

Northern Drive

10th Street

W. Jasmine Drive

Dixie Hwy.

1.0

0 75 150 300

Scale: 1' = 150'

L1.00.....	Sheet Key Map
H1.01 - H1.02.....	Paver Hardscape Plan
H1.03.....	Paver Specifications
H1.04.....	Paver Sealer Specifications
L-1.01 - L1.02.....	Landscape Plan
L1.03.....	Plant List and Planting Details
L1.04 - L1.09.....	Landscape Specifications

Northlake Blvd

US 1

Park Ave

Silver Beach Rd

Old Dixie Hwy

Northern Dr

Future Phase

Project Site

100' Buffer

N Congress Ave

# Park Avenue Streetscape

Prepared for Town of Lake Park  
Lake Park, Florida

**Morton**  
PLANNING | LANDSCAPE ARCHITECTURE  
3910 RCA Blvd. Suite 1015 | Palm Beach Gardens, FL 33410

INSTRUCTION BID PLAN

1.

ME LA

## REVISIONS

2023	FINAL CD PLAN
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Landscape Plan

SCALE | AS SHOWN

LAWN | KB/JR

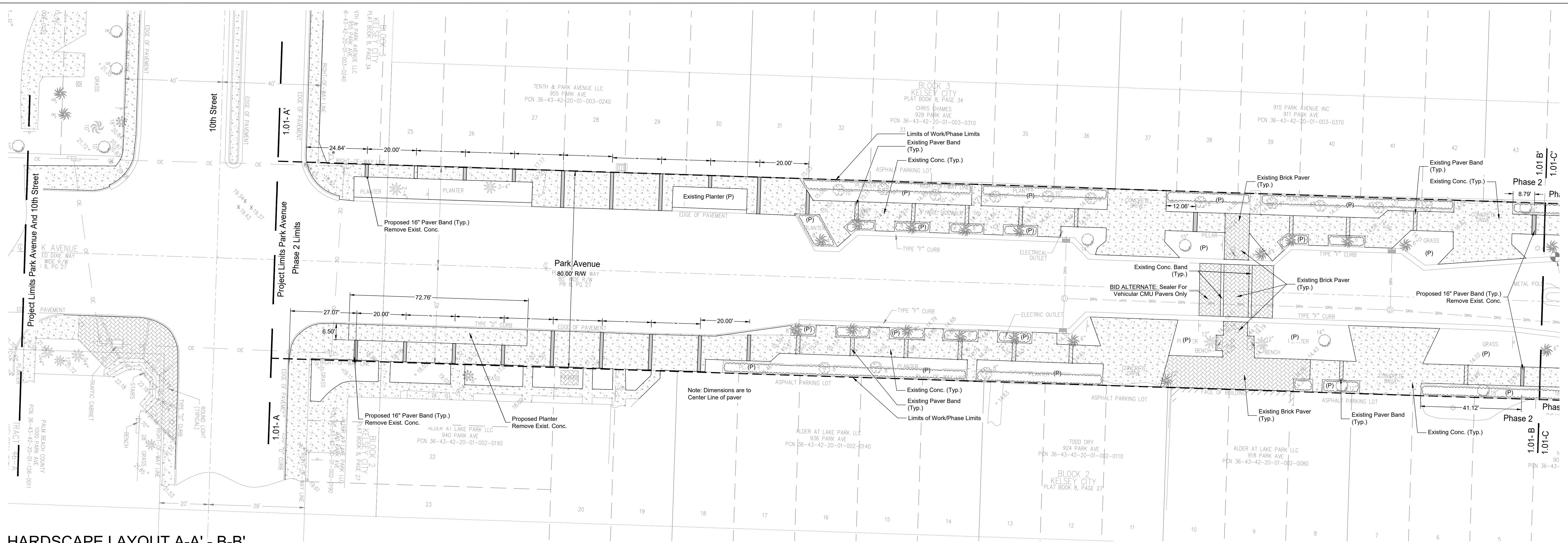
CHECKED BY | HPH

E | G210.21 - LPStreetscape - LA

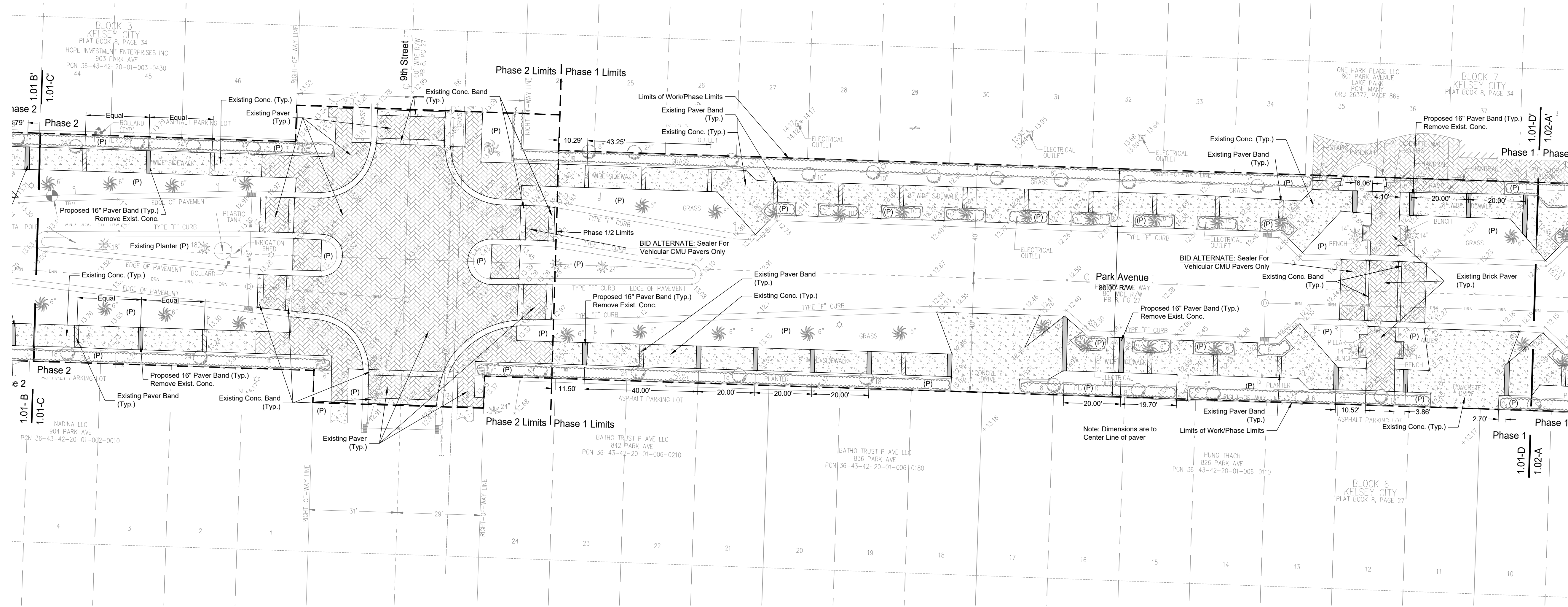
2021-09-09

1.00



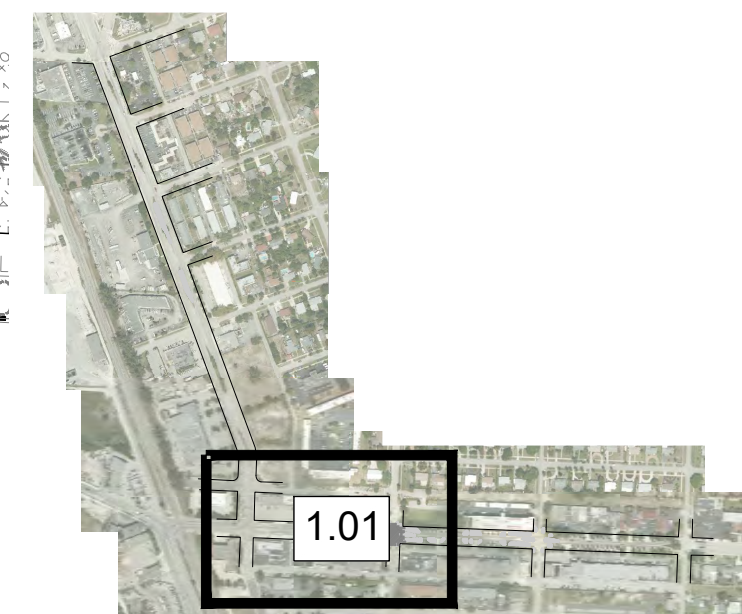


**HARDSCAPE LAYOUT A-A' - B-B'**  
PLAN  
SCALE 1" = 20'

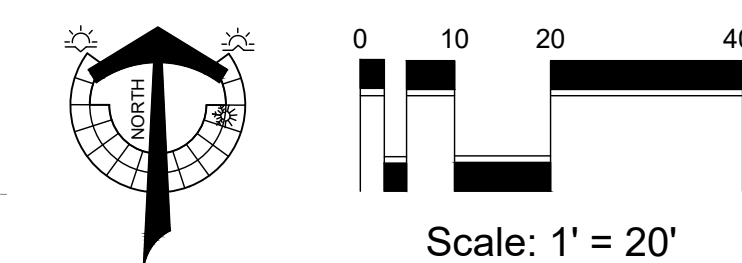


**HARDSCAPE LAYOUT C-C' - D-D'**  
PLAN  
SCALE 1" = 20'

- Graphic Legend**
- Existing to Remain
- Concrete
  - Brick or CMU Paver
  - Paver Band
- Proposed
- Paver Band



Key Map



Scale: 1' = 20'  
**PAVER HARDSCAPE PLAN**

# Park Avenue Streetscape

Prepared for Town of Lake Park  
Lake Park, Florida

CONSTRUCTION BID PLAN

SEAL:

NAME LA

REVISIONS

12/14/2022 60% HARDSCAPE CONCEPT

6/13/2023 FINAL CD PLAN

DATE

2021-09-20

FILE | G210.21 - LPStreetscape - LA

CHECKED BY | HPH

DRAWN | KB/JR

SCALE | AS SHOWN

PAK Avenue Hardscape Plan

H1.01







## EXTERIOR CLEANING

## 1.01 DESCRIPTION

- ## 1.02 RELATED SECTIONS

- ### 1.03 SUBMITTALS

- ## 1.04 QUALITY ASSURANCE

- ## 1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- ## 1.06 ENVIRONMENTAL REQUIREMENTS

- ## 1.07 SEQUENCING AND SCHEDULING

- ## 1.08 WARRANTY

- ## PART 2 - PRODUCTS

## 2.01 CLEANING AGENTS

- ### PART 3 - EXECUTION

### 3.01 GENERAL

- ### 3.04 EXTERIOR CLEANING SPECIFICATIONS

- ### 3.05 GENERAL CLEAN UP

- END OF SECTION

SECTION 07 19 00  
CONCRETE SEALER

## PART 1 - GENERAL

## 1.1 SUMMARY

- ## 1.2 REFERENCE STANDARDS

- ### 1.3 SUBMITTALS

- ## 1.4 QUALITY ASSURANCE

- ## 1.5 DELIVERY, STORAGE, AND HANDLING

- ## 1.6 WARRANTY

- ## PREFERRED CMU PAVER



## SIDEWALK CROSS BAND PAVER

Steplock Shellock CMU Paver:  
16" x 16" x 1-5/8"  
Color: TBD  
Artistic Pavers (305) 653-7283



SECTION 07 19 00  
CONCRETE SEALER

## PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Subject to compliance with requirements, provide products from the following manufacturer:  
Eco-Wares/Envirosafe Mfg. 7634-B Progress Circle, West Melbourne, FL. 32904  
Service: 866- 874-8070  
Internet: [www.eco-ware.com](http://www.eco-ware.com)
- B. Substitutions: Only as allowed in writing per the Town of Lake Park or designated representative.
- C. Specifications and Drawings are based on a minimum levels of material and detailing indicated in Specifications or on Drawings. The Town of Lake Park or the designated representative will be sole judge of appropriateness of substitutions.

## MATERIALS

- A. High-performance, penetrating water dispersed polyester polymer and water-borne polyurethane that when dry, fills the voids and coats the interior particles of the matrix on concrete surfaces preventing damage from freeze-thaw cycles. Safe for indoor or exterior use.
1. Acceptable Product: Trojan Masonry & Concrete Sealer
- B. Sealer shall have the following minimum performance:
1. Flash Point: non-flammable
  2. State: Liquid
  3. Color: Translucent – No color
  4. Vapor Pressure: (Air + 1) - N/A
  5. Solubility in Water: Dilutable
  6. Boiling Point: 100 degrees Celsius / 212 degrees Fahrenheit
  7. Freezing Point: 0 degrees Celsius / 32 degrees Fahrenheit Water
  8. Specific Gravity: (Water=1) - 1.10 @ 20 degrees Celsius
  9. Evaporation Rate: (BAC=1) - Same as Water
  10. Percent Solids by Weight: 10.5%
  11. pH: 6.8
  12. Volatile Organic Compounds: 5.9 g/L
  13. Freeze Thaw Resistance: Improved verifiable resistance under test conditions.
- C. Low Gloss Finish Sealer: High-performance, penetrating water dispersed polyester polymer and water-borne polyurethane that when dry, fills the voids and coats the interior particles of the matrix on concrete surfaces with acrylic added to the formula that settles on the surface to provide a low gloss sheen. Safe for indoor or exterior use.
1. Acceptable Product: Trojan Ultra Masonry Sealer
- D. Sealer shall have the following minimum performance:
1. Flash Point: non-flammable
  2. State: Liquid
  3. Color: Milky in container. Dries with a clear low gloss, satin finish
  4. Vapor Pressure: (Air + 1) - N/A
  5. Solubility in Water: Dilutable
  6. Boiling Point: 100 degrees Celsius / 212 degrees Fahrenheit
  7. Freezing Point: 0 degrees Celsius / 32 degrees Fahrenheit (Water)
  8. Specific Gravity: (Water=1) - 1.10 @ 20 degrees Celsius
  9. Evaporation Rate: (BAC=1) - Same as Water
  10. Percent Solids by Weight: 29%
  11. pH: 6.8
  12. Volatile Organic Compounds: 54.5g/L
  13. Freeze Thaw Resistance: Improved verifiable resistance under test conditions.
- E. Color Sealer: High-performance, penetrating water dispersed polyester polymer and water-borne polyurethane that when dry, fills the voids and coats the interior particles of the matrix. Includes UV resistant color stain applied to any porous surface including, concrete surfaces and pavers. Safe for indoor or exterior use.
1. Acceptable Product: Trojan Color Sealer
  2. Color Selection: As approved by the Town of Lake Park or designated representative.
- F. Sealer shall have the following minimum performance:
1. Flash Point: non-flammable
  2. State: Liquid
  3. Appearance: Colored liquid (various)
  4. Vapor Pressure: (Air + 1) - N/A
  5. Solubility in Water: Infinite
  6. Boiling Point: 100 degrees Celsius / 212 degrees Fahrenheit
  7. Freezing Point: 0 degrees Celsius / 32 degrees Fahrenheit Water
  8. Specific Gravity: (Water =1) - 1.10
  9. pH: 6.8
  10. Volatile Organic Compounds: 5.9 g/L
  11. Percent Solids by Weight: 12% - 19% (Varies by color and finish)
  12. Freeze Thaw Resistance: Improved verifiable resistance under test conditions.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- ### A. OMIT

### 3.2 SURFACE PREPARATION

- A. Prepare surfaces in accordance with manufacturer's instructions.
- B. Surfaces shall be clean. Remove dust, dirt, oil, grease, chemical films, coatings and other contaminants before application.
- C. If surface does NOT absorb water, then there is possibly another sealer applied to the surface and sealer should not be applied until original sealer is removed.
- D. Exterior Surfaces: In all cleaning cases rinse well using 3000 psi pressure washer and allow to dry thoroughly before application.
- E. Interior Surfaces: use a wet vacuum to remove excess water.

### 3.3 APPLICATION

- A. Apply sealer in accordance with manufacturer's instructions.
- B. Stir material thoroughly before and during application.
- C. Back-roll to even out the material and to remove any puddles in low spots.
- D. On some historic, old and extremely porous surfaces a second coat of either plain Trojan or Trojan Color may need to be applied to completely seal the surface.
- E. Surface minimum temperature must be above 45 degrees F before application.
- F. Allow to dry thoroughly before traffic is allowed onto floor.
- G. Trojan Masonry & Concrete Sealer: To paint over a Trojan treated area use only a good quality acrylic, oil-base, epoxy or urethane paint. Do not use latex paint over a Trojan coated surface since latex paint makes a weak bond especially in exterior applications. On new Concrete, Let dry and cure for 21-28 days depending on temperature and humidity.
- H. Trojan Color Sealer: should not be applied to a hot surface in the sun. Flash drying will occur and the affect will be uneven color with overlap marks. Always maintain a 'wet edge' when applying this product. On new concrete, (under 2 years of age), a pH reading should be taken before starting application to be sure that the pH is between 6 & 8. If it is not, then Enviro Etch should be applied to the surface. Rinse and allow to dry and re-take the pH reading.
  1. OMIT
  2. Apply Trojan Color Sealer with a low-pressure sprayer. Trojan Color Sealer should be applied liberally to allow the surface to drink as much as possible without leaving puddles.

### 3.4 SAFETY

- A. Safe storage, handling and use dictate that adequate health and safety precautions be observed with this product. User is specifically directed to consult the current Material Safety Data Sheet for this product as well as precautions contained on product labeling.

### 3.5 PROTECTION

- A. Protect sealer from damage during construction.

END OF SECTION



# Park Avenue Streetscape

Prepared for Town of Lake Park

Lake Park, Florida

CONSTRUCTION BID PLAN

SEAL:

NAM

LA

## REVISIONS

[illegible]

### Park Avenue Hardscape Pla

SCALE | AS SHOW

DRAWN | KB/J

CHECKED BY | HP

FILE | G210.21 - LPStreetscape - L

DATE | 2021-09-2

## PAVER HARDSCAPE SPECIFICATIONS

H1.04















SPECIFICATIONS

EXISTING SHRUBS TO BE REMOVED  
FROM THE PROPOSED PLANTER  
AREAS SHOWN ON THE PLANS

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, DSMM500 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.

WATERING

A. The Contractor shall be fully responsible to ensure that adequate water is provided to all plants from the point of installation until the date of Substantial Completion Acceptance. The Contractor shall adjust the automatic irrigation system, if available, and apply additional or adjust for less water using hoses as required.  
B. Hand water root balls of all plants to assure that the root balls have moisture above wilt point and below field capacity. Test the moisture content in each root ball and the soil outside the root ball to determine the water content.

SECTION 32 9100

PLANTING SOIL

PART 1 – GENERAL

1.1 SUMMARY

- A. The scope of work includes all labor, materials, tools, supplies, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of Planting Soil and /or the modification of existing site soil for use as Planting Soil, 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 Imported Planting Soil and soil amendments.
  2. Harvest and stockpile existing site soils suitable for Planting Soil.
  3. Modify existing stockpiled site soil.
    - a. Modify existing site soil in place for use as Planting Soil.
    - b. Install existing or modified existing soil for use as Planting Soil.
  4. Locate, purchase, deliver and install subsurface Drain Lines.
  5. Fine grade Planting Soil.
  6. Install Compost into Planting Soil.
  7. Clean up and disposal of all excess and surplus material.

1.2 CONTRACT DOCUMENTS

- A. Shall consist of specifications, 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.

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. Related Specification Section
    - a. Section 32900 - Planting
    - b. Section 32930 – Lawn
- 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 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.
1. ASTM: American Society of Testing Materials cited section numbers.
  2. U.S. Department of Agriculture, Natural Resources Conservation Service, 2003. National Soil Survey Handbook, title 430-VI. Available Online.
  3. US Composting Council [www.compostingcouncil.org](http://www.compostingcouncil.org) and [http://compostingcouncil.org/admin/wp-content/plugins/wp-pdfupload/pdf/191/LandscapeArch\\_Specs.pdf](http://compostingcouncil.org/admin/wp-content/plugins/wp-pdfupload/pdf/191/LandscapeArch_Specs.pdf).
  4. *Methods of Soil Analysis*, as published by the Soil Science Society of America (<http://www.soils.org/>).
  5. Up by Roots: healthy soils and trees in the built environment. 2008. J. Urban. International Society of Arboriculture, Champaign, IL.

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 actual conditions, refraining from doing any work in said areas until given approval to do so by the Owner's Representative.

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 among 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

- A. The Contractor shall adequately protect the work, adjacent property, and the public, and shall be responsible for any damages or injury due to the Contractor's actions.

1.7 CHANGES IN WORK

- A. The Owner's Representative may order changes in the work, and the contract sum adjusted accordingly. All such orders and adjustments plus claims by the Contractor for extra compensation must be made and approved in writing before executing the work involved.
- B. All changes in the work, notifications and contractor's request for information (RFI) shall conform to the contract general condition requirements.

1.8 CORRECTION OF WORK

- A. 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, at the soonest possible time that can be coordinated with other work and seasonal weather demands but not more than 180 (one hundred and eighty) days after notification.

1.9 DEFINITIONS

- A. Acceptable drainage: Drainage rate is sufficient for the plants to be grown. Typical rates for installed Planting Soil are between 1 - 5 inches per hour. Turf soils are often higher, but drainage rates above 2 - 3 inches per hour will dry out very fast. In natural undisturbed soil a much lower drainage rate, as low as 1/8" inch per hour can still support good plant growth.
- B. Amendment: material added to Topsoil to produce Planting Soil Mix. Amendments are classified as general soil amendments, fertilizers, biological, and pH amendments.
- C. Biological Amendment: Amendments such as Mycorrhizal additives, compost tea or other products intended to change the soil biology.
- D. Compacted soil: soil where the density of the soil is greater that the threshold for root limiting, and further defined in this specification.
- E. Compost: well decomposed stable organic material as defined by the US Composting Council and further defined in this specification.
- F. Drainage: The rate at which soil water moves through the soil transitioning the soil from saturated condition to field capacity. Most often expressed as saturated hydraulic conductivity (Ksat; units are inches per hour).
- G. End of Warranty Acceptance: The date when the Owner's Representative accepts that the plants and work in this section meet all the requirements of the warranty. It is intended that the materials and workmanship warranty for Planting, Planting Soil, and Irrigation (if applicable) work run concurrent with each other, and further defined in this specification.
- H. Existing Soil: Mineral soil existing at the locations of proposed planting after the majority of the construction within and around the planting site is completed and just prior to the start of work to prepare the planting area for soil modification and/or planting, and further defined in this specification.
- I. Fertilizer: amendment used for the purpose of adjusting soil nutrient composition and balance.
- J. Fine grading: The final grading of the soil to achieve exact contours and positive drainage, often accomplished by hand rakes or drag rakes other suitable devices, and further defined in this specification, and further defined in this specification.
- K. Finished grade: surface or elevation of Planting Soil after final grading and 12 months of settlement of the soil, and further defined in this specification.
- L. Graded soil: Soil where the A horizon has been stripped and relocated or re-spread; cuts and fills deeper than 12 inches, and further defined in this specification.
- M. Installed soil: Planting soil and existing site soil that is spread and or graded to form a planting soil, and further defined in this specification.
- N. Minor disturbance: Minor grading as part of agricultural work that only adjusts the A horizon soil, minor surface compaction in the top 6 inches of the soil, applications of fertilizers, installation of utility pipes smaller than 18 inches in diameter thru the soil zone.
- O. Owner's Representative: The person or entity, 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 may appoint other persons to review and approve any aspects of the work.
- P. Planting Soil: Topsoil, or Planting Soil Mixes which are imported or existing at the site, or made from components that exist at the site, or are imported to the site; and further defined in this specification.
- Q. Scarify: Loosening and roughening the surface of soil and sub soil prior to adding additional soil on top, and further defined in this specification.
- R. Soil Fracturing: Deep loosening the soil to the depths specified by using a back hoe, and further defined in this specification.
- S. Soil Horizons: as defined in the USDA National Soil Survey Handbook [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242).
- T. Soil Tilling: Loosening the surface of the soil to the depths specified with a **rotary tine tilling machine, roto tiller, (or spade tiller)**, and further defined in this specification.
- U. Subgrade: surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing Planting Soil.
- V. Substantial Completion Acceptance: The date at the end of the Planting, Planting Soil, and Irrigation installation (if applicable) 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, and further defined in this specification.
- W. Topsoil: naturally produced and harvested soil from the A horizon or upper layers or the soil as further defined in this specification.
- X. Undisturbed soil: Soils with the original A horizon intact that have not been graded or compacted. Soils that have been farmed, subjected to fire or logged but not graded, and natural forested land will be considered as undisturbed.

SUBMITTALS

- A. See the contract General Conditions for policy and procedures related to submittals.
- B. Submit all product submittals eight weeks prior to the start of the soil work.
- C. Product data and certificates: For each type of manufactured product, submit data and certificates that the product meets the specification requirements, signed by the product manufacturer, and complying with the following:

- C. Product data and certificates: For each type of manufactured product, submit data and certificates that the product meets the specification requirements, signed by the product manufacturer, and complying with the following:

1. Submit manufacturers or supplier's product data and literature certified analysis for standard products and bulk materials, complying with testing requirements and referenced standards and specific requested testing.
  - a. For each Compost product submit the following analysis by a recognized laboratory:
    - 1.) pH
    - 2.) Salt concentration (electrical conductivity)
    - 3.) Moisture content %, wet weight basis
    - 4.) Particle size % passing a selected mesh size, dry weight basis
    - 5.) Stability carbon dioxide evolution rate mg CO2-C per g OM per day
    - 6.) Solvita maturity test
    - 7.) Physical contaminants (inerts) %, dry weight basis
    - 8.) US EPA Class A standard, 40CFR § 503.13, Tables 1 and 3 levels Chemical Contaminants mg/kg (ppm)
  - b. For Coarse Sand product submit the following analysis by a recognized laboratory:
    - 1.) pH
    - 2.) Particle size distribution (percent passing the following sieve sizes):
      - 3/8 inch (9.5 mm)
      - No 4 (4.75 mm)
      - No 8 (2.36 mm)
      - No 16(1.18 mm)
      - No 30 (.60 mm)
      - No 50 (.30 mm)
      - No 100 (.15 mm)
      - No 200 (.075 mm)

- D. Samples: Submit samples of each product and material, where required by Part 2 of 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.

1. Submit samples a minimum of 8 weeks prior to the anticipated date of the start of soil installation
2. Samples of all Topsoil, Coarse Sand, Compost and Planting Soil shall be submitted at the same time as the particle size and physical analysis of that material.

- E. Soil testing for Imported and Existing Topsoil, existing site soil to be modified as Planting Soil and Planting Soil Mixes.

1. Topsoil, existing site soil and Planting Soil Mix testing: Submit soil test analysis report for each sample of Topsoil, existing site soil and Planting Soil from an approved soil-testing laboratory and where indicated in Part 2 of the specification as follows:
  - a. Submit Topsoil, Planting Soil, Compost, and Coarse Sand for testing at least 8 weeks before scheduled installation of Planting Soil Mixes. Submit Planting Soil Mix test no more than 2 weeks after the approval of the Topsoil, Compost and Coarse Sand. Do not submit to the testing laboratory, Planting Soil Mixes, for testing until all Topsoil, Compost and Coarse Sand have been approved.
  - b. If tests fail to meet the specifications, obtain other sources of material, retest and resubmit until accepted by the Owner's Representative.
  - c. All soil testing will be at the expense of the Contractor.
2. Provide a particle size analysis (% dry weight) and USDA soil texture analysis. Soil testing of Planting Soil Mixes shall also include USDA gradation (percentage) of gravel, coarse sand, medium sand, and fine sand in addition to silt and clay.
3. Provide the following other soil properties:
  - a. pH and buffer pH.
  - b. Percent organic content by oven dried weight.
  - c. Nutrient levels by parts per million including: phosphorus, potassium, magnesium, manganese, iron, zinc and calcium. Nutrient test shall include the testing laboratory recommendations for supplemental additions to the soil for optimum growth of the plantings specified.
  - d. Soluble salt by electrical conductivity of a 1:2 soil water sample measured in Milliohm per cm.
  - e. Cation Exchange Capacity (CEC).

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.

1. The Owner's Representative may utilize the Contractor's penetrometer and moisture meter at any time to check soil compaction and moisture.

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. Installer Qualifications: The installer shall be a firm having at least 5 years of experience of a scope similar to that required for the work, including the preparation, mixing and installation of soil mixes to support planting. The installer of the work in Section: Planting, shall be the same firm installing the work in this section.

1. The bidders list for work under this section shall be approved by the Owner's Representative.
  2. Installer Field Supervision: When any Planting Soil work is in progress, installer shall maintain, on site, an experienced 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 soil, shall be trained and proficient in the use of field surveying equipment to establish grades and can communicate in English with the Owner's Representative.
  4. The installer's crew shall be experienced in the installation of Planting Soil, plantings, and irrigation (where applicable) and interpretation of planting plans, soil installation plans, and irrigation plans (where applicable).
  5. If requested, submit references of past projects and employee training certifications that support that the Contractors meet all of the above installer qualifications and applicable licensures.
- B. Soil testing laboratory qualifications: an independent laboratory, with the experience and capability to conduct the testing indicated and that specializes in USDA agricultural soil testing, Planting Soil Mixes, and the types of tests to be performed. Geotechnical engineering testing labs shall not be used.
- C. All delivered and installed Planting Soil shall conform to the approved submittals sample color, texture and approved test analysis.
1. The Owner's Representative may request samples of the delivered or installed soil be tested for analysis to confirm the Planting Soil conforms to the approved material.
  2. All testing shall be performed by the same soil lab that performed the original Planting Soil testing.

3. Testing results shall be within 10% plus or minus of the values measured in the approved Planting Soil Mixes.
  4. Any Planting Soil that fails to meet the above criteria, if requested by the Owner's Representative, shall be removed and new soil installed.
- D. Soil compaction testing: following installation or modification of soil, test soil compaction with a penetrometer.
1. Maintain at the site at all times a soil cone penetrometer with pressure dial and a soil moisture meter to check soil connection and soil moisture.
    - a. Penetrometer shall be AgraTronix Soil Compaction Meter distributed by Ben Meadows, [www.benmeadows.com](http://www.benmeadows.com), or approved equal.
    - b. Moisture meter shall be "general digital soil moisture meter" distributed by Ben Meadows, [www.benmeadows.com](http://www.benmeadows.com), or approved equal.
  2. Penetrometer readings are impacted by soil moisture and excessively wet or dry soils will read significantly lower or higher than soils at optimum moisture.

1.14 SITE CONDITIONS

- A. It is the responsibility of the Contractor to be aware of all surface and subsurface 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, they shall remain responsible for plant material under the warrantee clause of the specifications.
2. This specification requires that all Planting Soil and Irrigation (if applicable) work be completed and accepted prior to the installation of any plants.

1.15 SOIL COMPACTION – GENERAL REQUIREMENTS

- A. Except where more stringent requirements are defined in this specification. The following parameters shall define the general description of the threshold points of soil compaction in existing, modified or installed soil and subsoil.
- B. The following are threshold levels of compaction as determined by each method.
1. Acceptable Compaction: Good rooting anticipated, but increasing settlement expected as compaction is reduced and/or in soil with a high organic matter content.
    - a. Bulk Density Method – Varies by soil type see Chart on page 32 in [Up By Roots](#).
    - b. Standard Proctor Method – 75-85% soil below 75% is unstable and will settle excessively.
    - c. Penetration Resistance Method – about 75-250 psi, below 75 psi soil becomes increasingly unstable and will settle excessively.
  2. Root limiting Compaction: Root growth is limited with fewer, shorter and slower growing roots.
    - a. Bulk Density Method – Varies by soil type see Chart on page 32 in [Up By Roots](#).
    - b. Standard Proctor Method – above approximately 85%.
    - c. Penetration Resistance Method – about 300 psi.
  3. Excessive Compaction: Roots not likely to grow but can penetrate soil when soil is above field capacity.
    - a. Bulk Density Method – Varies by soil type see Chart on page 32 in [Up By Roots](#).
    - b. Standard Proctor Method – Above 90%.
    - c. Penetration Resistance Method – Approximately above 400 psi

1.16 DELIVERY, STORAGE, AND HANDLING

- A. Weather: Do not mix, deliver, place or grade soils when frozen or with moisture above field capacity.
- B. Protect soil and soil stockpiles, including the stockpiles at the soil blender's yard, from wind, rain and washing that can erode soil or separate fines and coarse material, and contamination by chemicals, dust and debris that may be detrimental to plants or soil drainage. Cover stockpiles with plastic sheeting or fabric at the end of each workday.
- C. All manufactured packaged products and material shall be delivered to the site in unopened containers and stored in a dry enclosed space suitable for the material and meeting all environmental regulations. Biological additives shall be protected from extreme cold and heat. All products shall be freshly manufactured and dated for the year in which the products are to be used.
- D. Deliver all chemical amendments in original, unopened containers with original labels intact and legible, which state the guaranteed chemical analysis. Store all chemicals in a weather protected enclosure.
- E. Bulk material: Coordinate delivery and storage with Owner's Representative and confine materials to neat piles in areas acceptable to Owner's Representative.

1.17 EXCAVATING AND GRADING 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 damage. Hand excavate as required. Maintain grade stakes set by others until parties concerned mutually agree upon removal.
- C. Notification of the utility locate service (811) is required for all planting areas. The Contractor is responsible for knowing the location and avoiding utilities that are not covered by the utility locate service.

PART 2 – PRODUCTS

2.1 IMPORTED TOPSOIL

- A. Imported Topsoil definition: Fertile, friable soil containing less than 5% total volume of the combination of subsoil, refuse, roots larger than 1 inch diameter, heavy, sticky or stiff clay, stones larger than 2 inches in diameter, noxious seeds, sticks, brush, litter, or any substances deleterious to plant growth. The percent (%) of the above objects shall be controlled by source selection not by screening the soil. Topsoil shall be suitable for the germination of seeds and the support of vegetative growth. Imported Topsoil shall not contain weed seeds in quantities that cause noticeable weed infestations in the final planting beds. Imported Topsoil shall meet the following physical and chemical criteria:
1. Soil texture: USDA loam, sandy clay loam or sandy loam with clay content between 15 and 25%. And a combined clay/silt content of no more than 55%.
  2. pH value shall be between 5.5 and 7.0.
  3. Percent organic matter (OM): 2.0-5.0%, by dry weight.
  4. Soluble salt level: Less than 2 mmho/cm.
  5. Soil chemistry suitable for growing the plants specified.
- B. Imported Topsoil shall be a harvested soil from fields or development sites. The organic content and particle size distribution shall be the result of natural soil formation. Manufactured soils where Coarse Sand, Composted organic material or chemical additives has been added to the soil to meet the requirements of this specification section shall not be acceptable. Retained soil peds shall be the same color on the inside as is visible on the outside.
- C. Imported Topsoil for Planting Soil shall NOT have been screened and shall retain soil peds or clods larger than 2 inches in diameter throughout the stockpile after harvesting.

LANDSCAPE SPECIFICATIONS







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	B. Grade the finish surface of all planted areas to meet the grades shown on the drawings, allowing the finished grades to remain higher (10 – 15% of depth of soil modification) than the grades on the grading plan, as defined in paragraph Planting Soil Installation, to anticipate settlement over the first year.
	C. Utilize hand equipment, small garden tractors with rakes, or small garden tractors with buckets with teeth for fine grading to keep surface rough without further compaction. Do not use the flat bottom of a loader bucket to fine grade, as it will cause the finished grade to become overly smooth and or slightly compressed.
	D. Provide for positive drainage from all areas toward the existing inlets, drainage structures and or the edges of planting beds. Adjust grades as directed to reflect actual constructed field conditions of paving, wall and inlet elevations. Notify the Owner's Representative in the event that conditions make it impossible to achieve positive drainage.
	E. Provide smooth, rounded transitions between slopes of different gradients and direction. Modify the grade so that the finish grade before adding mulch and after settlement is one or two inches below all paving surfaces or as directed by the drawings.
	F. Fill all dips and remove any bumps in the overall plane of the slope. The tolerance for dips and bumps in shrub and ground cover planting areas shall be a 2 inch deviation from the plane in 10 feet. The tolerance for dips and bumps in lawn areas shall be a 1 inch deviation from the plane in 10 feet.
3.12	INSTALLATION OF COMPOST TILL LAYER
	A. After Planting Soil Mixes are installed in planting bed areas and just prior to the installation of shrub or groundcover plantings, spread 3 – 4 inches of Compost over the beds and roto till into the top 4 - 6 inches of the Planting Soil. This step will raise grades slightly above the grades required in paragraph "Fine Grading". This specification anticipates that the raise in grade due to this tilling will settle within a few months after installation as Compost breaks down. Additional settlement as defined in paragraph "Planting Soil and Planting Soil Mix installation" must still be accounted for in the setting of final grades.
3.13	CLEAN-UP
	A. During installation, keep the site free of trash, pavements reasonably clean and work area in an orderly condition at the end of each day. Remove trash and debris in containers from the site no less than once a week.
	1. Immediately clean up any spilled or tracked soil, fuel, oil, trash or debris deposited by the Contractor from all surfaces within the project or on public right of ways and neighboring property.
	B. Once installation is complete, wash all soil from pavements and other structures. Ensure that mulch is confined to planting beds and that all tags and flagging tape are removed from the site. The Owner's Representative seals are to remain on the trees and removed at the end of the warranty period.
	1. Make all repairs to grades, ruts, and damage to the work or other work at the site.
	2. Remove and dispose of all excess Planting Soil, subsoil, mulch, plants, packaging, and other material brought to the site by the Contractor.
3.14	PLANTING SOIL AND MODIFIED EXISTING SOIL PROTECTION
	A. The Contractor shall protect installed and/or modified Planting Soil from damage including contamination and over compaction due to other soil installation, planting operations, and operations by other Contractors or trespassers. Maintain protection during installation until acceptance. Utilize fencing and matting as required or directed to protect the finished soil work. Treat, repair or replace damaged Planting Soil immediately.
	B. Loosen compacted Planting Soil and replace Planting Soil that has become contaminated as determined by the Owner's Representative. Planting Soil shall be loosened or replaced at no expense to the Owner.
	a. Till and restore grades to all soil that has been driven over or compacted during the installation of plants.
	b. Where modified existing soil has become contaminated and needs to be replaced, provide imported soil that is of similar composition, depth and density as the soil that was removed.
3.15	PROTECTION DURING CONSTRUCTION
	A. The Contractor shall protect planting and related work and other site work from damage due to planting operations, operations by other Contractors or trespassers.
	1. Maintain protection during installation until the date of plant acceptance (see specifications section – Planting). Treat, repair or replace damaged work immediately.
	2. Provide temporary erosion control as needed to stop soil erosion until the site is stabilized with mulch, plantings or turf.
	B. Damage done by the Contractor, or any of their sub-contractors to existing or installed plants, or any other parts of the work or existing features to remain, including large existing trees, soil, paving, utilities, lighting, irrigation, other finished work and surfaces including those on adjacent property, shall be cleaned, repaired or replaced by the Contractor at no expense to the Owner. The Owner's Representative shall determine when such cleaning, replacement or repair is satisfactory. Damage to existing trees shall be assessed by a certified arborist.
3.16	SUBSTANTIAL COMPLETION ACCEPTANCE
	A. Upon written notice from the Contractor, the Owners Representative shall review the work and make a determination if the work is substantially complete.
	B. The date of substantial completion of the planting soil shall be the date when the Owner's Representative accepts that all work in Planting, Planting Soil, and Irrigation installation sections is complete.
3.17	FINAL ACCEPTANCE / SOIL SETTLEMENT
	A. At the end of the plant warrantee and maintenance period, (see Specification section - Planting) the Owner's Representative shall observe the soil installation work and establish that all provisions of the contract are complete and the work is satisfactory.
	1. Restore any soil settlement and or erosion areas to the grades shown on the drawings. When restoring soil grades remove plants and mulch and add soil before restoring the planting. Do not add soil over the root balls of plants or on top of mulch.
	B. Failure to pass acceptance: If the work fails to pass final acceptance, any subsequent observations must be rescheduled as per above. The cost to the Owner for additional observations will be charged to the Contractor at the prevailing hourly rate of the Owner's Representative.

END OF SECTION 32 9100

SECTION 329200  
TURF AND GRASS WORK

PART 1: GENERAL

1.1	SCOPE
A.	The work consists of performing all grass sodding and related work as indicated on drawing and described in this section.
B.	Unless otherwise indicated, the Contractor is responsible for the repair of any existing lawn areas disturbed during the construction process
C.	The Contractor is responsible for the irrigation of all lawn areas on the project, including those not covered by an irrigation system. There are lawn areas on the project that are not provided with an irrigation system

1.2	REFERENCES AND RELATED DOCUMENTS
A.	ASPA (American Sod Producers Association) - Guideline Specifications to Sodding.
B.	FS O-F-241 - Fertilizers, Mixed, Commercial.
C.	Section 02200, Earthwork.
D.	The provisions of the General Conditions, Supplementary Conditions, and the Sections included under, Division 1, General Requirements, are included as part of this section.
1.3	DEFINITIONS
A.	Weeds: Include, but are not limited to, Crab Grass, Bermudagrass (when not planted as sports turf), Johnson Grass, Poison Ivy, Nut Sedges, Bindweed, Goose Grass, Crowfoot Grass, Torpedo Grass, Spurges, Spreading Dayflower, Guinea Grass, Bull Paspalum, Sandbur, Love Grass, Finger Grass, Panicum Grasses, Foxtail, Smut Grass, Amaranth, Chickweeds, Ragwood, Spanish Needles, Thistle, Horsetweed, Dogfennel, Cudweed, Hawksbeard, Dollarweed, Pepperweed, Beggarweeds, Sida, Oxalis, Pusley, Penneywort, Matchweed, and Punctureweed.
1.4	SUBMITTALS
A.	Provide submittals per section 01340.
B.	Provide submittals for the following products for the Architect's approval of prior to start of work on the sodding.
1.	Fertilizer
2.	For all turf areas, submit planting soil analyses of the completed mixture of existing and imported soils (top 6") for approval at no additional cost to the Owner. The analysis shall show percent of organic material in the soil through the Weight Loss on Ignition soil test method, indicate the soil pH, and contain recommendations from the testing laboratory for additional topsoil, fertilizer type and application rate, and other soil amendments necessary to bring the top 6" of soils to the following specified levels:
a.	Percolation rate: minimum 8" per hour in the top eight inches of soil
b.	PH level: 6.5 - 7.5
c.	Soil Organic Content 5% minimum/10% maximum (test by Weight Loss on Ignition method)
d.	Major and Minor nutrients as recommended by the laboratory for the growing of Argentine Bahia turf.
e.	Agricultural testing laboratories acceptable to the Engineer and the Owner shall perform all testing and make all soil amendment recommendations. Test results for the soil properties, and recommendations for soil amendments based on the soil properties may be generated by more than one testing laboratory.
3.	Herbicides
4.	Fire ant certification from the sod supplier
C.	Section 01700 - Contract Closeout: Procedures for submittals.
D.	Operation Data: Submit for continuing Owner maintenance.
E.	Maintenance Data: Include maintenance instructions, cutting method and maximum grass height, types, application frequency, and recommended coverage of fertilizer.
1.5	(OMIT)
1.6	QUALITY ASSURANCE
A.	Bahiagrass and/or St Augustine Sod: Minimum age of 18 months, with root development that will support its own weight without tearing, when suspended vertically by holding the upper two corners.
B.	Submit sod certification for grass species and location of sod source.
C.	Bahiagrass and/or St Augustine Sod Producer: Company specializing in sod production and harvesting with minimum five years' experience and certified by the State of Florida.
D.	Installers: Company approved by the sod producer.
1.7	REGULATORY REQUIREMENTS
A.	Comply with regulatory agencies for fertilizer and herbicide composition.
B.	Provide certificate of compliance from authority having jurisdiction indicating approval of fertilizer and herbicide mixture.
C.	Contractor shall follow all regulations, ordinance, and code governing the work, including but not limited to permitting and inspections.
1.8	DELIVERY, STORAGE, AND PROTECTION
A.	Section 01600 - Material and Equipment: Transport, handle, store, and protect products.
B.	Deliver sod on pallets. Protect exposed roots from dehydration.
C.	All sod delivered to the site, shall be laid within 8 hours.
1.9	PROJECT CONDITIONS
A.	Contractor shall inspect the site and plans to become aware of the project conditions and requirements before submitting a bid.
B.	Section 01041 – Project Coordination.
C.	Sequence installation to ensure orderly and expeditious utility connections.
D.	Coordinate with installation of underground sprinkler system pipe and watering heads.
1.10	CONTRACTOR SUPERVISION
E.	The Contractor shall provide a competent superintendent and any necessary assistants on the project when work is in progress.
F.	The superintendent shall not be changed during the project without the consent of the Engineer unless the superintendent leaves the Contractor's employment.
G.	The superintendent shall represent the Contractor and in the Contractor's absence all directions given to him by the Engineer shall be binding as if given to the Contractor.
H.	The Contractor's superintendent shall supervise the Contractor's employees on the job site and be responsible for their actions and conduct on the job site.
1.11	PROTECTION OF WORK AND PROPERTY
I.	The Contractor shall continuously maintain adequate protection of all his work from damage and shall protect the Owner's property from injury or loss arising in connection with his work.
J.	The Contractor is responsible for contacting the necessary entities to determine the locations of all underground utilities on the site.
K.	The Contractor shall take care to avoid damage to any existing buildings, equipment, piping, pipe coverings, electrical systems, sewers, sidewalks, landscaping, grounds, aboveground or underground installations or structures of any kind, and shall be responsible for any damage that occurs as a result of his work.
L.	Contractor shall adequately protect his work and all adjacent property as provided and required by law.
M.	Utilities noted on the plans are anticipated locations only. The utilities shown may not include all underground utilities on the site, and the locations indicated may not be as installed.

PART 2: PRODUCTS

2.1	GRASS SOD
A.	Sod shall be the recognized Argentine Bahia, St. Augustine 'Floratam' or whichever is called for on the drawings.
B.	Sod shall be well matted with roots; shall be of firm tough texture having a compact top growth and heavy root development. All sod shall be sand based. Sod shall contain no significant amounts (more than 1% of canopy) of bermudagrass, weeds or any other objectionable vegetation. The soil embedded in the sod shall be free from fungus, vermin and other diseases and shall have been mowed at least three times with an approved lawn mower with final mowing not more than 7 days before the sod is cut. The sod shall be taken up in commercial size rectangles measuring 16" x 24". The soil base of the sod shall be of a uniform thickness.
C.	Sod shall be sufficiently thick to insure a dense stand of live grass. Sod shall be live, fresh, and uninjured at the time of planting. Plant sod within 48 hours after harvesting.
D.	Use only sod certified free of fire ants. Before delivering any sod to the project, the Contractor shall furnish to the Owner and the Engineer written certification from the supplier that the sod is free of fire ants.
2.2	COMMERCIAL FERTILIZERS
A.	Commercial fertilizer shall comply with the State Fertilizer Laws. Numerical designation for fertilizer indicates the minimum percentage respectively of (1) total nitrogen, (2) available phosphoric acid, and (3) water soluble potash contained in the fertilizer.
B.	Fertilizer shall be 8-8-8-with appropriate minor nutrients applied at the rate of 16 pounds per 1000 square feet.
2.3	WATER
A.	Contractor shall supply and apply all water.
2.4	ROLLER
A.	Contractor shall use a roller(s) appropriately sized to achieve the required lawn surface grade.
2.5	FERTILIZER SPREADER
A.	Contractor shall use a device for spreading the fertilizer capable of uniformly distributing the material at required rates.
2.6	HERBICIDES
A.	The Contractor shall select, provide, and apply all herbicides as required.
2.7	TOPSOIL
A.	The Contractor shall apply a minimum 2" thick layer of topsoil consisting of thoroughly mixed weed free 60% coarse sand and 40% Florida peat.

PART 3: EXECUTION

3.1	EXAMINATION
A.	The Contractor and his sod installer shall verify that prepared soil base is ready to receive the work of this section.
3.2	GENERAL: The order of work for sod installation shall be as follows:
A.	Bahiagrass Lawns:
1.	Removal of debris and existing vegetation not noted to remain.
2.	Roto-tilling of all compacted areas.
3.	Subgrading.
4.	Removal of additional debris as required.
5.	Fine grading.
6.	Placement of sod.
7.	Cut in or patch gaps between or within the turf pieces or as needed to provide a uniform walking surface and to remove any potential tripping hazard.
8.	Gaps 2" or less in any direction may be filled with coarse sand.
9.	Clean up.
10.	Watering.
11.	Rolling of sod as soon as practical, and topdressing
12.	Maintenance (including watering of all areas regardless of whether or not a sprinkler system has been installed).
13.	Application of fertilizer 30 days after installation of sod.
3.2	ROTO-TILLING:
A.	Kill by herbicide and remove all weeds or existing grasses from areas to be roto- tilled.
B.	Roto-till all lawn areas that have become compacted during the construction process as required assuring adequate percolation of water through the soil.
3.3	SUBGRADING:
A.	Kill by herbicide and remove all weeds or existing grasses from areas to be subgraded.
B.	Subgrade all areas to be sodded as required to produce the finish grades indicated on the grading plans and specifications.
C.	Remove all existing shell rock or other road base that encroaches more than 12" into any lawn area, and fill any voids caused by road base removal with clean, well-draining, and properly compacted planting soil
D.	Roto-till all topsoil and amendments into the existing soil until the top 6" of soil is a homogeneous mixture.
E.	Test completed soil mix samples to verify that they meets the requirements of paragraph 1.06(B)(2). Do not proceed with additional work until the Owner and the Engineer have approved the soils tests and reports from the approved testing laboratories.
3.4	REMOVAL OF DEBRIS
A.	Clean areas to receive grass of all stones larger than 1" in diameter, sticks, stumps, paper, glass, and other debris. Kill by herbicide and remove all weeds or existing grasses from areas to be sodded.
3.5	FINE GRADING
A.	After removal of debris and the eradication of any existing weeds, perform fine grading as required to bring all areas to receive grass to a smooth, even, and finished grade. Use a laser grader to fine grade areas receiving Bermudagrass. Fine grade other areas receiving grass by raking to eliminate wind rows, ridges, depressions and other irregularities. The Contractor shall fine grade areas to be sodded as necessary to achieve a finished grade (top of the sod) as specified in this section.
B.	All sodded areas bordered by sidewalks, asphalt pavement, or curbs shall have a finished grade (top of the sod's soil) that is flush (or less than ½" below) with the grade of the adjacent sidewalk, asphalt pavement, or curb.
C.	All sodded areas bordered by planting areas shall have a finished grade (top of the sod's soil) that is 1½" above the soil level in the adjacent planting bed.

3.6 PLACING OF SOD

A.	Sod size shall be as previously specified. The setting of pieces shall be staggered in such a manner as to avoid continuous seams. Sod shall be moist and shall be placed on a moist earth bed. Carefully place sod by hand, edge to edge in rows at right angles to the slope, starting at the base of the area and working upward. Install only full size (16" x 24") pieces of sod (except for cutting-in purposes). There shall be no voids between sod pieces, no overlapping of the edges of sod pieces, and the finished grade of all sodded areas smooth and even. Use clean sand to fill any developing voids or unevenness in the sod surface. Unless otherwise indicated by the grading plans, the Contractor shall ensure that the finished grade of sod does not vary more than 1" from a 10' long straight edge.
B.	Sod shall be laid for the turf areas as required to produce a smooth and even surface conforming to the grades indicated on the project civil engineering plans. The Contractor shall ensure that the finished grade of sod does not vary more than 1" from a 10' long straight edge.
C.	Sod located on slopes should be placed carefully enough so that rolling with a power roller is not necessary. Sod located around retention areas, along pavement areas or in swales may be staked at the discretion of the Contractor. The repair of any erosion or sod relocation necessary prior to the sod becoming firmly rooted to the existing soil will be the responsibility of the Contractor. Stakes, if used, shall not interfere with walking on, or the mowing of, the sodded areas.
D.	The Contractor shall ensure that the finished grade of sod placed directly adjacent to buildings or other walls does not vary more than 2" from a 10' long straight edge.
E.	Turf shall be set abutting to sidewalks, terraces and other hardscape finishes so the top of the turf rootzone is ¾" below the adjacent hardscape and does not impede surface flow.
3.7	CLEAN UP
F.	On a daily basis, all debris, fertilizer bags, pallets etc. shall be removed from the site
G.	Upon completion of the work, all debris, fertilizer bags, pallets etc. shall be removed from the site. Any paved areas including curbs and sidewalks shall be thoroughly swept.
3.10	WATERING
A.	Watering of the sodded areas will be the responsibility of the Contractor.
B.	Sources from which water will be available shall be installed prior to sodding and shall be in operation for watering sodded areas.
C.	In areas where a permanent irrigation system is not to be installed under this contract, the Contractor shall provide necessary temporary irrigation facilities for performing watering as required to establish and maintain turf areas in a healthy and green condition. The Contractor shall note that there are areas of this work that are not to be irrigated by an irrigation system.
3.11	APPLICATION OF FERTILIZER
A.	Fertilizer shall be as previously specified. The rate of application for grass shall be approximately 16 pounds per 1000 sq. ft. Fertilizer shall be spread uniformly over the area to receive grass by using an approved distribution device calibrated to distribute the appropriate quantity. Fertilizing operations shall not be performed when the wind velocity exceeds 15 miles per hour.
B.	Bahiagrass and St. Augustinesod shall be fertilized 30 days after installation. The Contractor shall request an inspection so that the application of the fertilizer can be verified.
C.	Bermudagrass sod shall be fertilized both 30 and 60 days after installation. The Contractor shall request an inspection each time so that the application of the fertilizer can be verified.
3.12	ROLLING AND TOPDRESSING OF THE SOD
A.	Where ever possible, within one month of the laying of the sod pieces, the sod shall be pressed firmly into contact with the sod bed by rolling with a suitably sized mechanical roller or other approved equipment. The rolling operation shall provide a smooth and even surface conforming to the grades shown on the grading plan, and insure knitting of sod without displacement of sod or deformation of the surfaces.
B.	All developed unevenness or depressions in the lawn surfaces shall be top dressed as required to achieve a smooth and even finish. Top dressing shall not be applied more than 1" thick. In the case that the lawn surface requires more than 1" of correction, the uneven areas must be removed, re-graded and re-sodded.
3.13	GUARANTEE AND REPLACEMENT
A.	All sod work shall be guaranteed up until the end of the maintenance period. Replacement of defective or distressed grass materials shall be performed at no additional cost to the Owner. During the guarantee period, it shall be the Contractor's responsibility to immediately replace any dead material.
3.14	COMPLETION AND ACCEPTANCE
A.	Completion of work shall mean full compliance and conformity with the provisions expressed or implied in drawings and in the specifications. Upon satisfactory completion of the work, the Engineer will perform an inspection of the work to determine if the sodding work is ready for acceptance.
3.16	MAINTENANCE PROVISIONS - BAHIAGRASS
A.	The Contractor shall be responsible for complete maintenance of all grass lawn areas until "Substantial Completion" of the project or final acceptance of the landscape and irrigation work by the Owner and the Engineer, whichever is later. Maintenance shall include, but not be limited to:
1.	Mowing all lawn areas, no less than every other week, and the removal of all visible amounts of grass clippings from the lawn areas. The lawn shall never be allowed to exceed 8" in height for bahiagrass or 4" in height for St. Augustine truf.
2.	Edging of all walks, roadways, and planting beds no less than every other week.
3.	Eradication of all harmful insects (including ants).
4.	Control of all lawn and soil diseases.
5.	Watering and fertilizing as specified, and as required to maintain all lawn areas in a good condition for plant growth. Grass is required to be in a healthy and green condition at the time of final acceptance.
6.	Eradication of all weeds in the lawns as necessary for the grass to conform to the specification in paragraph 2.01.
B.	Maintenance shall include, but not be limited to:
1.	Mowing all lawn areas no less than every week, and the removal of all visible amounts of grass clippings from the lawn areas. Do not cut the lawn in more than 1/4" increments.
2.	Edging of all pavements and curbs no less than every week. Maintain the line between the St. Augustine, Bermudagrass or Bahia grass every other week.
3.	Eradication of all harmful insects (including ants).
4.	Control of all lawn and soil diseases.
5.	Watering and fertilizing as required to maintain all lawn areas in an excellent condition for plant growth and sports field use. Grass is required to be in a healthy and green condition at the time of final acceptance.
6.	Eradication of all weeds in the lawns as necessary for the grass to conform to the specification in paragraph 2.01. Lawns shall be weed-free upon the final acceptance of the work.
7.	All other work as necessary for the specialty Contractor to ensure a high-quality turf areas.

END OF SECTION

LANDSCAPE SPECIFICATIONS

CONSTRUCTION BID PLAN

SEAL:

NAME LA

REVISIONS

12/14/2022 60% HARDSCAPE CONCEPT

6/13/2023 FINAL CD PLAN

Park Avenue Landscape Plan

SCALE | AS SHOWN

DRAWN | KB/JR

CHECKED BY | HPH

FILE | G210.21 - LPSStreetscape - LA

DATE | 2021-09-20







SPECIFICATIONS

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 and shall be labeled individually or in groups by genus, species, variety and cultivar.
- 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, bores, 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
- Plant quality above the soil line:** All plants shall conform to the Florida Grades and Standards for Nursery Plants and specify tree grades as either Florida #1 or Florida Fancy Grades if noted in the plant list. Latest Edition.
- 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 project Crown Acceptance details (or 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 branches.
- a.) Main branches shall be distributed along the central leader not clustered together. They shall form a balanced crown appropriate for the cultivar/species.
- b.) Branch diameter shall be no larger than two-thirds (one-half is preferred) the diameter of the central leader measured 1 inch above the branch union.
- c.) The attachment of the largest branches (scaffold branches) shall be free of included bark.
- 4.) Trunk: The tree trunk shall be relatively straight, vertical, and free of wounds that penetrate to the wood (properly made pruning cuts, closed or not, are acceptable and are not considered wounds), sunburned areas, conks (fungal fruiting bodies), wood cracks, sap leakage, signs of boring insects, galls, cankers, girdling ties, or lesions (mechanical injury).
- 5.) Temporary branches, unless otherwise specified, can be present along the lower trunk below the lowest main (scaffold) branch, particularly for trees less than 1 inch in caliper. These branches should be no greater than 3/8-inch diameter.
- b. Trees shall have one central leader. If the leader was headed, a new leader (with a live terminal bud) at least one-half the diameter of the pruning cut shall be present.
- 1.) All trees are assumed to have one central leader trees unless a different form is specified in the plant list or drawings.
- c. All graft unions, where applicable, shall be completely closed without visible sign of graft rejection. All grafts shall be visible above the soil line.
- d. Trunk caliper and taper shall be sufficient so that the lower five feet of the trunk remains vertical without a stake. Auxiliary stake may be used to maintain a straight leader in the upper half of the tree.
2. **Plant quality at or below the soil line:**
- a. Plant roots shall be normal to the plant type specified. Root observations shall take place without impacting tree health. Root quality at or below the soil line shall comply with the project Root Acceptance details and the following:
- 1.) The roots shall be reasonably free of scrapes, broken or split wood.
- 2.) The root system shall be reasonably free of injury from biotic (e.g., insects and pathogens) and abiotic (e.g., herbicide toxicity and salt injury) agents. Wounds resulting from root pruning used to produce a high quality root system are not considered injuries.
- 3.) A minimum of three structural roots reasonably distributed around the trunk (not clustered on one side) shall be found in each plant. Root distribution shall be uniform throughout the root ball, and growth shall be appropriate for the species.
- a.) Plants with structural roots on only one side of the trunk (J roots) shall be rejected.
- 4.) The root collar shall be within the upper 2 inches of the substrate/soil. Two structural roots shall reach the side of the root ball near the top surface of the root ball. The grower may request a modification to this requirement for species with roots that rapidly descend, provided that the grower removes all stem girdling roots above the structural roots across the top of the root ball.
- 5.) The root system shall be reasonably free of stem girdling roots over the root collar or kinked roots from nursery production practices.
- a.) Plant Grower Certification: The final plant grower shall be responsible to have determined that the plants have been root pruned at each step in the plant production process to remove stem girdling roots and kinked roots, or that the previous production system used practices that produce a root system throughout the root ball that meets these specifications. Regardless of the work of previous growers, the plant’s root system shall be modified at the final production stage, if needed, to produce the required plant root quality.
- 6.) At time of observations and delivery, the root ball shall be moist throughout. Roots shall 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 burlap 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 prior to shipping 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 placing 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.
- 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 burlap used for wrapping the root ball package shall be natural, biodegradable material. If the burlap 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.
1. spade machine until planted.

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

1. Container plants may be permitted only when indicated on the drawing, in this specification, or approved by the Owner’s Representative.
2. Provide plants shall be established and well rooted in removable containers.
3. Container class size shall conform to ANSI Z60.1 for container plants for each size and type of plant.

2.3 ANNUAL FLOWERING AND SEASONAL COLOR PLANTS

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

2.4 PALMS

- A. 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.
- B. Defroning, tying, and hedging:
1. In preparing palm trees for relocation, all dead fronds shall be removed.
2. All remaining fronds above horizontal shall be lifted up and tied together around the crown in an upright position. Up to 2/3 of the oldest live fronds can be removed; all fronds can be removed on Sabal palms. 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 evacuation shall be done closer than 8 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

A. Planting Soil as used in this specification means the soil at the planting site, or imported as modified and defined in specification Section Planting Soil. If there is no Planting Soil specification, the term Planting Soil shall mean the soil at the planting site within the planting hole.

2.6 MULCH

- A. Mulch shall be “Walk on” grade, coarse, ground, from tree and woody brush sources. The size range shall be a minimum (less than 25% or less of volume) fine particles 3/8 inch or less in size, and a maximum size of individual pieces (largest 20% or less of volume) shall be approximately 1 to 1-1/2 inch in diameter and maximum length approximately 4 to 8”. Pieces larger than 8 inch long that are visible on the surface of the mulch after installation shall be removed.
1. It is understood that mulch quality will vary significantly from supplier to supplier and region to region. The above requirements may be modified to conform to the source material from locally reliable suppliers as approved by the Owner’s Representative.
- B. Submit supplier’s product specification data sheet and a one gallon sample for approval.

2.7 TREE STAKING AND GUYING MATERIAL

- A. Tree guying to be flat woven polypropylene material, 3/4 inch wide, and 900 lb. break strength. Color to be Green. Product to be ArborTie manufactured by Deep Root Partners, L.P. or approved equal.
- B. Stakes shall be lodge pole stakes free of knots and of diameters and lengths appropriate to the size of plant as required to adequately support the plant.
- C. Below ground anchorage systems to be constructed of 2 x 2-dimensional untreated wood securing (using 3 inch long screws) horizontal portions to 4 feet long vertical stakes driven straight into the ground outside the root ball.
- D. Submit manufacturer’s product data for approval.

2.8 TREE BARK PROTECTOR

- A. Tree Bark Protectors shall be black extruded resin mesh, 4 inches in diameter, 5 feet long. As manufactured by Industrial Netting, Minneapolis, MN, USA or approved equal.
- B. Fasten the split side of the Tree Bark Protector together in three places with black plastic tape.
- C. Submit manufacturers’ product data for approval.

PART 3— EXECUTION

3.1 SITE EXAMINATION

- A. Examine the surface grades and soil conditions to confirm that the requirements of the Specification Section – Planting Soil - and the soil and drainage modifications indicated on the Planting Soil Plan and Details (if applicable) have been completed. Notify the Owner’s Representative in writing of any unsatisfactory conditions.

3.2 DELIVERY, STORAGE AND HANDLING

- A. Protect materials from deterioration during delivery and storage. Adequately protect plants from drying out, exposure of roots to sun, wind or extremes of heat and cold temperatures. If planting is delayed more than 24 hours after 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.

3.3 PLANTING SEASON

- A. Planting shall only be performed when weather and soil conditions are suitable for planting the materials specified in accordance with locally accepted practice. Install plants during the planting time as described below unless otherwise approved in writing by the Owner’s Representative. In the event that the Contractor request planting outside the dates of the planting season, approval of the request does not change the requirements of the warranty.

3.4 ADVERSE WEATHER CONDITIONS

- A. No planting shall take place during extremely hot, dry, windy or freezing weather.
- B. Prior to the start of work, prepare a detailed schedule of the work for coordination with other trades.

3.5 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 altered to fit around lines. Notify the Owner’s Representative of any conflicts encountered.

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 or 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.

3.7 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.

3.8 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, DSMMS00 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.

3.9 INSTALLATION OF PLANTS: GENERAL

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

- D. 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.

- E. 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.

- F. 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.
- G. For trees to be planted in prepared Planting Soil that is deeper than the root ball depth, compact the soil under the root ball using a mechanical tamper to assure a firm bedding for the root ball. If there is more than 12 inches of planting soil under the root ball excavate and tamp the planting soil in lifts not to exceed 12 inches.
- H. Set top outer edge of the root ball at the average elevation of the proposed finish. Set the plant plumb and upright in the center of the planting hole. The tree graft, if applicable, shall be visible above the grade. Do not place soil on top of the root ball.

- I. The Owner’s Representative may request that plants orientation be rotated when planted based on the form of the plant.
- J. Backfill the space around the root ball with the same planting soil or existing soil that was excavated for the planting space. See Specification Section Planting Soil, for requirements to modify the soil within the planting bed.
- K. Brace root ball by tamping Planting Soil around the lower portion of the root ball. Place additional Planting Soil around base and sides of ball in six-inch (6”) lifts. Lightly tamp each lift using foot pressure or hand tools to settle backfill, support the tree and eliminate voids. DO NOT over compact the backfill or use mechanical or pneumatic tamping equipment. Over compaction shall be defined as greater than 85% of maximum dry density, standard proctor or greater than 250 psi as measured by a cone penetrometer when the volumetric soil moisture is lower than field capacity.
1. When the planting hole has been backfilled to three quarters of its depth, water shall be poured around the root ball and allowed to soak into the soil to settle the soil. Do not flood the planting space. If the soil is above field capacity, allow the soil to drain to below field capacity before finishing the planting. Air pockets shall be eliminated and backfill continued until the planting soil is brought to grade level.

- L. Where indicated on the drawings, build a 4 inch high, level berm of Planting Soil around the outside of the root ball to retain water. Tamp the berm to reduce leaking and erosion of the saucer.
- M. Thoroughly water the Planting Soil and root ball immediately after planting.
- N. Remove all nursery plant identification tags and ribbons as per Owner’s Representative instructions. The Owner’s Representative’s seals are to remain on plants until the end of the warranty period.
- O. Remove corrugated cardboard trunk protection after planting.
- P. Follow additional requirements for the permitted root ball packages.

3.10 PERMITTED ROOT BALL PACKAGES AND SPECIAL PLANTING REQUIREMENTS

- A. The following are permitted root ball packages and special planting requirements that shall be followed during the planting process in addition to the above General planting requirements.

B. BALLED AND BURLAPPED PLANTS

1. After the root ball has been backfilled, remove all twine and burlap from the top of the root ball. Cut the burlap 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. CONTAINER (INCLUDES BOXED AND ABOVE-GROUND FABRIC CONTAINERS) PLANTS

1. This specification assumes that most container plants have significant stem girdling and



Park Avenue Streetscape

Prepared for Town of Lake Park

Lake Park, Florida

SEAL:

NAME LA

REVISIONS

12/14/2022 60% HARDSCAPE CONCEPT

Park Avenue Landscape Plan

SCALE | AS SHOWN

DRAWN | KB/JR

CHECKED BY | HPH

FILE | G210-21 - LPSStreetscape - LA

DATE | 2021-09-20



SPECIFICATIONS

circling roots, and that the root collar is too low in the root ball.		3.18		MULCHING OF PLANTS		3.19		PLANTING BED FINISHING		3.20		WATERING		3.21		CLEAN-UP		3.22		PROTECTION DURING CONSTRUCTION		3.23		PLANT MAINTENANCE PRIOR TO SUBSTANTIAL COMPLETION ACCEPTANCE		3.24		SUBSTANTIAL COMPLETION ACCEPTANCE		3.25		MAINTENANCE DURING THE WARRANTY PERIOD BY OTHERS		3.26		MAINTENANCE DURING THE WARRANTY PERIOD BY THE PLANT INSTALLER		3.27		END OF WARRANTY FINAL ACCEPTANCE / MAINTENANCE OBSERVATION		3.28		END OF SECTION 32 9300																																																																																																																																																			
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.		A. Assume 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. Assume that soil grades in the beds are smooth and as shown on the plans.		C. Plants shall be planted in even, triangularly 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.		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 palm. 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.		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.		1. 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.		2. Trees that required heavily modified root balls to meet the root quality standards may become unstable. The Owner's Representative may 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.		A. For all street trees in commercial areas where indicted on the drawings, apply a Tree Bark Protector to each tree.		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.		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.		B. Controlled release fertilizers shall be applied according to the manufacturer's instructions and standard horticultural practices.		A. Prune plants as directed by the Owner's Representative. Pruning trees shall be limited to addressing structural defects as shown in details; follow recommendations in "Structural Pruning: A Guide For The Green Industry" published by Urban Tree Foundation, Visalia CA.		B. All pruning shall be performed by a person experienced in structural tree pruning.		C. Except for plants specified as multi-stemmed or as otherwise instructed by the Owner's Representative, preserve or create a central leader.		D. Pruning of large trees shall be done using pole pruners or if needed, from a ladder or hydraulic lift to gain access to the top of the tree. Do not climb in newly planted trees. Small trees can be structurally pruned by laying them over before planting. Pruning may also be performed at the nursery prior to shipping.		E. Remove and replace excessively pruned or malformed stock resulting from improper pruning that occurred in the nursery or after.		F. Pruning shall be done with clean, sharp tools.		G. No tree paint or sealants shall be used.		A. Apply 4 inches of mulch before settlement, covering the entire planting bed area. Install no more than 1 inch of mulch over the top of the root balls of all plants. Taper to 2 inches when abutting pavement.		B. For trees planted in lawn areas the mulch shall extend to a 5 foot radius around the tree or to the extent indicated on the plans.		C. Lift all leaves, low hanging stems and other green portions of small plants out of the mulch if covered.		A. After planting, smooth out all grades between plants before mulching.		B. Separate the edges of planting beds and lawn areas with a smooth, formed edge cut into the turf with the bed mulch level slightly lower, 1 and 2 inches, than the adjacent turf sod or as directed by the Owner's Representative. Bed edge lines shall be a depicted on the drawings.		A. The Contractor shall be fully responsible to ensure that adequate water is provided to all plants from the point of installation until the date of Substantial Completion Acceptance. The Contractor shall adjust the automatic irrigation system, if available, and apply additional or adjust for less water using hoses as required.		B. Hand water root balls of all plants to assure that the root balls have moisture above wilt point and below field capacity. Test the moisture content in each root ball and the soil outside the root ball to determine the water content.		A. During installation, keep the site free of trash, pavements reasonably clean and work area in an orderly condition at the end of each day. Remove trash and debris in containers from the site no less than once a week.		1. Immediately clean up any spilled or tracked soil, fuel, oil, trash or debris deposited by the Contractor from all surfaces within the project or on public right of ways and neighboring property.		B. Once installation is complete, wash all soil from pavements and other structures. Ensure that mulch is confined to planting beds and that all tags and flagging tape are removed from the site. The Owner's Representative's seals are to remain on the trees and removed at the end of the warranty period.		C. Make all repairs to grades, ruts, and damage by the plant installer to the work or other work at the site.		D. Remove and dispose of all excess planting soil, subsoil, mulch, plants, packaging, and other material brought to the site by the Contractor.		A. The Contractor shall protect planting and related work and other site work from damage due to planting operations, operations by other Contractors or trespassers. Maintain protection during installation until Substantial Completion Acceptance. Treat, repair or replace damaged work immediately.		B. Damage done by the Contractor, or any of their sub-contractors to existing or installed plants, or any other parts of the work or existing features to remain, including roots, trunk or branches of large existing trees, soil, paving, utilities, lighting, irrigation, other finished work and surfaces including those on adjacent property, shall be cleaned, repaired or replaced by the Contractor at no expense to the Owner. The Owner's Representative shall determine when such cleaning, replacement or repair is satisfactory.		A. During the project work period and prior to Substantial Completion Acceptance, the Contractor shall maintain all plants.		B. Maintenance during the period prior to Substantial Completion Acceptance shall consist of pruning, watering, cultivating, weeding, mulching, removal of dead material, repairing and replacing of tree stakes, tightening and repairing of guys, repairing and replacing of damaged tree wrap material, resetting plants to proper grades and upright position, and furnishing and applying such sprays as are necessary to keep plantings reasonably free of damaging insects and disease, and in healthy condition. The threshold for applying insecticides and herbicide shall follow established Integrated Pest Management (IPM) procedures. Mulch areas shall be kept reasonably free of weeds, grass.		A. Upon written notice from the Contractor, the Owners Representative shall review the work and make a determination if the work is substantially complete.		1. Notification shall be at least 7 days prior to the date the contractor is requesting the review.		B. The date of substantial completion of the planting shall be the date when the Owner's Representative accepts that all work in Planting, Planting Soil, and Irrigation installation sections is complete.		C. The Plant Warranty period begins at date of written notification of substantial completion from the Owner's Representative. The date of substantial completion may be different than the date of substantial completion for the other sections of the project.		A. After Substantial Completion Acceptance, the Contractor shall make sufficient site visits to observe the Owner's maintenance and become aware of problems with the maintenance in time to request changes, until the date of End of Warranty Final Acceptance.		1. Notify the Owner's Representative in writing if maintenance, including watering, is not sufficient to maintain plants in a healthy condition. Such notification must be made in a timely period so that the Owner's Representative may take corrective action.		a. Notification must define the maintenance needs and describe any corrective action required.		2. In the event that the Contractor fails to visit the site and or notify, in writing, the Owner's Representative of maintenance needs, lack of maintenance shall not be used as grounds for voiding or modifying the provisions of the warranty.		A. During the warranty period, provide all maintenance for all plantings to keep the plants in a healthy state and the planting areas clean and neat.		B. General requirements:		1. All work shall be undertaken by trained planting crews under the supervision of a foreman with a minimum of 5 years experience supervising commercial plant maintenance crews.		2. All chemical and fertilizer applications shall be made by licensed applicators for the type of chemicals to be used. All work and chemical use shall comply with all applicable local, provincial and federal requirements.		3. Assume that hoses and watering equipment and other maintenance equipment does not block paths or be placed in a manner that may create tripping hazards. Use standard safety warning barriers and other procedures to maintain the site in a safe manner for visitors at all times.		4. All workers shall wear required safety equipment and apparel appropriate for the tasks being undertaken.		5. The Contractor shall not store maintenance equipment at the site at times when they are not in use unless authorized in writing by the Owner's Representative.		6. Maintenance vehicles shall not park on the site including walks and lawn areas at any time without the Owner's Representative's written permission.		7. Maintain a detailed log of all maintenance activities including types of tasks, date of task, types and quantities of materials and products used, watering times and amounts, and number of each crew. Periodically review the logs with the Owner's Representative, and submit a copy of the logs at the end of each year of the maintenance agreement.		8. Meet with the Owner's Representative a minimum of three times a year to review the progress and discuss any changes that are needed in the maintenance program. At the end of the warranty period attend a hand over meeting to formally transfer the responsibilities of maintenance to the Owner's Representative. Provide all information on past maintenance activities and provide a list of critical tasks that will be needed over the next 12 months. Provide all maintenance logs and soil test data. Make the Contractor's supervisor available for a minimum of one year after the end of the warranty period to answer questions about past maintenance.		C. Provide the following maintenance tasks:		1. Watering: Provide all water required to keep soil within and around the root balls at optimum moisture content for plant growth.		a. Maintain all watering systems and equipment and keep them operational.		b. Monitor soil moisture to provide sufficient water. Check soil moisture and root ball moisture with a soil moisture meter on a regular basis and record moisture readings. Do not over water.		2. Soil nutrient levels: Take a minimum of 4 soil samples from around the site in the spring and fall and have them tested by an accredited agricultural soil testing lab for chemical composition of plant required nutrients, pH, salt and % organic matter. Test results shall include laboratory recommendations for nutrient applications. Apply fertilizers at rates recommended by the soil test.		a. Make any other soil test and/or plant tissue test that may be indicated by plant conditions that may not be related to soil nutrient levels such as soil contaminated by other chemicals or lack of chemical uptake by the plant.		3. Plant pruning: Remove cross over branching, shorten or remove developing co dominant leaders, dead wood and winter-damaged branches. Unless directed by the Owner's Representative, do not shear plants or make heading cuts.		4. Restore plants: Reset any plants that have settled or are leaning as soon as the condition is noticed.		5. Guying and staking: Maintain plant guys in a taught position. Remove tree guys and staking after the first full growing season unless directed by Owner's Representative.		6. Weed control: Keep all beds free of weeds. Hand-remove all weeds and any plants that do not appear on the planting plan. Chemical weed control is permitted only with the approval of the Owner's Representative. Schedule weeding as needed but not less 12 times per year.		7. Trash removal: Remove all trash and debris from all planting beds and maintain the beds in a neat and tidy appearance on a daily basis.		8. Plant pest control: Maintain disease, insects and other pests at manageable levels. Manageable levels shall be defined as damage to plants that may be noticeable to a professional but not to the average person. Use least invasive methods to control plant disease and insect outbreaks.		a. The Owner's Representative must approve in advance the use of all chemical pesticide applications.		9. Plant replacement: Replace all plants that are defective as defined in the warranty provisions, as soon as the plant decline is obvious and in suitable weather and season for planting as outlined in above sections. Plants that become defective during the maintenance period shall be covered and replaced under the warranty provisions.		10. Mulch: Refresh mulch once a year to maintain complete coverage but do not over mulch. Typical mulch depth for trees, shrubs and groundcovers is 3 inches. At no time shall the overall mulch thickness be greater than 4 inches. Do not apply mulch within 6 inches of the trunks or stems of any plants. Replacement mulch shall meet the requirements of the original approved material. Mulch shall be no more than one inch on top of the root ball surface.		11. Bed edging: Check and maintain edges between mulch and lawn areas in smooth neat lines as originally shown on the drawings.		12. Leaf, fruit and other plant debris removal: Remove fall leaf, spent flowers, fruit and plant part accumulations from beds and paved surfaces. Maintain all surface water drains free of debris. Debris removal shall be undertaken at each visit to weed or pick up trash in beds.		13. Damage from site use: Repair of damage by site visitors and events, beyond normal wear, are not part of this maintenance. The Owner's Representative may request that the Contractor repair damage beds or plantings for an additional cost. All additional work shall be approved in advance by the Owner's Representative.		A. At the end of the Warranty and Maintenance period the Owner's Representative shall observe the work and establish that all provisions of the contract are complete and the work is satisfactory.		1. If the work is satisfactory, the maintenance period will end on the date of the final observation.		2. If the work is deemed unsatisfactory, the maintenance period will continue at no additional expense to the Owner until the work has been completed, observed, and approved by the Owner's Representative.		B. FAILURE TO PASS OBSERVATION: If the work fails to pass final observation, any subsequent observations must be rescheduled as per above. The cost to the Owner for additional observations will be charged to the Contractor at the prevailing hourly rate of the Owners Representative.	

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