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GEOTECHNICAL
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WATER
CONSTRUCTION MANAGEMENT

M E M O R A N D U M

To: Jeff Kimble

From: Leslie Nelson, GZA GeoEnvironmental, Inc.

Date: May 14, 2020

File No.: 16.0062335.01

Re: Wolverine Worldwide Former Tannery Restoration

The restoration design was prepared by an experienced team lead by the following professionals:

Barry Stuedemann, P.E., PWS, Associate Principal – Barry is a Professional Engineer and Professional Wetland Scientist with over 30 years of experience in the natural resource and civil engineering consulting fields. His technical expertise includes: natural wetland, buffer, and riparian environment restoration design; stream and streambank restoration and relocation design; restoration maintenance and monitoring; civil site development engineering; stormwater management and green infrastructure design; implementation of best management practices (BMPs) in civil engineering design; and interpretation, consultation, and application of local, state, and federal regulations and policies. He has worked closely with agencies and trustees involving: wetland regulation; coastal area management; wetland, buffer, and riparian functional analysis and mitigation; floristic quality assessments; wildlife habitat assessments; sedimentation and erosion control; and detailed stormwater management permitting.

David M. Leone, P.E., Associate Principal – David is the leader of GZA's Dams and Water Resources Technical Practice Group. His flood assessment and risk management expertise spans over 20 years and includes hazard vulnerability assessments focusing on surface water hydrology, open-channel hydraulics, stormwater, and two- and three-dimensional hydrodynamics. Dave has extensive experience with analysis of both riverine and coastal environments, including the combined effects of stormwater, groundwater, and riverine and coastal flood mechanisms. Dave is a hydrologist and hydraulic engineer.

Jay Womack, ASLA, LEED AP, Senior Landscape Architect – Jay is a Senior Landscape Architect / Ecological Designer at GZA and has 30 years of experience in landscape architecture and ecology. Jay's design philosophy is rooted in a lifelong affinity for the ecosystems of the Midwest and in the belief that people need to be connected to the environment, a philosophy closely aligned with Aldo Leopold's Land Ethic. Jay has been recognized nationally for his work that uses the lens of ecology to bring awareness to sustainable designs in ways that combine art, science, ecology, and economic benefits where people can interact with nature. By recognizing that the places where we live, work, and play contain a unique and ever-changing part of the global system, Jay continually works toward a balance between the built environment and nature through design strategies that embrace ecology and incorporate ecosystem functions into everyday life.

Restoration Summary

Proposed restoration activities for the designated excavation areas include replacement of vegetation removed as part of the excavation with native plant species in order to replace and enhance the following overarching functions. The proposed restoration was developed based on typical regulatory requirements for shoreline restoration projects.

- Water quality protection for Rogue River
- Replacement of wildlife habitat
- Shoreline erosion protection

In collaboration with the City of Rockford and WWW, modifications were made to the preliminary restoration design to add new design elements which include:

- Inclusion of maple tree species;
- Removal of tall species from the planting plan to provide views of Rogue River from White Pine Trail; and,
- Inclusion of native species plant plugs to be strategically placed along the edges of the restoration areas to provide a slightly more 'landscaped' aesthetic.

Additional changes to the original restoration design include:

- Seeding disturbed areas east of White Pine Trail with turf and planting scattered trees to restore these areas.
- Typical 'park-like' landscape design elements were added east of the White Pine Trail including additional tree species and vegetated borders (carex species and prairie dropseed).
- The proposed earthen material to be placed beneath topsoil for the restoration seeding and planting was revised based on the limited availability of substantially PFOS free soils. Subsoils will now consist of sand and rocks and the amount of topsoil was increased to provide adequate substrate for the proposed plantings.

Goals of the planned restoration include the following.

1. Restore excavation areas to have similar vegetation cover as pre-construction conditions. Seed Mixtures and plant plugs to be utilized for the project have been revised slightly since the preliminary design to use pre-designed

mixtures from a local nursery near Grand Rapids. Seed mixtures and additional plant plugs include native emergent and wetland plants as well as native short-statured prairie grasses and forbs (flowers) with a variety of flower colors and bloom timeframes throughout the spring, summer, and fall seasons.

Anticipated schedule for plant installation is as follows:

- Install topsoil and seed along shoreline by May 15, 2020. Install erosion control matting over the newly installed seed.
- Install plant plugs by June 30, 2020. Install goose protection fencing to prevent predation of newly planted plugs.
- Conduct onsite irrigation, on an as needed basis, during the 2020 growing season to assist with vegetation establishment.
- Plant trees between mid-September and mid-October, exact dates weather dependent.

2. Provide long-term stabilization to the shoreline of Rogue River through permanent erosion control measures, which include native plantings and placement of riprap within Rogue River in one location to provide protective armoring at a steeply sloped, and somewhat eroded portion of the shoreline.

   Plant species to be used include native grasses such as little bluestem and native flowering species such as New England aster, black-eyed Susan, and milkweeds. The deep root systems of native plants have the ability to provide protection from erosion and can reduce water run off through providing infiltration. In addition, native plants do not require the use of fertilizers and provide habitat and food for wildlife.

3. Provide water quality protection for Rogue River.

4. Provide aesthetically pleasing landscaping elements to enhance the park-like setting adjacent to White Pine Trail.

ZONE 1: EMERGENT PLANTING ZONE MODIFIED (SEED MIXTURE)

Grasses, Sedges, and Rushes

SCIENTIFIC NAME	COMMON NAME	PLS OZ/ACRE	SEED/SQ. FT.
Carex comosa	Bristly Sedge	5.00	3.44
Carex crinita	Fringed Sedge	1.00	0.53
Carex hystericina	Porcupine Sedge	4.00	2.75
Carex stipata	Awl-fruited Sedge	2.00	1.56
Carex vulpinoidea	Fox Sedge	4.00	9.18
Eleocharis palustris	Great Spike Rush	0.25	0.29
Glyceria canadensis	Canada Manna Grass	2.00	3.40
Glyceria grandis	Reed Manna Grass	4.00	7.35
Juncus effusus	Soft Rush	0.25	5.74
Juncus torreyi	Torrey's Rush	0.25	9.18
Leersia oryzoides	Rice Cut Grass	2.00	1.56
Scirpus acutus (Schoenoplectus a.)	Hard-stem Bulrush	1.00	0.46
Scirpus atrovirens	Dark Green Bulrush	1.00	10.56
Scirpus cyperinus	Wool Grass	0.25	9.76
Scirpus fluviatilis (Bolboschoenus f.)	River Bulrush	7.00	0.69
~~*Scirpus validus (S. tabernaemontanii)*~~	~~Soft-stem Bulrush~~	~~2.00~~	~~1.42~~
	SUBTOTAL	**34.00**	**66.45**

Forbs

SCIENTIFIC NAME	COMMON NAME	PLS OZ/ACRE	SEED/SQ. FT.
Acorus americanus	Sweet Flag	5.00	0.76
Alisma subcordatum	Common Water Plantain	3.50	4.82
Asclepias incarnata	Swamp Milkweed	2.00	0.22
Aster puniceus	Swamp Aster	0.50	0.92
Bidens cernua	Nodding Bur Marigold	1.00	0.48
Cicuta maculata	Water Hemlock	0.75	0.21
~~*Eupatorium maculatum*~~	~~Joe Pye Weed~~	~~0.25~~	~~0.55~~
Eupatorium perfoliatum	Boneset	0.50	1.84
Iris virginica	Southern Blue Flag Iris	2.00	0.05
Lobelia cardinalis	Cardinal Flower	0.25	2.30
Lobelia siphilitica	Great Blue Lobelia	0.25	2.87
Mimulus ringens	Monkey Flower	0.25	13.20
Peltandra virginica	Arrow Arum	8.00	0.01
Penthorum sedoides	Ditch Stonecrop	0.50	14.92
Polygonum pensylvanicum (Persicaria p.)	Pennsylvania Smartweed	3.00	0.90
Pontederia cordata	Pickerel Weed	6.00	0.17
Rumex orbiculatus	Great Water Dock	0.25	0.05
Sagittaria latifolia	Common Arrowhead/Duck Potato	0.25	0.35
Sparganium eurycarpum	Common Bur Reed	7.75	0.09
Verbena hastata	Blue Vervain	2.00	4.27
	SUBTOTAL	**43.75**	**48.43**
	TOTAL	**77.75**	**114.88**

Remove strikethroughs from Native Connections Emergent Wetland seed mix.

Install a Mycorrhizal Inocculant with the above seed mix at 40 lbs/acre.
Source: http://nativeconnections.net/
Costs = $1,295/acre; $898 1/2 acre; $705 1/4 acre.

ZONE 2 - WET-MESIC PLANTING ZONE MODIFIED (SEED MIXTURE)

Grasses, Sedges, and Rushes

SCIENTIFIC NAME	COMMON NAME	PLS OZ/ACRE	SEED/SQ. FT.
~~*Andropogon gerardii*~~	~~Little Bluestem~~	~~20.00~~	~~4.59~~
Carex bebbii	Bebb's oval sedge	0.50	0.39
Carex vulpinoidea	Fox Sedge	0.50	1.15
Elymus virginicus	Virginia Wild Rye	24.00	2.31
Panicum virgatum	Switchgrass	9.90	3.18
Scirpus cyperinus	Wool Grass	0.10	3.90
*Schizachyrium scoparium**	Little Bluestem	28.00	9.64
~~*Sorghastrum nutans*~~	~~Indian Grass~~	~~20.00~~	~~5.51~~
~~*Spartina pectinata*~~	~~Prairie Cordgrass~~	~~1.00~~	~~0.15~~
	SUBTOTAL	**63.00**	**20.57**

Forbs

SCIENTIFIC NAME	COMMON NAME	PLS OZ/ACRE	SEED/SQ. FT.
~~*Actinomeris alternifolia (Verbesina a.)*~~	~~Wingstem~~	~~0.60~~	~~0.12~~
Allium cernuum	Nodding Wild Onion	1.00	0.17
~~*Angelica atropurpurea*~~	~~Angelica~~	~~1.00~~	~~0.12~~
Asclepias incarnata	Swamp Milkweed	0.50	0.06
Aster novae-angliae	New England Aster	0.50	0.76
Cassia hebecarpa	Wild Senna	5.50	0.18
Coreopsis tripteris	Tall Coreopsis	1.00	0.32
Desmodium canadense	Showy Tick Trefoil	0.50	0.06
~~*Eupatorium purpureum*~~	~~Sweet Joe Pye Weed~~	~~0.50~~	~~0.48~~
Helenium autumnale	Sneezeweed	0.50	1.49
Heliopsis helianthoides	False sunflower	8.00	1.16
~~*Heracleum maximum (H. lanatum)*~~	~~Cow Parsnip~~	~~1.20~~	~~0.07~~
Hypericum pyramidatum	Great St John's Wort	1.50	6.54
Liatris spicata	Marsh Blazingstar	0.50	0.13
Lobelia siphilitica	Great Blue Lobelia	0.50	5.74
Monarda fistulosa	Wild Bergamot	1.50	2.41
Penstemon digitalis	Foxglove Beardtongue	2.50	7.46
Physostegia virginiana	Obedient Plant	0.50	0.13
Pycnanthemum virginianum	Mountain mint	0.20	1.01
Ratibida pinnata	Yellow Coneflower	1.50	1.03
Rudbeckia hirta	Black-eyed Susan	3.50	7.39
Rudbeckia triloba	Brown-eyed Susan	2.50	1.95
Scrophularia lanceolata	Early Figwort	0.50	2.12
~~*Silphium terebinthinaceum*~~	~~Prairie Dock~~	~~1.50~~	~~0.03~~
Solidago riddellii	Riddell's Goldenrod	0.50	1.07
Verbena hastata	Blue Vervain	1.00	2.13
Zizia aurea	Golden Alexander	1.00	0.25
	SUBTOTAL	**35.20**	**43.56**
	TOTAL	**98.20**	**64.13**

Remove strikethroughs from Native Connections Wet-Mesic Prairie seed mix.

*** Added species to Native Connections Wet-Mesic Prairie seed mix.**

Install a Mycorrhizal Inocculant with the above seed mix at 40 lbs/acre.

Source: http://nativeconnections.net/

Costs = $1,075/acre; $656 1/2 acre; $527 1/4 acre.

ZONE 3: DRY-MESIC PLANTING ZONE MODIFIED (SEED MIXTURE)

Grasses, Sedges, and Rushes

SCIENTIFIC NAME	COMMON NAME	PLS OZ/ACRE	SEED/SQ. FT.
Bouteloua curtipendula	Side-oats Grama	8.00	1.10
Carex bicknellii	Bicknell's Sedge	0.25	0.10
Carex molesta	Field Oval Sedge	1.00	0.57
Elymus canadensis	Canada Wild Rye	4.00	0.48
Koeleria cristata (K. macrantha, pyramidata)	June Grass	1.50	6.89
Schizachyrium scoparium	Little Bluestem	16.00	5.51
~~*Sorghastrum nutans*~~	~~Indian Grass~~	~~5.30~~	~~1.46~~
	SUBTOTAL	**30.75**	**14.65**

Forbs

SCIENTIFIC NAME	COMMON NAME	PLS OZ/ACRE	SEED/SQ. FT.
~~*Agastache scrophulariaefolia*~~	~~Purple Giant Hyssop~~	~~0.25~~	~~0.53~~
Amorpha canescens	Leadplant	1.50	0.59
~~*Asclepias syriaca*~~	~~Common Milkweed~~	~~1.50~~	~~0.14~~
Asclepias tuberosa	Butterfly Milkweed	1.00	0.10
Aster laevis	Smooth Blue Aster	0.50	0.63
Aster novae-angliae	New England Aster	0.25	0.38
Cassia fasciculata (Chamaecrista f.)	Partridge Pea	10.00	0.62
Coreopsis lanceolata	Lance-leaf Coreopsis	8.00	3.67
Echinacea purpurea	Purple Coneflower	8.00	1.21
Eryngium yuccifolium	Rattlesnake Master	1.00	0.17
Liatris aspera	Rough Blazingstar	0.50	0.18
Liatris spicata	Marsh Blazingstar	1.50	0.38
Lupinus perennis	Lupine	1.50	0.04
Monarda fistulosa	Wild Bergamot	2.00	3.21
Penstemon digitalis	Foxglove Beardtongue	1.00	2.98
Petalostemum purpureum (Dalea p.)	Purple Prairie Clover	6.50	2.69
Pycnanthemum tenuifolium	Slender Mountain Mint	0.50	4.34
Ratibida pinnata	Yellow Coneflower	4.00	2.75
Rudbeckia fulgida	Orange Coneflower	1.50	1.07
Rudbeckia hirta	Black-eyed Susan	4.50	9.50
~~*Silphium terebinthinaceum*~~	~~Prairie Dock~~	~~1.00~~	~~0.02~~
Solidago rigida	Stiff Goldenrod	0.50	0.47
~~*Vernonia gigantea (V. altissima)*~~	~~Tall Ironweed~~	~~1.50~~	~~0.83~~
Zizia aurea	Golden Alexander	1.50	0.38
	SUBTOTAL	**55.75**	**35.36**
	TOTAL	**86.50**	**50.01**

Remove strikethroughs from Native Connections Dry-Mesic Pollinator seed mix.

Install a Mycorrhizal Inocculant with the above seed mix at 40 lbs/acre.
Source: http://nativeconnections.net/
Costs = $1,065/acre; $639 1/2 acre; $447 1/4 acre.

ZONE 4: TURF PLANTING ZONE MODIFIED (SEED MIXTURE)

Species	Common Name	Lbs./Acre	% by Weight
Festuca brevipila	Hard Fescue (Nanook or equal)	40.00	20%
Festuca ovina	Sheep Fescue	30.00	15%
Festuca rubra commutata	Chewings Fescue (LS3000 or equal)	60.00	25%
Festuca rubra arenaria	Creeping Red Fescue	40.00	20%
*Poa pratensis**	Kentucky Bluegrass	30.00	20%
	TOTAL Lbs/Acre	**200.00**	**100**

Mix includes four varieties of non-native tall fescues that are deeper rooted, more drought tolerant and slower growing than traditional lawn species. It will tolerate full sun and part shade and a range of soil types. Depending on the desired look, mow 0 to 4 times per season. Once established watering should not be necessary.

*** Added species to Native Connections Fescue Lawn Low Maintenance Mix**

Source: http://nativeconnections.net/
Costs = >25 Lbs. = $5/Lb.; 25-100 Lbs. = $4.25/Lb.; 100+ Lbs. = $3.50/Lb.

COVER CROP - FOR SPRING AND FALL PLANTING

SPRING PLANTING ONLY

SEED MIXTURE

Species	Common Name	Oz/Acre
Forbs		
Avena sativa	Oats	40.00

FALL PLANTING ONLY

SEED MIXTURE

Species	Oz/Acre
Regreen™	50.00

EMERGENT AND WET-MESIC SUPPLEMENTAL PLUG SPECIES

SCIENTIFIC NAME	COMMON NAME	PLUGS/ACRE	PLUGS PER SQ FT	NUMBER OF PLUGS
Asclepias purpurascens	PURPLE MILKWEED	570.00	0.01	314
Carex grayii	COMMON BUR SEDGE	570.00	0.01	25
Carex comosa	BRISTLY SEDGE	570.00	0.01	50
Carex hystericina	PORCUPINE SEGDE	570.00	0.01	25
Carex lupulina	COMMON HOPS SEDGE	570.00	0.01	298
Filipendula rubra	QUEEN OF THE PRAIRIE	570.00	0.01	276
Gentiana andrewsii	BOTTLE GENTIAN	570.00	0.01	276
Juncus torreyi	TORREY'S RUSH	570.00	0.01	316
Liatris pycnostachya	PRAIRIE BLAZING STAR	570.00	0.01	276
Liatris spicata	MARSH BLAZING STAR	570.00	0.01	286
Lobelia cardinalis	CARDINAL FLOWER	570.00	0.01	10
Lobelia siphilitica	GREAT BLUE LOBELIA	570.00	0.01	10
Mentha arvensis	WILD MINT	570.00	0.01	276
Oligoneuron riddellii	RIDDELL'S GOLDENROD	570.00	0.01	10
Pedicularis canadensis	WOOD BETONY	570.00	0.01	266
Physostegia virginiana	OBEDIENT PLANT	570.00	0.01	296
Pontederia cordata	PICKEREL WEED	570.00	0.01	266
Pycnanthemum virginianum	COMMON MOUNTAIN MINT	570.00	0.01	10
Scutellaria lateriflora	MAD-DOG SKULLCAP	570.00	0.01	266
Senna hebecarpa	WILD SENNA	570.00	0.01	266
Sparganium eurycarpum	COMMON BUR REED	570.00	0.01	286
Sporobolus heterolepis	PRAIRIE DROPSEED	570.00	0.01	80
Veronicastrum virginicum	CULVER'S ROOT	570.00	0.01	276
		TOTAL		**4460**

Sedge Zone - intermix species at 10" on center within 3' wide zone from edge of sidewalk

SCIENTIFIC NAME	COMMON NAME	PLUG SPACING	PLUGS PER SQ FT	NUMBER OF PLUGS
Carex pensylvanica	COMMON OAK SEDGE	10" OC		1190
Carex radiata	STRAIGHT STYLED WOOD SEDGE	10" OC		1190
		TOTAL		**2380**

DRY-MESIC SUPPLEMENTAL PLUG SPECIES

SCIENTIFIC NAME	COMMON NAME	PLUGS PER ACRE	PLUGS PER SQ FT	NUMBER OF PLUGS
Asclepias purpurascens	PURPLE MILKWEED	570.00	0.01	152
Asclepias tuberosa	BUTTERFLY MILKWEED	570.00	0.01	154
Echinacea pallida	PALE PURPLE CONEFLOWER	570.00	0.01	152
Gentiana alba	YELLOWISH GENTIAN	570.00	0.01	152
Liatris pycnostachya	PRAIRIE BLAZING STAR	570.00	0.01	154
Pedicularis canadensis	WOOD BETONY	570.00	0.01	154
Tradescantia ohiensis	SPIDERWORT	570.00	0.01	154
Veronicastrum virginicum	CULVER'S ROOT	570.00	0.01	154
		TOTAL		**1226**

Prairie Dropseed Zone, plant plugs at 3' o.c. in a line parallel to the sidewalk.

SCIENTIFIC NAME	COMMON NAME	PLUG SPACING	PLUGS PER SQ FT	NUMBER OF PLUGS
Sporobolus heterolepis	PRAIRIE DROPSEED	3' O.C.		300
		TOTAL		**300**

TREE SPECIES

Emergent & Wet-Mesic

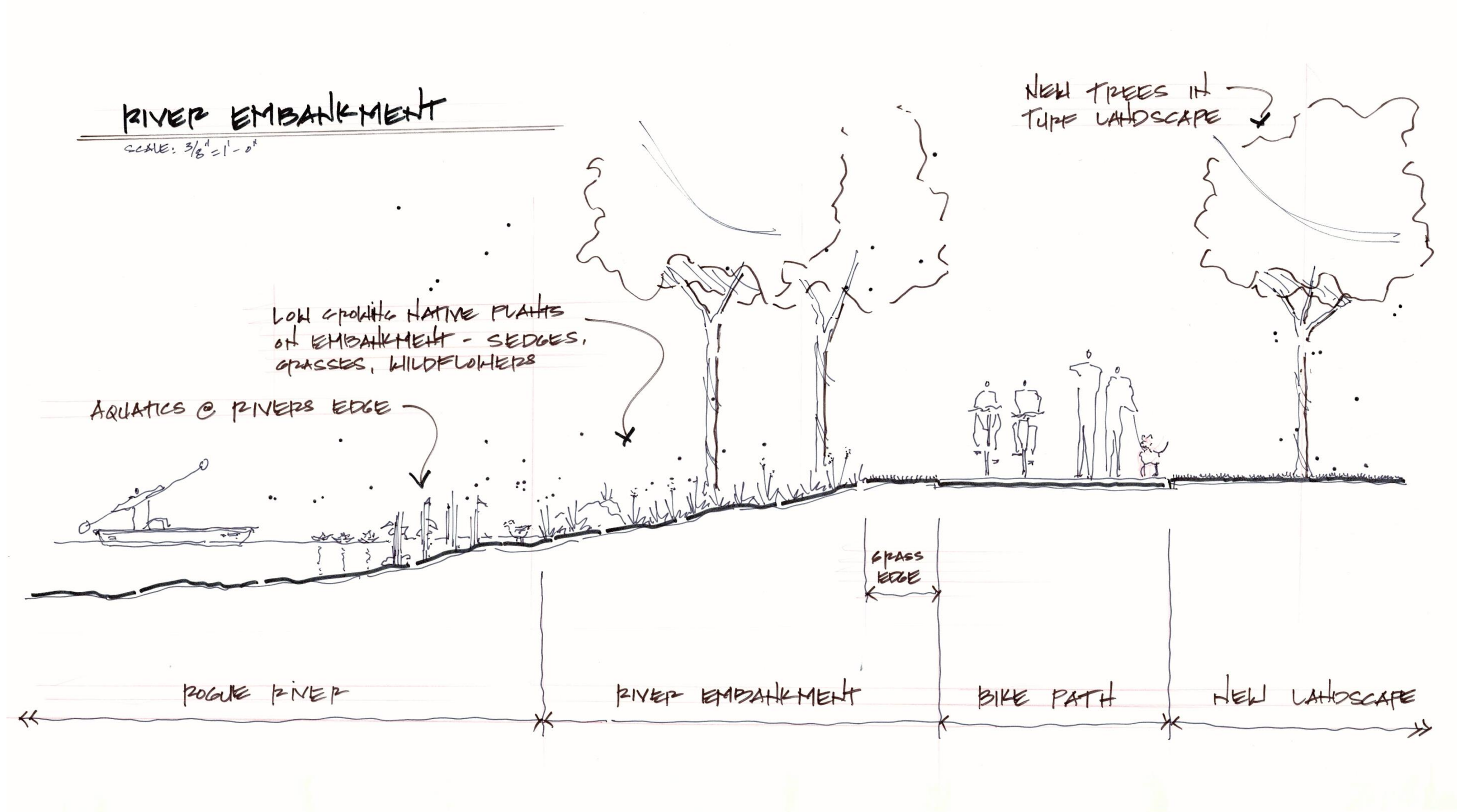
ACRONYM	SCIENTIFIC NAME	COMMON NAME	QUANTITY PROPOSED	UNIT
CEPOCC	*Cephalanthus occidentalis*	BUTTONBUSH	9	3 Gal
COAM2	*Cornus amomum*	SILKY DOGWOOD	9	3 Gal
NYSSYL	*Nyssa sylvatica*	BLACK TUPELO	2	15 Gal
PLAOCC	*Platanus occidentalis*	AMERICAN PLANETREE	2	2" CAL.
QUEBIC	*Quercus bicolor*	SWAMP WHITE OAK	5	15 Gal
QUEBIC	*Quercus rubra*	RED OAK	1	15 Gal
		SUBTOTAL	**28**	

Dry-Mesic

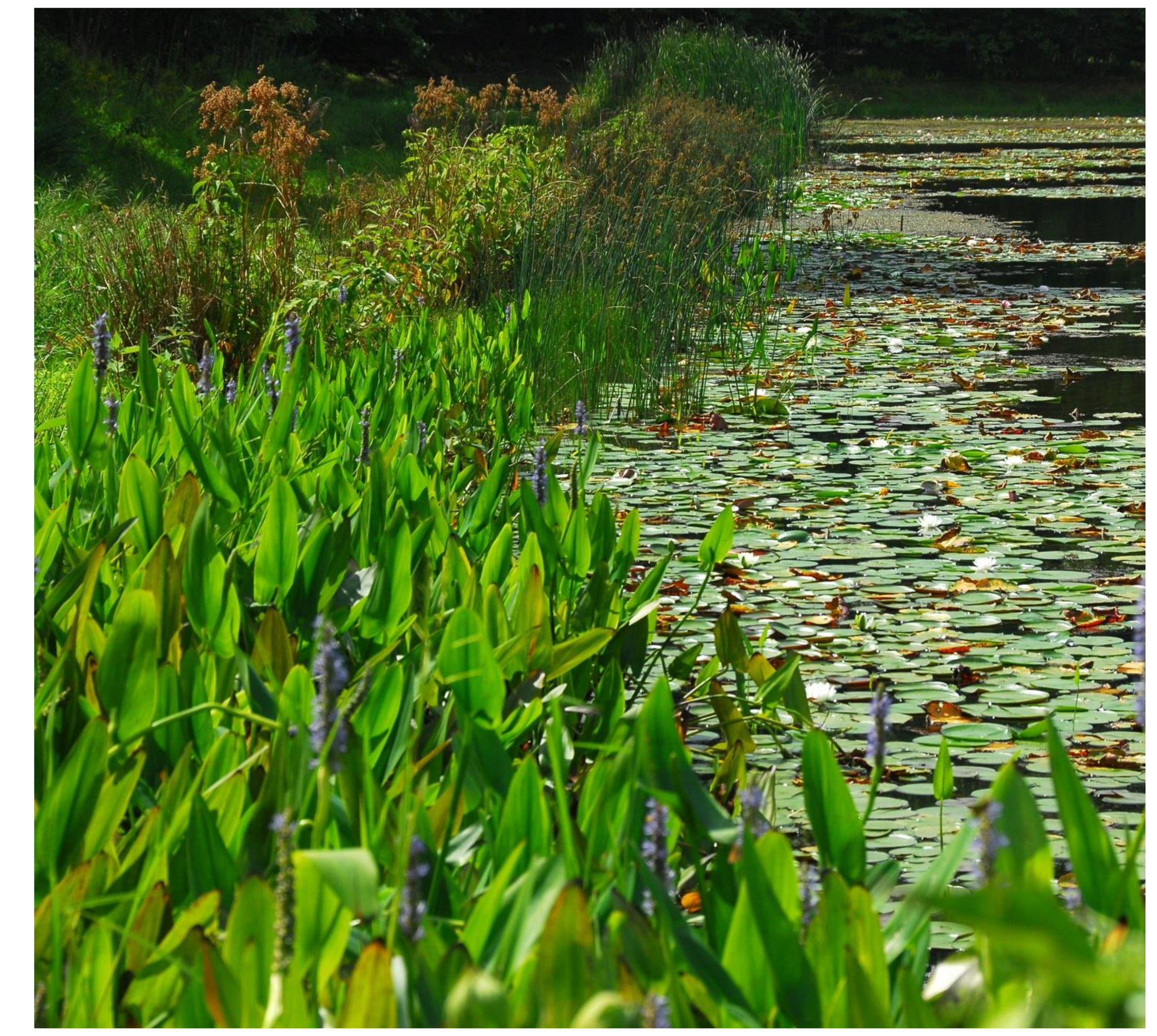
ACRONYM	SCIENTIFIC NAME	COMMON NAME	QUANTITY PROPOSED	UNIT
QUEMAC	*Qurcus macrocarpa*	BUR OAK	4	15 Gal
		SUBTOTAL	**4**	

Turf

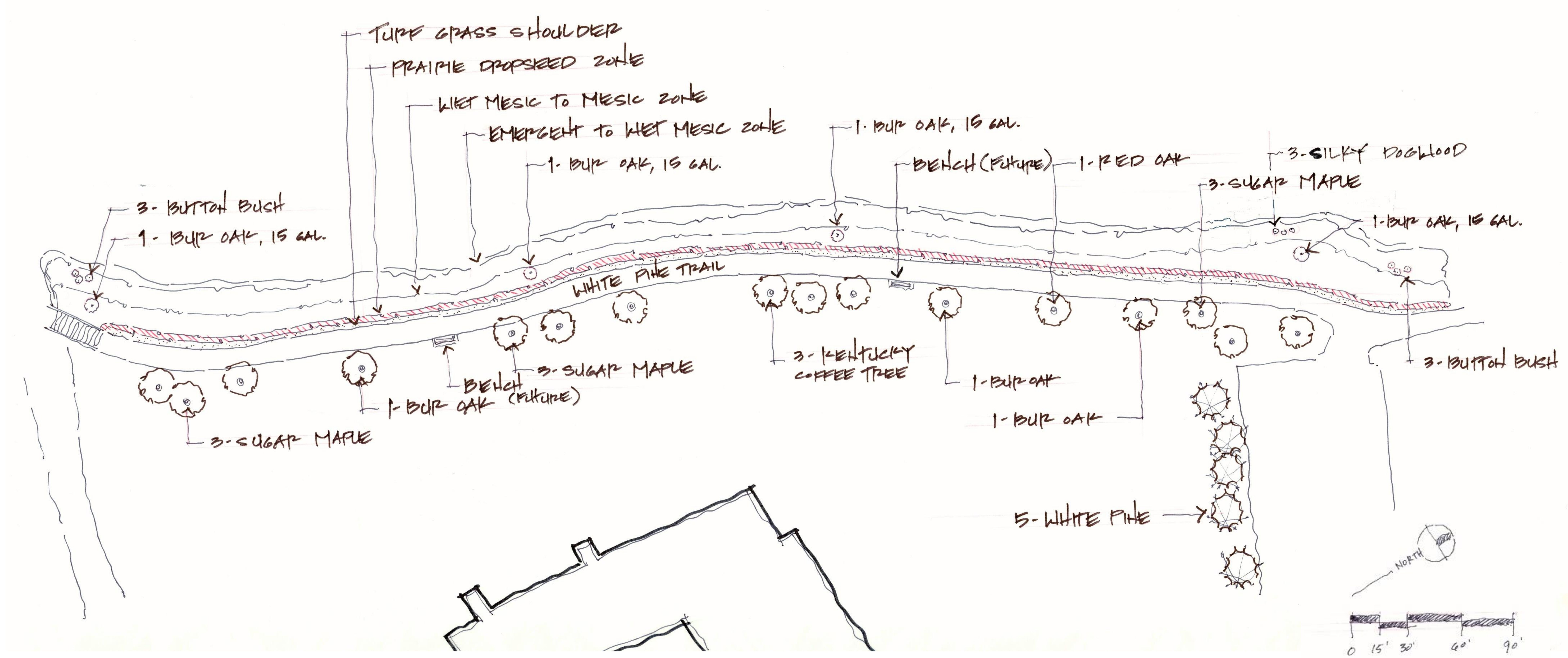
ACRONYM	SCIENTIFIC NAME	COMMON NAME	QUANTITY PROPOSED	UNIT
ACESAC	*Acer saccharum*	SUGAR MAPLE	12	2" CAL.
CELOCC	*Celtis occidentalis*	HACKBERRY	2	2" CAL.
GYMDIO	*Gymnocladus dioicus*	KENTUCKY COFFEETREE	4	2" CAL.
PINSTR	*Pinus strobus*	WHITE PINE	5	8' HGT.
QUEMAC	*Qurcus macrocarpa*	BUR OAK	3	2" CAL.
QUERUB	*Quercus rubra*	RED OAK	12	2" CAL.
		SUBTOTAL	**38**	
		TOTAL	**70**	



Example of Prairie Dropseed Zone



Example of Waters Edge



DRAWN BY BHS
DESIGN BY BHS
DATE 08/23/19

REVISIONS
CONCEPTUAL DESIGN PLANS FOR BIDDING PURPOSES ONLY
REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS

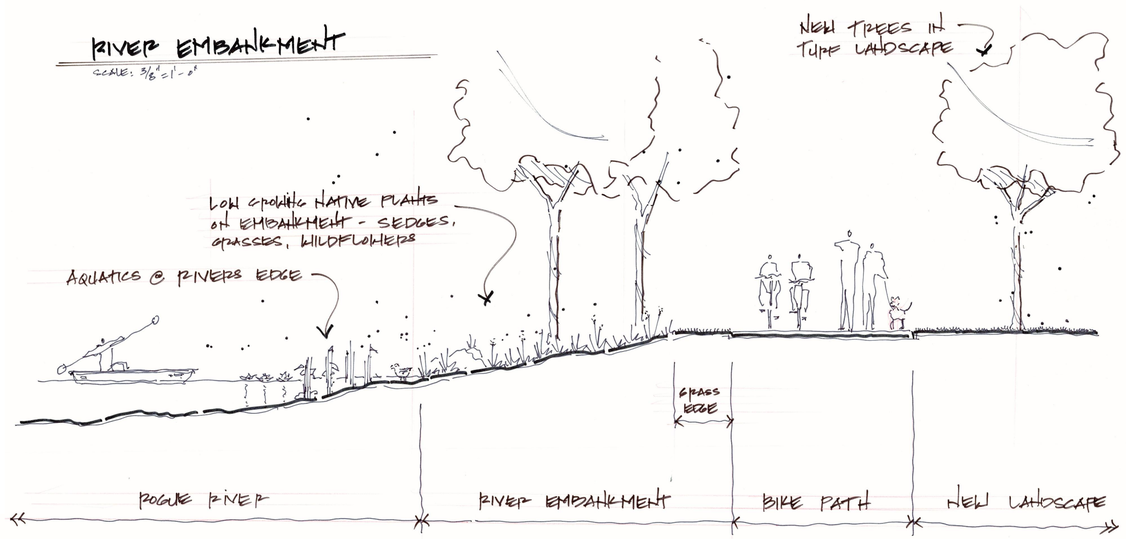
ROSE & WESTRA
A DIVISION OF GZA
Grand Rapids, Michigan
GEOTECHNICAL-ENVIRONMENTAL-ECOLOGICAL-WATER-CONSTRUCTION MANAGEMENT

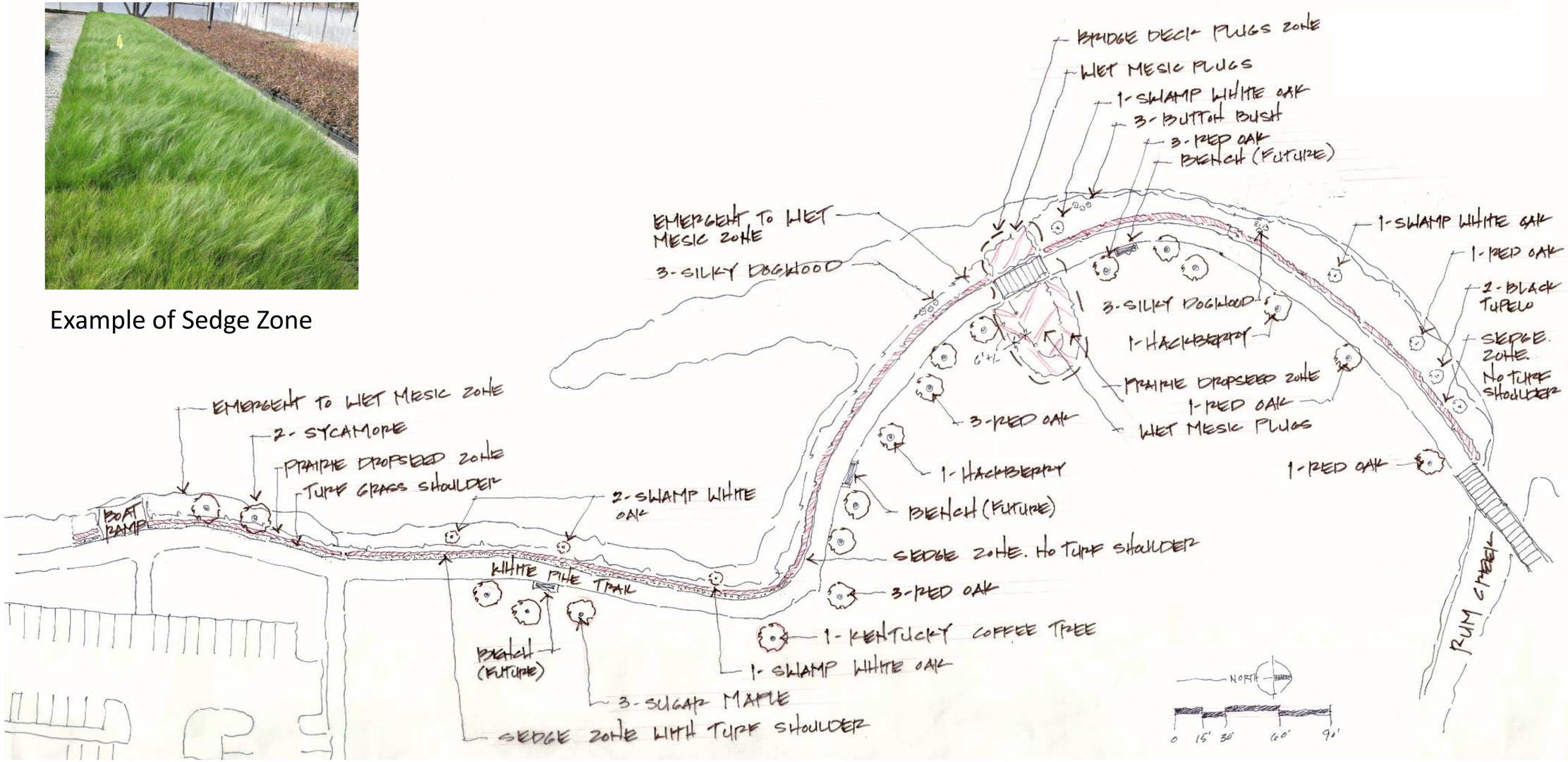
PROJECT NO. 16.0062335.01

SHEET NO. 9LA

Example of Emergent to Wet Mesic Zone

Example of Sedge Zone





NO.	REVISIONS	BY	DATE
0	CONCEPTUAL DESIGN PLANS FOR BIDDING PURPOSES ONLY	TDM	06/23/19

DRAWN BY BHS DATE 06/23/19
DESIGN BY BHS DATE 06/23/19
FILE NO.: 623350I_19.txt

REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS

ROSE & WESTRA
A DIVISION OF GZA
Grand Rapids, Michigan
GEOTECHNICAL-ENVIRONMENTAL-ECOLOGICAL-WATER-CONSTRUCTION MANAGEMENT

PROJECT NO.
16.0062335.01
SHEET NO.
9LA

NOTES:

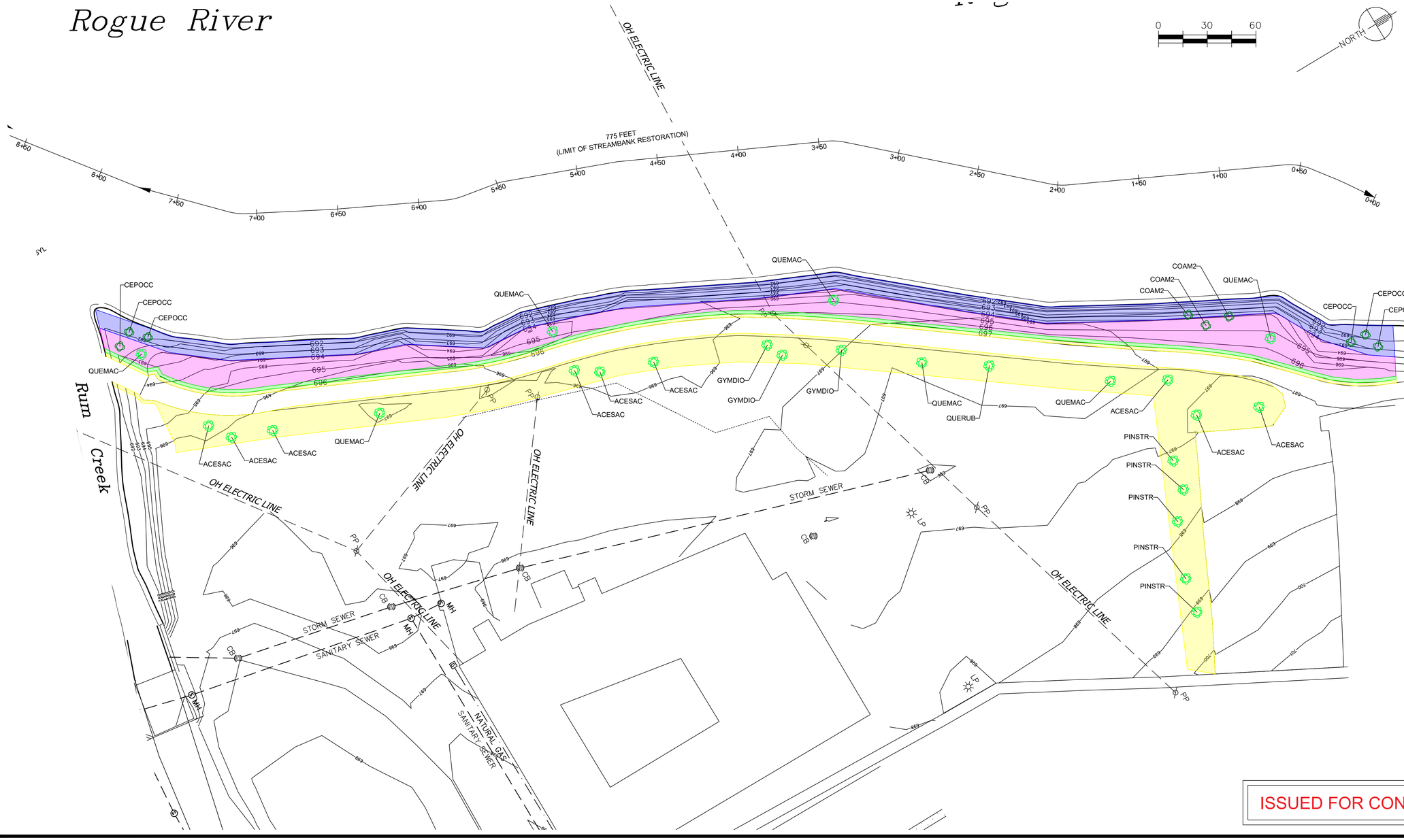
1. EDGE OF RIVER SHOWN IS BASED ON AERIAL TOPOGRAPHIC SURVEY. PLANTING ZONES MEET CURRENT EDGE OF RIVER.
2. RESTORATION TO OCCUR WITHIN LIMITS OF SEEDING ZONES AS SHOWN.
3. FOR SEED MIXES, PLUGS, SHRUBS, AND TREE SPECIES, SEE SPECIFICATIONS SECTION 32 93 00 - PLANTS.
4. TREE AND SHRUB LOCATIONS ARE APPROXIMATE AND SHALL BE FIELD LOCATED BY QUALIFIED BOTANIST AT INSTALLATION.
5. REFER TO FIGURE 9E FOR TYPICAL RESTORATION CROSS SECTIONS AND FIGURE 9F FOR TYPICAL RESTORATION DETAILS.
6. REFER TO FIGURE 10C FOR PLANTING DETAILS.

LEGEND:

- TOPOGRAPHIC CONTOURS
- PROPERTY LIMIT
- EDGE OF RIVER (~ EL. 691.5 AT TIME OF AERIAL TOPOGRAPHIC SURVEY)
- EMERGENT / WET-MESIC PLANTING ZONE
- DRY-MESIC PLANTING ZONE
- PRAIRIE DROPSEED PLANTING ZONE
- CAREX PLANTING ZONE
- TURF PLANTING ZONE
- PROPOSED TREE
- PROPOSED SHRUB

TREE AND SHRUB ABBREVIATIONS:

ACESAC	ACER SACCHARUM (SUGAR MAPLE)
CELOCC	CELTIS OCCIDENTALIS (COMMON HACKBERRY)
CEPOCC	CEPHALANTHUS OCCIDENTALIS (BUTTON BUSH)
COAM2	CORNUS AMOMUM (SILKY DOGWOOD)
GYMDIO	GYMNOCLADUS DIOICUS (KENTUCKY COFFEETREE)
NYSSYL	NYSSA SYLVATICA (BLACK TUPELO)
PINSTR	PINUS STROBUS (WHITE PINE)
PLAOCC	PLATANUS OCCIDENTALIS (SYCAMORE)
QUEBIC	QUERCUS BICOLOR (SWAMP WHITE OAK)
QUEMAC	QUERCUS MACROCARPA (BUR OAK)
QUERUB	QUERCUS RUBRA (NORTHERN RED OAK)



ISSUED FOR CONSTRUCTION

PLANTING PLAN – NORTH

WOLVERINE WORLD WIDE/
WARNER, NORCROSS and JUDD
FORMER TANNERY SITE, 123 MAIN ST, ROCKFORD, MI
REMEDIAL ACTION

DRAWN BY	DESIGN BY	DATE
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FILE NO.: 6233501_19_bid

NO.	REVISIONS	BY	DATE
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REVISED IN ACCORDANCE WITH CONSTRUCTION RECORDS

ROSE & WESTRA
A DIVISION OF GZA
Grand Rapids, Michigan
GEOTECHNICAL–ENVIRONMENTAL–ECOLOGICAL–WATER–CONSTRUCTION MANAGEMENT

PROJECT NO.
16.0062335.01

SHEET NO.
10A

NOTES:

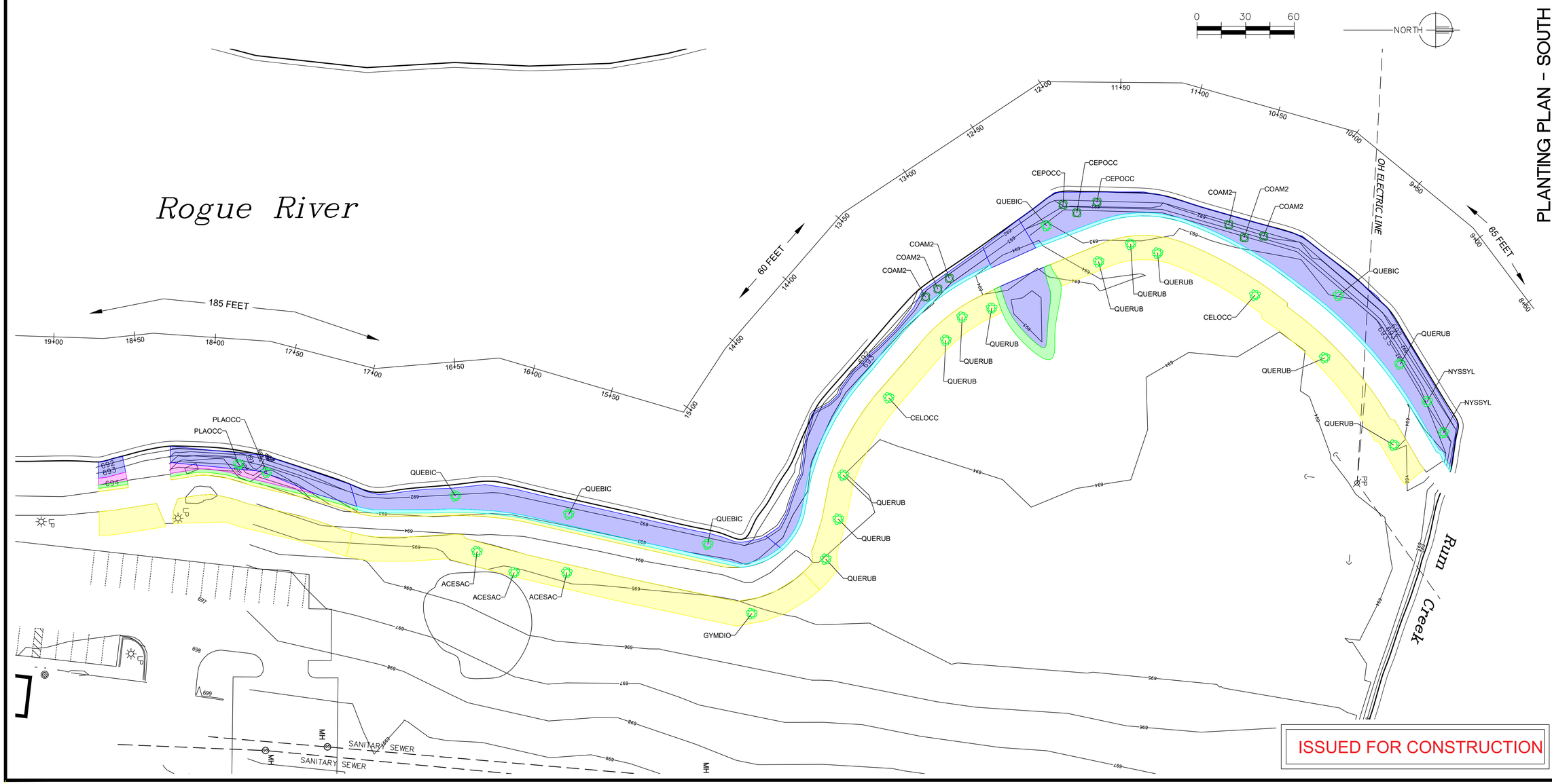
1. EDGE OF RIVER SHOWN IS BASED ON AERIAL TOPOGRAPHIC SURVEY. PLANTING ZONES MEET CURRENT EDGE OF RIVER.
2. RESTORATION TO OCCUR WITHIN LIMITS OF SEEDING ZONES AS SHOWN.
3. FOR SEED MIXES, PLUGS, SHRUBS, AND TREE SPECIES, SEE SPECIFICATIONS SECTION 32 93 00 - PLANTS.
4. TREE AND SHRUB LOCATIONS ARE APPROXIMATE AND SHALL BE FIELD LOCATED BY QUALIFIED BOTANIST AT INSTALLATION.
5. REFER TO FIGURE 9E FOR TYPICAL RESTORATION CROSS SECTIONS AND FIGURE 9F FOR TYPICAL RESTORATION DETAILS.
6. REFER TO FIGURE 10C FOR PLANTING DETAILS.

LEGEND:

- TOPOGRAPHIC CONTOURS
- PROPERTY LIMIT
- EDGE OF RIVER (~ EL. 691.5 AT TIME OF AERIAL TOPOGRAPHIC SURVEY)
- EMERGENT / WET-MESIC PLANTING ZONE
- DRY-MESIC PLANTING ZONE
- PRAIRIE DROPSEED PLANTING ZONE
- CAREX PLANTING ZONE
- TURF PLANTING ZONE
- PROPOSED TREE
- PROPOSED SHRUB

TREE AND SHRUB ABBREVIATIONS:

ACESAC	ACER SACCHARUM (SUGAR MAPLE)
CELOCC	CELTIS OCCIDENTALIS (COMMON HACKBERRY)
CEPOCC	CEPHALANTHUS OCCIDENTALIS (BUTTON BUSH)
COAM2	CORNUS AMOMUM (SILKY DOGWOOD)
GYMDIO	GYMNOCLADUS DIOICUS (KENTUCKY COFFEETREE)
NYSSYL	NYSSA SYLVATICA (BLACK TUPELO)
PINSTR	PINUS STROBUS (WHITE PINE)
PLAOCC	PLATANUS OCCIDENTALIS (SYCAMORE)
QUEBIC	QUERCUS BICOLOR (SWAMP WHITE OAK)
QUEMAC	QUERCUS MACROCARPA (BUR OAK)
QUERUB	QUERCUS RUBRA (NORTHERN RED OAK)



PLANTING PLAN – SOUTH

WOLVERINE WORLD WIDE/ WARNER, NORCROSS and JUDD

FORMER TANNERY SITE, 123 MAIN ST, ROCKFORD, MI

REMEDIAL ACTION

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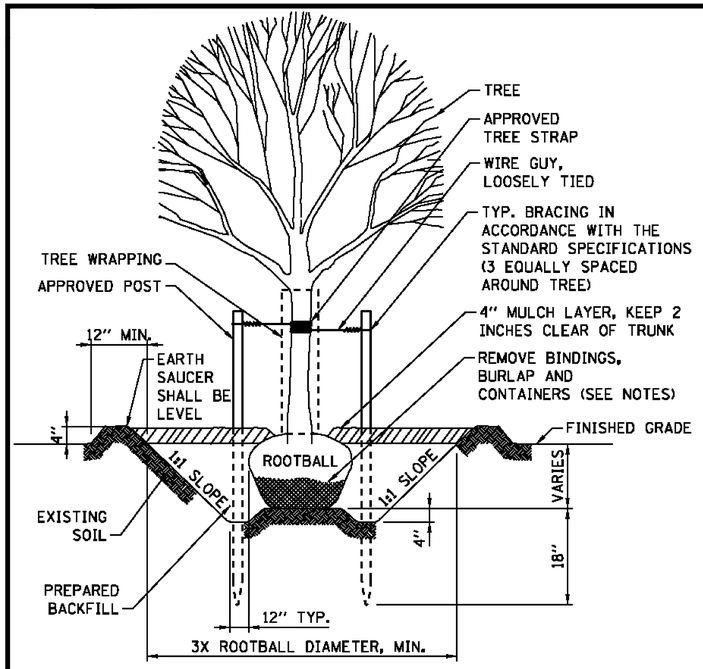
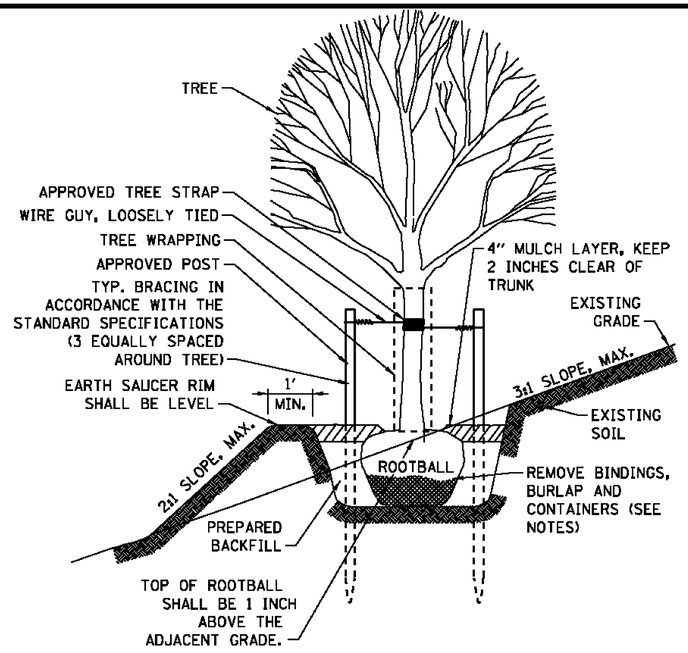
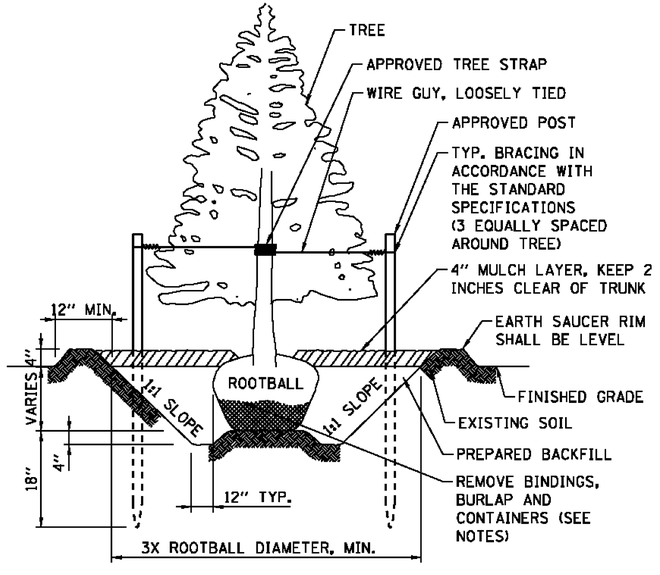


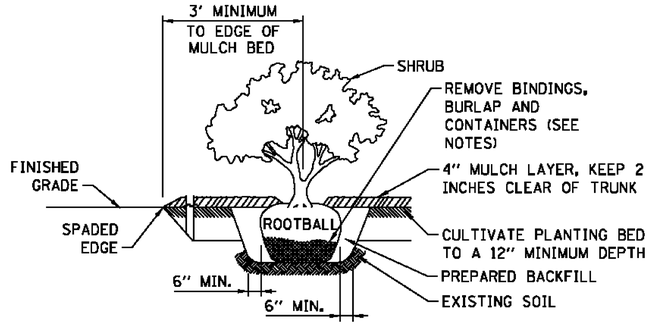
DECIDUOUS TREE PLANTING DETAIL



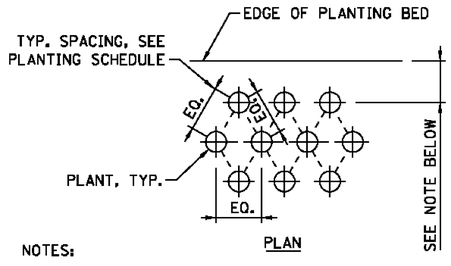
STEEP SLOPE PLANTING DETAIL



EVERGREEN TREE PLANTING DETAIL



SHRUB PLANTING DETAIL



NOTES:

OFFSET OF PLANTS FROM EDGE OF PLANTING AREA SHALL BE EQUAL TO HALF OF THE PLANT SPACING REQUIREMENT FOR EACH PLANT SPECIES AS SHOWN IN THE PLANTING SCHEDULE, OR 3' MINIMUM, UNLESS OTHERWISE INDICATED.

SHRUB AND GROUNDCOVER SPACING DETAIL

PLANTING NOTES:

1. MARK THE LOCATIONS OF ALL UNDERGROUND UTILITIES BEFORE BEGINNING WORK. REPORT ANY CONFLICTS TO THE ENGINEER IMMEDIATELY FOR RESOLUTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL UNDERGROUND, SURFACE AND OVERHEAD UTILITIES REGARDLESS OF LOCATION OR LACK OF LOCATION ON PLANS.
3. PLANTING PLANS ARE DIAGRAMMATIC. PLANT LOCATIONS SHALL BE REVIEWED BY THE CONTRACTOR AND ENGINEER AND OR ILLINOIS TOLLWAY LANDSCAPE ARCHITECT AND ADJUSTED IN THE FIELD AS NECESSARY PRIOR TO PLANTING.
4. TREES SHALL BE LOCATED CLEAR OF ROADWAY PAVEMENT EDGES, FIFTY (50) FEET MINIMUM.
5. TREE AND SHRUB PLANTINGS SHALL NOT BLOCK ACCESS TO GATES IN FENCES, HYDRANTS ON NOISE WALLS, OR OTHER SERVICE ACCESS DOORS.
6. TREES PLANTED IN TURF AREAS SHALL BE LOCATED TEN (10) FEET MINIMUM CLEAR FROM THE EDGE OF PLANTINGS BEDS.
7. TO AVOID POTENTIAL CONFLICTS, TREES AND SHRUBS SHALL BE OFFSET FROM UTILITIES A MINIMUM OF TEN (10) FEET AND ANY ADDITIONAL CLEARANCE REQUIRED BY UTILITY COMPANIES. ADDITIONALLY, TREES SHALL BE LOCATED TEN (10) FEET MINIMUM CLEAR FROM FENCES, WALLS, BRIDGES, AND OTHER STRUCTURES. THIS DISTANCE SHALL BE INCREASED, PER THE PROJECTED MATURE TREE CANOPY SIZE, TO PREVENT OVERHANGING LIMBS ON HIGHWAYS AND BRIDGES.
8. THE VERTICAL CLEAR DISTANCE BETWEEN DITCH BOTTOMS, PLANTINGS AND PLANTING BEDS SHALL BE THREE (3) FEET MINIMUM AND NINE (9) FEET MINIMUM HORIZONTAL DISTANCE FOR DITCHES LESS THAN THREE (3) FEET DEEP.
9. PERFORM PERCOLATION TESTS WITHIN PLANTING AREAS, - ONE TEST PER AREA OR 1000 SF OF PLANTING BED. MAX. EXCAVATE A 12 INCH X 12 INCH X 12 INCH PIT AND FILL WITH WATER. RECORD THE PER HOUR RATE OF WATER DISPERSAL FROM THE PIT. IF PERCOLATION IS LESS THAN 2 INCHES PER HOUR, CONTACT THE ENGINEER FOR FURTHER INSTRUCTIONS. RELOCATE PLANTINGS AS INSTRUCTED BY THE ENGINEER. RESTORE PIT TO SURROUNDING CONDITION.
10. PRUNING SHALL ONLY BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS. IMPROPERLY PRUNED PLANTING WILL BE REJECTED AND REPLACEMENTS WILL IMMEDIATELY BE MADE BY THE CONTRACTOR.
11. SCARIFY THE SIDES OF PLANTING PITS TO LOOSEN SOIL PRIOR TO PLANTING.
12. WHEN INDICATED ON PLANS, TREE WRAPPING SHALL BE INSTALLED ON ALL DECIDUOUS TREES TO PROTECT FROM DEER AND RODENT DAMAGE. WRAPPING SHALL BE ANCHORED TO GROUND AND EXTEND UP TO LOWEST BRANCH. WRAPPING PLACEMENT SHALL NOT BEAR AGAINST OR INHIBIT GROWTH OF TRUNK OR LOWEST BRANCH.
13. TOP OF ROOT BALL SHALL BE APPROXIMATELY ONE (1) INCH ABOVE ADJACENT FINISHED GRADE. REMOVE DEBRIS AND MULCH FROM AROUND ROOT COLLAR.
14. SHRUB PLANTINGS, UNLESS OTHERWISE NOTED, SHALL BE PLANTED IN MULCHED BEDS. THE EDGE OF THE MULCHED BEDS SHALL EXTEND A MINIMUM OF THREE (3) FEET BEYOND THE CENTERS OF THE PERIPHERAL PLANTS IN THE BED. THE EDGE OF THE MULCHED BED FOR SHRUB PLANTINGS ADJACENT TO A WALL, FENCE, GUARDRAIL, OR OTHER FIXED OBJECT SHALL EXTEND TO THE OBJECT. THE PERIPHERAL PLANTS IN THE BED SHALL BE PLANTED FIVE (5) FEET CLEAR OF THE OBJECT. WHEN A TREE IS LOCATED IN A SHRUB BED, THE MINIMUM DISTANCE BETWEEN THE TREE AND THE ADJACENT SHRUB SHALL BE SIX (6) FEET.
15. ALL FACILITIES AND LANDSCAPE AREAS ON AND OFF SITE DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITION.
16. ALL TREE SUPPORTS INCLUDING STAKES AND GUY WIRES, BRACING STRAPS AND ANCHORS SHALL BE REMOVED AFTER ONE (1) YEAR OR AS DIRECTED BY THE ENGINEER.
17. REMOVE ALL BINDING MATERIALS, CONTAINERS, AND MARKING TAPES FROM PLANTINGS PRIOR TO BACKFILLING. REMOVE SYNTHETIC BURLAP ENTIRELY, REMOVE NATURAL BURLAP, TWINE, AND WIRE BASKETS FROM THE TOP HALF OF ROOT BALLS. THE LOWER HALF OF NATURAL BURLAP SHALL BE FOLDED TOWARD THE BOTTOM OF THE ROOT BALL.
18. PLANTINGS SHALL BE INSTALLED PLUMB WITH THE BEST SIDE FACING THE PRIMARY VIEWING DIRECTION.
19. PLANTS SHALL COMPLY WITH ANSI Z60.1. LATEST EDITION, AND SHALL BE WELL FORMED WITH FULL FOLIAGE MASS. PLANTS SHALL BE HEALTHY, VIGOROUS, FREE OF DISEASE, INSECT PESTS AND THEIR EGGS. BASIS OF PLANT REJECTION INCLUDES BUT IS NOT LIMITED TO: PLANT IS MORE THAN 10% DEAD, ROOT BOUND, IMPROPERLY PRUNED, EXHIBITS DISPROPORTIONAL GROWTH PATTERN OR DOES NOT MEET SPECIFIED SIZE REQUIREMENTS.
20. DO NOT DISTURB OR DAMAGE ROOT BALL WHEN PLANTING. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING PLANTING PITS. WHEN PIT IS HALF FULL OF SOIL, LIGHTLY TAMP, WATER THOROUGHLY. ADD REMAINING SOIL AND WATER FURTHER UNTIL SOIL IS COMPLETELY CONSOLIDATED AND NO MORE WATER IS ABSORBED.
21. PREPARED BACKFILL SHALL CONSIST OF EQUAL PARTS TOPSOIL, COMPOST AND EXISTING SITE SOIL SUITABLE FOR PLANT GROWTH. TOPSOIL SHALL COMPLY WITH SECTION 211 OF THE SPECIFICATIONS.
22. THE CONTRACTOR SHALL COMPLETE FORM A-37 TO DOCUMENT MILESTONE DATES ASSOCIATED WITH PLANT INSTALLATION AND ESTABLISHMENT AS REQUIRED BY THE ILLINOIS TOLLWAY.

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