

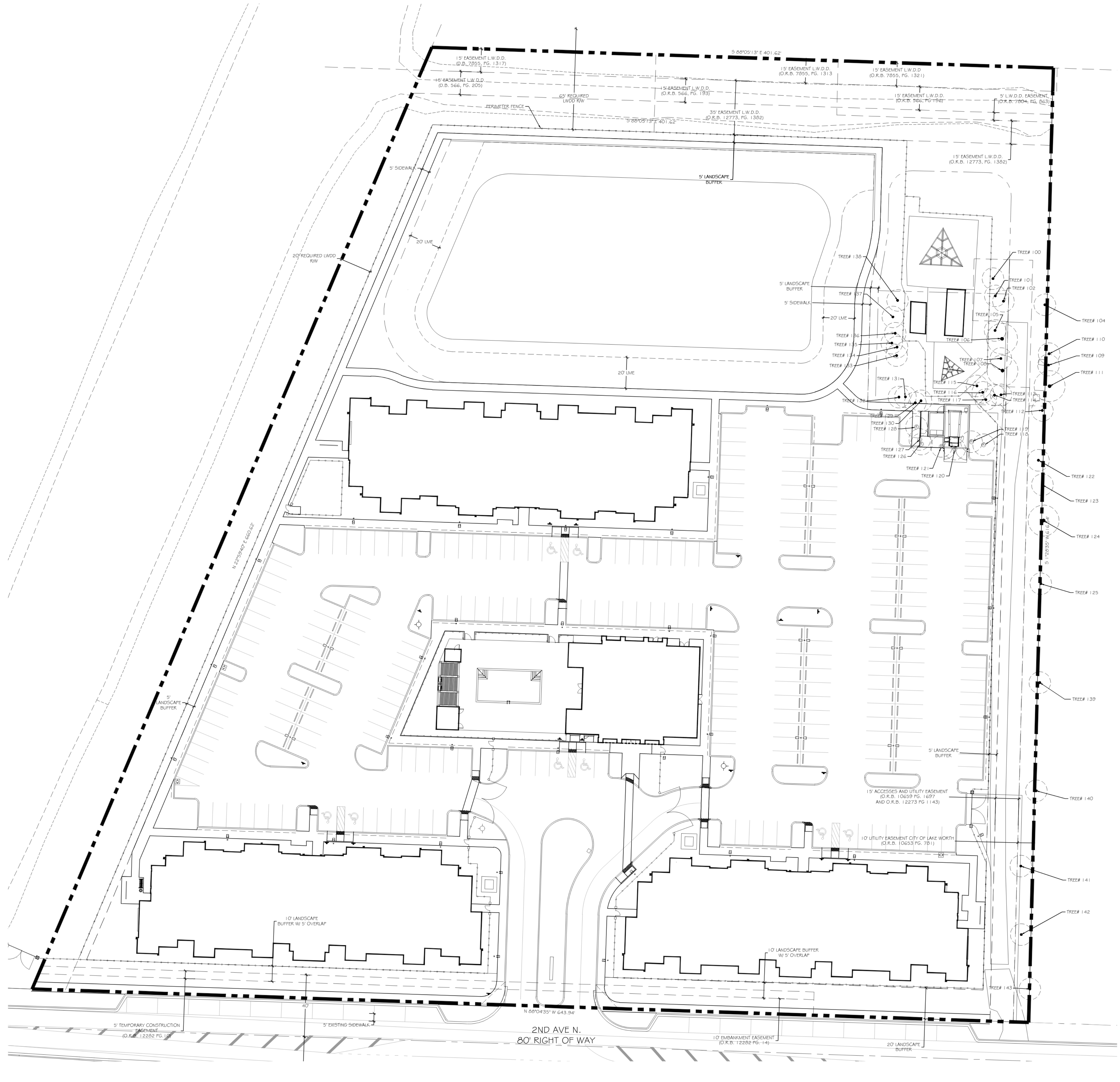
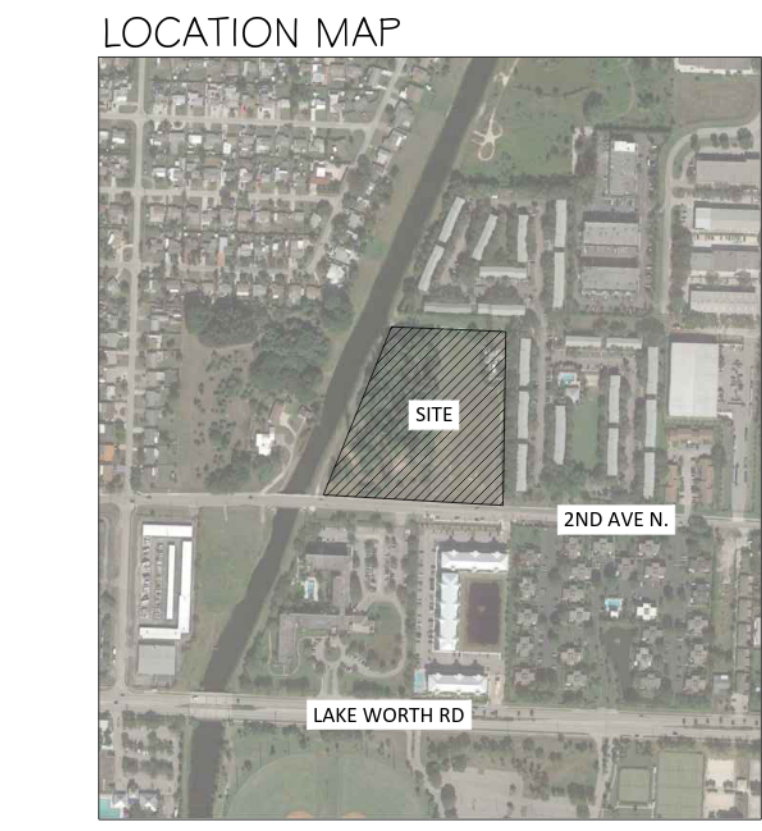
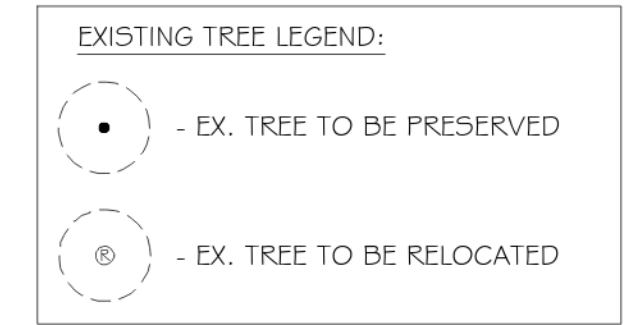
Consultants:

Revisions:
 7/29/22- Comments
 10/12/22- Comments
 03/13/23- Resubmittal

RESIDENCES AT LAKE WORTH
 Lake Worth, Florida
 Richman Group Development

TAG #:	SPECIES:	DBH:	DISPOSITION:	NOTES:
100	CABBAGE PALM	24"	PRESERVE	
101	CABBAGE PALM	24"	PRESERVE	
102	CABBAGE PALM	24"	PRESERVE	
104	CABBAGE PALM	15"	PRESERVE	
105	CABBAGE PALM	15"	PRESERVE	
106	LIVE OAK	20"	PRESERVE	
107	CABBAGE PALM	18"	PRESERVE	
108	LIVE OAK	24"	PRESERVE	
109	CABBAGE PALM	20"	PRESERVE	
110	CABBAGE PALM	20"	PRESERVE	
111	LIVE OAK	24"	PRESERVE	
112	CABBAGE PALM	20"	PRESERVE	
113	CABBAGE PALM	15"	PRESERVE	
114	CABBAGE PALM	14"	PRESERVE	
115	CABBAGE PALM	20"	PRESERVE	
116	CABBAGE PALM	20"	PRESERVE	
117	CABBAGE PALM	12"	PRESERVE	
118	CABBAGE PALM	12"	RELOCATE	
119	CABBAGE PALM	24"	RELOCATE	
120	CABBAGE PALM	24"	RELOCATE	
121	CABBAGE PALM	24"	RELOCATE	
122	CABBAGE PALM	30"	PRESERVE	
123	CABBAGE PALM	24"	PRESERVE	
124	LIVE OAK	30"	PRESERVE	
125	CABBAGE PALM	24"	PRESERVE	
126	CABBAGE PALM	18"	RELOCATE	
127	CABBAGE PALM	18"	RELOCATE	
128	CABBAGE PALM	18"	RELOCATE	
129	CABBAGE PALM	30"	PRESERVE	
130	CABBAGE PALM	18"	PRESERVE	
131	CABBAGE PALM	30"	PRESERVE	
132	CABBAGE PALM	18"	PRESERVE	
133	CABBAGE PALM	18"	PRESERVE	
134	CABBAGE PALM	18"	PRESERVE	
135	CABBAGE PALM	30"	PRESERVE	
136	CABBAGE PALM	30"	PRESERVE	
137	CABBAGE PALM	24"	PRESERVE	
138	CABBAGE PALM	30"	PRESERVE	
139	CABBAGE PALM	12"	PRESERVE	
140	CABBAGE PALM	18"	PRESERVE	
141	CABBAGE PALM	12"	PRESERVE	
142	CABBAGE PALM	12"	PRESERVE	
143	CABBAGE PALM	18"	PRESERVE	

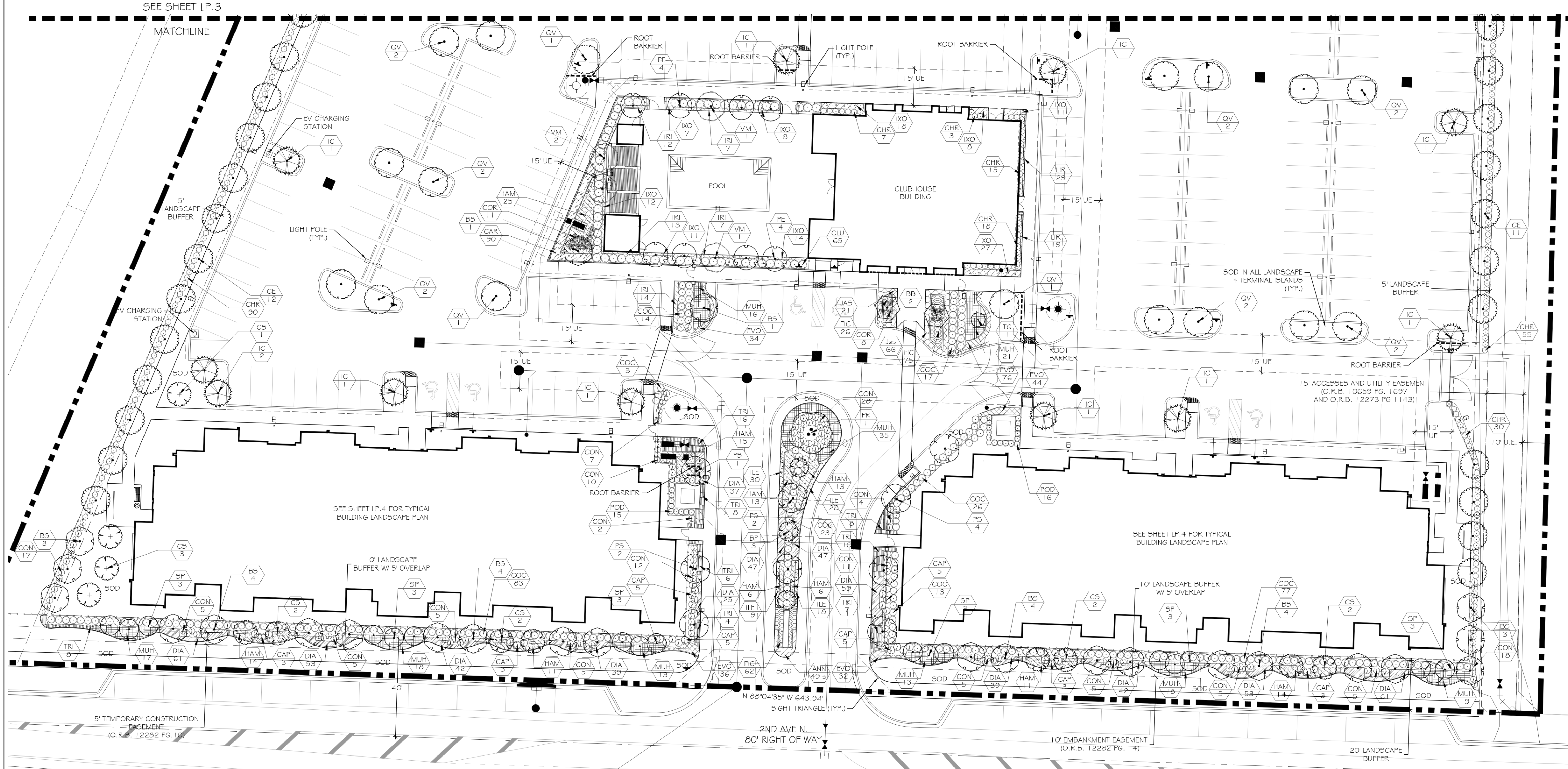
NOTES:
 -EXISTING TREE AND PALM LOCATIONS AND SIZES PROVIDED BY TREE AND TOPO SURVEY BY CAULFIELD & WHEELER, INC.
 -ALL RELOCATED TREE MATERIAL MUST HAVE IRRIGATION AT TIME OF INSTALLATION.



Consultants:

Revisions:
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RESIDENCES AT LAKE WORTH
 Lake Worth, Florida
 Richman Group Development

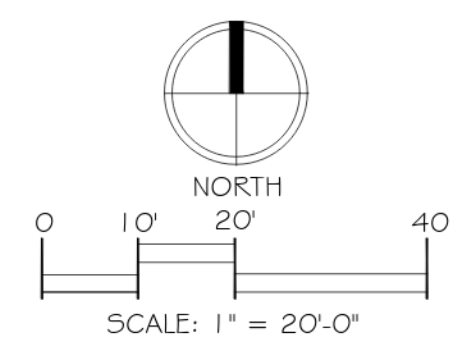
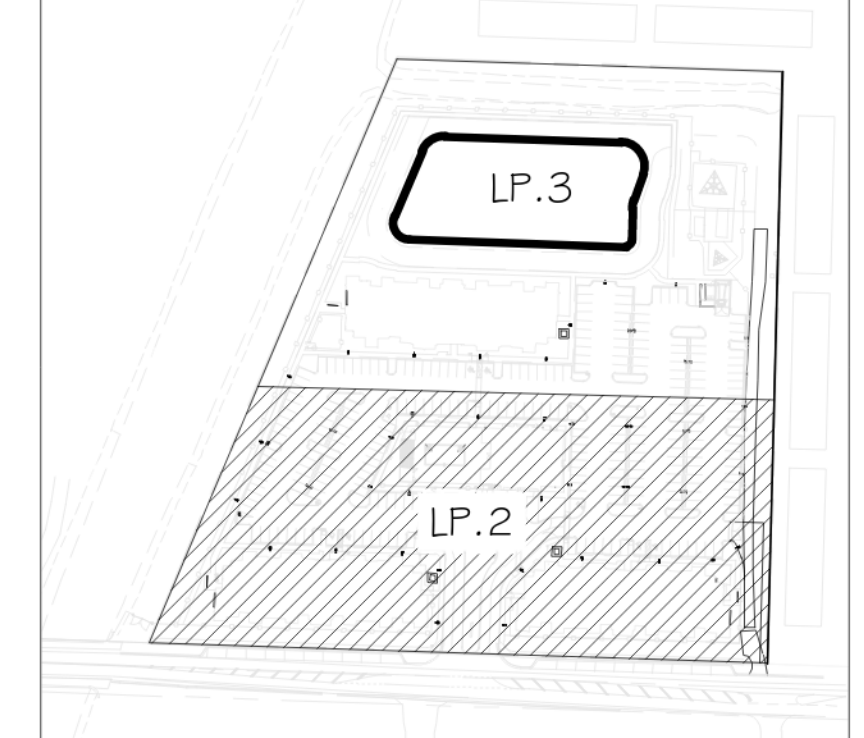


LANDSCAPE REQUIREMENT CHART:

LOCATION/ AREA	CODE REQUIREMENT	REQUIRED	PROVIDED
NORTH PL: 401.62 L.F. 5' LANDSCAPE BUFFER (SHEET LP.3)	1 TREE PER 20 L.F. 2' HT. HEDGE	20 TREES 2' HT. HEDGE	20 TREES 2' HT. HEDGE
EAST PL: 616.54 L.F. 5' LANDSCAPE BUFFER (SHEETS LP.2 & LP.3)	1 TREE PER 20 L.F. 2' HT. HEDGE	31 TREES 2' HT. HEDGE	31 TREES 2' HT. HEDGE
WEST PL: 660.62 L.F. 5' LANDSCAPE BUFFER (SHEETS LP.2 & LP.3)	1 TREE PER 20 L.F. 2' HT. HEDGE	33 TREES 2' HT. HEDGE	33 TREES 2' HT. HEDGE
SOUTH PL: 643.94 L.F. MINUS ENTRANCE = 584.3 L.F. 10' LA. BUFFER W/ OVERLAP 20' LANDSCAPE BUFFER (SHEET LP.2)	1 SMALL TREE PER 15 L.F. OR 1 MEDIUM TREE PER 20 L.F. OR 1 LARGE TREE PER 25 L.F. 2' HT. HEDGE & GROUNDCOVER	39 SMALL TREES OR 30 MEDIUM TREES OR 24 LARGE TREES 2' HT. HEDGE & GROUNDCOVER	24 LARGE TREES 6' HT. HEDGE & GROUNDCOVER
NATIVE TREE REQ5: (SHEET LP.2 & LP.3)	75% OF ALL REQUIRED TREES	75% OF TOTAL	89% OF TOTAL
NATIVE PLANTING REQ5: (SHEET LP.2 & LP.3)	75% OF ALL REQUIRED VEGETATION	75% OF TOTAL	92% OF TOTAL
TREES AND PALMS OVERALL SITE: (SHEET LP.2 & LP.3)	PALMS SHALL NOT BE MORE THAN 20% OF REQUIRED TREES	PALMS 20% OR LESS OF REQUIRED TREES	TREES: 191 (89.3%) PALMS: 23 (10.7%)

NOTES:
 -AREAS LABELED 'SOD' TO BE ST. AUGUSTINE SOD.
 -All RELOCATED TREE MATERIAL MUST HAVE IRRIGATION AT TIME OF
 INSTALLATION.

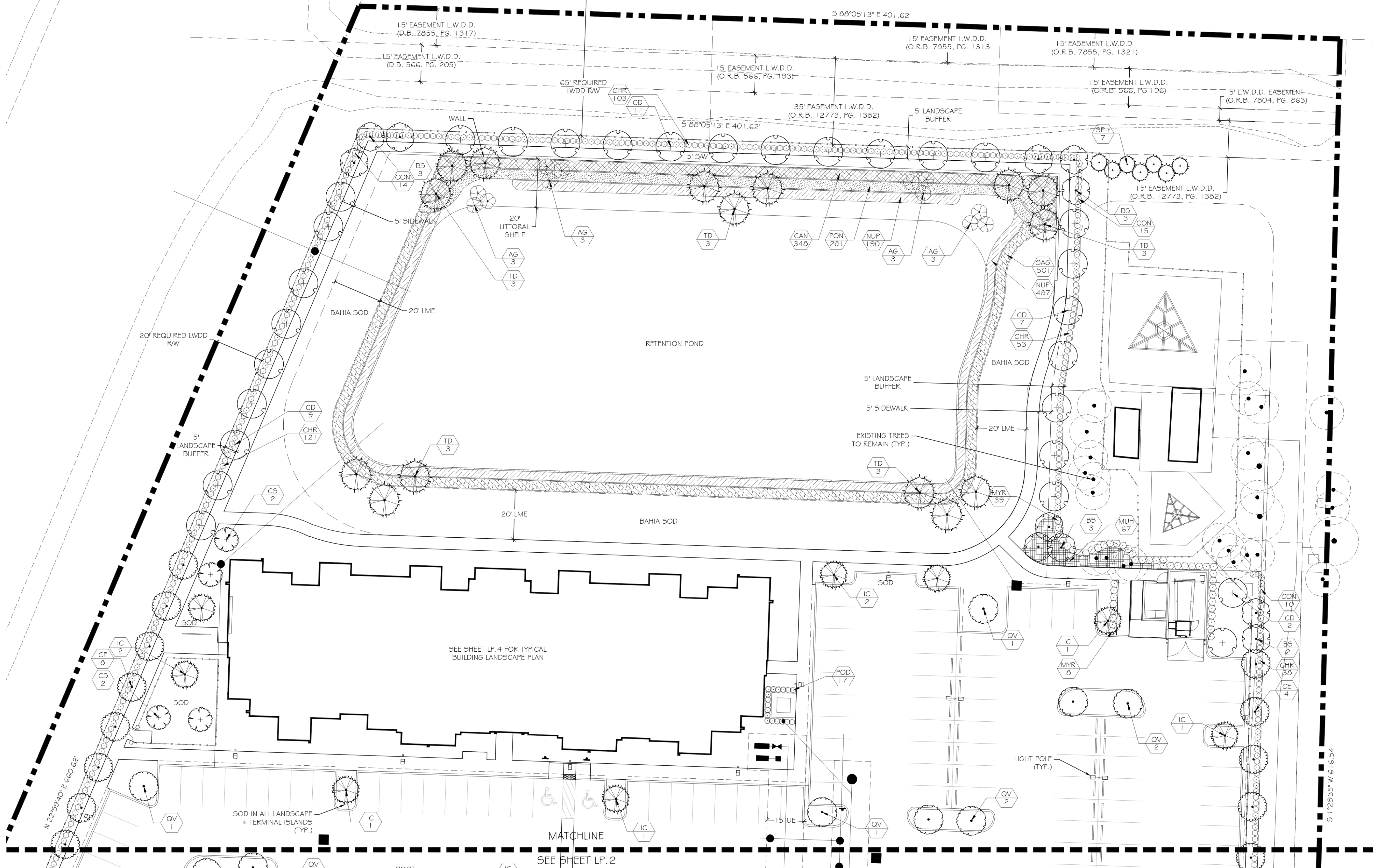
KEY MAP



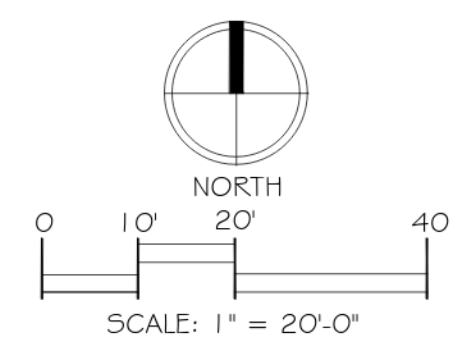
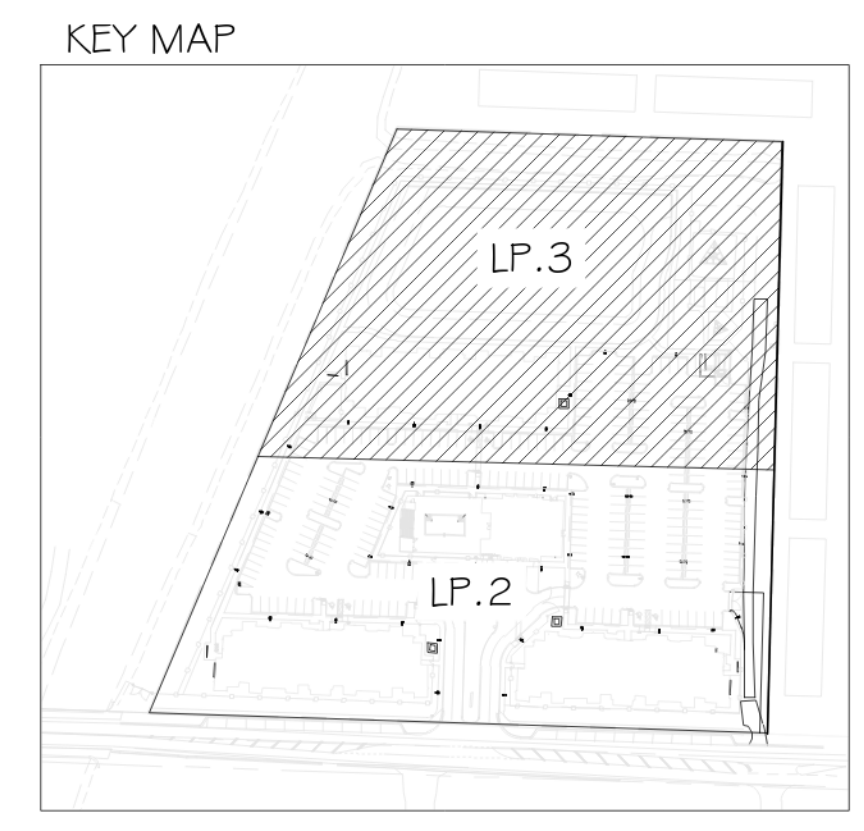
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NOTES:
 -AREAS LABELED "SOD" TO BE ST. AUGUSTINE SOD.
 -ALL RELOCATED TREE MATERIAL MUST HAVE IRRIGATION AT TIME OF INSTALLATION.
 -SEE SHEET LP.2 FOR PLANT SCHEDULE.



GENERAL CONDITIONS

A. CONTRACT DOCUMENTS: Shall consist of specifications and its general conditions and the drawings. The intent of these documents is to include all labor, materials, and services necessary for the proper execution of the work. The documents are to be considered as one. Whatever is called for by any parts shall be as binding as if called for in all parts.

B. VERIFICATION: The Contractor shall verify measurements on the drawings before beginning work. In case of error or discrepancy in the drawings or specifications or in the work of others affecting his/her work, he/she shall notify the Owner's Representative immediately. The Contractor shall be held responsible for any damages or loss due to his/her failure to observe these instructions.

C. MATERIALS, MACHINERY, EMPLOYEES: Except as otherwise noted, the Contractor shall provide and pay for all materials, labor, tools, and other items necessary and incidental to the completion of his/her work.

D. SURVEYS, PERMITS, REGULATIONS: The Owner shall furnish an adequate survey of the property. The Contractor shall obtain and pay for all permits and comply with all laws and ordinances bearing on the operation or conduct of the work as drawn and specified.

E. PROTECTION OF WORK, PROPERTY AND PERSON: The Contractor shall adequately protect the work, adjacent property, and the public, and shall be responsible for any damages or injury due to his/her actions.

F. CHANGES IN THE WORK: The owner may order changes in the work, and the contract sum being adjusted accordingly. All such orders and adjustments plus claims by the Contractor for extras must be made in writing before the work is commenced.

G. CORRECTION OF WORK: The Contractor shall re-execute any work that fails to conform to the requirements of the contract and shall remedy defects due to faulty materials or workmanship upon written notice from the Owner's Representative for a period of ninety (90) days from the date of completion of the contract.

H. Owner's Authorized Representative: The Owner's authorized representative acts as the authorized representative of the Owner in conjunction with the project manager, and has authority to accept or reject materials or workmanship and to make minor changes in the work not involving extra cost. He will also interpret the meaning of the contract documents and may stop the work if necessary to ensure its proper execution.

I. CLARIFICATION OF DRAWINGS BEFORE BIDDING: After reviewing the drawings thoroughly it is the Contractor's responsibility to clarify with the Owner's Representative any questions the Contractor may have regarding the method of construction, quantities, or quality of materials included or called out. If the Contractor cannot contact the Owner's Representative, the Contractor must qualify his/her bid or accept the interpretation of the Owner's Representative on the questionable areas as they develop during construction.

J. SAMPLES: The Owner's Representative reserves the right to take and analyze samples of materials for conformity to specifications at any time. The Contractor shall furnish samples upon request by the Owner's Representative. Rejected materials shall be immediately removed from the site and replaced at the Contractor's expense. The cost of testing materials not meeting specifications shall be paid by the Contractor.

K. PRE-CONSTRUCTION CONFERENCE: Schedule a pre-construction meeting with the Owner's Representative at least seven (7) days before beginning work. The purpose of this conference is to review any questions the Contractor may have regarding the work, administrative procedures during construction and project work schedule.

015639 Tree and Plant Protection

PART 1 GENERAL

1.1 SUMMARY The scope of work includes all labor, materials, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with protection of existing trees and other plants as shown on the drawings and as specified herein.

- 1. Provide preconstruction evaluations
2. Provide tree and plant protection fencing.
3. Provide protection of root zones and above ground tree and plants
4. Provide pruning of existing trees and plants.
5. Coordinate with the requirements of Section Planting Soil for modifications to the soil within the root zone of existing trees and plants.
6. Provide all insect and disease control.
7. Provide maintenance of existing trees and plants including irrigation during the construction period as recommended by the arborist report.
8. Provide maintenance of existing trees and plants including irrigation during the post construction plant maintenance period.
9. Remove tree protection fencing and other protection from around and under trees and plants.
10. Clean up and disposal of all excess and surplus material.

1.2 CONTRACT DOCUMENTS

A. Shall consist of specifications and general conditions and the drawings. The intent of these documents is to include all labor, materials, and services necessary for the proper execution of the work. The documents are to be considered as one. Whatever is called for by any parts shall be as binding as if called for in all parts.
B. It is the intent of this section that the requirements apply to all sections of the project specification such that any subcontractor must comply with the restrictions on work within designated Tree and Plant Protection Areas.

1.3 RELATED DOCUMENTS AND REFERENCES

- A. Related Documents:
1. Drawings and general provisions of contract including general and supplementary conditions and Division I specifications apply to work of this section.
2. Section - Planting
B. References: The following specifications and standards of the organizations and documents listed in this paragraph form a part of the specification to the extent required by the references thereto. In the event that the requirements of the

All terms in this specification shall be as defined in the "Glossary of Arboricultural Terms" or as modified below.
Owner's Representative: The person appointed by the Owner to represent their interest in the review and approval of the work and to serve as the contracting authority with the Contractor. The Owner's Representative or Owner may appoint other persons to review and approve any aspects of the work, such as the landscape architect who prepared the plans.
B. Reasonable and reasonably: When used in this specification is intended to mean that the conditions cited will not affect the establishment or long term stability, health or growth of the plant. This specification recognizes that plants are not free of defects, and that plant conditions change with time. This specification also recognizes that some decisions cannot be totally based on measured findings and that professional judgment is required. In cases of differing opinion, the Owner's Representative expert shall determine when conditions within the plant are judged as reasonable.
C. Shrub: Woody plants with mature height approximately less than 25 feet.
D. Tree and Plant Protection Area: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and defined by a circle centered on the trunk with each tree with a radius equal to the crown dipline unless otherwise indicated by the owner's representative.
E. Tree: Single and multi-stemmed plants, including palms with anticipated mature height approximately greater than 25 feet or any plant identified on the plans as a tree.

1.10 SUBMITTALS

A. PRODUCT DATA: Submit manufacturer product data and literature describing all products required by this section to the Owner's Representative for approval. Provide submittal four weeks before the start of any work at the site.

1.11 OBSERVATION OF THE WORK

A. The Owner's Representative may inspect the work at any time.

1.12 PRE-CONSTRUCTION CONFERENCE

A. Schedule a pre - construction meeting with the Owner's Representative at least seven (7) days before beginning work to review any questions the Contractor may have regarding the work, administrative procedures during construction and project work schedule.

1.13 QUALITY ASSURANCE

- A. Contractor qualifications:
1. All pruning, branch tie-back, tree removal, root pruning, and fertilizing required by this section shall be performed by or under the direct supervision of ISA Certified Arborist Submit aforementioned individual's qualifications for approval by the Owner's Representative.
2. All applications of pesticide or herbicide shall be performed by a person maintaining a current state license to apply chemical pesticides valid in the jurisdiction of the project. Submit copies of all required state licensing certificates including applicable chemical applicator licenses.
B. Irrigation subcontractor
C. Prior to this meeting, mark all trees and plants to remain and or be removed as described in this specification for review and approval by the Owner's Representative.

2.1 QUALITY ASSURANCE

- A. Contractor qualifications:
1. All pruning, branch tie-back, tree removal, root pruning, and fertilizing required by this section shall be performed by or under the direct supervision of ISA Certified Arborist Submit aforementioned individual's qualifications for approval by the Owner's Representative.
2. All applications of pesticide or herbicide shall be performed by a person maintaining a current state license to apply chemical pesticides valid in the jurisdiction of the project. Submit copies of all required state licensing certificates including applicable chemical applicator licenses.
B. Irrigation subcontractor
C. Prior to this meeting, mark all trees and plants to remain and or be removed as described in this specification for review and approval by the Owner's Representative.

PART 2 PRODUCTS

- 2.3 TREE PROTECTION FENCING:
A. PLASTIC MESH FENCE: Heavy - duty orange plastic mesh fencing fabric 48 inches wide. Fencing shall be attached to metal "U" or "T" post or wooden post driven into the ground of sufficient depth to hold the fabric solidly in place with out sagging. The fabric shall be attached to the post using attachment ties of sufficient number and strength to hold up the fabric without sagging. The Owner's Representative may request, at any time, additional post, deeper post depths and or additional fabric attachments if the fabric begins to sag, lean or otherwise not present a sufficient barrier to access.
B. GATES: For each fence type and in each separate fenced area, provide a minimum of one 3 foot wide gate. Gates shall be lockable. The location of the gates shall be approved by the Owner's Representative.
C. Submit suppliers product data that product meets the requirements for approval.
2.4 Tree protection sign:
A. Heavy-duty cardboard signs, 8.5 inches x 11 inches, white colored background with black 2 inch high or larger letters block letters. The signs shall be attached to the tree protection fence every 50 feet o.c. The tree protection sign shall read "Tree and Plant Protection Area - Keep Out".
2.5 TREE GROWTH REGULATOR (TGR)
A. Cambast 25C
B. Submit suppliers product data that product meets the requirements for approval.

2.6 MATTING

A. Matting for vehicle and work protection shall be heavy duty matting designed for vehicle loading over tree roots, aluminum mats as manufactured by Alumamats, Inc. Franklin, PA 16323 or approved equal.
B. Submit suppliers product data that product meets the requirements for approval.

2.7 GEOGRID

- A. Geogrid shall be woven polyester fabric with PVC coating, Uni-axial or biaxial geogrid, inert to biological degradation, resistant to naturally occurring chemicals, alkalis, acids.
1. Geogrid shall be Miragrid ZXT as manufactured by Ten Cate Nicolon, Norcross, GA. http://www.tencate.com or approved equal.
B. Submit suppliers product data that product meets the requirements for approval.
2.8 FILTER FABRIC
A. Filter Fabric shall be nonwoven polypropylene fibers, inert to biological degradation and resistant of naturally occurring chemicals, alkalis and acids.
1. Miraf 135 N as manufactured by Ten Cate Nicolon, Norcross, GA. http://www.tencate.com or approved equal.
B. Submit suppliers product data that product meets the requirements for approval.

PART 3 EXECUTION

- A. SITE EXAMINATION
A. Examine the site, tree, plant and soil conditions. Notify the Owner's Representative in writing of any conditions that may impact the successful Tree and Plant Protections that is the intent of this section.
B. Prior to the start of work, prepare a detailed schedule of the work for coordination with other trades.
C. Coordinate the relocation of any irrigation lines currently present on the irrigation plan, heads or the conduits of other utility lines or structures that are in conflict with tree locations. Root balls shall not be altered to fit around lines. Notify the Owner's Representative of any conflicts encountered.
3.3 TREE AND PLANT PROTECTION AREA: The Tree and Plant Protection Area is defined as all areas indicated on the tree protection plan. Where no limit of the Tree and Plant Protection Area is defined on the drawings, the limit shall be the drip line (outer edge of the branch crown) of each tree.
3.4 Preparation:
A. Prior to the preconstruction meeting, layout the limits of the Tree and Plant Protection Area and then alignments of required Tree and Plant Protection Fencing and root pruning. Obtain the Owner's Representative's approval of the limits of the protection area and the alignment of all fencing and root pruning.
B. Flag all trees and shrubs to be removed by wrapping orange plastic ribbon around the trunk and obtain the Owner's Representative's approval of all trees and shrubs to be removed prior to the start of tree and shrub removal. After approval, mark all trees and shrubs to be removed with orange paint in a band completely around the base of the tree or shrub 4.5 feet above the ground.
C. Flag all trees and shrubs to remain with white elastic ribbon tied completely around the trunk or each tree and on a

- inches of Wood Chips or Mulch.
4. Areas where heavy vehicle traffic is unavoidable provide a layer of Geogrids under 8 - 12 inches of Wood Chips or Mulch and a layer of matting over the Wood Chips or Mulch.
B. The Owner's Representative shall approve the appropriate level of protection.
C. In the above requirements, light vehicle is defined as a track sick steer with a ground pressure of 4 psi or lighter. A heavy vehicle is any vehicle with a tire or track pressure of greater than 4 psi. Lightweight materials are any packaged materials that can be physically moved by hand into the location. Bulk materials such as soil, or aggregate shall never be stored within the Tree and Plant Protection Area.
3.8 PROTECTION:
A. Protect the Tree and Plant Protection Area at all times from compaction of the soil; damage of any kind to trunks, bark, branches, leaves and roots of all plants; and contamination of the soil, bark or leaves with construction materials, debris, silt, fuels, oils, and any chemicals substance. Notify the Owner's Representative of any spills, compaction or damage and take corrective action immediately using methods approved by the Owner's Representative.

3.9 GENERAL REQUIREMENTS AND LIMITATIONS FOR OPERATIONS WITHIN THE TREE AND PLANT PROTECTION AREA

A. The Contractor shall not engage in any construction activity within the Tree and Plant Protection Area without the approval of the Owner's Representative including: operating, moving or storing equipment; storing supplies or materials; locating temporary facilities including trailers or portable toilets and shall not permit employees to traverse the area to access adjacent areas of the project or use the area for lunch or any other work breaks. Permitted activity, if any, within the Tree and Plant Protection Area may be indicated on the drawings along with any required remedial activity as listed below.
B. In the event that construction activity is unavoidable within the Tree and Plant Protection Area, notify the Owner's Representative and submit a detailed written plan of action for approval. The plan shall include: a statement detailing the reason for the activity including why other areas are not approved; a description of the proposed activity; the time period for the activity; and a list of remedial actions that will reduce the impact on the Tree and Plant Protection Area from the activity. Remedial actions shall include but shall not be limited to the following:
1. In general, demolition and excavation within the drip line of trees and shrubs shall proceed with extreme care either by the use of hand tools, directional boring and/or Air Knife excavation where indicated or with other low impact equipment that will not cause damage to the tree, roots or soil.
2. When encountered, exposed roots, 1 inches and larger in diameter shall be worked around in a manner that does not break the outer layer of the root surface (bark). These roots shall be covered in Wood Chips and shall be maintained above permanent wet point at all times. Roots one inch and larger in diameter shall not be cut with out the approval of the owners representative. Excavation shall be tunneled under these roots without cutting them. In the areas where roots are encountered, work shall be performed and scheduled to close excavations as quickly as possible over exposed roots.
3. Tree branches that interfere with the construction may be tied back or pruned to clear only to the point necessary to complete the work. Other branches shall only be removed when specifically indicated by the Owner's Representative. Tying back or trimming of all branches and the cutting of roots shall be in accordance with accepted arboricultural practices (ANSI A300, part 8) and be performed under supervision of the arborist.
4. Matting: Install temporary matting over the Wood Chips or Mulch to the extent indicated. Do not permit foot traffic, scaffolding or the storage of materials within the Tree and Plant Protection Area to occur off of the temporary matting.
5. Trunk Protection: Protect the trunk of each tree to remain by covering it with a ring of 8 foot long 2 inch x 6 - inch planks loosely banded onto the tree with 3 steel bands. Staple the bands to the planks as necessary to hold them securely in place. Trunk protection must be kept in place no longer than 12 months. If construction requires work near a particular tree to continue longer than 12 months, the steel bands shall be inspected every six months and loosened if they are found to have become tight.
6. Air Excavation Tool: If excavation for footings or utilities is required within the Tree and Plant Protection Area, air excavation tool techniques shall be used where practical or as designed on the drawings.
a. Remove the Wood Chips from an area approximately 18 inches beyond the limits of the hole or trench to be excavated. Cover the Wood Chips for a distance of not less than 15 feet around the limit of the excavation area with Filter Fabric or plastic sheeting to protect the Wood Chips from silt. Mound the Wood Chips so that the plastic slopes towards the excavation.
b. Using a sprinkler or soaker hose, apply water slowly to the area of the excavation for a period of at least 4 hours, approximately 12 hours prior to the work so that the ground water level is at or near field capacity at the beginning of the work. For excavations that go beyond the damp soil, rewet the soil as necessary to keep soil moisture near field capacity.
c. Using an air excavation tool specifically designed and manufactured for the intended purpose, and at pressures recommended by the manufacturer of the equipment, fracture the existing soil to the shape and the depths required. Work at rates and using techniques that do not harm tree roots. Air pressure shall be a maximum of 90-100 psi.
1) The air excavation tool shall be "Air-Spade" as manufactured by Concept Engineering Group, Inc., Verona, PA (412) 828-8802, or Air Knife as manufactured by Easy Use Air Tools, Inc. Allison Park, Pa. (866) 328-5723 or approved equal.
d. Using a commercial, high-powered vacuum truck if required, remove the soil from the excavation produced by the Air Knife excavation. The vacuum truck should generally operate simultaneously with the hose operator, such that the soil produced is picked up from the excavation hole, and the exposed roots can be observed and not damaged by the ongoing operation. Do not drive the vacuum truck into the Tree and Plant Protection Area unless the area is protected from compaction as approved in advance by the Owner's Representative.
e. Remove all excavated soil and excavated Wood Chips, and contaminated soil at the end of the excavation.
f. Schedule the work so that foundations or utility work is completed immediately after the excavation. Do not let the roots dry out. Mist the roots several times during the day. If the excavated area must remain open over night, mist the roots and cover the excavation with black plastic.
g. Dispose of all soil in a manner that meets local laws and regulations.
h. Restore soil within the trench as soon as the work is completed. Utilize soil of similar texture to the removed soil and lightly compact with hand tools. Leave soil mounded over the trench to a height of approximately 10% of the trench depth to account for settlement.
i. Restore any Geogrids, Filter Fabric, Wood Chips or Mulch and or matting that was previously required for the area.

1.11 OBSERVATION OF THE WORK
A. The Owner's Representative may inspect the work at any time.

1.12 PRE-CONSTRUCTION CONFERENCE
A. Schedule a pre - construction meeting with the Owner's Representative at least seven (7) days before beginning work to review any questions the Contractor may have regarding the work, administrative procedures during construction and project work schedule.

- 1. The following Contractors shall attend the preconstruction conference:
a. General Contractor.
b. Consulting Arborist.
c. Subcontractor assigned to install Tree and Plant Protection measures.
d. Earthwork Contractor.
e. All site utility Contractors that may be required to dig or trench into the soil.
f. Landscape subcontractor.
g. Irrigation subcontractor
B. Prior to this meeting, mark all trees and plants to remain and or be removed as described in this specification for review and approval by the Owner's Representative.

1.13 QUALITY ASSURANCE
A. Contractor qualifications:
1. All pruning, branch tie-back, tree removal, root pruning, and fertilizing required by this section shall be performed by or under the direct supervision of ISA Certified Arborist Submit aforementioned individual's qualifications for approval by the Owner's Representative.
2. All applications of pesticide or herbicide shall be performed by a person maintaining a current state license to apply chemical pesticides valid in the jurisdiction of the project. Submit copies of all required state licensing certificates including applicable chemical applicator licenses.
B. Irrigation subcontractor
C. Prior to this meeting, mark all trees and plants to remain and or be removed as described in this specification for review and approval by the Owner's Representative.

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B. Irrigation subcontractor
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a. General Contractor.
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d. Earthwork Contractor.
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1.14 QUALITY ASSURANCE
A. Contractor qualifications:
1. All pruning, branch tie-back, tree removal, root pruning, and fertilizing required by this section shall be performed by or under the direct supervision of ISA Certified Arborist Submit aforementioned individual's qualifications for approval by the Owner's Representative.
2. All applications of pesticide or herbicide shall be performed by a person maintaining a current state license to apply chemical pesticides valid in the jurisdiction of the project. Submit copies of all required state licensing certificates including applicable chemical applicator licenses.
B. Irrigation subcontractor
C. Prior to this meeting, mark all trees and plants to remain and or be removed as described in this specification for review and approval by the Owner's Representative.

- 3.17 Removal of fencing and other Tree and plant protection
A. At the end of the construction period or when requested by the Owner's Representative remove all fencing, Wood Chips or Mulch, Geogrids and Filter Fabric, trunk protection and or any other Tree and Plant Protection material.
3.18 DAMAGE OR LOSS TO EXISTING PLANTS TO REMAIN
B. Any trees or plants designated to remain and which are damaged by the Contractor shall be replaced in kind by the Contractor at their own expense. Trees shall be replaced with a tree of similar species and of equal size or 6 inch caliper which ever is less. Shrubs shall be replaced with a plant of similar species and equal size or the largest size plants reasonably available which ever is less. Where replacement plants are to be less than the size of the plant that is damaged, the Owner's Representative shall approve the size and quality of the replacement plant.
1. All trees and plants shall be installed per the requirements of Specification Section Planting.
C. Plants that are damaged shall be considered as requiring replacement or appraisal in the event that the damage affects more than 25 % of the crown, 25% of the trunk circumference, or root protection area, or the tree is damaged in such a manner that the tree could develop into a potential hazard. Trees and shrubs to be replaced shall be removed by the Contractor at his own expense.
1. The Owner's Representative may engage an independent arborist to assess any tree or plant that appears to have been damaged to determine their health or condition.
C. Any tree that is determined to be dead, damaged or potentially hazardous by the Owner's arborist and upon the request of the Owner's Representative shall be immediately removed by the Contractor at no additional expense to the owner. Tree removal shall include all clean up of all wood parts and grinding of the stump to a depth sufficient to plant the replacement tree or plant, removal of all chips from the stump site and filling the resulting hole with topsoil.
D. Any remedial work on damaged existing plants recommended by the consulting arborist shall be completed by the Contractor at no cost to the owner. Remedial work shall include but is not limited to: soil compaction remediation and vertical mulching, pruning and or cabling, insect and disease control including injections, compensatory watering, additional mulching, and could include application free growth regulators (TGR).
E. Remedial work may extend up to two years following the completion of construction to allow for any requirements of multiple applications or the need to undertake applications at required seasons of the year.

END OF SECTION 015639

SECTION 32 9300

PLANTING

PART 1 GENERAL

1.1 SUMMARY

- A. The scope of work includes all labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of plant (also known as "landscaping") complete as shown on the drawings and as specified herein.
B. The scope of work in this section includes, but is not limited to, the following:
1. Locate, purchase, deliver and install all specified plants.
2. Water all specified plants.
3. Mulch, fertilize, stake, and prune all specified plants.
4. Maintenance of all specified plants until the beginning of the warranty period.
5. Plant warranty.
6. Clean up and disposal of all excess and surplus material.
7. Maintenance of all specified plants during the warranty period.

1.2 CONTRACT DOCUMENTS

A. Shall consist of specifications and general conditions and the construction drawings. The intent of these documents is to include all labor, materials, and services necessary for the proper execution of the work. The documents are to be considered as one. Whatever is called for by any parts shall be as binding as if called for in all parts.

1.3 RELATED DOCUMENTS AND REFERENCES

- A. Section - Tree Protection and Plant Protection
B. References: The following specifications and standards of the organizations and documents listed in this paragraph form a part of the specification to the extent required by the references hereto. In the event that the requirements of the following referenced standards and specification conflict with this specification section the requirements of this specification shall prevail. In the event that the requirements of any of the following referenced standards and specifications conflict with each other the more stringent requirement shall prevail or as determined by the Owners Representative.
1. State of California, Department of Food and Agriculture, Regulations for Nursery Inspections, Rules and Grading.
2. ANSI Z60.1 American Standard for Nursery Stock, most current edition.
3. ANSI A 300 - Standard Practices for Tree, Shrub and other Woody Plant Maintenance, most current edition and parts.
4. Florida Grades and Standards for Nursery Stock, current edition (Florida Department of Agriculture, Tallahassee FL).
5. Interpretation of plant names and descriptions shall reference the following documents. Where the names or plant descriptions disagree between the several documents, the most current document shall prevail.
a. USDA - The Woodyplant Resources Information Network (GRIN) http://www.ars-grin.gov/cgi-bin/searchgrin.html
b. Manual of Woody Landscape Plants, Michael Dirr; Stipes Publishing, Champaign, Illinois; Most Current Edition.
c. The New Sunset Western Garden Book, Oxmoor House, most current edition.
6. Pruning practices shall conform to recommendations "Structural Pruning: A Guide For The Green Industry" most current edition; published by Urban Tree Foundation, Visalia, California.
7. Glossary of Arboricultural Terms, International Society of Arboriculture, Champaign IL, most current edition.

1.4 VERIFICATION

A. All scaled dimensions on the drawings are approximate. Before proceeding with any work, the Contractor shall carefully check and verify all dimensions and quantities, and shall immediately inform the Owner's Representative of any discrepancies between the information on the drawings and the following referenced standards and specifications conflict with each other the more stringent requirement shall prevail or as determined by the Owners Representative.
B. In the case of a discrepancy in the plant quantities between the plan drawings and the plant call outs, list or plant schedule, the number of plants or square footage of the planting bed actually drawn on the plan drawings shall be deemed correct and prevail.

1.5 PERMITS AND REGULATIONS

A. The Contractor shall obtain and pay for all permits related to this section of the work unless previously excluded under provision of the contract or general conditions. The Contractor shall comply with all laws and ordinances bearing on the operation or conduct of the work as drawn and specified. If the Contractor observes that a conflict exists between permit requirements and the work outlined in the contract documents, the Contractor shall promptly notify the Owner's Representative in writing including a description of any necessary changes and changes to the contract price resulting from changes in the work.
B. Wherever references are made to standards or codes in accordance with which work is to be performed or tested, the edition or revision of the standards and codes current on the effective date of this contract shall apply, unless otherwise expressly set forth.
C. In case of conflict among any referenced standards or codes or between any referenced standards and codes and the specifications, the more restrictive standard shall apply or Owner's Representative shall determine which shall govern.

1.6 PROTECTION OF WORK, PROPERTY AND PERSON

result in plants unacceptable to this project.

When reasonable or reasonably is used in relation to other issues such as weeds, diseases, insects, it shall mean at levels low enough that no treatment would be required when applying recognized Integrated Plant Management practices.

- This specification recognizes that some decisions cannot be totally based on measured findings and that professional judgment is required. In cases of differing opinion, the Owner's Representative's expert shall determine when conditions are judged as reasonable.
M. Root ball: The mass of roots including any soil or substrate that is shipped with the tree within the root ball package.
N. Root ball package: The material that surrounds the root ball during shipping. The root package may include the material in which the plant was grown, or new packaging placed around the root ball for shipping.
O. Root collar (root crown, root flare, trunk flare): The region at the base of the trunk where the majority of the structural roots join the plant stem, usually at or near ground level.
P. Shrub: Woody plants with mature height approximately less than 15 feet.
Q. Spade harvested and transplanted: Field grown trees that are mechanically harvested and immediately transplanted to the final growing site without being removed from the digging machine.
R. Stem: The trunk of the tree.
S. Substantial Completion Acceptance: The date at the end of the Planting, Planting Soil, and Irrigation installation where the Owner's Representative accepts that all work in these sections is complete and the Warranty period has begun. This date may be different than the date of substantial completion for the other sections of the project.
T. Stem girdling root: Any root more than 1/4 inch diameter currently touching the trunk, or with the potential to touch the trunk, above the root collar approximately tangent to the trunk circumference or circling the trunk. Roots shall be considered as Stem Girdling that have, or are likely to have in the future, root to trunk bark contact.
U. Structural root: One of the largest roots emerging from the root collar.
V. Tree: Single and multi-stemmed plants with mature height approximately greater than 15 feet.

1.10 SUBMITTALS

- A. See contract general conditions for policy and procedure related to submittals.
B. Submit all product submittals 4 weeks prior to installation of plantings.
C. Product data: Submit manufacturer product data and literature describing all products required by this section to the Owner's Representative for approval. Provide submittal four weeks before the installation of plants.
D. Plant growers' certificates: Submit plant growers' certificates for all plants indicating that each meets the requirements of the specification, including the requirements of tree quality, to the Owner's Representative for approval. Provide submittal four weeks before the installation of plants.
E. Samples: Submit samples of each product and material where required by the specification to the Owner's Representative for approval. Label samples to indicate product, characteristics, and locations in the work. Samples will be reviewed for appearance only. Compliance with all other requirements is the exclusive responsibility of the Contractor.
F. Plant sources: Submit sources of all plants as required by Article - "Selection of Plants" to the Owner's Representative for approval.
G. Close out submittals: Submit to the Owner's Representative for approval.
1. Plant maintenance data and requirements.
H. Warranty period site visit record: If there is no maintenance during the warranty period, after each site visit during the warranty period, by the Contractor, as required by this specification, submit a written record of the visit, including any problems, potential problems, and any recommended corrective action to the Owner's Representative for approval.

1.11 OBSERVATION OF THE WORK

A. The Owner's Representative may observe the work at any time. They may remove samples of materials for conformity to specifications. Rejected materials shall be immediately removed from the site and replaced at the Contractor's expense. The cost of testing materials not meeting specifications shall be paid by the Contractor.
B. The Owner's Representative shall be informed of the progress of the work so the work may be observed at the following key times in the construction process. The Owner's Representative shall be afforded sufficient time to schedule visit to the site. Failure of the Owner's Representative to make field observations shall not relieve the Contractor from meeting all the requirements of this specification.

- 1. SITE CONDITIONS PRIOR TO THE START OF PLANTING: review the soil and drainage conditions.
2. COMPLETION OF THE PLANT LAYOUT STAKING: Review of the plant layout.
3. PLANT QUALITY: Review of plant quality at the time of delivery and prior to installation. Review tree quality prior to unloading where possible, but in all cases prior to planting.
4. COMPLETION OF THE PLANTING: Review the completed planting.

1.12 PRE-CONSTRUCTION CONFERENCE

A. Schedule a pre-construction meeting with the Owner's Representative at least seven (7) days before beginning work to review any questions the Contractor may have regarding the work, administrative procedures during construction and project work schedule.

1.13 QUALITY ASSURANCE

- A. Substantial Completion Acceptance - Acceptance of the work prior to the start of the warranty period:
1. Once the Contractor completes the installation of all items in this section, the Owner's Representative will observe all work for Substantial Completion Acceptance upon written request of the Contractor. The request shall be received at least ten calendar days before the anticipated date of the observation.
2. Substantial Completion Acceptance by the Owner's Representative shall be for general conformance to specified size, character and quality and not relieve the Contractor of responsibility for full conformance to the contract documents, including correct species.
3. Any plants that are deemed defective as defined under the provisions below shall not be accepted.
B. The Owner's Representative will provide the Contractor with written acknowledgment of the date of Substantial Completion Acceptance and the beginning of the warranty period and plant maintenance period (if plant maintenance is included).
C. Contractor's Quality Assurance Responsibilities: The Contractor is solely responsible for quality control of the work.
D. Installer Qualifications: The installer shall be a firm having at least 5 years of successful experience of a scope similar to that required for the work, including the handling and planting of large specimen trees in urban areas. The same firm shall install planting soil (where applicable) and plant material.

- 1. The bidders list for work under this section shall be approved by the Owner's Representative.
2. Installer Field Supervision: When any planting work is in progress, installer shall maintain, on site, a full-time supervisor who can communicate in English with the Owner's Representative.
3. Installer's field supervisor shall have a minimum of five years experience as a field supervisor installing plants and trees of the quality and scale of the proposed project, and can communicate in English with the Owner's Representative.
4. The installer's crew shall have a minimum of 3 years experienced in the installation of Planting Soil, Plantings, and Irrigation (where applicable) and interpretation of soil plans, planting plans and irrigation plans.

E. 1.14 PLANT WARRANTY:

- 1. The Contractor agrees to replace defective work and defective plants. The Owner's Representative shall make the final determination if plants meet these specifications or that plants are defective.
Plants warranty shall begin on the date of Substantial Completion Acceptance and continue for the following periods, classed by plant type:
d. Trees - 1 Year(s).
e. Shrubs - 1 Year(s).
f. Ground cover and perennial flower plants -1 Year(s).
g. Bulbs, annual flower and seasonal color plants - for the period of expected bloom or primary display.
2. When the work is accepted in parts, the warranty periods shall extend from each of the partial Substantial



Consultants:

Submittal list for work under this section shall be approved by the Owner's Representative.
1. The bidders list for work under this section shall be approved by the Owner's Representative.
2. Installer Field Supervision: When any planting work is in progress, installer shall maintain, on site, a full-time supervisor who can communicate in English with the Owner's Representative.
3. Installer's field supervisor shall have a minimum of five years experience as a field supervisor installing plants and trees of the quality and scale of the proposed project, and can communicate in English with the Owner's Representative.
4. The installer's crew shall have a minimum of 3 years experienced in the installation of Planting Soil, Plantings, and Irrigation (where applicable) and interpretation of soil plans, planting plans and irrigation plans.

Revisions:

7/29/22- Comments

10/12/22- Comments

03/13/23- Resubmittal

Table with 2 columns: Revision Number, Description

SIDENCES AT LAKE WORTH Lake Worth, Florida hman Group Development

1.15 SELECTION AND OBSERVATION OF PLANTS

A. The Owner's Representative may review all plants subject to approval of size, health, quality, character, etc. Review or approval of any plant during the process of selection, delivery, installation and establishment period shall not prevent that plant from later rejection in the event that the plant quality changes or previously existing defects become apparent that were not observed.

B. Plant Selection: The Owner's Representative reserves the right to select and observe all plants at the nursery prior to delivery and to reject plants that do not meet specifications as set forth in this specification. If a particular defect or substandard element can be corrected at the nursery, as determined by the Owner's Representative, the agreed upon remedy may be applied by the nursery or the Contractor provided that the correction allows the plant to meet the requirements set forth in this specification. Any work to correct plant defects shall be at the contractor's expense.

1. The Owner's Representative may make invasive observation of the plant's root system in the area of the root collar and the top of the root ball in general in order to determine that the plant meets the quality requirements for depth of the root collar and presence of roots above the root collar. Such observations will not harm the plant.

2. Corrections are to be undertaken at the nursery prior to shipping.

C. The Contractor shall bear all cost related to plant corrections.

D. All plants that are rejected shall be immediately removed from the site and acceptable replacement plants provided at no cost to the Owner.

E. Submit to the Owner's Representative, for approval, plant sources including the names and locations of nurseries proposed as sources of acceptable plants, and a list of the plants they will provide. The plant list shall include the botanical and common name and the size at the time of selection. Observe all nursery materials to determine that the materials meet the requirements of this section.

F. The Contractor shall require the grower or re-wholesale supplier to permit the Owner's Representative to observe the root system of all plants at the nursery or job site prior to planting including random removal of soil or substrate around the base of the plant. Observation may be as frequent and as extensive as needed to verify that the plants meet the requirements of the specifications and conform to requirements.

G. Where requested by the Owner's Representative, submit photographs of plants or representative samples of plants. Photographs shall be legible and clearly depict the plant specimen. Each submitted image shall contain a height reference, such as a measuring stick. The approval of plants by the Owner's Representative via photograph does not preclude the Owner's Representative's right to reject material while on site.

1.16 PLANT SUBSTITUTIONS FOR PLANTS NOT AVAILABLE

A. Submit all requests for substitutions of plant species, or size to the Owner's Representative, for approval, prior to purchasing the proposed substitution. Request for substitution shall be accompanied with a list of nurseries contacted in search for the required plant and a record of other attempts to locate the required material. Requests shall also include sources of plants found that may be of a smaller or larger size, or a different shape or habit than specified, or plants of the same genus and species but different cultivar origin, or which may otherwise not meet the requirements of the specifications, but which may be available for substitution.

1.17 SITE CONDITIONS

A. It is the responsibility of the Contractor to be aware of all surface and sub-surface conditions, and to notify the Owner's Representative, in writing, of any circumstances that would negatively impact the health of plantings. Do not proceed with work until unsatisfactory conditions have been corrected.

1. Should subsurface drainage or soil conditions be encountered which would be detrimental to growth or survival of plant material, the Contractor shall notify the Owner's Representative in writing, stating the conditions and submit a proposal covering cost of corrections. If the Contractor fails to notify the Owner's Representative of such conditions, he/she shall remain responsible for plant material under the warranty clause of the specifications.

B. It is the responsibility of the Contractor to be familiar with the local growing conditions, and if any specified plants will be in conflict with these conditions. Report any potential conflicts, in writing, to the Owner's Representative.

C. This specification requires that all Planting Soil and Irrigation (if applicable) work be completed and accepted prior to the installation of any plants.

1. Planting operations shall not begin until such time that the irrigation system is completely operational for the area(s) to be planted, and the irrigation system for that area has been preliminarily observed and approved by the Owner's Representative.

D. Actual planting shall be performed during those periods when weather and soil conditions are suitable in accordance with locally accepted horticultural practices.

1. Do not install plants into saturated or frozen soils. Do not install plants during inclement weather, such as rain or snow, or during extremely hot, cold or windy conditions.

1.18 PLANTING AROUND UTILITIES

A. Contractor shall carefully examine the civil, record, and survey drawings to become familiar with the existing underground conditions before digging.

B. Determine location of underground utilities and perform work in a manner that will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until parties concerned mutually agree upon removal.

C. Notification of Local Utility Locator Service, Sunshine 811, is required for all planting areas. The Contractor is responsible for knowing the location and avoiding utilities that are not covered by Sunshine 811.

PART 2 PRODUCTS

2.1 PLANTS: GENERAL

A. Standards and measurement: Provide plants of quantity, size, genus, species, and variety or cultivars as shown and scheduled in contract documents.

1. All plants including the root ball dimensions or container size to trunk caliper ratio shall conform to ANSI Z60.1 "American Standard for Nursery Stock" latest edition, unless modified by provisions in this specification. When there is a conflict between this specification and ANSI Z60.1, this specification section shall be considered correct.

2. Plants larger than specified may be used if acceptable to the Owner's Representative. Use of such plants shall not increase the contract price. If larger plants are accepted the root ball size shall be in accordance with ANSI Z-60.1. Larger plants may not be acceptable if the resulting root ball cannot be fit into the required planting space.

3. If a range of size is given, no plant shall be less than the minimum size and not less than 50 percent of the plants shall be as large as the maximum size specified. The measurements specified are the minimum and maximum size acceptable and are the measurements after pruning, where pruning is required.

B. Proper Identification: All trees shall be true to name as ordered or shown on planting plans.

C. Compliance: All trees shall comply with federal and state laws and regulations requiring observation for plant disease, pests, and weeds. Observation certificates required by law shall accompany each shipment of plants.

D. Plant Quality:

1. **General:** Provide healthy stock, grown in a nursery and reasonably free of die-back, disease, insects, eggs, borers, and larvae. At the time of planting all plants shall have a root system, stem, and branch form that will not restrict normal growth, stability and health for the expected life of the plant

2. **Plant quality above the soil line:**

a. Plants shall be healthy with the color, shape, size and distribution of trunk, stems, branches, buds and leaves normal to the plant type specified. Tree quality above the soil line shall comply with the Florida Grades and Standards tree grade Florida Fancy or Florida #1 and the following:

1.) Crown: The form and density of the crown shall be typical for a young specimen of the species or cultivar pruned to a central and dominant leader.

a.) Crown specifications do not apply to plants that have been specifically trained in the nursery as topiary, espalier, multi-stem, clump, or unique selections such as contorted or weeping cultivars.

2.) Leaves: The size, color, and appearance of leaves shall be typical for the time of year and stage of growth of the species or cultivar. Trees shall not show signs of prolonged moisture stress or over watering as indicated by wilted, shriveled, or dead leaves.

3.) Branches: Shoot growth (length and diameter) throughout the crown should be appropriate for the age and size of the species or cultivar. Trees shall not have dead, diseased, broken, distorted, or otherwise injured

5.) The root system shall be reasonably free of stem girdling roots over the root collar or kninked roots from nursery production practices.

6.) At time of observations and delivery, the root ball shall be moist throughout. Rootball soil not show signs of excess soil moisture conditions as indicated by stunted, discolored, distorted, or dead roots.

E. Submittals: Submit for approval the required plant quality certifications from the grower where plants are to be purchased, for each plant type. The certification must state that each plant meets all the above plant quality requirements.

1. The grower's certification of plant quality does not prohibit the Owner's Representative from observing any plant or rejecting the plant if it is found to not meet the specification requirements.

2.2 **ROOT BALL PACKAGE OPTIONS:** The following root ball packages are permitted. Specific root ball packages shall be required where indicated on the plant list or in this specification. Any type of root ball packages that is not specifically defined in this specification shall not be permitted.

A. BALLED AND BURLAPPED PLANTS

1. All Balled and Burlapped Plants shall be field grown, and the root ball packaged in a burlap and twine and/or burap and wire basket package.

2. Plants shall be harvested with the following modifications to standard nursery practices.

a. Prior to digging any tree that fails to meet the requirement for maximum soil and roots above the root collar, carefully removed the soil from the top of the root ball of each plant, using hand tools, water or an air spade, to locate the root collar and attain the soil depth over the structural roots requirements. Remove all stem girdling roots above the root collar. Care must be exercised not to damage the surface of the root collar and the top of the structural roots.

b. Trees shall be dug for a minimum of 4 weeks and a maximum of 52 weeks prior to shipping. Trees dug 4 to 52 weeks after planting are defined as hardened-off. Digging is defined as cutting all roots and lifting the tree out of the ground and either moving it to a new location in the nursery or cutting it back into the same hole. Trees that are stored out of the ground shall be placed in a holding area protected from extremes of wind and sun with the root ball protected by covering with mulch or straw and irrigated sufficiently to keep moisture in the root ball above wilt point and below saturation

c. If wire baskets are used to support the root ball, a "low profile" basket shall be used. A low profile basket is defined as having the top of the highest loops on the basket no less than 4 inches and no greater than 8 inches below the shoulder of the root ball package. The basket shall be removed completely at time of planting.

1.) At nurseries where sandy soils prevent the use of "low profile baskets", baskets that support the entire root ball, including the top, are allowable.

d. Twine and burrap used for wrapping the root ball package shall be natural, biodegradable material. If the burrap decomposes after digging the tree then the root ball shall be re-wrapped prior to shipping if roots have not yet grown to keep root ball intact during shipping.

SPADE HARVESTED AND TRANSPLANTED

1. Spade Harvested and Transplanted Plants shall meet all the requirements for field grown trees. Root ball diameters shall be of similar size as the ANSI Z60.1 requirements for Balled and Burlapped plants.

2. Trees shall be harvested prior to leafing out (bud break) in the spring or during the fall planting period except for plants known to be considered as fall planting hazards. Plants that are fall planting hazards shall only be harvested prior to leafing out in the spring.

3. Trees shall be moved and planted within 48 hours of the initial harvesting and shall remain in the spade machine until planted.

C. CONTAINER (INCLUDING ABOVE-GROUND FABRIC CONTAINERS AND BOXES) PLANTS

4. Container plants may be permitted only when indicated on the drawing, in this specification, or approved by the Owner's Representative.

5. Provide plants shall be established and well rooted in removable containers.

6. Container class size shall conform to ANSI Z60.1 for container plants for each size and type of plant.

D. BARE ROOT PLANTS

7. Harvest bare root plants while the plant is dormant and a minimum of 4 weeks prior to leaf out (bud break).

8. The root spread dimensions of the harvested plants shall conform to ANSI Z60.1 for nursery grown bare root plants for each size and type of plant. Just prior to shipping to the job site, dip the root system into a slurry of hydrogel (cross linked polyacrylamide) and water mixed at a rate of 15 oz. of hydrogel in 25 gallons of water. Do not shake off the excess hydrogel. Place the root system in a pleated black plastic bag and tie the bag snugly around the trunk. Bundle and tie the upper branches together.

9. Keep the trees in a cool dark space for storage and delivery. If daytime outside temperatures exceeds 70 degrees F, utilize a refrigerated storage area with temperature between 35 and 50 degrees.

10. Where possible, plan time of planting to be before bud break. For trees to be planted after bud break, place the trees before bud break in an irrigated bed of pea gravel.

a. The pea gravel bed shall be 18 inches deep over a sheet of plastic.

b. Space trees to allow the unbundled branches to grow without shading each other.

c. Once stored in pea gravel, allow the trees sufficient time for the new root system to flush and spring growth of leaves to fully develop before planting.

d. Pea gravel stored trees may be kept for up to one growing season.

e. Pea gravel stored trees shall be dipped, packaged and shipped similar to the requirements for freshly dug bare root trees above.

2.3 ANNUAL FLOWERING AND SEASONAL COLOR PLANTS

E. Container or flat-grown plants should be sized as noted in the planting plan. Plants shall be well-rooted and healthy.

2.4 PALMS

F. Except as modified below or where the requirements are not appropriate to the specification of palms, palms shall meet all the requirements of the plant quality section above.

D. Defending, tying, and hedging:

5. In preparing palm trees for relocation, all dead fronds shall be removed.

6. All remaining fronds above horizontal shall be lifted up and tied together around the crown in an upright position. Do not tie too tightly, bind or injure the bud. Jute binder twine shall be used in tying up the fronds; wire will not be permitted. Fronds shall be untied immediately after planting.

C. Digging the root ball:

1. When digging out the root ball, no excavation shall be done closer than 24 inches to the trunk at ground level and the excavation shall extend below the major root system to a minimum depth of 3.5 feet. The bottom of the root ball shall be cut off square and perpendicular to the trunk below the major root system.

D. The Contractor shall not free-fall, drag, roll or abuse the tree or put a strain on the crown (bud area) at any time. A protective device shall be used around the trunk of the tree while lifting and relocating so as not to injure the bud, or scar or skin the trunk in any way.

2.5 PLANTING SOIL

Planting Soil shall contain a mixture of 1/3 sand, 1/3 topsoil and 1/3 peat humus. Sand shall be clean, salt-free and containing no extraneous matter. Topsoil shall be friable fertile soil with representative characteristics of area soils. It should be free of heavy silt, stone, excess lime, shell rock, plant roots, debris or other foreign matter. It shall not contain noxious plant growth (such as bermuda, torpedo or nut grasses). It shall test between the pH range of 5.0 to 7.0 unless otherwise specified and contain no toxic residues or substances that would endanger plant growth. If topsoil is not available on site, it shall be imported from local sources with similar soil characteristics to that found at project site. obtain topsoil only from naturally, well-drained sites where topsoil occurs in a depth not less than 4". Peat humus shall be decomposed peat with no identifiable fibers or if available, muck may be substituted and shall be free from stones, excessive plant roots, debris or other foreign matter. muck shall not be overly saturated with water.

delivery, set plants in a location protected from sun and wind. Provide adequate water to the root ball package during the shipping and storage period.

1. All plant materials must be available for observation prior to planting.

2. Using a soil moisture meter, periodically check the soil moisture in the root balls of all plants to assure that the plants are being adequately watered. Volumetric soil moisture shall be maintained above wilting point and below field capacity for the root ball substrate or soil.

B. Do not deliver more plants to the site than there is space with adequate storage conditions. Provide a suitable remote staging area for plants and other supplies.

1. The Owner's Representative or Contractor shall approve the duration, method and location of storage of plants.

C. Provide protective covering over all plants during transporting.

3.2 ADVERSE WEATHER CONDITIONS

A. No planting shall take place during extremely hot, dry, windy or freezing weather.

3.3 COORDINATION WITH PROJECT WORK

A. The Contractor shall coordinate with all other work that may impact the completion of the work.

B. Prior to the start of work, prepare a detailed schedule of the work for coordination with other trades.

C. Coordinate the relocation of any irrigation lines, heads or the conduits of other utility lines that are in conflict with tree locations. Root balls shall not be allowed to fit around lines. Notify the Owner's Representative of any conflicts encountered.

3.4 LAYOUT AND PLANTING SEQUENCE

A. Relative positions of all plants and trees are subject to approval of the Owner's Representative.

B. Notify the Owner's Representative, one (1) week prior to layout. Layout all individual tree and shrub locations. Place plants above surface at planting location and place a labeled stake at planting location. Layout bed lines with paint for the Owner's Representative's approval. Secure the Owner's Representative's acceptance before digging and start of planting work.

C. When applicable, plant trees before other plants are installed.

D. It is understood that plants are not precise objects and that minor adjustments in the layout will be required as the planting plan is constructed. These adjustments may not be apparent until some or all of the plants are installed. Make adjustments as required by the Owner's Representative including relocating previously installed plants.

3.5 SOIL PROTECTION DURING PLANT DELIVERY AND INSTALLATION

A. Protect soil from compaction during the delivery of plants to the planting locations, digging of planting holes and installing plants.

1. Where possible deliver and plant trees that require the use of heavy mechanized equipment prior to final soil preparation and tilling. Where possible, restrict the driving lanes to one area instead of driving over and compacting a large area of soil.

2. Till to a depth of 6 inches, all soil that has been driven over during the installation of plants.

3.6 SOIL MOISTURE

A. Volumetric soil moisture level, in both the planting soil and the root balls of all plants, prior to, during and after planting shall be above permanent wilting point and below field capacity for each type of soil texture within the following ranges.

Soil type	Permanent wilting point	Field capacity
Sand, Loamy sand, Sandy loam	5 - 8%	12-18%
Loam, Sandy clay, Sandy clay loam	14 - 25%	27-36%
Clay loam, Silt loam	11 - 22%	31 - 36%
Silty clay, Silty clay loam	22 - 27%	38 - 41%

1. Volumetric soil moisture shall be measured with a digital moisture meter. The meter shall be the Digital Soil Moisture Meter, DSM500 by General Specialty Tools and Instruments, or approved equivalent.

B. The Contractor shall confirm the soil moisture levels with a moisture meter. If the moisture is too high, suspend planting operations until the soil moisture drains to below field capacity.

3.7 INSTALLATION OF PLANTS: GENERAL

C. Observe each plant after delivery and prior to installation for damage of other characteristics that may cause rejection of the plant. Notify the Owner's Representative of any condition observed.

D. No more plants shall be distributed about the planting bed area than can be planted and watered on the same day.

E. The root system of each plant, regardless of root ball package type, shall be observed by the Contractor, at the time of planting to confirm that the roots meet the requirements for plant root quality in Part 2 Products: Plants General: Plant Quality. The Contractor shall undertake at the time of planting, all modifications to the root system required by the Owner's Representative to meet these quality standards.

1. Modifications, at the time of planting, to meet the specifications for the depth of the root collar and removal of stem girdling roots and circling roots may make the plant unstable or stress the plant to the point that the Owner's Representative may choose to reject the plant rather than permitting the modification.

2. Any modifications required by the Owner's Representative to make the root system conform to the plant quality standards outlined in Part 2 Products: Plants General: Quality, or other requirements related to the permitted root ball package, shall not be considered as grounds to modify or void the plant warranty.

3. The resulting root ball may need additional staking and water after planting. The Owner's Representative may reject the plant if the root modification process makes the tree unstable or if the tree is not healthy at the end of the warranty period. Such plants shall still be covered under the warranty.

4. The Contractor remains responsible to confirm that the grower has made all required root modifications noted during any nursery observations.

F. Container and Boxed Root Ball Shaving: The outer surfaces of ALL plants in containers and boxes, including the top, sides and bottom of the root ball shall be shaved to remove all circling, descending, and matted roots. Shaving shall be performed using saws, knives, sharp shovels or other suitable equipment that is capable of making clean cuts on the roots. Shaving shall remove a minimum of one inch of root mat or up to 2 inches as required to remove all root segments that are not growing reasonably radial to the trunk.

G. Exposed Stem Tissue after Modification: The required root ball modifications may result in stem tissue that has not formed trunk bark being exposed above the soil line. If such condition occurs, wrap the exposed portion of the stem in a protective wrapping with a white filter fabric. Secure the fabric with biodegradable masking tape. DO NOT USE string, twine, green nursery ties or any other material that may girdle the trunk if not removed.

H. Excavation of the Planting Space: Using hand tools or tracked mini-excavator, excavate the planting hole into the Planting Soil to the depth of the root ball measured after any root ball modification to correct root problems, and wide enough for working room around the root ball or to the size indicated on the drawing or as noted below.

1. For trees and shrubs planted in soil areas that are NOT tilled or otherwise modified to a depth of at least 12 inches over a distance of more than 10 feet radius from each tree, or 5 feet radius from each shrub, the soil around the root ball shall be loosened as defined below or as indicated on the drawings.

a. The area of loosening shall be a minimum of 3 times the diameter of the root ball at the surface sloping to 2 times the diameter of the root ball at the depth of the root ball.

b. Loosening is defined as digging into the soil and turning the soil to reduce the compaction. The soil does not have to be removed from the hole, just dug, lifted and turned. Lifting and turning may be accomplished with a tracked mini excavator, or hand shovels.

2. If an auger is used to dig the initial planting hole, the soil around the auger hole shall be loosened as defined above for trees and shrubs planted in soil areas that are NOT tilled or otherwise modified.

3. The measuring point for root ball depth shall be the average height of the outer edge of the root ball after any required root ball modification.

4. If motorized equipment is used to deliver plants to the planting area over exposed planting beds, or used to loosen the soil or dig the planting holes, all soil that has been driven over shall be tilled to a depth of 6 inches.

away; do not fold down onto the Planting Soil.

2. If the plant is shipped with a wire basket that does not meet the requirements of a "Low Rise" basket, remove the top 6 - 8 inches of the basket wires just before the final backfilling of the tree.

3. Earth root balls shall be kept intact except for any modifications required by the Owner's Representative to make root package comply with the requirement in Part 2 Products.

C. SPADE HARVESTED AND TRANSPLANTED PLANTS

1. After installing the tree, loosen the soil along the stem between the root ball and the surrounding soil out to a radius from the root ball edge equal to the diameter of the root ball to a depth of 6 - 10 inches by hand digging to disturb the soil interface.

2. Fill any gaps below this level with loose soil.

D. CONTAINER (INCLUDES BOXED AND ABOVE-GROUND FABRIC CONTAINERS) PLANTS

1. This specification assumes that most container plants have significant stem girdling and circling roots, and that the root collar is to low in the root ball.

2. Remove the container.

3. Perform root ball shaving as defined in Installation of Plants: General above.

4. Remove all roots and substrate above the root collar and the main structural roots according to root correction details so root system conforms to root observations detail.

5. Remove all substrate at the bottom of the root ball that does not contain roots.

6. Using a hose, power washer or air excavation device, wash out the substrate from around the trunk and top of the remaining root ball and find and remove all stem girdling roots within the root ball above the top of the structural roots.

E. BARE ROOT PLANTS

1. Dig the planting hole to the diameter of the spread of the roots to a depth in the center that maintains the root collar at the elevation of the surrounding finished grade and slightly deeper along the edges of the hole.

2. Spread all roots out radial to the trunk in the prepared hole making the hole wider where needed to accommodate long roots. Root tips shall be directed away from the trunk. Prune any broken roots removing the least amount of tissue possible.

3. Maintain the trunk plumb while backfilling soil around the roots.

4. Lightly tamp the soil around the roots to eliminate voids and reduce settlement.

3.9 GROUND COVER, PERENNIAL AND ANNUAL PLANTS

A. Assure that soil moisture is within the required levels prior to planting. Irrigation, if required, shall be applied at least 12 hours prior to planting to avoid planting in muddy soils.

B. Assure that soil grades in the beds are smooth and as shown on the plans.

C. Plants shall be planted in even, triangular spaced rows, at the intervals called out for on the drawings, unless otherwise noted. The first row of Annual flower plants shall be 6 inches from the bed edge unless otherwise directed.

D. Dig planting holes sufficiently large enough to insert the root system without deforming the roots. Set the top of the root system at the grade of the soil.

E. Schedule the planting to occur prior to application of the mulch. If the bed is already mulched, pull the mulch from around the hole and plant into the soil. Do not plant the root system in the mulch. Pull mulch back so it is not on the root ball surface.

F. Press soil to bring the root system in contact with the soil.

G. Spread any excess soil around in the spaces between plants.

H. Apply mulch to the bed being sure not to cover the tops of the plants with or the tops of the root ball with mulch.

I. Water each planting area as soon as the planting is completed. Apply additional water to keep the soil moisture at the required levels. Do not over water.

3.10 PALM PLANTING

A. Palm trees shall be placed at grade making sure not to plant the tree any deeper in the ground than the palm trees originally stood.

B. The trees shall be placed with their vertical axis in a plumb position.

C. All backfill shall be native soil except in cases where planting in rock. Water-settle the back fill.

D. Do not cover root ball with mulch or topsoil.

E. Provide a watering berm at each plant. Berms shall extend a minimum of 18 inches out from the trunk all around and shall be a minimum of (6) inches high.

F. Remove twine which ties fronds together after placing palm in planting hole and securing it in the upright position.

3.11 STAKING AND GUYING

A. Do not stake or guy trees unless specifically required by the Contract Documents, or in the event that the Contractor feels that staking is the only alternative way to keep particular trees plumb.

6. The Owner's Representative shall have the authority to require that trees are staked or to reject staking as an alternative way to stabilize the tree.

7. Trees that required heavily modified root balls to meet the root quality standards may become unstable. The Owner's Representative will choose to reject these trees rather than utilize staking to temporarily support the tree.

B. Trees that are guyed shall have their guys and stakes removed after one full growing season or at other times as required by the Owner's Representative.

C. Tree guying shall utilize the tree staking and guying materials specified. Guying to be tied in such a manner as to create a minimum 12-inch loop to prevent girdling. Refer to manufacturer's recommendations and the planting detail for installation.

1. Plants shall stand plumb after staking or guying.

2. Stakes shall be driven to sufficient depth to hold the tree rigid.

D. For trees planted in planting mix over waterproofed membrane, use dead men buried 24 inches to the top of the dead man, in the soil. Tie the guy to the dead man with a double wrap of line around the dead man followed by a double half hitch. When guys are removed, leave the dead men in place and cut the guy tape 12 inches above the ground, leaving the tape end covered in mulch.

3.12 STRAIGHTENING PLANTS

A. Maintain all plants in a plumb position throughout the warranty period. Straighten all trees that move out of plumb including those not staked. Plants to be straightened shall be excavated and the root ball moved to a plumb position, and then re-backfilled.

B. Do not straighten plants by pulling the trunk with guys.

3.13 INSTALLATION OF FERTILIZER AND OTHER CHEMICAL ADDITIVES

A. Do not apply any soluble fertilizer to plantings during the first year after transplanting unless soil test determines that fertilizer or other chemical additives is required. Apply chemical additives only upon the approval of the Owner's Representative.

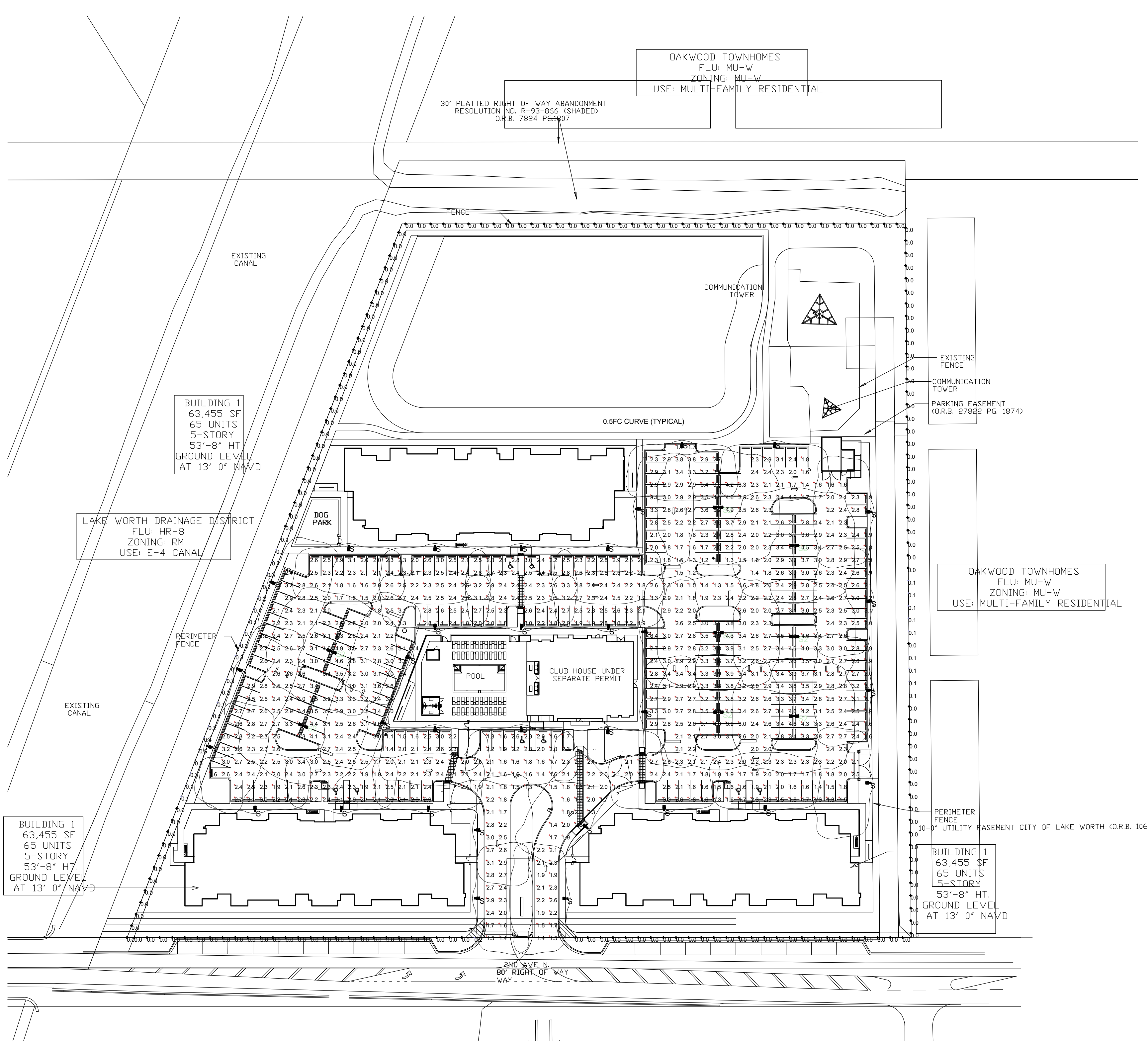
SEAL:

Javier Font AR No. 12547

PROPOSED RESIDENTIAL DEVELOPMENT
RESIDENCES AT LAKE WORTH
 2ND AVENUE NORTH
 LAKE WORTH, FLORIDA

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DATE:
 10-12-2022
 PROJECT NO:
 21-092
 DRAWING NAME:
 SITE LIGHTING
 PHOTOMETRIC PLAN
 SHEET NO:
A-0.1



Plan View
 Scale 1" = 50'

LUMINAIRE SCHEDULE									
Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens	LLF	Watts
	S	33	NLS LIGHTING NV-1-T4-48L-7-30K-UNV-HSS ON RTA DIRECT BURIAL POLE 20' AFG	SINGLE LED LUMINAIRE WITH HOUSE-SIDE SHIELD ON 20' AFG RTA POLE	WHT LED ARRAY, 30K, 80 CRI	NV-1-T4-48L-7-30K-HSS-IES	Absolute	0.85	104
	S2	8	NLS LIGHTING NV-1-T4-32L-7-30K-UNV ON RTA DIRECT BURIAL POLE 20' AFG	DOUBLE LED LUMINAIRE ON 20' AFG RTA POLE	WHT LED ARRAY, 30K, 80 CRI	NV-1-T4-32L-7-30K-IES	Absolute	0.85	142

STATISTICS					
Description	Symbol	Avg	Max	Min	Max/Min
PARKING AREA (Z=0')	+	2.5 fc	5.2 fc	1.1 fc	4.7:1
PROPERTY LINE (Z=0')	+	0.0 fc	0.5 fc	0.0 fc	N/A

LUMINAIRE LOCATIONS							
No.	Label	X	Y	Z	MH	Orientation	Tilt
1	S	366.2	134.2	20.0	20.0	180.0	0.0
2	S	434.7	134.2	20.0	20.0	180.0	0.0
3	S	503.2	134.2	20.0	20.0	180.0	0.0
4	S	572.0	134.2	20.0	20.0	180.0	0.0
5	S	572.4	68.4	20.0	20.0	0.0	0.0
6	S	503.2	68.5	20.0	20.0	0.0	0.0
7	S	434.7	68.6	20.0	20.0	0.0	0.0
8	S	781.3	161.4	20.0	20.0	-90.0	0.0
9	S	781.3	90.4	20.0	20.0	-90.0	0.0
10	S	780.8	19.9	20.0	20.0	-90.0	0.0
11	S	780.5	-53.7	20.0	20.0	-90.0	0.0
12	S	594.2	163.7	20.0	20.0	90.0	0.0
13	S	599.3	66.2	20.0	20.0	90.0	0.0
14	S	429.5	-76.0	20.0	20.0	0.0	0.0
15	S	360.3	-76.0	20.0	20.0	0.0	0.0
16	S	291.8	-76.0	20.0	20.0	0.0	0.0
17	S	696.9	-75.4	20.0	20.0	0.0	0.0
18	S	616.6	-75.4	20.0	20.0	0.0	0.0
19	S	466.5	-91.1	20.0	20.0	90.0	0.0
20	S	466.5	-145.3	20.0	20.0	90.0	0.0
21	S	540.0	-145.5	20.0	20.0	-90.0	0.0
22	S	555.5	-89.3	20.0	20.0	-53.6	0.0
23	S	253.8	-24.3	20.0	20.0	111.0	0.0
24	S	277.5	36.8	20.0	20.0	111.0	0.0
25	S	304.1	105.9	20.0	20.0	111.0	0.0
26	S	415.2	45.3	20.0	20.0	-72.4	0.0
27	S	395.3	-6.6	20.0	20.0	-72.4	0.0
28	S	599.3	2.8	20.0	20.0	90.0	0.0
29	S	704.4	216.1	20.0	20.0	180.0	0.0
30	S2	719.6	134.8	20.0	20.0	90.0	0.0
31	S2	352.7	50.7	20.0	20.0	-67.7	0.0
32	S2	330.0	-8.3	20.0	20.0	-67.7	0.0
33	S2	659.6	165.1	20.0	20.0	90.0	0.0
34	S2	719.6	-0.6	20.0	20.0	90.0	0.0
35	S2	719.9	82.4	20.0	20.0	90.0	0.0
36	S2	659.8	65.4	20.0	20.0	90.0	0.0
37	S2	659.8	2.4	20.0	20.0	90.0	0.0
38	S	434.7	-9.5	20.0	20.0	180.0	0.0
39	S	503.2	-9.5	20.0	20.0	180.0	0.0
40	S	572.0	-11.0	20.0	20.0	180.0	0.0
41	S	630.8	216.1	20.0	20.0	180.0	0.0

NOTES

- CALCULATIONS HAVE BEEN PERFORMED ACCORDING TO IES STANDARDS AND PRACTICE. SOME DIFFERENCES BETWEEN MEASURED VALUES AND CALCULATED RESULTS MAY OCCUR DUE TO TOLERANCES IN CALCULATION METHODS, TESTING PROCEDURES, COMPONENT PERFORMANCES, MEASURED CONDITIONS SUCH AS TECHNICAL AND FIELD VOLTAGES AND TEMPERATURE VARIATIONS. INPUT DATA SUCH AS ROOM DIMENSIONS, REFLECTANCES, FURNITURE, LIGHT LOSS FACTOR, FURNITURE, ARCHITECTURAL ELEMENTS AND FOLIAGE SIGNIFICANTLY AFFECT THE LIGHTING CALCULATIONS. IF THE REAL ENVIRONMENT DOES NOT MATCH INPUT DATA DIFFERENCES WILL OCCUR BETWEEN MEASURED AND CALCULATED VALUES.
- ALL POLES ARE TO BE 20' AFG WITHOUT TENON. LUMINAIRE ARE TO BE BOLTED TO SIDE OF POLES. ALL POLES TO BE (RTA) ROUND TAPERED ALUMINUM, DIRECT BURIAL AS MANUFACTURED BY HAPCO # RTA20D6BE.**
- WIND LOAD CALCULATIONS, TO MEET SITE LOCATION LOAD REQUIREMENTS, MUST BE PREPARED AND SUBMITTED AS PART OF THE SUBMITTAL PROCESS. SAID CALCULATIONS MUST BE SIGNED AND SEALED BY FLORIDA REGISTERED ENGINEER.