>Size</th>
<th>Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>115 Ea.</td>
<td>Ac</td>
<td>Anemone canadensis</td>
<td>Canada Anemone</td>
<td>Plug</td>
<td>24&quot; O.C.</td>
</tr>
<tr>
<td>50 Ea.</td>
<td>Sn</td>
<td>Sorghastrum nutans</td>
<td>Indian Grass</td>
<td>Plug</td>
<td>18&quot; O.C.</td>
</tr>
</tbody>
</table>

**Biotreatment Calculations**

<table>
<thead>
<tr>
<th>Hydrologic Soil Group</th>
<th>SLP Soil Group B (majority is B&amp;D R.B.)</th>
<th>Acre</th>
<th>C Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>Total Tributary Drainage Area</td>
<td>7,028 ft²</td>
<td>0.16</td>
</tr>
<tr>
<td>Building</td>
<td>4,960 ft²</td>
<td>0.01</td>
<td>0.06</td>
</tr>
<tr>
<td>Bioretention Area</td>
<td>1,336 ft²</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Landscape Area</td>
<td>920 ft²</td>
<td>0.02</td>
<td>0.23</td>
</tr>
<tr>
<td>Percent Imposition</td>
<td>1.04</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Detailed Design**

- **Concrete Sides:**
  - 4" thick concrete sides
  - Concrete aprons

- **Planting Area:**
  - 8" minimum planting area

**Clean-out Structure Detail**

- **Clean-out Structure:**
  - 6" minimum clean-out size
  - Clean-out structure detail

**Typical Biotreatment Cross-Section**

- 8" minimum planting area
  - Clean-out structure detail
  - Clean-out structure detail

**Typical Biotreatment Overflow Structure**

- 8" minimum planting area
  - Clean-out structure detail
  - Clean-out structure detail

**Plant List:**

- **115 Ea.**
  - Anemone canadensis
  - Canada Anemone
  - Plug
  - 24" O.C.

- **50 Ea.**
  - Sorghastrum nutans
  - Indian Grass
  - Plug
  - 18" O.C.
This sheet is from the project that was completed. Therefore, this plan depicts existing conditions. Existing conditions, however, shall be field verified prior to construction.
This sheet is from the project that was completed. Therefore, this plan depicts existing conditions. Existing conditions, however, shall be field verified prior to construction.
This sheet and the ones that follow are select plan sheets for the fully designed project. These depict the fully completed proposed conditions. The bidder shall propose bid to complete the parking lot and proposed bioswale as depicted in these plans.
This sheet is from the project that contains the full design. Therefore, this plan depicts proposed conditions. Existing conditions shall be as depicted in the plans for the portion of the project completed. However, shall be field verified prior to construction.
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