ADDENDUM NUMBER: 6
UNC CHARLOTTE
ELM, MAPLE AND PINE RESIDENCE HALLS RENOVATIONS
SCO#120994003 - Code: 41226 - Item 307
PROJECT NUMBER 3523-00
February 8, 2016

NOTICE TO CONTRACTORS

This Addendum issued prior to receipt of Bid shall and does hereby become a part of the Construction Documents for the above project.

All principal Contractors shall be responsible for seeing that their Subcontractors are properly apprised of the contents of this Addendum.

All information contained in this Addendum shall supersede and shall take precedence over any conflicting information in the original Bidding Documents dated 12/18/15 and all previous Addendum.

All Contractors shall acknowledge receipt of this Addendum in the space provided in the Proposal Form. Failure to do so may subject Bidder to disqualification.

A. CHANGES TO PRIOR ADDENDA
No changes.

B. CHANGES TO BIDDING REQUIREMENTS
No changes.

C. CHANGES TO CONDITIONS OF THE CONTRACT
No changes.

D. CHANGES TO SPECIFICATIONS

SECTION - 00 00 01 NOTICE TO BIDDERS
a. Section reissued in its entirety.

SECTION 23 05 93 – TESTING, ADJUSTING AND BALANCING FOR HVAC
a. Section reissued in its entirety.

SECTION 32 92 00 – TURF AND GRASSES
a. Section reissued in its entirety.

SECTION 32 93 00 – PLANTS
a. Section reissued in its entirety.

E. CHANGES TO DRAWINGS
SHEET L100 – LANDSCAPE PLAN BASE BID
a. Sheet reissued dated 2/8/16.

SHEET L110 – LANDSCAPE PLAN ALTERNATE 9
a. Sheet reissued dated 2/8/16.

Attachments:
Section 00 00 1 – Notice To Bidders
Section 23 05 93 – Testing, Adjusting and Balancing for HVAC
Section 32 92 00 - Turf and Grasses
Section 32 93 00 – Plants
Sheet L100
Sheet L110

End of Addendum

NOTICE TO BIDDERS

Sealed proposals will be received by The University of North Carolina in Charlotte, NC, in Room 206 of the Facilities Management/Campus Police Building (#55 on the campus map) until 2:00 pm on Monday, February 15, 2016 and immediately thereafter publicly opened and read for the furnishing of labor, material and equipment entering into the construction of:

Elm, Maple, and Pine Residence Halls Renovation
The University of North Carolina at Charlotte

Bids will be accepted from the following *Prequalified General Contractors only*:

1. **J. M. Thompson Company**
   Attn: John Thompson
   Telephone: 919-851-1611
   Email: john.thompson@jmthompsonco.com

2. **James R. Vannoy & Sons Construction Co., Inc.**
   Attn: Bill Blank
   Telephone: 704.529.1912
   Email: bill.blank@jrvannoy.com

3. **Shiel Sexton Company Inc.**
   Attn: Ben Wilhelm
   Telephone: 704-679-0775
   Email: bwilhelm@shielsexton.com

Visitor parking is available at the Facilities Management Building/Campus Police Building (#55 on the campus map) in designated spaces in Lot 26.

Bids will be received for single prime contract. All proposals shall be lump sum. Please note that any bids delivered to the UNC Charlotte Facilities Management, Capital Projects must be received by 2:00 pm on bid day. .

Mandatory Pre-Bid Meeting

A mandatory pre-bid meeting (for the prequalified bidders) will be held for all interested bidders on Tuesday, January 12, 2016 at 2:00 p.m. in Room 112 of the Cone University Center. The meeting will address project specific questions, issues, bidding procedures, and bid forms.

Complete plans, specifications and contract documents will be open for inspection at:

UNC Charlotte
Facilities Management/Police Building
2nd Floor – Capital Projects
9151 Cameron Boulevard
Charlotte, NC 28223
(704) 687-0615

KSQ/Peterson
2115 Rexford Road
Suite 500
Charlotte, NC 28211
(704) 364-3400

Metrolina Minority Contractors Association (MMCA) Plan Room & Resource Center
2848 Queen City Drive
Suite B
Charlotte, NC 28208
(877) 526-6205
mmca@mmcaofcharlotte.org

or may be obtained by qualified as prime bidders, upon deposit of two hundred dollars ($200) in cash or certified check. The full plan deposit will be returned to those bidders provided all documents are returned in good, usable condition within ten (10) days after the bid date.

Electronic copies of the plans, specifications and contract documents will also be provided electronically to all pre-qualified bidders. Contact for electronic plans and specifications is Pam MacMillan, (704) 319-5341, or pmacmillan@ksqpeterson.com.

Electronic copies of the plans, specifications and contract documents are available at the following:

1. Associated General Contractors (AGC) Carolinas Branch and the Hispanic Contractors Association of the Carolinas (HCAC) – (800) 364-2059; sales@isqft.com

2. North Carolina Offices of McGraw-Hill Dodge Corporation – (877) 784-9556 or (800) 393-6343; http://construction.com/dodge

3. Construction Market Data – (770) 209-3429; john.kasper@cmdgroup.com or vicki.van@cmdgroup.com

NOTE: The bidder shall include with the bid proposal the form *Identification of Minority Business Participation* identifying the minority business participation it will use on the project and shall include either *Affidavit **A*** or *Affidavit **B*** as applicable. Forms and instructions are included within the Proposal Form in the bid documents. Failure to complete these forms is grounds for rejection of the bid. (GS143-128.2c Effective 1/1/2002.).

All contractors are hereby notified that they must have proper license as required under the state laws governing their respective trades.

General contractors are notified that Chapter 87, Article 1, General Statutes of North Carolina, will be observed in receiving and awarding general contracts. General contractors submitting bids on this project must have license classification for Building Contractor with an unlimited license required by the NC General Contractors Licensing Board under G.S. 87-1.

NOTE--SINGLE PRIME CONTRACTS: Under GS 87-1, a contractor that superintends or manages construction of any building, highway, public utility, grading, structure or improvement shall be deemed a "general contractor" and shall be so licensed. Therefore a single prime project that involves other trades will require the single prime contractor to hold a proper General Contractors license.

Each proposal shall be accompanied by a cash deposit or a certified check drawn on some bank or trust company, insured by the Federal Deposit Insurance Corporation, of an amount equal to not less than five percent (5%) of the proposal, or in lieu thereof a bidder may offer a bid bond of five percent (5%) of the bid executed by a surety company licensed under the laws of North Carolina to execute the contract in accordance with the bid bond. Said deposit shall be retained by the owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten days after the award or to give satisfactory surety as required by law.

A performance bond and a payment bond will be required for one hundred percent (100%) of the contract price.

Payment will be made based on ninety-five percent (95%) of monthly estimates and final payment made upon completion and acceptance of work.

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of 30 days.

The owner reserves the right to reject any or all bids and to waive informalities.

In order to maximize the time available to the successful bidder to complete the site work per Supplementary General Conditions, Article 23, Section 1.6.A, the Owner will issue a Letter of Intent to such bidder within 10 days following the bid opening. This authorizes the bidder to immediately proceed with development of shop drawings, material procurement, and/or related site work activities based on the following conditions:

- On-site work and the formal start date will not begin until after the formal contract agreement is executed and a Notice to Proceed is issued by the Designer, on behalf of the Owner.
- Payment for work by the bidder or its subcontractors will not be authorized until the formal contract agreement is executed. However, if through no fault of the bidder the contract agreement is not executed, the Owner will reimburse the bidder for actual expenses and fees expended to date.

The Letter of Intent will not modify the project schedule identified separately in the bid documents.

Bidders who will not attend the Bid Opening need to ensure their sealed bids are delivered no later than **2:00 p.m. Monday, February 15, 2016** to the following:

Mailed Proposals:
Attn: Ms. Joyce Clay
The University of North Carolina at Charlotte
Facilities Management – Capital Project
9201 University City Boulevard
Charlotte, NC 28223-0001

or

Hand Delivered:
Attn: Ms. Joyce Clay – 2nd Floor Capital Projects
Facilities Management/Campus Police Building (#55 on the campus map)
9151 Cameron Boulevard
Charlotte, NC 28223
(704) 687-0615

Designer:
KSQ/Peterson
2115 Rexford Road
Suite 500
Charlotte, NC 28211
(704) 364-3400

Owner:
The University of North Carolina at Charlotte
FM-Capital Projects
9201 University City Blvd
Charlotte, NC 28223
(704) 687-0615

END OF SECTION

SECTION 23 05 93

TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Testing, adjustment, and balancing of:
   1. Air systems.
   2. Hydronic systems.

B. Measurement of final operating condition of HVAC systems.

C. Sound measurement of equipment operating conditions.

D. Work of this Section is to be provided as an independent contract under the General Contractor. The MC shall provide coordination and associated work required for Test and Balance Contractor to perform his work as noted in this section. The MC shall coordinate schedule requirements to ensure the final TAB can be completed prior to State inspections.

1.02 REFERENCES

A. AABC MN-1 - AABC National Standards for Total System Balance; Associated Air Balance Council.

B. ASHRAE Standard 111 - **Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation and Air-Conditioning Systems**; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

C. NEBB (TAB) - Procedural Standards for Testing Adjusting Balancing of Environmental Systems; National Environmental Balancing Bureau.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Submit qualifications for approval including:
   1. Name of testing, adjusting and balancing agency.
   2. Qualifications of supervisor to be one of the following:
      a. AABC certified test and balance engineer.
      b. NEBB certified testing, balancing and adjusting supervisor.

C. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
   1. Submit to Architect/Engineer.
   2. Submit prior to starting the testing, adjusting, and balancing work.
   3. Include certification that the balancing supervisor has reviewed the contract documents, the equipment and systems, and the control system sufficiently understand the design intent for each system.
   4. Include at least the following in the plan:
      a. Preface: An explanation of the intended use of the control system.
      b. List of all air flow, water flow, sound level, system capacity and efficiency measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
      c. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
      d. Identification and types of measurement instruments to be used and their most recent calibration date.

e. Discussion of what notations and markings will be made on the duct and piping drawings during the process.
f. Final test report forms to be used.
g. Detailed step-by-step procedures for TAB work for each system and issue, including:
   1) Terminal flow calibration (for each terminal type).
   2) Diffuser proportioning.
   3) Branch/submain proportioning.
   4) Total flow calculations.
   5) Rechecking.
   6) Diversity issues.
h. Expected problems and solutions.
i. Details of how TOTAL flow will be determined; for example:
   1) Air: Sum of hood readings of all terminals, supply (SA) and return air (RA) pitot traverse, SA or RA flow stations.
   2) Water: Pump curves, circuit setter, flow station, ultrasonic, etc.
j. Specific procedures that will ensure that both air and water side are operating at the lowest possible pressures and methods to verify this.
k. Confirmation of understanding of the outside air ventilation criteria under all conditions.
l. Method of determining and setting minimum outside air flow rate.
m. Method of checking building static pressure.
n. Proposed selection points for sound measurements and sound measurement methods.
o. Methods for making coil or other system plant capacity measurements.
p. Description of TAB work for areas to be built out later, if any.
q. False loading of systems to complete TAB work, if specified.
r. Exhaust fan balancing and capacity verifications, including any required room pressure differentials.
s. Procedures for field technician logs of discrepancies, deficient or uncompleted work by others, contract interpretation requests and lists of completed tests (scope and frequency).
t. Procedures for formal progress reports, including scope and frequency.
u. Procedures for formal deficiency reports, including scope, frequency and distribution.

D. Control System Coordination Reports: Communicate in writing to the controls installer all setpoint and parameter changes made or problems and discrepancies identified during TAB which affect the control system setup and operation.

E. Progress Reports.

F. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
   1. Submit under provisions of Section 01 40 00.
   2. Submit to the Architect/Engineer, General Contractor, and HVAC Controls Contractor within two weeks after completion of testing, adjusting, and balancing.
   3. Revise TAB plan to reflect actual procedures and submit as part of final report.
   4. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect/Engineer and for inclusion in operating and maintenance manuals.
   5. Provide reports in letter size binder manuals, complete with index page and indexing tabs, with cover identification at front and side.
   6. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.

7. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
8. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Standard 111.
9. Units of Measure: Report data in both I-P (inch-pound) units.
10. Test Reports: Indicate data on AABC MN-1 forms, forms prepared following ASHRAE Standard 111, or NEBB forms.
11. Include the following on the title page of each report:
    a. Name of Testing, Adjusting, and Balancing Agency.
    b. Address of Testing, Adjusting, and Balancing Agency.
    c. Telephone number of Testing, Adjusting, and Balancing Agency.
    d. Name of TAB Supervisor.
    e. Project name.
    f. Project location.
    g. Project Architect.
    h. Project Engineer.
    i. Project Contractor.
    j. Project altitude.
    k. Report date.

G. Project Record Documents: Record actual locations of flow measuring stations, balancing valves and other balancing devices.

1.04 QUALITY ASSURANCE

A. Perform total system balance in accordance with AABC MN-1, ASHRAE Standard 111, or NEBB Procedural Standards for Testing, Balancing and Adjusting of Environmental Systems.

B. TAB Agency Qualifications: Company specializing in the testing, adjusting, and balancing of systems specified in this Section with minimum three years of experience.

C. Perform Work under supervision of AABC Certified Test and Balance Engineer, NEBB Certified Testing, Balancing and Adjusting.

1.05 SEQUENCING, SCHEDULING and COORDINATION

A. Sequence work to commence after completion of systems and schedule completion of work before Substantial Completion of Project. Coordinate work schedule with GC and affected subcontractors.

B. Schedule and provide assistance in final adjustment and test of life safety systems, smoke evacuation systems, and smoke control systems.

C. Coordinate with and provide necessary support to the commissioning agent during the functional testing process.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
    1. Systems are started and operating in a safe and normal condition.
    2. Temperature control systems are installed complete and operable.
    3. Proper thermal overload protection is in place for electrical equipment.
    4. Final filters are clean and in place. If required, install temporary media in addition to final filters.

5. Duct systems are clean of debris.
6. Fans are rotating correctly.
7. Fire and volume dampers are in place and open.
8. Air coil fins are cleaned and combed.
9. Access doors are closed and duct end caps are in place.
10. Air outlets are installed and connected.
11. Duct system leakage is minimized.
12. Hydronic systems are flushed, filled, and vented.
13. Pumps are rotating correctly.
14. Proper strainer baskets are clean and in place.
15. Service and balance valves are open.

B. Submit field reports. Report defects and deficiencies noted during performance of services which prevent system balance.

3.02 PREPARATION

A. Provide instruments required for testing, adjusting, and balancing operations. Make instruments available to Architect to facilitate spot checks during testing.

B. Provide additional balancing devices as required.

3.03 INSTALLATION TOLERANCES

A. Air Handling Systems: Adjust to within plus or minus 10 percent of design for supply systems and plus or minus 10 percent of design for return and exhaust systems.

B. Air Outlets and Inlets: Adjust total to within plus or minus 10 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

C. Hydronic Systems: Adjust to within plus or minus 10 percent of design.

3.04 RECORDING AND ADJUSTING

A. Field Logs: Maintain written logs including:
1. Running log of events and issues.
2. Discrepancies, deficient or uncompleted work by others.
3. Contract interpretation requests.
4. Lists of completed tests.

B. Ensure recorded data represents actual measured or observed conditions.

C. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.

D. Mark on the drawings the locations where traverse and other critical measurements were taken and cross reference the location in the final report.

E. Cross reference diffusers with the location in the final report.

F. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.

G. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

H. Where actual measurements recorded for the final balance show deviation of more than the specified tolerance from the design, and the deviation cannot be corrected by balancing with the installed layout and elements, note this deviation in the final report with recommendations for corrective action.

I. In those cases where recorded data can be reasonably interpreted to be inaccurate, inconsistent or erroneous, the Engineer may request additional testing and balancing. The TAB Contractor shall, at no additional cost to the Owner, perform such retesting and rebalancing as directed by and in the presence of the Engineer.

J. Where, in the opinion of the TAB Contractor, there is excessive vibration, movement or noise from any piece of equipment, ductwork, or piping, these conditions should be noted in the final report with recommendations for action.

3.05 AIR SYSTEM PROCEDURE

A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities.

B. Make air quantity measurements in ducts by traverse of entire cross sectional area of duct.

C. Measure air quantities at air inlets and outlets.

D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.

E. Use volume control devices to regulate air quantities only to extent that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.

F. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.

G. Provide system schematic with required and actual air quantities recorded at each outlet or inlet. The design documents may be used for this.

H. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.

I. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.

J. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.

K. Where modulating dampers are provided, take measurements and balance at extreme conditions. Balance variable volume systems at maximum air flow rate, full cooling, and at minimum air flow rate, full heating.

L. Measure building static pressure and adjust supply, return, and exhaust air systems to provide required relationship between each to maintain approximately 0.05 inches positive static pressure.

M. For variable air volume terminal units set volume controller to air flow setting indicated. Confirm connections properly made and confirm proper operation for automatic variable air volume temperature control.

N. On fan powered VAV boxes, adjust fan speed for air flow setting indicated.

3.06 WATER SYSTEM PROCEDURE

A. Adjust water systems to provide required or design quantities.

B. Use calibrated fittings and pressure gauges to determine flow rates for system balance. Where flow metering devices are not installed, base flow balance on temperature difference across various heat transfer elements in the system.

C. Adjust systems to provide specified pressure drops and flows through heat transfer elements prior to thermal testing. Perform balancing by measurement of temperature differential in conjunction with air balancing.

D. Effect system balance with automatic control valves fully open to heat transfer elements.

E. Effect adjustment of water distribution systems by means of balancing cocks, valves, and fittings. Do not use service or shut-off valves for balancing unless indexed for balance point.

F. Where available pump capacity is less than total flow requirements or individual system parts, full flow in one part may be simulated by temporary restriction of flow to other parts.

3.07 SCOPE

A. Test, adjust, and balance the following:
1. HVAC Pumps
2. Packaged Boilers
3. Centrifugal Water Chillers
4. Induced Draft Cooling Tower
5. Packaged Roof Top Heating/Cooling Units
6. Packaged Terminal Air Conditioning Units
7. Unit Air Conditioners
8. Computer Room Air Conditioning Units
9. Air Coils
10. Terminal Heat Transfer Units
11. Air Handling Units
12. Fans
13. Air Filters
14. Air Terminal Units
15. Air Inlets and Outlets

3.08 MINIMUM DATA TO BE REPORTED

A. Electric Motors:
1. Manufacturer
2. Model/Frame
3. HP/BHP
4. Phase, voltage, amperage; nameplate, actual, no load
5. RPM
6. Service factor
7. Starter size, rating, heater elements
8. Sheave Make/Size/Bore

B. V-Belt Drives:
1. Identification/location
2. Required driven RPM
3. Driven sheave, diameter and RPM
4. Belt, size and quantity
5. Motor sheave diameter and RPM
6. Center to center distance, maximum, minimum, and actual

C. Pumps:
1. Identification/number
2. Manufacturer
3. Size/model
4. Impeller
5. Service
6. Design flow rate, pressure drop, BHP

7. Actual flow rate, pressure drop, BHP
8. Discharge pressure
9. Suction pressure
10. Total operating head pressure
11. Shut off, discharge and suction pressures
12. Shut off, total head pressure

D. Combustion Equipment:
1. Boiler manufacturer
2. Model number
3. Serial number
4. Firing rate
5. Overfire draft
6. Gas meter timing dial size
7. Gas meter time per revolution
8. Gas pressure at meter outlet
9. Gas flow rate
10. Heat input
11. Burner manifold gas pressure
12. Percent carbon monoxide (CO)
13. Percent carbon dioxide (CO2)
14. Percent oxygen (O2)
15. Percent excess air
16. Flue gas temperature at outlet
17. Ambient temperature
18. Net stack temperature
19. Percent stack loss
20. Percent combustion efficiency
21. Heat output

E. Chillers:
1. Identification/number
2. Manufacturer
3. Capacity
4. Model number
5. Serial number
6. Evaporator entering water temperature, design and actual
7. Evaporator leaving water temperature, design and actual
8. Evaporator pressure drop, design and actual
9. Evaporator water flow rate, design and actual
10. Condenser entering water temperature, design and actual
11. Condenser pressure drop, design and actual
12. Condenser water flow rate, design and actual

F. Cooling Tower:
1. Tower identification/number
2. Manufacturer
3. Model number
4. Serial number
5. Rated capacity
6. Entering air WB temperature, specified and actual
7. Leaving air WB temperature, specified and actual
8. Ambient air DB temperature
9. Condenser water entering temperature
10. Condenser water leaving temperature

11. Condenser water flow rate
12. Fan RPM

G. Cooling Coils:
1. Identification/number
2. Location
3. Service
4. Manufacturer
5. Air flow, design and actual
6. Entering air DB temperature, design and actual
7. Entering air WB temperature, design and actual
8. Leaving air DB temperature, design and actual
9. Leaving air WB temperature, design and actual
10. Water flow, design and actual
11. Water pressure drop, design and actual
12. Entering water temperature, design and actual
13. Leaving water temperature, design and actual
14. Saturated suction temperature, design and actual
15. Air pressure drop, design and actual

H. Heating Coils:
1. Identification/number
2. Location
3. Service
4. Manufacturer
5. Air flow, design and actual
6. Water flow, design and actual
7. Water pressure drop, design and actual
8. Entering water temperature, design and actual
9. Leaving water temperature, design and actual
10. Entering air temperature, design and actual
11. Leaving air temperature, design and actual
12. Air pressure drop, design and actual

I. Air Moving Equipment:
1. Location
2. Manufacturer
3. Model number
4. Serial number
5. Arrangement/Class/Discharge
6. Air flow, specified and actual
7. Return air flow, specified and actual
8. Outside air flow, specified and actual
9. Total static pressure (total external), specified and actual
10. Inlet pressure
11. Discharge pressure
12. Sheave Make/Size/Bore
13. Number of Belts/Make/Size
14. Fan RPM

J. Return Air/Outside Air:
1. Identification/location
2. Design air flow
3. Actual air flow
4. Design return air flow
5. Actual return air flow

6. Design outside air flow
7. Actual outside air flow
8. Return air temperature
9. Outside air temperature
10. Required mixed air temperature
11. Actual mixed air temperature
12. Design outside/return air ratio
13. Actual outside/return air ratio

K. Exhaust Fans:
1. Location
2. Manufacturer
3. Model number
4. Serial number
5. Air flow, specified and actual
6. Total static pressure (total external), specified and actual
7. Inlet pressure
8. Discharge pressure
9. Sheave Make/Size/Bore
10. Number of Belts/Make/Size
11. Fan RPM

L. Duct Traverses:
1. System zone/branch
2. Duct size
3. Area
4. Design velocity
5. Design air flow
6. Test velocity
7. Test air flow
8. Duct static pressure
9. Air temperature
10. Air correction factor

M. Air Flow Measuring Stations:
1. Identification/location
2. System
3. Size
4. Area
5. Design velocity
6. Design air flow
7. Test velocity
8. Test air flow

N. Hydronic Flow Measuring Stations:
1. Identification/number
2. Location
3. Size
4. Manufacturer
5. Model number
6. Serial number
7. Design Flow rate
8. Design pressure drop
9. Actual/final pressure drop
10. Actual/final flow rate
11. Station calibrated setting

O. Terminal Unit Data:
   1. Manufacturer
   2. Type, constant, variable, single, dual duct
   3. Identification/number
   4. Location
   5. Model number
   6. Size
   7. Minimum static pressure
   8. Minimum design air flow
   9. Maximum design air flow
   10. Maximum actual air flow
   11. Inlet static pressure

P. Air Distribution Tests:
   1. Air terminal number
   2. Room number/location
   3. Terminal type
   4. Terminal size
   5. Area factor
   6. Design velocity
   7. Design air flow
   8. Test (final) velocity
   9. Test (final) air flow
   10. Percent of design air flow

Q. Sound Level Reports:
   1. Location
   2. Octave bands - equipment off
   3. Octave bands - equipment on

END OF SECTION

SECTION 32 92 00

TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Seeding.
2. Sodding.

B. Related Sections:

1. Division 31 Section "Site Clearing" for topsoil stripping and stockpiling.
2. Division 31 Section "Earth Moving" for excavation, filling and backfilling, and rough grading.
3. Division 32 Section "Planting Irrigation" for turf irrigation.
4. Division 32 Section "Plants" for border edgings.

C. Substitutions:

1. The species or varieties, materials, products or sizes specified herein by botanical and common name, shall be provided as specified.
2. Substitutions will be permitted only upon written application by the Contractor to the Grounds Superintendent, and when approved by Landscape Architect in writing.
3. Request for permission to substitute will not be entertained unless adequate evidence substantiating the unavailability of the specified item accompanies the request for substitution.

1.3 DEFINITIONS

A. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.

B. Finish Grade: Elevation of finished surface of planting soil.

C. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

D. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

E. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

F. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

G. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.

H. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

I. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

1. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to this Project.

B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

1. Certification of each seed mixture for turfgrass sod. Include identification of source and name and telephone number of supplier.

C. Qualification Data: For qualified landscape Installer.

D. Product Certificates: For soil amendments and fertilizers, signed by manufacturer.

E. Material Test Reports: For existing surface soil.

F. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required initial maintenance periods.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful turf establishment.

1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

2. Pesticide Applicator: State licensed, commercial.

B. Soil-Testing Laboratory Qualifications: An independent laboratory or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

1. Soil Analysis: For each unamended soil type, furnish soil analysis and a written report by a qualified soil-testing laboratory.

2. The soil-testing laboratory shall oversee soil sampling.

3. Report suitability of tested soil for turf growth.

a. State recommendations for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.

b. Report presence of problem salts, minerals, or heavy metals; if present, provide additional recommendations for corrective action.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod in time for planting within 24 hours of harvesting. Protect sod from breakage and drying.

1.7 MAINTENANCE SERVICE

A. Initial Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable turf is established but for not less than the following periods:

1. Seeded Turf: 60 days from date of Substantial Completion.
    a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.
2. Sodded Turf: 30 days from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SEED

A. Grass seed shall be turf Zoysia 'Palisades'.

B. Superintendent and/or designee and as specified on plans with a 95% minimum purity and 85% minimum germination, and be free of noxious weed seeds, as certified by the North Carolina Co-op Improvement Association or its approved equivalent by the Grounds Superintendent or designee.

C. Seed shall be delivered to the site in sealed standard size containers, showing weight, analysis, name of vendor and germination test. Seed, which has become wet, moldy, over one year old, or otherwise damaged, will not be accepted.

2.2 TURFGRASS SOD

A. Turfgrass Sod: Certified, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.

B. Sod shall be two years old; minimum thickness of 1/2 to 5/8 inch plus thickness of top growth and thatch.

C. Approved turf type shall be turf Zoysia 'Palisades'.

2.3 LAWN MULCH:

A. Lawn mulch shall be Polyacrylamide powder or oat straw from the latest available harvest crop and shall be free of noxious weed seeds and foreign material.

B. Specifications/Compliances:
1. ANSI/NSF Standard 60 Drinking water treatment chemicals.
2. 48h or 96h Acute Toxicity Tests (*D. magna, P. promelas, or O. mykiss).*
3. 7 day Chronic Toxicity Tests (*P. promelas or C. dubia)*

C. Technical Information:
1. Appearance: White granular powder
2. Bulk Density: 40-50 lbs/cubic foot
3. Percentage Moisture: 15% maximum
4. pH 0.5% solution: 6-8
5. Shelf Life: up to 5 years

D. Coverage:
1. 10-20 # powder/Acre – gentle to moderate slopes (flat to 4:1) Dry Spread Application
2. 20-50 # powder/Acre – steep slopes (3:1 to 1:1) Dry Spread Application
3. 3.5-5 # powder/1,000 gallons water per 1/3 Acre – Hydroseed Application

E. Directions for Use:
1. Dry Form: Polyacrylamide Erosion Control Powder may be applied by hand spreader, mechanical disc, or hand sowing. Slope or ditch application may require artificial support, such as double-shredded hardwood much, to reduce down slope movement. Areas of high water velocity will require benching or tier structuring to reduce velocity. Sheet flow applications are best.
2. Liquid Form: Polyacrylamide Erosion Control Powder may be applied with hydroseeders, water trucks or other spraying devices. All spraying devices must have a mechanical agitator or mixing apparatus or hydraulic recirculation. **Caution-Do Not** mix powder into a spraying device that does not contain a mixing apparatus.

F. Mixing:
1. Sprinkle powder into the water with the mixing apparatus operating as the last material to be added to the mix. Three to Five minutes of mixing will be required after the powder is sprinkled into the water. ADD THE POWDER SLOWLY-adding the powder too fast will result in clumping resulting in poor performance. Longer mixing times will create high viscosity solutions possibly causing some types of spray equipment to undergo cavitation. **Caution-Do Not** exceed 8 lbs/1500 gallons as viscosity of the water may damage spraying equipment. (This will treat ½ acre).

F. Clean-Up:
1. Spilled powder should be cleaned up dry as best as possible using broom or vacuum. Extreme slippery conditions will result. In event of skin contact, wash powder from skin as soon as possible using soap and water.

G. Precautions/Limitations:
1. Prevent inhalation of the powder, use adequate dust mask.
2. Clean up spills quickly. Do not use water unless necessary, extremely slippery conditions will result.
3. Do Not add water to the Polyacrylamide Erosion Control Powder, add the powder (sprinkle) to the water slowly.
4. Polyacrylamide Erosion Control Powder will remain viable on the soil surface for 60-90 days. Longer viability will occur when applied powder is covered with double-shredded hardwood mulch.
5. Polyacrylamide Erosion Control Powder has been specifically tailored to specific soil types. Soil types in varying geographical areas will require testing.

2.4 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:

1. Class: T, with a minimum of 99 percent passing through No. 8 sieve and a minimum of 75 percent passing through No. 60 sieve.

2. Class: O, with a minimum of 95 percent passing through No. 8 sieve and a minimum of 55 percent passing through No. 60 sieve.

B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, and with a minimum of 99 percent passing through No. 6 sieve and a maximum of 10 percent passing through No. 40 sieve.

C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

D. Aluminum Sulfate: Commercial grade, unadulterated.

E. Perlite: Horticultural perlite, soil amendment grade.

F. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No. 50 sieve.

G. Sand: Clean, washed, natural or manufactured, and free of toxic materials.

H. Diatomaceous Earth: Calcined, 90 percent silica, with approximately 140 percent water absorption capacity by weight.

I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.5 ORGANIC SOIL AMENDMENTS

A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1/2-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings.

B. Sphagnum Peat: Partially decomposed sphagnum peat moss, finely divided or of granular texture, with a pH range of 3.4 to 4.8.

C. Muck Peat: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture, with a pH range of 6 to 7.5, and having a water-absorbing capacity of 1100 to 2000 percent.

D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.

E. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.6 FERTILIZERS

A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 4 percent nitrogen and 10 percent phosphoric acid.

B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.

D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.

2.7 PLANTING SOILS

A. Topsoil: Native soil on site or natural soil harvested from another site that naturally has the texture and composition to meet the specification described below, and is free of noxious weed see, shall constitute an Acceptable Planting Media. (APM).

B. Planting mix for Lawn, Turf or Seeding Areas: A planting mix may be developed that will be an Acceptable Planting Media by amending the existing soil or by removing the existing soil and replacing it with new planting mix. The planting mix shall have uniform composition throughout, with a mixture of subsoil. It shall be free of stones, lumps, live plants and their roots, sticks, and other extraneous matter. It shall contain no man-made materials unless otherwise specified. Planting mix shall not be used while in a frozen or muddy condition.

C. Unless there are unusual circumstances with project and unless otherwise specified in the contract documents and approved by the Grounds Superintendent and/or designee, the Acceptable Planting Media shall contain the following specified percentages of constituents:

1. CLAY Minimum 10%/Maximum 40%
2. SAND Minimum 20%/Maximum 50%
3. SILT Minimum 20%/Maximum 50%
4. ORGANIC MATTER Minimum 5%/Maximum 10%

D. Organize Matter is defined as compost/humus such as sawdust or leaf mold that has completed the decomposition process. Percentage of organic matter shall be determined by loss on ignition of moisture free samples dried at 65 degrees.

2.8 PESTICIDES

A. General: Pesticide, registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Soil Testing: A sample of the proposed topsoil or planting mix shall be submitted to the Grounds Superintendent 30 calendar days prior to installation and be approved prior to delivery to the site. Organic matter will be defined as organic/humus such as sawdust or leaf-mold that has completed the decomposition process. Planting mix shall be corrected by the Contractor. Retesting cost shall be at the Contractor's expense.

B. Preparation of Seed Bed: Unless otherwise approved by the PM/Engineer, all other site work required by this contract shall be complete and in place before grassing operations are begun.

C. Work may be completed in parts if so requested by the Contractor and approved by the PM/Engineer. Prior to seeding operations, all proposed lawn areas shall be scarified to 6" depth and pulverized until the surface is smooth, friable and of a uniformly fine texture. Remove stones and foreign material over one inch in diameter and grade for positive drainage as required to prevent ponding of water. Finish grade will be made by hand raking (all seeded areas).

D. Lime shall be broadcasted and worked into the soil at all areas at the rate dictated by the soil test that will provide a PH level of 6.5 to 7.0.

E. Examine areas to be planted for compliance with requirements and other conditions affecting performance.

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.

F. Proceed with installation only after unsatisfactory conditions have been corrected.

G. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

3.3 TURF AREA PREPARATION

A. Limit turf subgrade preparation to areas to be planted.

B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 6 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1. Apply superphosphate fertilizer directly to subgrade before loosening.
2. Thoroughly blend planting soil off-site before spreading, or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil.
3. Spread planting soil to a depth of 2 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

C. Unchanged Subgrades: If turf is to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:

1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
2. Loosen surface soil to a depth of at least 6 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 6 inches of soil. Till soil to a homogeneous mixture of fine texture.
    a. Apply superphosphate fertilizer directly to surface soil before loosening.
3. Remove stones larger than 1 inch in any dimension and sticks, roots, trash, and other extraneous matter.
4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.

D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.

E. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

F. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

G. University Bed Preparation requirements:

1. Soil preparations for planting areas are divided into four categories depending on the situation. The two categories that apply to turfs and grasses are Type 1 and Type 2:
    a. Type I
        1) The “Type I” planting bed preparation is intended for areas in which the existing soil is of sufficient quality that it can be retained and amended to achieve the plant mix specification. Backfill materials/soils cannot meet this criteria and is covered by Type 2.
        2) Existing vegetation shall be removed by scraping away the top 3” of existing grade. Subsoil to 12” remove rocks (including gravel) and debris and remove from the site.

3) This material shall be hauled away and disposed of in accordance with the contract provisions.
4) The contractor shall install a sufficient quantity of soil and soil amendments to achieve the desired/specified final grade and soil specification. Soil shall be added in an amount sufficient to account for natural consolidation of the final soil product. Unless otherwise specified, the plant bed shall be graded as follows:
   a) Roadway medians 2" to 4" above top/curb at center of median
   b) Sidewalk planting strips-achieve positive drainage from front of walk to back of curb
   c) All soil amendments shall be mixed thoroughly and completely with the existing soil.
5) All stone and debris is to be removed from the median areas and shoulder of the roadways. No further work (any new material added) is to proceed until this stone and debris is removed. Hand raking is strongly recommended.
6) There is to be no damage to the existing trees or their root systems during this work. All damages will be the responsibility of the contractor to correct or replace at the direction of the Grounds Superintendent or representative. All turf work is to be outside of the mulch ring areas.

b. Type 2
1) The "Type 2" planting bed preparation is intended for areas in which the existing soil is to be removed to a depth of 18" and replaced with soil meeting the plant mix specification. This preparation also includes the tilling, loosening, sub-soiling of the material from18" to 36" deep in order to provide aeration and lessen the compaction. Backfill materials/soils fit into this category and must be removed/replaced.
2) Existing soil shall be removed and disposed of in accordance with the contract provisions. The existing layer of soil between 18" and 36" deep shall be tilled in place and inspected by Grounds Superintendent or designee prior to plant mix/soil being added to reach final grade.
3) The contractor shall install a sufficient quantity of approved plant mix to achieve the desired/specified grade. Soil shall be added in an amount sufficient to account for natural consolidation. Unless otherwise specified, the plant bed shall be graded as follows:
   a) Roadway medians & Planting beds – crown height in inches shall be equal to median width in feet with a maximum height of 6 inches.
   b) Roadway plants strips-achieve positive drainage from front of walk to back of curb
   c) Plant beds in turf areas or around buildings – 6" above surrounding grade at center of bed, 2" above grade at edge of bed.
4) All planting beds and areas to be mulched shall have a 4" V-cut trench installed at the perimeter of the planting bed and adjacent to concrete walks, curbing, and grassed areas. The V-cut trench shall form the bed line edge. Trench depth and width shall be consistent and uniform throughout the installation.
5) All work shall be achieved from the sides of the planting bed areas. The contractor shall not allow equipment to operate on the loosened soil or plant mix.

3.4 SEEDING

A. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.

1. Do not use wet seed or seed that is moldy or otherwise damaged.

2. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

B. Apply fertilizer at a rate of 250 lbs. per acre to all areas

C. Sow seed at a total rate of 8 lb/1000 sq. ft. for new lawn areas; 3 to 5 lb/ 1000 sq. ft. for overseeded areas.

D. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.

E. Apply mulch uniformly at the rate of 1-2 bales (90 pounds) per 1,000 sq. ft.

F. Protect seeded areas from hot, dry weather or drying winds by applying compost mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch, and roll surface smooth.

3.5 SODDING

A. Pre-emergent Herbicide: A pre-emergent herbicide and fertilizer combination (oxadiazon + fertilizer, or approved equal) shall be broadcast according to label recommendations Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.

B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

1. Lay sod across angle of slopes exceeding 1:3.

2. Anchor sod on slopes exceeding 1:6 with wood pegs spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage.

C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.6 TURF MAINTENANCE

A. Prior to acceptance: The Contractor shall be responsible for all maintenance of plants, turf and facilities until final acceptance. This includes all necessary watering, application of appropriate fertilizer, based on planting season, and the appropriate application of fungicides and insecticides necessary to maintain plants free from disease and insect activity.

1. All maintenance performed prior to acceptance shall be considered incidental to the project and no separate payment shall be made.

B. Seeded Areas:

1. Maintenance of seeded areas shall consist of fertilization, erosion repair, reseeding and incidental operations as necessary to establish a vigorous, healthy and uniform stand of specified grass. All areas which fail to show a uniform stand of grass for any reason shall be treated properly until a uniform stand of at least 90% coverage is attained with no bare areas.

2. Grass mowing operations shall be performed by the Contractor until final acceptance of the work. Trash and debris shall be removed prior to mowing performed only when the grass is dry. Mowing of turf shall be performed whenever grass height is 5”. It shall be cut to a height of 3” to 4”. All maintenance performed prior to acceptance shall be considered incidental to the project and no separate payment shall be made.

C. Sodded / Areas: Contractor shall maintain sodded areas as follows:

1. Watering: Water sod / sprigs immediately after installation. Soak sod thoroughly enough to penetrate soil below the newly installed sod. Then water as follows:
   a. 0-14 days 170 gallons/ 1,000 sq. ft. , every day
   b. 15-28 days 225 gallons/ 1,000 sq. ft. , every other day

c. 29-42 days 340 gallons/ 1,000 sq. ft. , every three days
d. 43-48 days 680 gallons/ 1,000 sq. ft. , once per week
e. After 48 days As needed to maintain acceptable turf
f. In the event the project is accepted prior to the watering requirements being fulfilled, the contractor will be required to provide water up to 90 days after sodding.

2. Fertilizing Sodded Areas:
   a. Fertilize sod 2 to 3 weeks after laying sod with high phosphorus fertilizer. Apply a complete nitrogen fertilizer every three weeks until the sod has achieved satisfactory establishment.
3. Mowing Sodded Areas:
   a. Grass mowing operations shall be performed by the Contractor until final acceptance of the work.
   b. Trash and debris shall be removed prior to mowing.
   c. Mowing shall be performed only when the grass is dry.
   d. Mowing of turf shall be performed whenever grass height is 5". It shall be cut to a height of 3" to 4".
4. Apply pesticides and other chemical products and biological control agents in accordance with requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

3.7 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by Architect:

1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 95 percent over any 10 sq. ft. and bare spots not exceeding one (1) square foot.
2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.

B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

3.8 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

END OF SECTION

SECTION 32 93 00

PLANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plants.
2. Planting soils.
3. Tree stabilization.

B. Related Sections:

1. Division 31 Section "Site Clearing" for protection of existing trees and plantings, topsoil stripping and stockpiling, and site clearing.
2. Division 31 Section "Earth Moving" for excavation, filling, and rough grading and for subsurface aggregate drainage and drainage backfill materials.

1.2 DEFINITIONS

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.

B. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.

C. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.

D. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.

E. Finish Grade: Elevation of finished surface of planting soil.

F. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

G. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

H. Pests: Living organisms that occur where they are not desired, or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

I. Planting Area: Areas to be planted.

J. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

K. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.

L. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

M. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.

N. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

O. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

P. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated, including soils.

1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
2. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to the Project.

B. Samples for Verification: For each of the following:

1. Trees and Shrubs: Three samples of each variety and size delivered to the site for review. Maintain approved samples on-site as a standard for comparison.
2. Organic Mulch: 1-pint volume of each organic mulch required; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.

C. Qualification Data: For qualified landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.

D. Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:

1. Manufacturer's certified analysis of standard products.
2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

E. Material Test Reports: For existing in-place surface soil.

F. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before start of required maintenance periods.

G. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

A. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

1. Pesticide Applicator: State licensed, commercial.

B. Soil Analysis: For each unamended soil type, furnish soil analysis and a written report by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of the soil.

1. A sample of the proposed topsoil or planting mix shall be submitted to the Grounds Superintendent 30 calendar days prior to installation and be approved prior to delivery to the site. Organic matter will be defined as organic/humus such as sawdust or leaf-mold that has completed the decomposition process. Planting mix shall be corrected by the Contractor. Retesting cost shall be at the Contractor’s expense.
2. The soil-testing laboratory shall oversee soil sampling.
3. Report suitability of tested soil for plant growth.

a. State recommendations for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.
b. Report presence of problem salts, minerals, or heavy metals; if present, provide additional recommendations for corrective action.

C. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

D. Plant Material Observation: Landscape Architect and Grounds Superintendent may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Landscape Architect and Grounds Superintendent retain right to observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

1. Notify Landscape Architect of sources of planting materials seven days in advance of delivery to site.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk fertilizers, lime, and soil amendments with appropriate certificates.

C. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

D. Handle planting stock by root ball.

E. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
2. Do not remove container-grown stock from containers before time of planting.
3. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly-wet condition.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

B. Interruption of Existing Services or Utilities: Do not interrupt services or utilities to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary services or utilities according to requirements indicated:

1. Notify Owner no fewer than two days in advance of proposed interruption of each service or utility.
2. Do not proceed with interruption of services or utilities without Owner's written permission.

C. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
1. The UNC Charlotte standard planting timeframe is October 15th – May 1st.

D. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

E. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.
1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.7 WARRANTY

A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.
1. Failures include, but are not limited to, the following:
   a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner, or incidents that are beyond Contractor's control.
   b. Structural failures including plantings falling or blowing over.
2. Warranty Periods from Date of Substantial Completion:
   a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
3. Include the following remedial actions as a minimum:
   a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
   b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
   c. A limit of one replacement of each plant will be required except for losses or replacements due to failure to comply with requirements.
   d. Provide extended warranty for period equal to original warranty period, for replaced plant material.

1.8 MAINTENANCE SERVICE

A. Initial Maintenance Service: Provide maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established but for not less than maintenance period below.
1. Maintenance Period for Trees and Shrubs: Six months from date of Substantial Completion.
2. Maintenance Period for Ground Cover and Other Plants: Six months from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant Schedule or Plant Legend shown on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated

when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

1. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots will be rejected.
2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.

B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.

C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

D. Labeling: Label each plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for the plant as shown on Drawings.

E. If formal arrangements or consecutive order of plants is shown on Drawings, select stock for uniform height and spread, and number the labels to assure symmetry in planting.

2.2 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:

1. Class: T, with a minimum of 99 percent passing through No. 8 sieve and a minimum of 75 percent passing through No. 60 sieve.
2. Class: O, with a minimum of 95 percent passing through No. 8 sieve and a minimum of 55 percent passing through No. 60 sieve.
3. Provide lime in form of ground dolomitic limestone.

B. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent sulfur, with a minimum of 99 percent passing through No. 6 sieve and a maximum of 10 percent passing through No. 40 sieve.

C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

D. Aluminum Sulfate: Commercial grade, unadulterated.

E. Perlite: Horticultural perlite, soil amendment grade.

F. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No. 50 sieve.

G. Sand: Clean, washed, natural or manufactured, and free of toxic materials.

H. Diatomaceous Earth: Calcined, 90 percent silica, with approximately 140 percent water absorption capacity by weight.

I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.3 ORGANIC SOIL AMENDMENTS

A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 3/4-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

1. Organic Matter Content: 50 to 60 percent of dry weight.
2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

B. Sphagnum Peat: Partially decomposed sphagnum peat moss, finely divided or granular texture, with a pH range of 3.4 to 4.8.

C. Muck Peat: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture, with a pH range of 6 to 7.5, and having a water-absorbing capacity of 1100 to 2000 percent.

D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.

1. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with ammonium nitrate at a minimum rate of 0.15 lb/cu. ft. of loose sawdust or ground bark, or with ammonium sulfate at a minimum rate of 0.25 lb/cu. ft. of loose sawdust or ground bark.

E. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, debris, and material harmful to plant growth.

2.4 FERTILIZERS

A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 1 percent nitrogen and 10 percent phosphoric acid.

B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

E. Planting Tablets: Tightly compressed chip type, long-lasting, slow-release, commercial-grade planting fertilizer in tablet form. Tablets shall break down with soil bacteria, converting nutrients into a form that can be absorbed by plant roots.

1. Size: 10-gram tablets.
2. Nutrient Composition: 20 percent nitrogen, 10 percent phosphorous, and 5 percent potassium, by weight plus micronutrients.

2.5 PLANTING SOILS

A. Planting Soil : ASTM D 5268 topsoil, with pH range of 5.5 to 7, a minimum of 4 percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth. Mix ASTM D 5268 topsoil with the soil amendments and fertilizers as recommended by the soils testing report.

B. Planting Soil: Existing, native surface topsoil formed under natural conditions with the duff layer retained during excavation process. Verify suitability of native surface topsoil to produce viable planting soil. Clean soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

1. Supplement with planting soil when quantities are insufficient.

2. Mix existing, native surface topsoil with the soil amendments and fertilizers as recommended by the soils testing report.

C. Planting Soil: Existing, in-place surface soil. Verify suitability of existing surface soil to produce viable planting soil. Remove stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth. Mix surface soil with the soil amendments and fertilizers as recommended by the soils testing report.

2.6 MULCHES

A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:

1. Type: Double-hammered and cured hardwood.
2. Color: Brown, dyed.

2.7 WEED-CONTROL BARRIERS

A. Nonwoven Geotextile Filter Fabric: Polypropylene or polyester fabric, 3 oz./sq. yd. minimum, composed of fibers formed into a stable network so that fibers retain their relative position. Fabric shall be inert to biological degradation and resist naturally-encountered chemicals, alkalis, and acids.

B. Composite Fabric: Woven, needle-punched polypropylene substrate bonded to a nonwoven polypropylene fabric, 4.8 oz./sq. yd.

2.8 PESTICIDES

A. General: Pesticide registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

2.9 MISCELLANEOUS PRODUCTS

A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.

B. Burlap: Non-synthetic, biodegradable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive plants for compliance with requirements and conditions affecting installation and performance.

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

D. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

E. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.

3.2 PLANTING AREA ESTABLISHMENT

A. Loosen subgrade of planting areas to a minimum depth of 12 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1. Apply superphosphate fertilizer directly to subgrade before loosening.
2. Spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil.
    a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
    b. Mix lime with dry soil before mixing fertilizer.
3. Spread planting soil to a depth of 12 inches but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
    a. Spread approximately one-half the thickness of planting soil over loosened subgrade. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil.

B. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades. Coordinate with site grading to provide a 6-inch layer of organic topsoil across all areas of the site where new planting is to occur.

C. University Bed Preparation requirements:

1. Soil preparations for planting areas are divided into four categories depending on the situation:
    a. Type I
        1) The “Type I” planting bed preparation is intended for areas in which the existing soil is of sufficient quality that it can be retained and amended to achieve the plant mix specification. Backfill materials/soils cannot meet this criteria and is covered by Type 2.
        2) Existing vegetation shall be removed by scraping away the top 3” of existing grade. Subsoil to 12” remove rocks (including gravel) and debris and remove from the site.
        3) This material shall be hauled away and disposed of in accordance with the contract provisions.
        4) The contractor shall install a sufficient quantity of soil and soil amendments to achieve the desired/specified final grade and soil specification. Soil shall be added in an amount sufficient to account for natural consolidation of the final soil product. Unless otherwise specified, the plant bed shall be graded as follows:
            a) Roadway medians 2” to 4” above top/curb at center of median
            b) Sidewalk planting strips-achieve positive drainage from front of walk to back of curb

c) All soil amendments shall be mixed thoroughly and completely with the existing soil.

5) All stone and debris is to be removed from the median areas and shoulder of the roadways. No further work (any new material added) is to proceed until this stone and debris is removed. Hand raking is strongly recommended.

6) There is to be no damage to the existing trees or their root systems during this work. All damages will be the responsibility of the contractor to correct or replace at the direction of the Grounds Superintendent or representative. All turf work is to be outside of the mulch ring areas.

b. Type 2

1) The "Type 2" planting bed preparation is intended for areas in which the existing soil is to be removed to a depth of 18" and replaced with soil meeting the plant mix specification. This preparation also includes the tilling, loosening, sub-soiling of the material from18" to 36" deep in order to provide aeration and lessen the compaction. Backfill materials/soils fit into this category and must be removed/replaced.

2) Existing soil shall be removed and disposed of in accordance with the contract provisions. The existing layer of soil between 18" and 36" deep shall be tilled in place and inspected by Grounds Superintendent or designee prior to plant mix/soil being added to reach final grade.

3) The contractor shall install a sufficient quantity of approved plant mix to achieve the desired/specified grade. Soil shall be added in an amount sufficient to account for natural consolidation. Unless otherwise specified, the plant bed shall be graded as follows:

a) Roadway medians & Planting beds – crown height in inches shall be equal to median width in feet with a maximum height of 6 inches.

b) Roadway plants strips-achieve positive drainage from front of walk to back of curb

c) Plant beds in turf areas or around buildings – 6" above surrounding grade at center of bed, 2" above grade at edge of bed.

4) All planting beds and areas to be mulched shall have a 4" V-cut trench installed at the perimeter of the planting bed and adjacent to concrete walks, curbing, and grassed areas. The V-cut trench shall form the bed line edge. Trench depth and width shall be consistent and uniform throughout the installation.

5) All work shall be achieved from the sides of the planting bed areas. The contractor shall not allow equipment to operate on the loosened soil or plant mix.

c. Type 3

1) The "Type 3" planting is intended for individual tree and individual/group Shrub planting where no soil replacement is required unless specified by the Grounds Superintendent or designee.

d. Type 4

1) The "Type 4" planting is intended for individual tree planting in medians and roadside planting strips and shoulders.

The preparation for installation of the trees shall include the tilling of a 10'x10' area centered on the new tree location. The existing soil shall be broken up to a depth of 18" within that 10'x10' area and one cubic yard of composted soil conditioner shall be thoroughly mixed throughout. Soil in the bottom of the tree pit shall be firmly tamped to reduce settling.

3.3 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches: Excavate circular planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are not acceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.

1. Excavate approximately three times as wide as ball diameter.
2. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
3. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
4. Keep excavations covered or otherwise protected when unattended by Installer's personnel.

B. Subsoil and topsoil removed from excavations may not be used as planting soil.

C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

1. Hardpan Layer: Drill 6-inch- diameter holes, 24 inches apart, into free-draining strata or to a depth of 10 feet, whichever is less, and backfill with free-draining material.

D. Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.

E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.4 TREE, SHRUB, AND VINE PLANTING

A. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

B. Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

C. Set balled and burlapped stock plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.

1. Use planting soil for backfill.
2. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
4. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.
5. Continue backfilling process. Water again after placing and tamping final layer of soil.

D. Set container-grown stock plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.

1. Use planting soil for backfill.
2. Carefully remove root ball from container without damaging root ball or plant.
3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.

4. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended in soil reports from soil-testing laboratory. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.
5. Continue backfilling process. Water again after placing and tamping final layer of soil.

E. When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

3.5 TREE, SHRUB, AND VINE PRUNING

A. Remove only dead, dying, or broken branches. Do not prune for shape.

B. Prune, thin, and shape trees, shrubs, and vines as directed by Architect.

C. Prune, thin, and shape trees, shrubs, and vines according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.

D. Do not apply pruning paint to wounds.

3.6 TREE STABILIZATION

A. Install trunk stabilization as follows unless otherwise indicated:

1. Staking and Tying: Stake trees of 2- through 5-inch caliper. Stake trees of less than 2-inch caliper only as required to prevent wind tip out. Use stakes of length required to penetrate at least 18 inches below finish grade. Set stakes and space to avoid penetrating root balls or root masses.
2. Use three stakes per trees. Space stakes equally around trees.
3. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.
4. Support trees with two strands of tie wire, connected to the brass grommets of tree-tie webbing at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.

3.7 GROUND COVER AND PLANT PLANTING

A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated in even rows with triangular spacing.

B. Use planting soil for backfill.

C. Dig holes large enough to allow spreading of roots.

D. For rooted cutting plants supplied in flats, plant each in a manner that will minimally disturb the root system but to a depth not less than two nodes.

E. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

F. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

G. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.8 PLANTING AREA MULCHING

A. Install weed-control barriers before mulching according to manufacturer's written instructions. Completely cover area to be mulched, overlapping edges a minimum of 6 inches and secure seams with galvanized pins.

B. Mulch backfilled surfaces of planting areas and other areas indicated.

1. Trees in Turf Areas: Apply organic mulch ring of 4-inch average thickness, with 36-inch radius around trunks or stems. Do not place mulch within 2 inches of trunks or stems.

2. Organic Mulch in Planting Areas: Apply 4-inch average thickness of organic mulch over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 2 inches of trunks or stems.

C. All plant beds will be maintained using a 4" depth "V" trench, border method edging to retain bark mulch neatly. Leaves are removed from beds in late Fall.

3.9 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease.

B. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated past management practices whenever possible to minimize the use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.10 PESTICIDE APPLICATION

A. Apply pesticides and other chemical products and biological control agents in accordance with authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Pre-Emergent Herbicides (Selective and Non-Selective): Apply to tree, shrub, and ground-cover areas in accordance with manufacturer's written recommendations. Do not apply to seeded areas.

C. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

3.11 CLEANUP AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition.

B. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

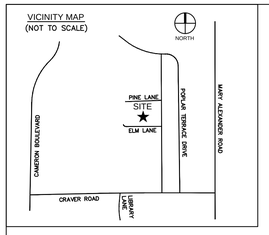
C. After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

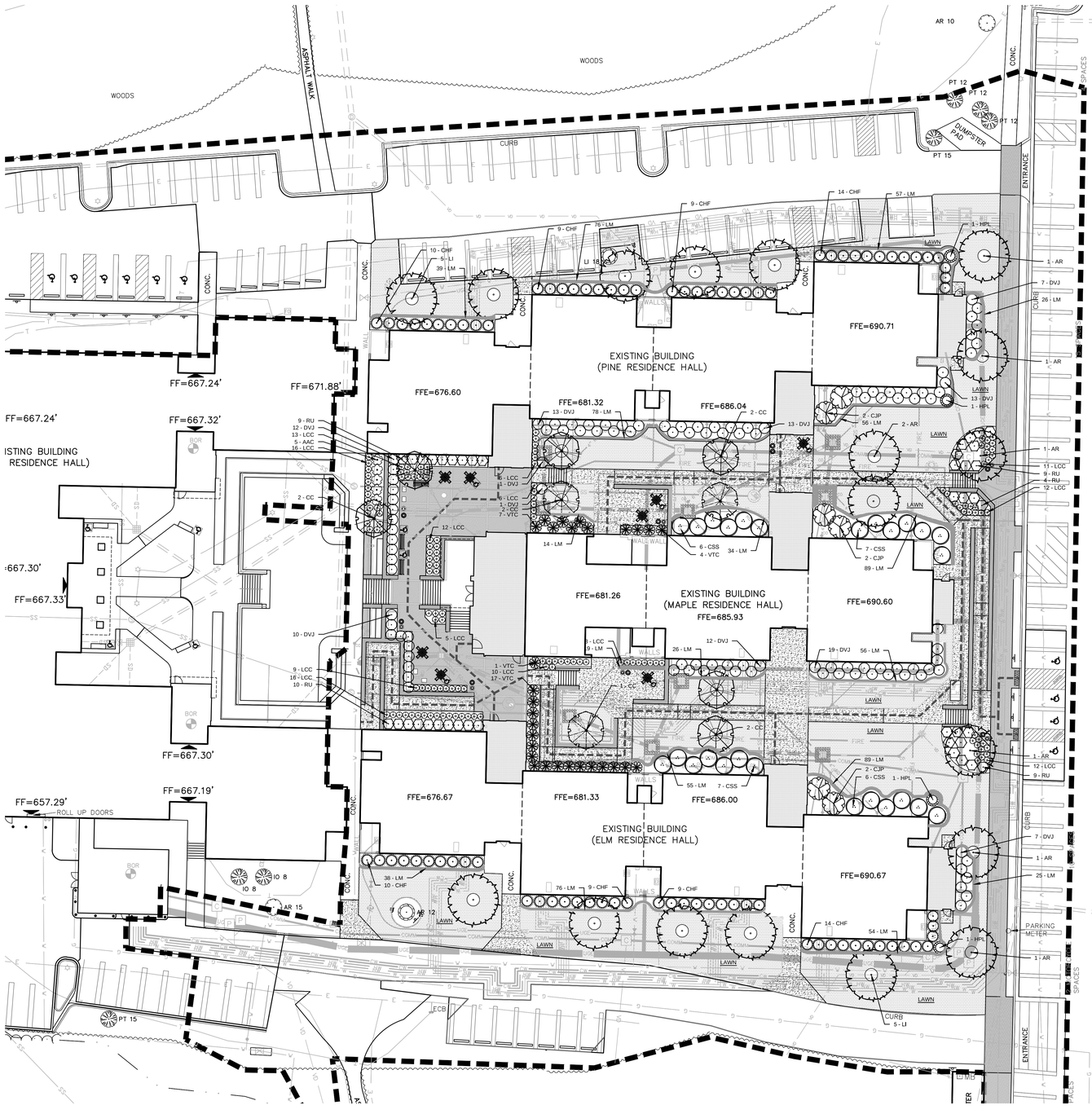
3.12 DISPOSAL

A. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.

END OF SECTION

VICINITY MAP
(NOT TO SCALE)





LANDSCAPING NOTES:

1. TREE PROTECTION NOTE: TREE PROTECTION FENCING MUST BE IN PLACE PRIOR TO ANY DEMOLITION, LAND DISTURBANCE OR ISSUANCE OF A GRADING PERMIT AND SHALL INCLUDE WARNING SIGNS POSTED IN BOTH ENGLISH AND SPANISH, AS FOLLOWS: "NO TRESPASSING/TREE PROTECTION AREA/PROHIBIDO ENTRAR / ZONA PROTECTORA PARA LOS ÁRBOLES."
2. PROTECTION OF EXISTING VEGETATION: AT THE START OF GRADING INVOLVING THE LOWERING OF EXISTING GRADE AROUND A TREE OR STRIPPING OF TOPSOIL, A CLEAN, SHARP, VERTICAL CUT SHALL BE MADE AT THE EDGE OF THE TREE SAVE AREA AT THE SAME TIME AS OTHER EROSION CONTROL MEASURES ARE INSTALLED. THE TREE PROTECTION FENCING SHALL BE INSTALLED ON THE SIDE OF THE CUT FARTHEST AWAY FROM THE TREE TRUNK AND SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION IN THE VICINITY OF THE TREES IS COMPLETE. NO STORAGE OF MATERIALS, FILL, OR EQUIPMENT AND NO TRESPASSING SHALL BE ALLOWED WITHIN THE BOUNDARY OF THE PROTECTED AREA.
3. ROOT ZONE PROTECTION AREA: CONTRACTOR SHALL COMPLY WITH LOCAL JURISDICTIONAL REQUIREMENTS. NO DISTURBANCE ALLOWED WITHIN THIS AREA. AREA MUST BE PROTECTED WITH BOTH TREE PROTECTION FENCING AND WARNING SIGNS.

ADDENDUM 2

4. SEEDBED PREPARATION: SEE SPECIFICATIONS SECTION 32 92 00 - TURF AND GRASSES, PART 3.3 FOR SEEDBED PREP INSTRUCTIONS.
5. PLANTING BED PREPARATION: SEE SPECIFICATIONS SECTION 32 93 00 - PLANTS, PART 3.3 FOR PLANTING BED PREP INSTRUCTIONS.
6. SOIL SHOULD BE TESTED AND AMENDED WITH LIME AND FERTILIZER FOR HARDWOOD TREES ACCORDING TO NCDA PROCEDURES. SCARIFY PLANT PIT WALLS. CONSULT LANDSCAPE ARCHITECT FOR ALTERNATE COMPLIANCE.
7. ALL PLANTING BEDS AND OTHER AREAS INDICATED TO BE MULCHED SHALL BE MULCHED WITH CURED, DOUBLE GROUND HARDWOOD, APPROX. 3" DEPTH EXCEPT AT CROWN OF PLANT UNLESS OTHERWISE NOTED. FLARE AT CROWN SHOULD BE REVEALED. BACKFILL CONSISTS OF THOROUGHLY BROKEN UP NATIVE SOIL. TOTAL VOLUME OF BACKFILL SHOULD BE AMENDED WITH UP TO ONE THIRD PINE BARK MULCH. PIECES SHOULD BE NO LARGER THAN WHAT PASSES THROUGH A ONE INCH SCREEN. IF ADDITIONAL SOIL IS REQUIRED FOR BACKFILL DUE TO DETRIMENTAL SUBSOIL DRAINAGE CONDITIONS, USE SOIL SIMILAR TO EXISTING NATIVE SOIL. ADDITIONAL SOIL TO BE APPROVED BY LANDSCAPE ARCHITECT. MAXIMUM SAUCER HEIGHT IS 6 INCHES.
8. TOP OF ROOTBALL TO BE RAISED 2-3 INCHES ABOVE FINISH GRADE.
9. FOR B&B PLANTS, NATURAL FIBER BURLAP SHOULD BE TURNED DOWN BY 1/3 TOTAL HEIGHT OF ROOT BALL. PLASTIC FIBER BURLAP AND WIRE BASKETS SHOULD BE REMOVED TO 2/3'S OF TOTAL HEIGHT OF ROOT BALL.
10. CONTRACTOR IS RESPONSIBLE FOR KEEPING THE TREE UPRIGHT AND PLUMB THROUGHOUT THE WARRANTY PERIOD. IF STABILIZATION IS NECESSARY SEE STAKING DETAIL BELOW. ORANGE FLAGGING TAPE SHOULD BE ATTACHED TO SUPPORT WIRE. STAKING SHOULD BE REMOVED BY CONTRACTOR AT END OF ONE YEAR WARRANTY PERIOD OR AS DIRECTED BY GROUNDS MANAGEMENT.
11. USE STANDARD "GATOR" BAGS FOR WATERING TREES IN AREAS NOT UNDER IRRIGATION. INCORPORATE TERRA-SORB (OR EQUAL) AS PER MANUFACTURER'S RECOMMENDATIONS, FOR AREAS NOT UNDER IRRIGATION.
12. USE "BIO-BARRIER" OR EQUIVALENT ACCORDING TO MANUFACTURER'S RECOMMENDATION FOR TREES THAT WILL BE PLANTED WITHIN 10' OF PAVEMENT
13. ALL SOD SHOULD BE LAID BELOW THE EDGE OF SIDEWALK.
14. ALL UNPLANTED AREAS WITHIN PLANT BEDS SHALL BE MULCHED TO A 3" DEPTH (4" DEPTH FOR TREES) WITH DOUBLE HAMMERED HARDWOOD MULCH.

ADDENDUM 1

Plant Schedule - Alternate #9

UNC-Charlotte: Elm, Maple, & Pine Residence Halls

Quantity	Key	Botanical Name	Common Name	Specifications
TREES				
8	AR	*Acer rubrum 'October Glory'*	Red Maple	2-2.5" cal. min. B&B, Full, Matching
9	CC	*Cercis canandensis var. Texensis*	Texas Redbud	Multi-stem 3-5 trunk, B&B, 8-10' Ht. Min.
10	LI	*Lagerstroemia indica x fauriei 'Natchez'*	Natchez Crape Myrtle	Multi-stem 3-5 trunk, B&B, 8-10' Ht. Min.
SHRUBS				
6	CJP	*Camellia japonica 'Professor Sargent'*	Spring Blooming Camellia	15 Gal.
74	CHF	*Camellia sasanqua 'Hot Flash'*	Autumn Camellia 'Hot Flash'	7 Gal., 5' O.C.
26	CSS	*Camellia sasanqua 'Shishigashira'*	Fall Blooming Camellia	7 Gal., 5' O.C.
108	DVJ	*Distylium 'Vintage Jade'*	Vintage Jade Distylium	7 Gal., 4' O.C.
29	VTC	*Viburnum tinus 'Compactum'*	Compact Viburnum	5 Gal., 4.5' O.C.
4	HPL	*Hydrangea paniculata 'Limelight (tree form)'*	Treeform Limelight Hydrangea	10 Gal.
136	LCC	*Loropetalum chinensis var. 'Crimson Fire'*	Crimson Fire Chinese Fringe-Flower	3 Gal., 3' O.C.
41	RU	*Raphiolepis umbellata 'Snow White'*	Indian Hawthorn	3 Gal., 3.5' O.C.
5	AAC	*Rhododendron 'Autumn Chiffon'*	Autumn Chiffon Azalea	5 Gal., 3.5' O.C.
GROUNDCOVER and ORNAMENTAL GRASSES				
907	LM	*Liriope muscari 'Big Blue'*	Big Blue Lilyturf	4" pot, 14" O.C.
TURF and MULCH				
16,690	sq ft	*Sod - Palisades Zoysia*	Turf - Palisades Zoysia	Sod
99	cu yd	*Mulch - Double Hammered Hardwood, Dyed Brown*	Mulch	3" depth, Clean
Site Furnishings				
3		*Bench - Maglin MLB300 W*	Owner Preferred Alternate	As shown
8		*Cluster Seating - Maglin MLPT1104M*	Owner Preferred Alternate	As shown
8		*Trash Can/ Recycling Bin*	Owner Provided & Installed	As shown
8		*Recycling Receptacle*	Owner Provided & Installed	As shown

ALTERNATE 10:

ALL PLANT BED AND MULCH AREAS ARE TO BE PREPARED ACCORDING TO THE SOIL PREPARATION INSTRUCTIONS DIVISION 02-32 - EXTERIOR IMPROVEMENTS, SECTION 32 8420 - LANDSCAPE GRADING AND DRAINAGE, PART 3 - EXECUTION, PARAGRAPH C - SOIL PREPARATION.

ADDENDUM 1

NORTH CAROLINA 811
North Carolina One-Call Center

0 10 20 40
SCALE: 1" = 20'

Q:\PROJECTS\2013\X13033.00 UNC CHARLOTTE EMP HALLS RENOVATIONS\DWGS\2-DESIGN\X13033-PLNT.DWG

UNC CHARLOTTE
CHARLOTTE, NORTH CAROLINA

UNC CHARLOTTE
Elm Maple Pine
Residence Halls
Renovations

FINAL
SUBMITTAL

ARCHITECT
MEP ENGINEER
FIRE PROTECTION ENGINEER
KSQ peterson
NEW YORK NORTH CAROLINA OKLAHOMA TEXAS
NC–ENG–LICENSE NO. C–4064
KSQ Architects PC
dba KSQ/Peterson
2115 Rexford Road Suite 500
Charlotte North Carolina 28211
704 364 3400 phone
704 364 7080 fax
www.ksqpeterson.com

CONSULTANTS

STRUCTURAL & CIVIL ENGINEER,
LANDSCAPE ARCHITECTURE
STEWART (C-1051)
200 S College Street
Suite 720
Charlotte North Carolina 28202
704 334 7925 phone
704 334 7926 fax

ASBESTOS ABATEMENT DESIGN
AFFINITY ENERGY &
ENVIRONMENTAL ENGINEERS, PA
28 Schenck Parkway
Building 2B Suite 200
Asheville North Carolina 28803
828 393 8182 phone

RCDD
VERTEX TECHNOLOGY
CONSULTANTS
7427 Matthews Mint Hill Road
Suite 105-260
Charlotte North Carolina 28227
980 272 9500 phone

STEWART
101 N TRYON ST, SUITE 1400
CHARLOTTE, NC 28202
T 704.334.7925
FIRM LICENSE # C-1051
www.stewartinc.com
PROJECT #: X13033

PLAN NORTH

TRUE NORTH

REVISIONS

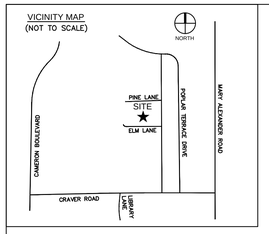
1	ADDENDUM #4	4 FEBRUARY 2016
2	ADDENDUM #6	8 FEBRUARY 2016

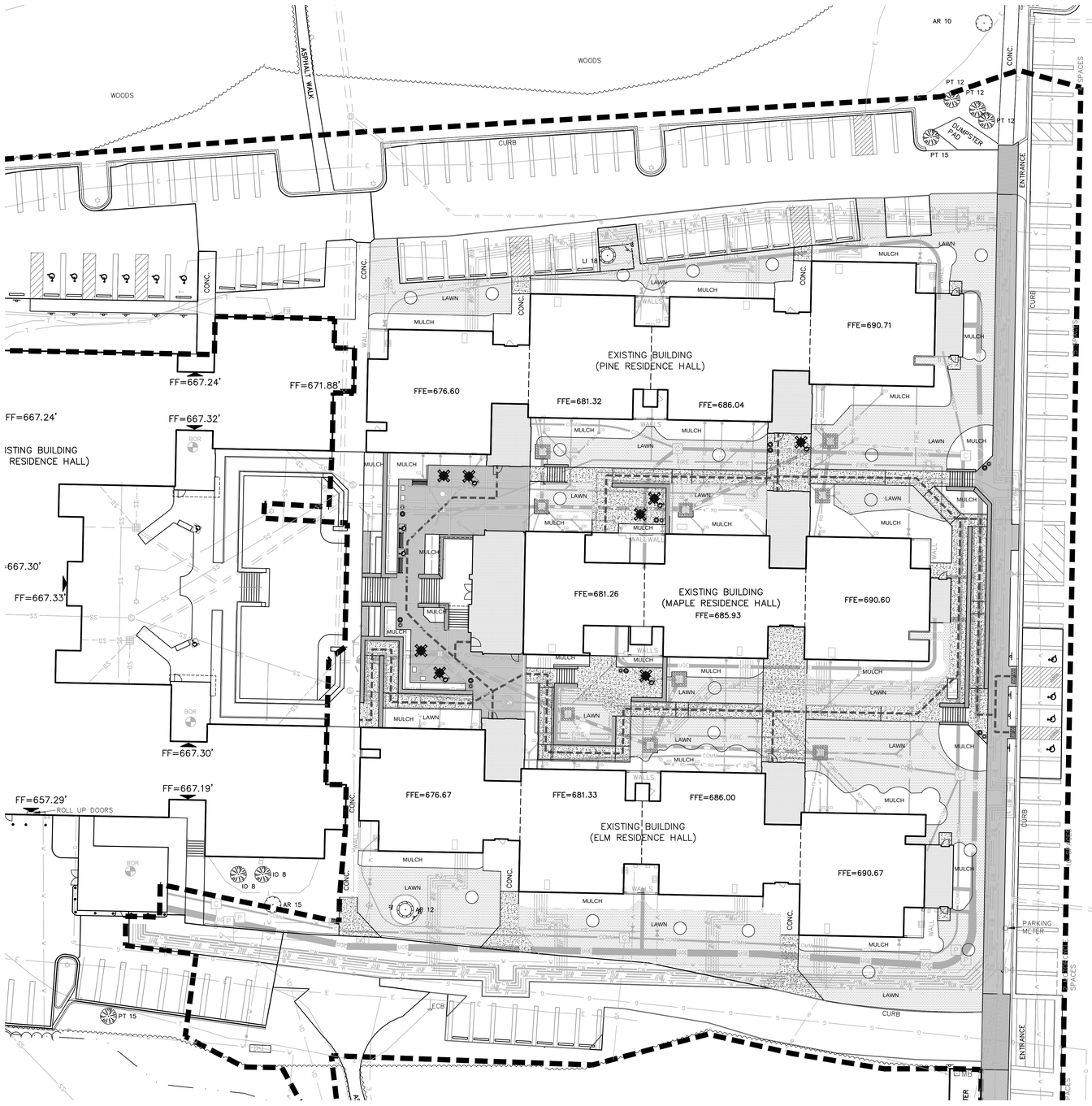
SCO ID #: 12-09940-03A
PROJECT #: 3523-00
DATE: 18 DECEMBER 2015
SHEET NAME:

LANDSCAPE PLAN ALTERNATE 9

SHEET NUMBER: L110

VICINITY MAP
(NOT TO SCALE)





LANDSCAPING NOTES:

1. TREE PROTECTION NOTE: TREE PROTECTION FENCING MUST BE IN PLACE PRIOR TO ANY DEMOLITION, LAND DISTURBANCE OR ISSUANCE OF A GRADING PERMIT AND SHALL INCLUDE WARNING SIGNS POSTED IN BOTH ENGLISH AND SPANISH, AS FOLLOWS: "NO TRESPASSING/TREE PROTECTION AREA/PROHIBIDO ENTRAR / ZONA PROTECTORA PARA LOS ÁRBOLES."
2. PROTECTION OF EXISTING VEGETATION: AT THE START OF GRADING INVOLVING THE LOWERING OF EXISTING GRADE AROUND A TREE OR STRIPPING OF TOPSOIL, A CLEAN, SHARP, VERTICAL CUT SHALL BE MADE AT THE EDGE OF THE TREE SAVE AREA AT THE SAME TIME AS OTHER EROSION CONTROL MEASURES ARE INSTALLED. THE TREE PROTECTION FENCING SHALL BE INSTALLED ON THE SIDE OF THE CUT FARTHEST AWAY FROM THE TREE TRUNK AND SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION IN THE VICINITY OF THE TREES IS COMPLETE. NO STORAGE OF MATERIALS, FILL, OR EQUIPMENT AND NO TRESPASSING SHALL BE ALLOWED WITHIN THE BOUNDARY OF THE PROTECTED AREA.
3. ROOT ZONE PROTECTION AREA: CONTRACTOR SHALL COMPLY WITH LOCAL JURISDICTIONAL REQUIREMENTS. NO DISTURBANCE ALLOWED WITHIN THIS AREA. AREA MUST BE PROTECTED WITH BOTH TREE PROTECTION FENCING AND WARNING SIGNS.

ADDENDUM 2

6. SEEDBED PREPARATION: SEE SPECIFICATIONS SECTION 32 92 00 - TURF AND GRASSES, PART 3.3 FOR SEEDBED PREP INSTRUCTIONS. **ALL BEDS ARE TO BE PREPARED PER SPECIFICATIONS - WITH OR WITHOUT PLANTS TO BE INSTALLED.**
7. PLANTING BED PREPARATION: SEE SPECIFICATIONS SECTION 32 93 00 - PLANTS, PART 3.3 FOR PLANTING BED PREP INSTRUCTIONS. **ALL BEDS ARE TO BE PREPARED PER SPECIFICATIONS - WITH OR WITHOUT PLANTS TO BE INSTALLED.**
8. SOIL SHOULD BE TESTED AND AMENDED WITH LIME AND FERTILIZER FOR HARDWOOD TREES ACCORDING TO NCDA PROCEDURES. SCARIFY PLANT PIT WALLS. CONSULT LANDSCAPE ARCHITECT FOR ALTERNATE COMPLIANCE.
9. ALL PLANTING BEDS AND OTHER AREAS INDICATED TO BE MULCHED SHALL BE MULCHED WITH CURED, DOUBLE GROUND HARDWOOD, APPROX. 3" DEPTH EXCEPT AT CROWN OF PLANT UNLESS OTHERWISE NOTED. FLARE AT CROWN SHOULD BE REVEALED. BACKFILL CONSISTS OF THOROUGHLY BROKEN UP NATIVE SOIL. TOTAL VOLUME OF BACKFILL SHOULD BE AMENDED WITH UP TO ONE THIRD PINE BARK MULCH. PIECES SHOULD BE NO LARGER THAN WHAT PASSES THROUGH A ONE INCH SCREEN. IF ADDITIONAL SOIL IS REQUIRED FOR BACKFILL DUE TO DETRIMENTAL SUBSOIL DRAINAGE CONDITIONS, USE SOIL SIMILAR TO EXISTING NATIVE SOIL. ADDITIONAL SOIL TO BE APPROVED BY LANDSCAPE ARCHITECT. MAXIMUM SAUCER HEIGHT IS 6 INCHES.
10. TOP OF ROOTBALL TO BE RAISED 2-3 INCHES ABOVE FINISH GRADE.
11. FOR B&B PLANTS, NATURAL FIBER BURLAP SHOULD BE TURNED DOWN BY 1/3 TOTAL HEIGHT OF ROOT BALL. PLASTIC FIBER BURLAP AND WIRE BASKETS SHOULD BE REMOVED TO 2/3'S OF TOTAL HEIGHT OF ROOT BALL.
12. CONTRACTOR IS RESPONSIBLE FOR KEEPING THE TREE UPRIGHT AND PLUMB THROUGHOUT THE WARRANTY PERIOD. IF STABILIZATION IS NECESSARY SEE STAKING DETAIL BELOW, ORANGE FLAGGING TAPE SHOULD BE ATTACHED TO SUPPORT WIRE. STAKING SHOULD BE REMOVED BY CONTRACTOR AT END OF ONE YEAR WARRANTY PERIOD OR AS DIRECTED BY GROUNDS MANAGEMENT.
13. USE STANDARD "GATOR" BAGS FOR WATERING TREES IN AREAS NOT UNDER IRRIGATION. INCORPORATE TERRA-SORB (OR EQUAL) AS PER MANUFACTURER'S RECOMMENDATIONS, FOR AREAS NOT UNDER IRRIGATION.
14. USE "BIO-BARRIER" OR EQUIVALENT ACCORDING TO MANUFACTURER'S RECOMMENDATION FOR TREES THAT WILL BE PLANTED WITHIN 10' OF PAVEMENT
15. ALL SOD SHOULD BE LAID BELOW THE EDGE OF SIDEWALK.
16. ALL UNPLANTED AREAS WITHIN PLANT BEDS SHALL BE MULCHED TO A 3" DEPTH (4" DEPTH FOR TREES) WITH DOUBLE HAMMERED HARDWOOD MULCH.

ADDENDUM 2

Plant Schedule - Base Bid

UNC-Charlotte: Elm, Maple, & Pine Residence Halls

Quantity	Key	Botanical Name	Common Name	Specifications
TURF and MULCH				
16,690	sq ft	*Sod - Palisades Zoysia*	Turf - Palisades Zoysia	Sod
99	cu yd	*Mulch - Double Hammered Hardwood, Dyed Brown*	Mulch	3" depth, Clean
Site Furnishings				
3		*Bench - Maglin MLB200-W*	Owner Preferred Alternate	As shown
8		*Cluster Seating - Maglin MLPT1104M*	Owner Preferred Alternate	As shown
8		*Trash Can/ Recycling Bin*	Owner Provided & Installed	As shown
8		*Recycling Receptacle*	Owner Provided & Installed	As shown

1 ADDENDUM

1 ADDENDUM

UNC CHARLOTTE
CHARLOTTE, NORTH CAROLINA

UNC CHARLOTTE
Elm Maple Pine
Residence Halls
Renovations

FINAL
SUBMITTAL

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 557 JONATHAN D. WOOD 12/23/15

ARCHITECT
MEP ENGINEER
FIRE PROTECTION ENGINEER

KSQ peterson
NEW YORK NORTH CAROLINA OKLAHOMA TEXAS
NC–ENG–LICENSE NO. C–4064

KSQ Architects PC
dba KSQ/Peterson
2115 Rexford Road Suite 500
Charlotte North Carolina 28211
704 364 3400 phone
704 364 7080 fax
www.ksqpeterson.com

CONSULTANTS

STRUCTURAL & CIVIL ENGINEER,
LANDSCAPE ARCHITECTURE
STEWART (C-1051)
200 S College Street
Suite 720
Charlotte North Carolina 28202
704 334 7925 phone
704 334 7926 fax

ASBESTOS ABATEMENT DESIGN
AFFINITY ENERGY & ENVIRONMENTAL ENGINEERS, PA
28 Schenck Parkway
Building 28 Suite 200
Asheville North Carolina 28803
828 393 8182 phone

RCDD
VERTEX TECHNOLOGY CONSULTANTS
7427 Matthews Mint Hill Road
Suite 105-260
Charlotte North Carolina 28227
980 272 9500 phone

STEWART
101 N TRYON ST, SUITE 1400
CHARLOTTE, NC 28202
T 704.334.7925
FIRM LICENSE #: C-1051
www.stewartinc.com
PROJECT #: X13033

PLAN NORTH

TRUE NORTH

REVISIONS

1	ADDENDUM #4	4 FEBRUARY 2016
2	ADDENDUM #6	8 FEBRUARY 2016

SCO ID #: 12-09940-03A
PROJECT #: 3523-00
DATE: 18 DECEMBER 2015
SHEET NAME:

LANDSCAPE PLAN BASE BID

SHEET NUMBER: L100

NORTH CAROLINA 811 North Carolina One-Call Center

0 10 20 40
SCALE: 1" = 20'

Q:\PROJECTS\2013\X13033.00 UNC CHARLOTTE EMP HALLS RENOVATIONS\DWG\SD-DESIGN\X13033-PLNT.DWG