

FIRE IN THE SAVANNA

Fire, a natural, recurring element, is a necessary part of savanna's life cycle.

Historically fires, often ignited by lightning, occurred on a 1 to 3 year frequency.

Fire-rejuvenated grasslands supported large populations of wildlife and native food plants which sustained early native Americans.

Species native to savanna ecosystem need regular occurrence of fire to reproduce, grow & survive.

Many only flower & produce seed after fire.

Longleaf Pine dominated fire-maintained savannas & was essentially the only tree present in these open grasslands.



Blazing Star, *Liatris spicata*, & Dwarf Sundew, *Drosera brevifolia* respond to fire by flowering.



Little Bluestem, *Schizachyrium scoparium*, responds to fire with more prolific flowers & seeds.



Slash Pine, a common savanna tree, & most hardwoods are found in wetter zones, stream bottoms & bayhead swamps that do not burn as frequently or as hot as the broader savannas.

A few upland fire-resistant hardwoods, such as Post Oak & Blackjack Oak, are found on gentle rises in the flatwoods.



Use of Prescribed Burns is beneficial to the savanna ecosystem. It should only be done by trained personnel, under certain conditions & with proper notifications



PRESCRIBED FIRE

SAVANNA RESTORATION MANAGEMENT TOOL



BENEFITS OF PRESCRIBED BURNING

Maintains health of savanna ecosystem

Restricts dense tree and shrub growth

Removes vegetation duff & exposes soil & seeds to sunlight

Triggers hard-shelled seeds to germinate

Allows diverse ground cover of grasses & wildflowers to flourish

Helps suppress growth of invasive plants such as

Chinese Privet, Chinese Tallow, Camphor Tree & Loblolly Pine

Helps avoid costly damaging wildfires by reducing fuel in the landscape

LONGLEAF PINE SAVANNA ECOSYSTEM

Longleaf pine savanna is an open landscape with scattered trees whose canopies do not close overhead.

Diverse communities of native grasses, perennials and wildflowers provide seasonal beauty, fragrance & color.

Grassland plants with deep root systems filter water for aquifers.

Longleaf pine savannas provide food and habitat for butterflies & other pollinating insects, songbirds & many wildlife species.

Longleaf pine woodlands and savannas once dominated over 60% of the landscape from the Virginia to Eastern Texas.

Longleaf Pine was the dominant tree on about 90 million acres of the Southeast when the Spanish arrived in the early 1500's.

CHANGES TO THE ECOSYSTEM

Longleaf pine savanna that once covered most of St. Tammany Parish but has been drastically reduced over the past 150 years by farming, replacement by artificial forest types & rural & urban development.

Years of no-burn policies allowed the proliferation of native & non-native fire-intolerant shrubs & trees to change/shade out the savanna ecosystem.

Native species of plants and wildlife have been displaced and in some cases threatened with extinction due to habitat loss.

Dangerous wildfires have occurred due to long-term fire suppression.

PINE SAVANNA RESTORATION PROJECT

PROJECT PURPOSE

Restore pine savanna & native meadow areas

Preserve & protect Blue Swamp Creek

Re-introduce fire through use of controlled burns

Control invasive native & non-native species that have taken over since Hurricane Katrina & construction of Recreation Complex

This allows sunlight to reach the ground so desirable species can be re-established



NATIVE LARVAL HOST PLANTS FOR LEPIDOPTERA BUTTERFLIES, SKIPPERS & MOTHS

Native plants can host huge numbers of Lepidoptera

Oak trees, as many as 517 species, Willows, 456; Cherry, 448; Maples, 285

Here are a very few of the Lepidoptera you may see as caterpillars on these plants or as adult butterflies, skippers or moths nectaring on flowers along the trails:



Oaks - Gray Hairstreak
Willow – Eastern Tiger Swallowtail
Black Cherry – Red Spotted Purple
Maple -- Promethea Moth
Magnolia - Tulip-Tree Beauty Moth
Hackberry – American Snout
Red Bay – Spicebush Swallowtail
Blackgum – Hebrew Moth
Pine - Pine Sphinx Moth
Aster – American Lady
Purple False Foxglove – Common Buckeye
Maypops – Gulf Fritillary



Sources: Allen, Charles. "Preferred Hosts for Larvae of Butterflies"; Tallamy, Douglas. *Bringing Nature Home: How Native Plants Sustain Wildlife in Our Gardens*; Wagner, David L. *Caterpillars of Eastern North America*

Photos: left to right - jeffpippen.com; gardenswithwings; Ken Childs butterfliesandmoths.com; butterflybushes.com; Donald Hall Univ. of FL;

Gary Jue butterfliesandmoths.com; naba.org; rogueembryo.com

IMPORTANCE OF NATIVE PLANTS

WILDLIFE DEPENDS ON PLANTS FOR SHELTER & FOOD

Many species of wildlife are attracted to acorns, berries, nuts & seeds produced by native plants

Birds collect insects & caterpillars found on native plants to feed their young

Many primarily insectivorous songbirds alter their diets to include fleshy fruits during migratory and winter periods when fewer insects and invertebrates are available

Fruiting plants have evolved strategies to capitalize on birds as seed dispersers



VIBURNUM FRUIT



EASTERN BLUEBIRD



VIRGINIA CREEPER BERRIES



POISON IVY FLOWERS



BROWN THRASHER

SOME FRUIT-BEARING PLANTS ALONG TRAILS, FRUITING SEASON & BIRDS ATTRACTED TO THEM INCLUDE:

Arrowwood Viburnum (*Viburnum dentatum*) (September-November) - Eastern Bluebird, White-throated Sparrow

Eastern Poison Ivy (*Toxicodendron radicans*) (August-January)

Downy Woodpecker, Pileated Woodpecker, Red-bellied Woodpecker, Brown Thrasher, Carolina Chickadee, Eastern Bluebird, Northern Cardinal, Tufted Titmouse, White-throated Sparrow

Sassafras (*Sassafras albidum*) (July-October) - Northern Cardinal, Red-bellied Woodpecker

Southern Magnolia (*Magnolia grandiflora*) (August-December) - Northern Cardinal, Pileated Woodpecker

Virginia Creeper (*Parthenocissus quinquefolia*) (August-November)

Brown Thrasher, Eastern Bluebird, Northern Cardinal, Downy Woodpecker, Red-bellied Woodpecker



SASSAFRAS FRUIT



PILEATED WOODPECKER



NORTHERN CARDINAL

MAGNOLIA SEEDS



WHAT IS BIODIVERSITY?

The diversity of ecosystems, natural communities, habitats & the species that comprise them
The ways species interact with each other and their environments

WHY IS BIODIVERSITY IMPORTANT?

Diversity of plants, soils & pollinators, provides array of food that sustains life.
Plants make life livable on earth by providing oxygen to breathe, cleansing the air & water.
The complex interactions of the many living species of plants & animals
on earth produce a healthy ecosystem.
It allows ecosystems to adjust to disturbances like extreme fire or floods.

THREATS TO BIODIVERSITY & HABITAT LOSS

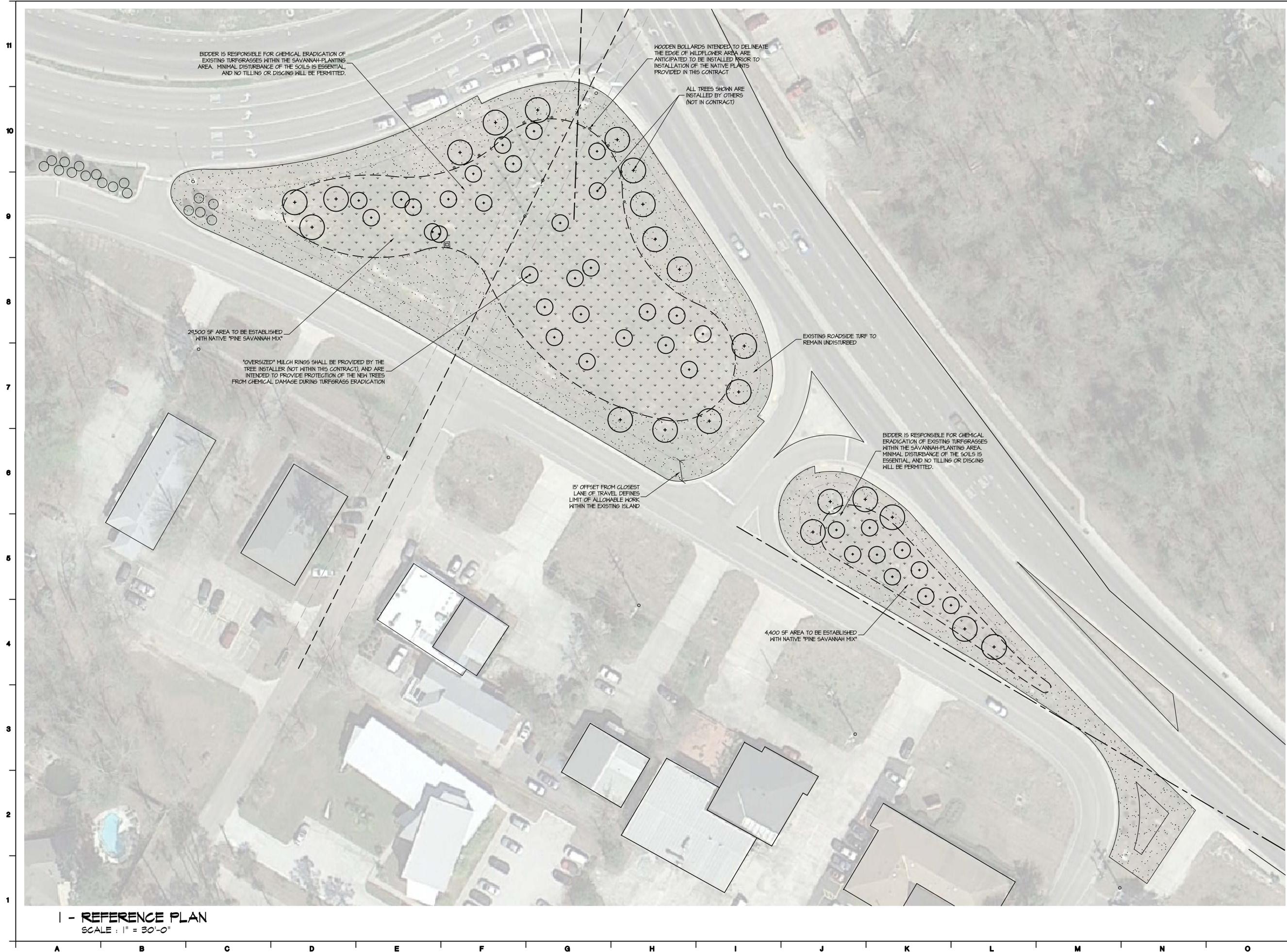
IN LONGLEAF PINE SAVANNAS INCLUDE

Non-natural environmental changes caused by human activities
Over exploitation of natural resources
Spread of non-native species
Pollution of natural resources

WATCH FOR A VARIETY OF WILDLIFE ALONG THE TRAILS

REPTILES & AMPHIBIANS: Frogs, Snakes & Turtles
BIRDS * POLLINATORS: Bees, Wasps, Flies, Butterflies
MAMMALS: Deer, Mice Opossum, Rabbits, Raccoons, Squirrels, Skunks





1 - REFERENCE PLAN
SCALE : 1" = 30'-0"

PROJECT NO. 3214.01
DRAWN BY: AMP
DATE: 04/20/14

SCALE: AS SHOWN
CHECKED BY: XXX
REVISIONS: XXX

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Causeway Approach Wildflower Restoration Area

Tree Planting and Irrigation Improvements

Mandeville, Louisiana

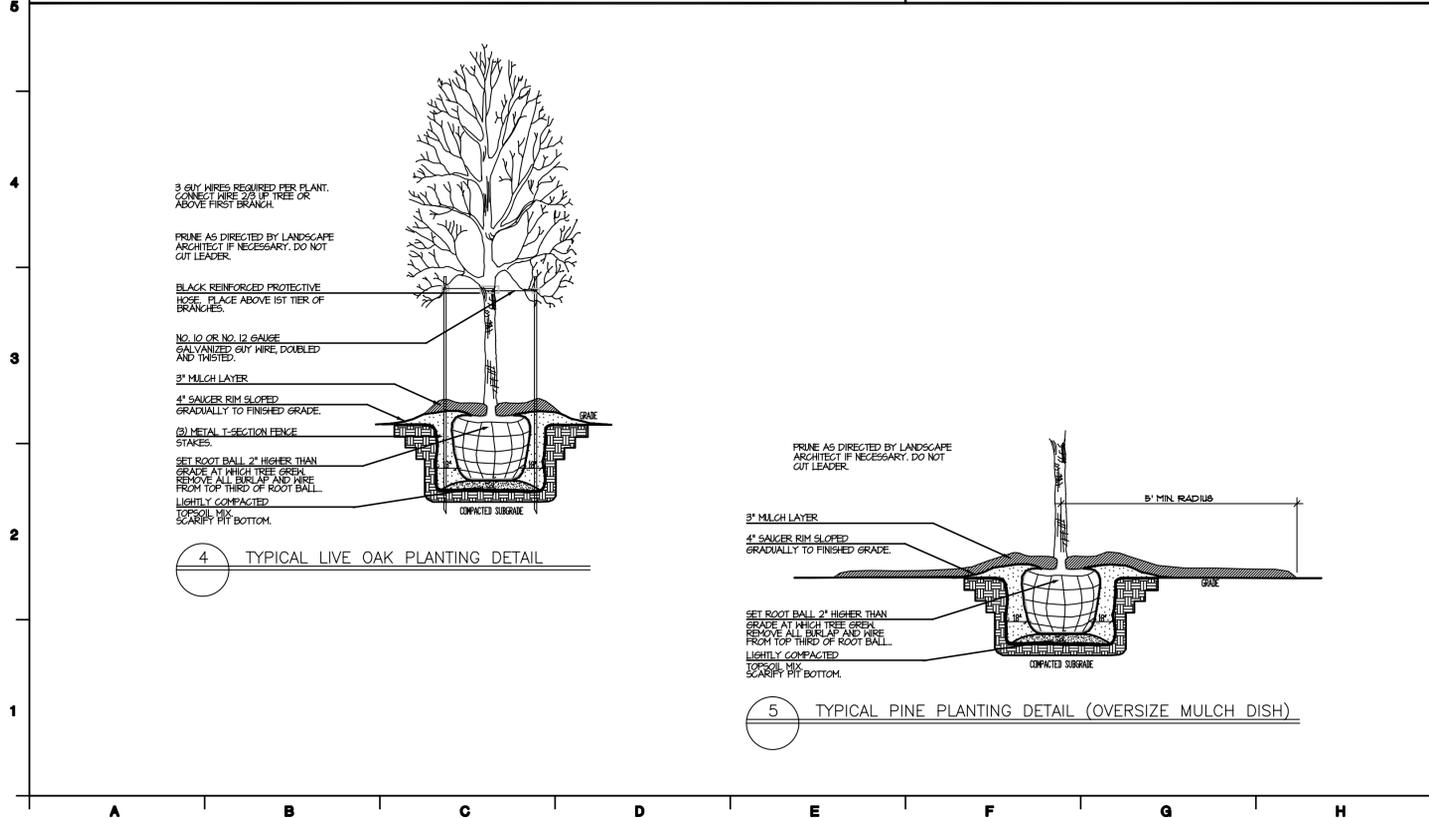
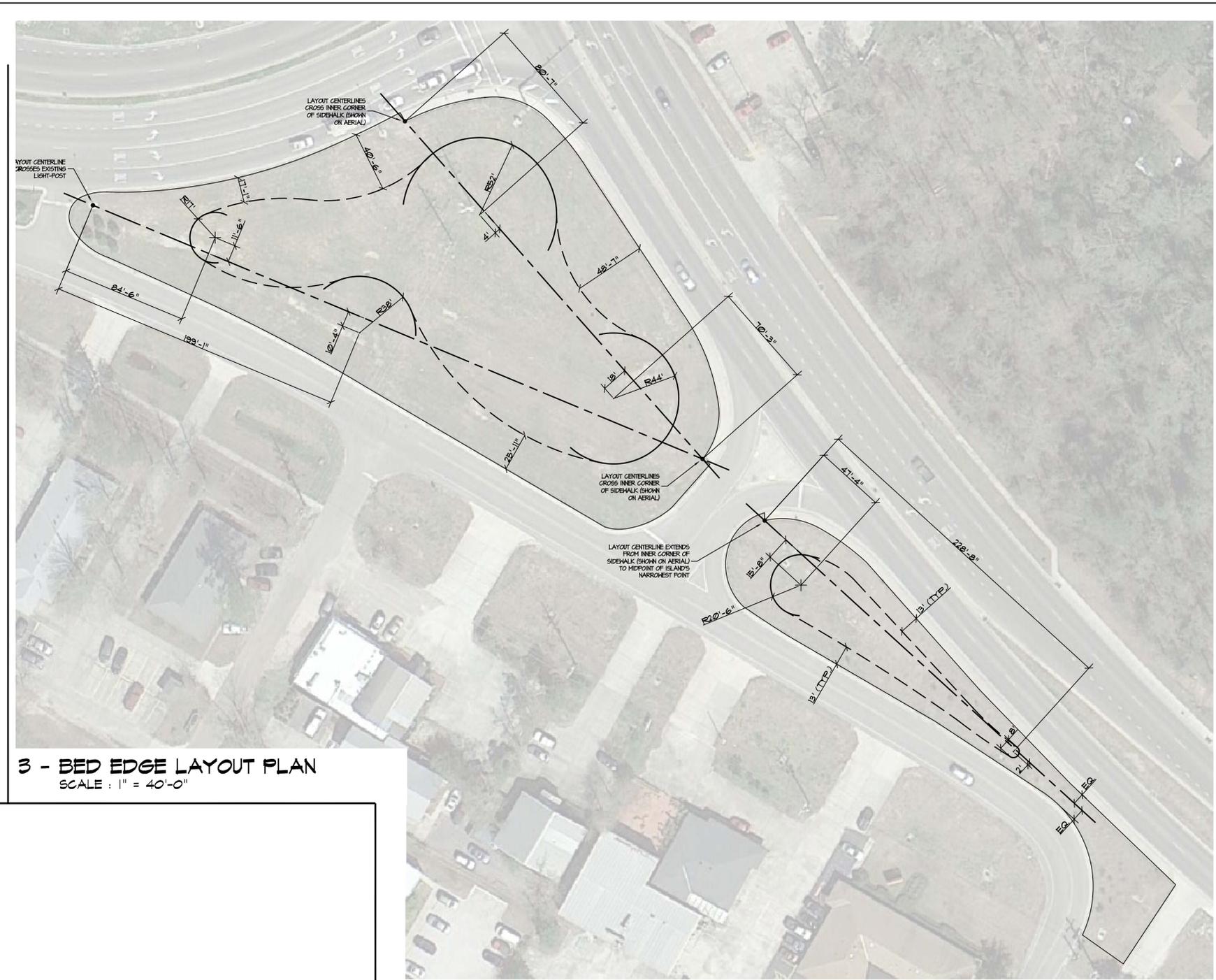
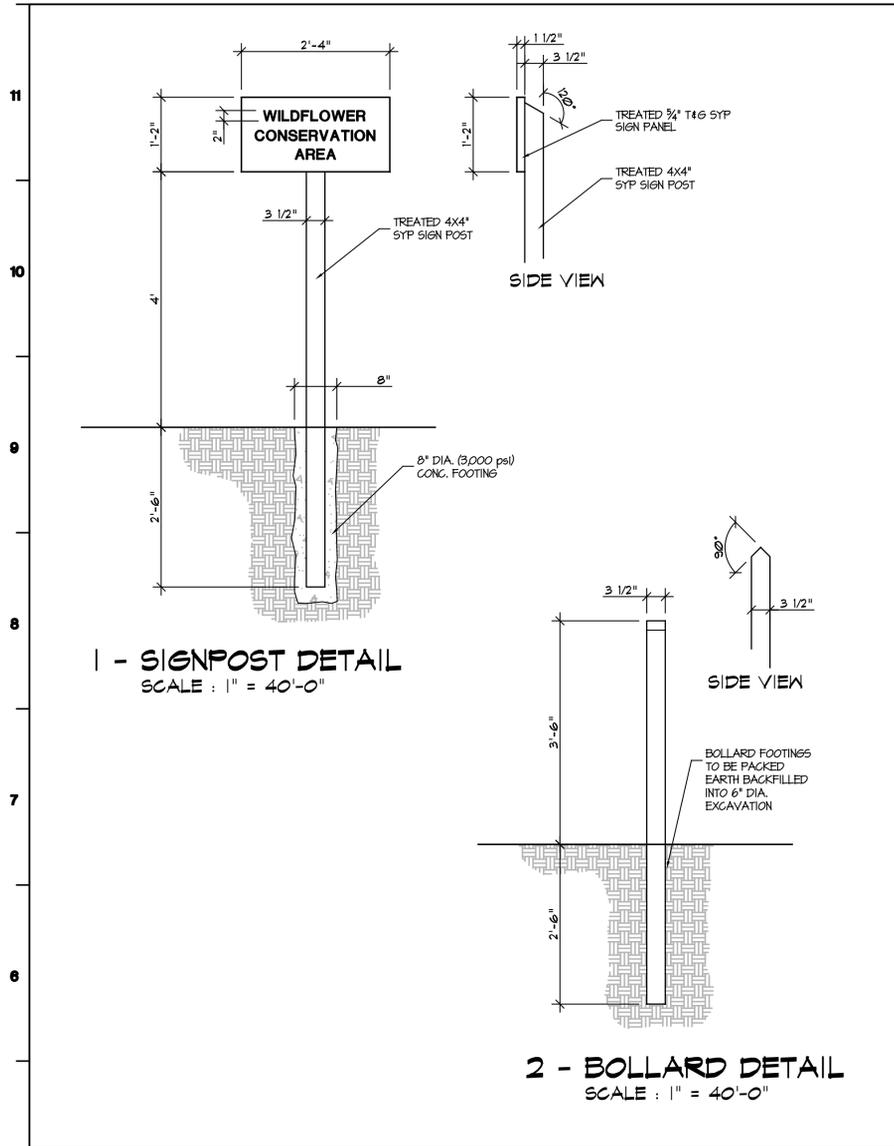
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PHONE: 601-833-1327 FAX: 601-833-1328

REFERENCE PLANT PLAN

CONSTRUCTION DOCUMENTS

2



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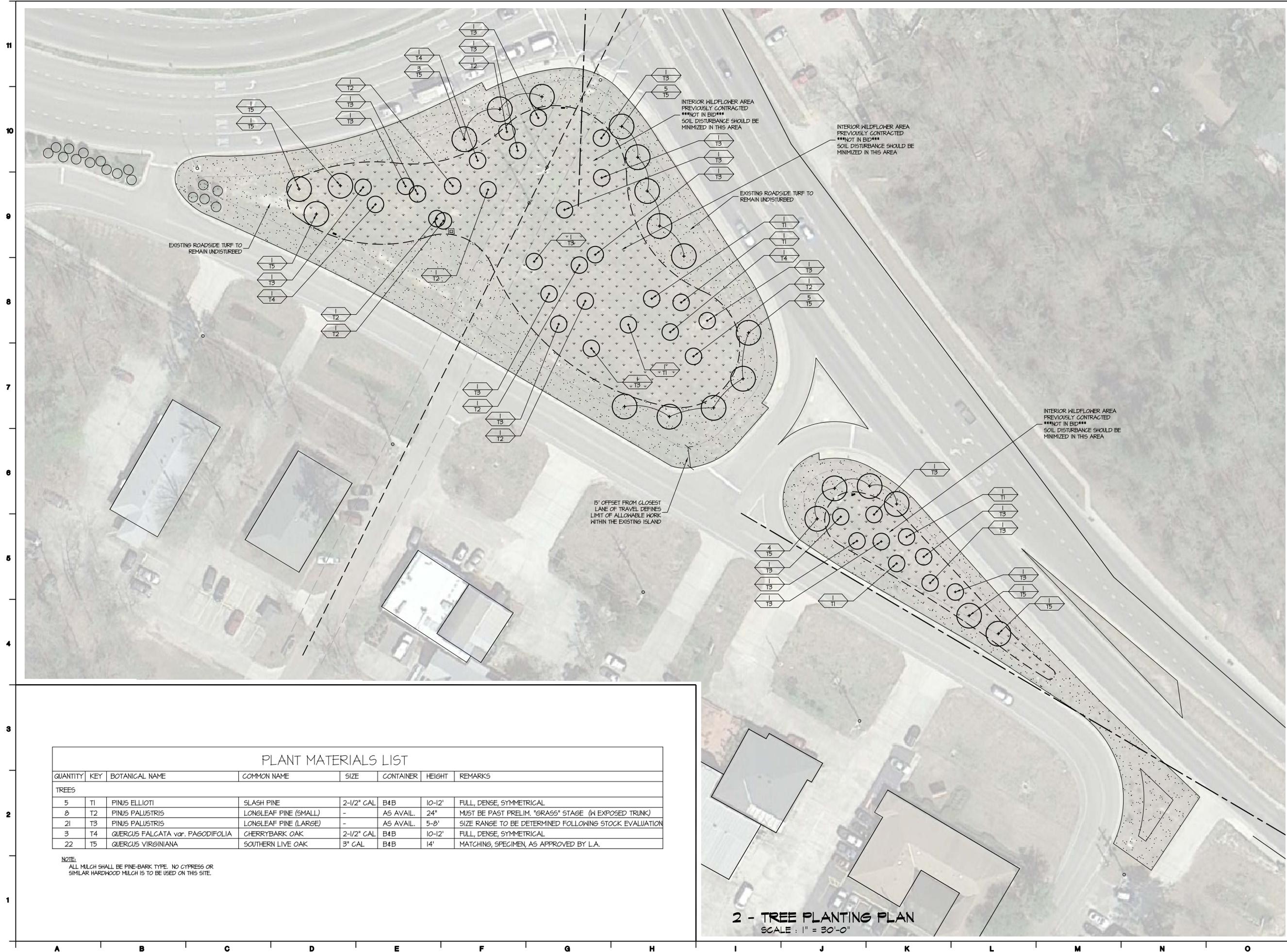
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LAYOUT PLAN / DTLs.
CONSTRUCTION DOCUMENTS

3



PLANT MATERIALS LIST

QUANTITY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	HEIGHT	REMARKS
TREES							
5	T1	PINUS ELLIOTTI	SLASH PINE	2-1/2" CAL	B4B	10-12'	FULL, DENSE, SYMMETRICAL
8	T2	PINUS PALUSTRIS	LONGLEAF PINE (SMALL)	-	AS AVAIL.	24"	MUST BE PAST PRELIM. "GRASS" STAGE (N EXPOSED TRUNK)
21	T3	PINUS PALUSTRIS	LONGLEAF PINE (LARGE)	-	AS AVAIL.	5-8'	SIZE RANGE TO BE DETERMINED FOLLOWING STOCK EVALUATION
3	T4	QUERCUS FALCATA var. PAGODIFOLIA	CHERRYBARK OAK	2-1/2" CAL	B4B	10-12'	FULL, DENSE, SYMMETRICAL
22	T5	QUERCUS VIRGINIANA	SOUTHERN LIVE OAK	3" CAL	B4B	14'	MATCHING, SPECIMEN, AS APPROVED BY L.A.

NOTE:
ALL MULCH SHALL BE PINE-BARK TYPE. NO CYPRESS OR SIMILAR HARDWOOD MULCH IS TO BE USED ON THIS SITE.

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Wildflower Restoration Area

Tree Planting
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Documents

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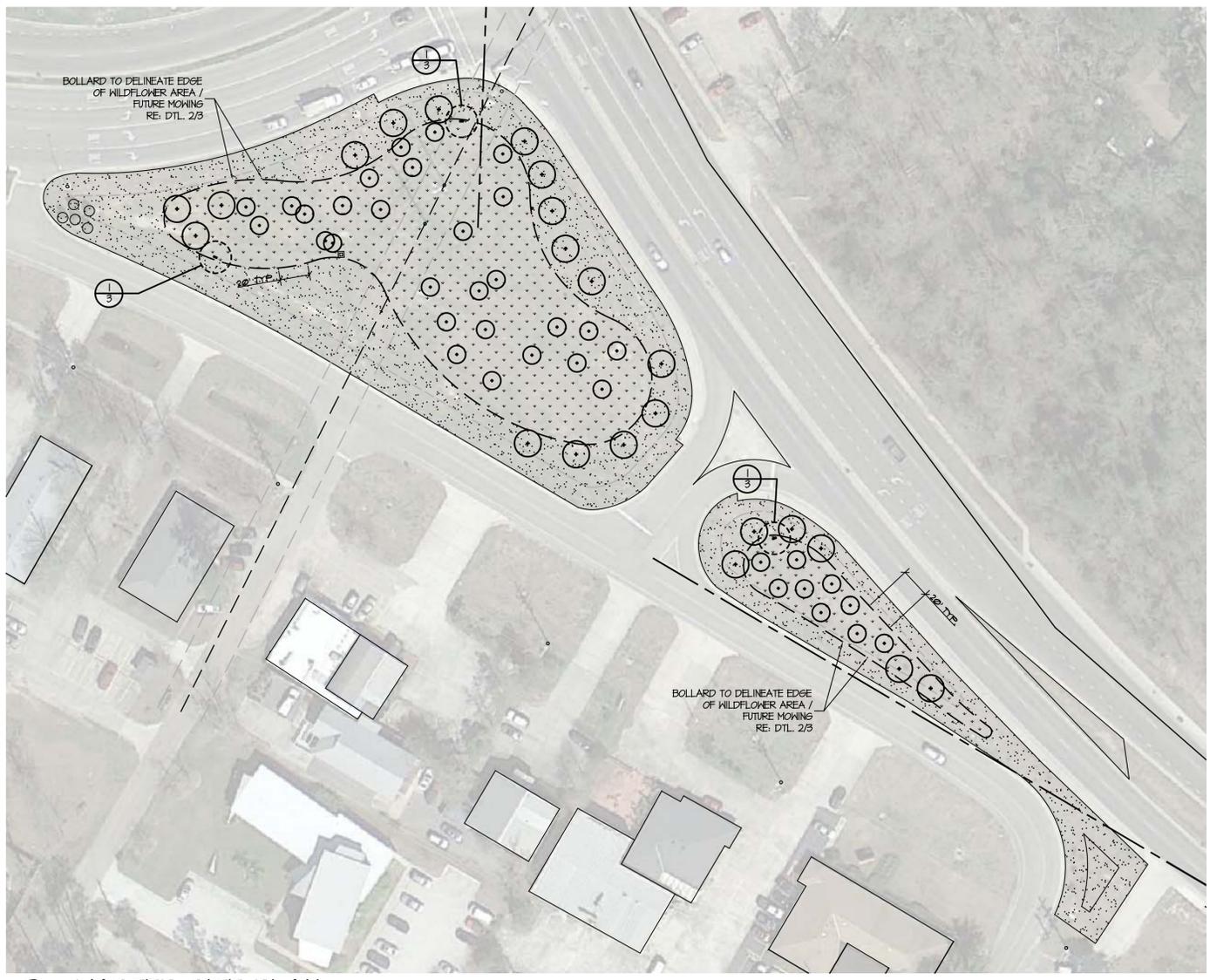
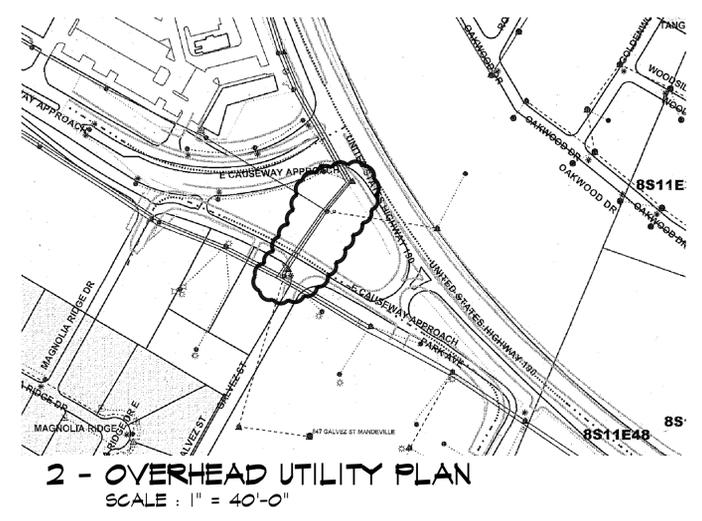
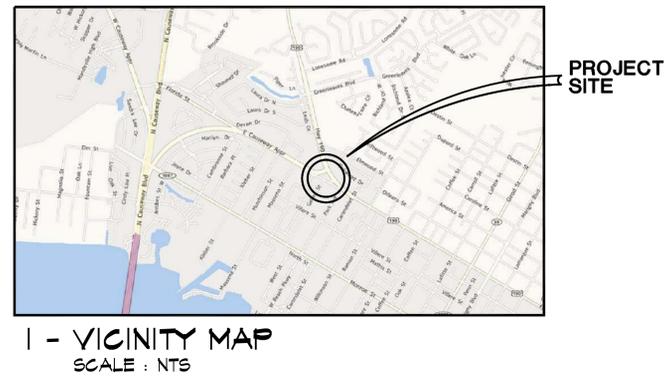
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SYMBOL KEY	
DETAIL NO. / PAGE NO. / SECTION NO./SH.	
DETAIL NO. / PAGE NO. / ELEVATION NO./SH.	
REVISION NO.	
DETAIL NO. / PAGE NO. / DETAIL NO. / SH.	
NEW ELEVATION MARK	
EXIST. ELEVATION MARK	
PROPERTY LINE	
CENTER LINE	

- INDEX TO DRAWINGS**
1. GENERAL NOTES / BOLLARD AND SIGN PLAN
 2. TREE-PLANTING PLAN
 3. LAYOUT PLAN / TREE INSTALLATION DETAILS
 4. IRRIGATION PLAN AND DETAILS
 5. LANDSCAPE AND IRRIGATION SPECIFICATIONS



General Notes

- All project base information is based on engineering survey information provided by the Client.
- The contractor shall supply all materials in quantities sufficient to complete the work shown on all drawings.
- Contractor shall notify Landscape Architect of errors and/or omissions in plans prior to commencing work.
- Contractor is responsible for determining the location and depth of all underground utilities prior to the commencement of work.
- Contractor shall stake-out all work in the field for inspection/approval by Landscape Architect prior to construction.
- All excess material to be removed from site by contractor.
- Contractor is responsible for verifying all existing conditions and dimensions and to report any discrepancies to the Landscape Architect prior to the commencement of work.
- Contractor is responsible for applying for and obtaining all necessary permits as required by the City of Mandeville, St. Tammany Parish, and the State of Louisiana.
- All plant material shall conform to the guidelines established by the current "American Standard for Nursery Stock", published by the American Association of Nurserymen or equivalent.
- Landscape Architect reserves the right to alter plant locations in the field without cost to the owner.
- All bed areas not identified on drawings shall be staked out in the field by the Landscape Architect.
- Contractor shall notify Landscape Architect of delivery of plant materials to the site for inspection prior to unloading. Landscape Architect reserves the right to reject any plant materials due to poor health, damage, or if materials do not meet specifications.
- All plants shall bear the same relationship to finished grade as the plants' original grade before digging.
- All plants shall be installed as per details and the contract.
- All plants and stakes shall be set plumb unless otherwise specified.
- All plants shall be watered thoroughly twice during the first 24-hour period after planting. All plants shall then be watered weekly or more often, if necessary, during the first growing season. The Landscape Contractor shall refer to the contract specifications for additional requirements.
- The Landscape Contractor shall refer to the plant list for seasonal requirements and other restrictions related to the time of planting.
- All plants shall be balled and wrapped or container grown as specified. No container grown stock will be accepted if it is root bound. All material made of synthetics or plastics shall be removed at time of planting.
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- With container grown stock, the container shall be removed and the container ball shall be cut through the surface vertically in two locations.
- The contractor shall be required to attend a Pre-Bid meeting as scheduled by the landscape architect.
- The contractor shall visit the site and thoroughly acquaint himself with all aspects of the construction outlined in this document prior to submitting a bid. Any discrepancies shall be brought immediately to the attention of the landscape architect.
- The contractor shall provide all necessary safety apparatus required to insure the health of workers as well as the owners and general public.
- The contractor shall provide any site demolition / utility relocation necessary for completion of work.
- The existing survey represents general locations of improvements. It shall be the general contractor's responsibility to locate all improvements on site.
- The general contractor shall verify all existing underground utilities' exact locations prior to excavation work. Repair of the system shall be the responsibility of the general contractor should they be damaged during the course of this construction project.
- Prior to alteration, addition, or tie-in, all damage by contractor shall be properly repaired by the general contractor, at the contractor's expense.
- The contractor shall keep the site clear of trash and construction debris during construction on a weekly basis.
- The contractor shall be responsible for permits and any changes for tie-in to existing streets and utilities.
- In no way do the dimensions shown on the plans represent an exact quantity of materials. The bidder is solely responsible for the quantities in his bid.
- The storage of materials on-site shall be allowed. Under no circumstances will staging be allowed on pre-existing lawn or garden areas. Any damage to existing lawn surfaces or garden / landscape areas shall require immediate restoration to original condition by general contractor.
- All removed topsoil shall be stored and used for finish grading. The contractor shall be responsible for removal and disposal of all debris material prior to finish grading.
- Fine grading and sod shall extend over entire site as per landscape plan.
- Contractor shall prevent erosion of stockpiled topsoil.
- Removal and disposal of all substances and material is to be accomplished according to specifications and Federal, State, and local regulations.
- All materials shall be new except where otherwise noted and shall conform with the standards of Underwriter's Laboratory in every case where such a standard has been established for the particular type of material in question.
- All work shall be performed in accordance with all applicable National and State codes and regulations.
- The contractor shall obtain and pay all necessary permits, and after completion, furnish owner certifications of final inspections and approval.
- All required tests shall be made in accordance with the latest standards of the NEC. The tests shall be made in the presence of the owner or their representative.
- All concrete shall be a minimum 3,000 PSI at 28 days and a minimum of 3-1/2" thick.
- The contractor shall provide for positive drainage around the building at all times.
- All exterior slabs (exposed to weather) shall be sloped so that all surfaces drain in a positive manner.
- All formwork is to be set true and plumb, bracing shall be adequate to maintain required lines.
- All portions of this project shall be bid as drawn. Any part of this project excluded in the contractor's bid shall be submitted in writing at the time of the bid submittal.

Causeway Approach Wildflower Restoration Area
Landscape and Irrigation Improvements
Mandeville, Louisiana

SITEPLAN / GEN. NOTES

CONSTRUCTION DOCUMENTS

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