

DIVISION 32 EXTERIOR IMPROVEMENTS

SECTION 32 01 80 OPERATION AND MAINTENANCE OF IRRIGATION

Contractor is responsible for operation and maintenance of irrigation until final acceptance by the University. A minimum of 1-year warranty shall apply.

End of Section 32 01 80

SECTION 32 01 90 OPERATION AND MAINTENANCE OF PLANTING

Contractor is responsible for maintenance of planting until final acceptance by the University. A minimum of 1-year warranty shall apply.

End of Section 32 01 90

SECTION 32 01 90.26 WATERING

Contractor is responsible for watering turf, trees, shrubs, and groundcovers until establishment.

End of Section 32 01 90.26

SECTION 32 06 90 SCHEDULES FOR PLANTING

Planting of trees, shrubs, and groundcovers is best completed in fall, spring, and winter when plant material is dormant.

End of Section 32 06 90

SECTION 32 14 00 UNIT PAVING

Brick Unit Paving - Polymeric Sand is preferred fill material to be used with brick paver units

End of Section 32 14 00

SECTION 32 16 00 Curbs, Gutters, Sidewalks, and Driveways

A. Sidewalks

1. Concrete sidewalks are to minimum 4,000 psi, min. 6" thick with welded wire mesh reinforcement and/or fiber reinforcement.
2. Rebar reinforcements shall be installed at sidewalk intersections.
3. Expansion joints shall be a maximum of 18' apart with saw cuts at 6' intervals.

End of Section 32 16 00

SECTION 32 31 00 Fences and Gates

Chain link fences and gates - Chain link fences to have top tension wire, mid rail, and bottom rail.

End of Section 32 31 00

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SECTION 32 33 13 SITE BICYCLE RACKS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes Bicycle Rack and Repair Station standards for all projects.
- B. The standard bicycle parking structure used by ECU for supporting and securing a bicycle is the "inverted U" style bicycle rack. This rack is; Loop Style 2-7/8" OD Galvanized In-Ground Bike Rack, Black Polyethylene Finish. Core drill or pour-in-place, 36" height and plum
- C. The "inverted U" rack is designed to secure two bicycles facing each other and fastened to vertical supports by a "U lock" or cable. Most bicycles are approximately 68 inches in length. When properly secured to the "inverted U" style rack, a back wheel of the bike projects out about 3 feet from the vertical support of the rack.
- D. Rows of "U" racks should be arranged to allow for ample maneuvering on a concrete pad. This generally requires that the rows be spaced at either 11 feet apart if there is a sidewalk between the racks or 6' without a sidewalk as shown in the arrangement diagrams following. The minimum distance between a building or wall structure and the vertical supports of the bicycle rack shall be 6 feet. Near the edge of the slab, pad or deck area, there is to be approximately 6 feet of pad so that the rear tire of a secured bike does not rest on the landscape.
- E. Illustrations of the above-described site bicycle racks and layouts for "Bicycle Rack Placement with Sidewalk" and "Bicycle Rack Placement without Sidewalk" are shown at the end of this section (see Illustration A and B).
- F. Installation of bike repair stations is dependent on building use and occupant types. Examples of preferred locations include parking garages, recreational facilities, and student centers. Project managers should be consulted to determine if bike repair station(s) should be installed as a requirement of the project.

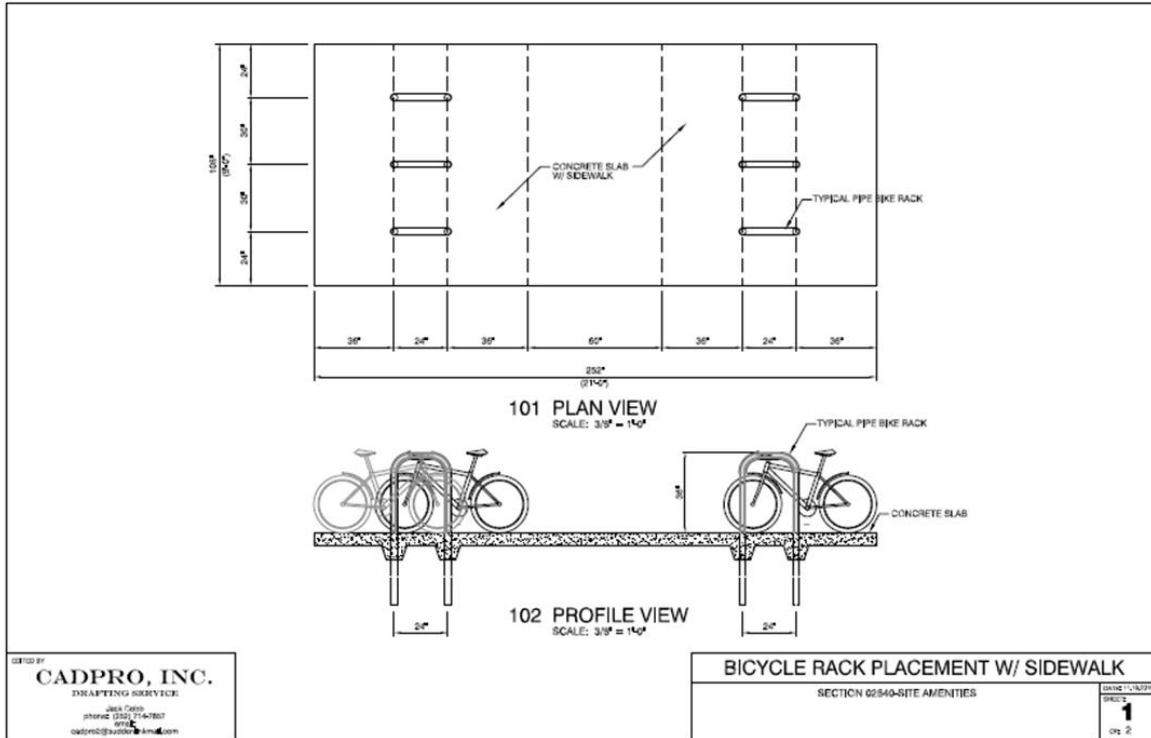
1.2 ACTION SUBMITTALS

- A. Product Data: For each type product

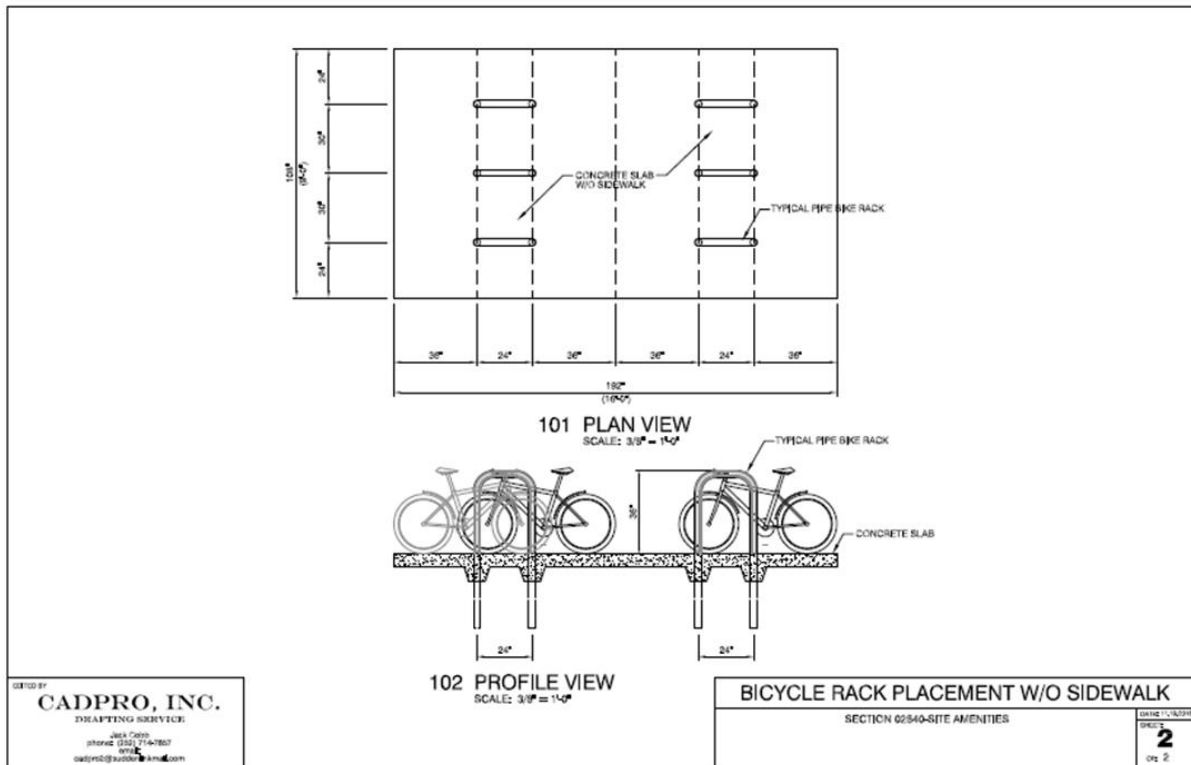
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1.3 ILLUSTRATIONS

A. SITE BICYCLE RACK PLACEMENT WITH SIDEWALK



B. SITE BICYCLE RACK PLACEMENT WITHOUT SIDEWALK



PART 2 – PRODUCTS

2.1 BICYCLE REPAIR STATIONS

- A. To insure the availability of repair parts and well as a consistent appearance, aesthetically across the university, the university has identified specific manufactures and models that are to be utilized.
- B. DERO
 - 1. FIXIT-H: Surface Mount, Powder Coat, Dark Purple
 - 2. AIR KIT 3-B: Surface Mount, Powder Coat, Dark Purple
 - 3. Penta-Nut-Tool: 1GPNS37-HEX

PART 3 - EXECUTION

- A. Core drill hole at least 1” diameter larger than rack and fill with machine-setting grout or equal such that the system is vandal-proof to removal or theft.

End of Section 32 33 13

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SECTION 32 33 23 SITE TRASH AND RECYCLING RECEPTACLES

PART 1 - GENERAL

1.1 SUMMARY

- A. All proposed site improvements shall be required to incorporate site furniture, including but not limited to, paired trash and recycling receptacles into design and cost of project.
- B. Receptacles should be located where needed, but should remain visually inconspicuous at the intersections of major pedestrian walks, in plazas, in courtyards, in vehicle and bicycle parking areas, at building entries, and where groups of pedestrian seating are provided. Receptacles within athletics areas should be located adjacent to bleachers, fence gates, restroom facilities, and other building entrances. The units should be placed contiguous to walks and on a concrete surface extending outward from the walk. The unit should be level and firmly secured to the ground.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type product

PART 2 – PRODUCTS

2.1 TRASH AND RECYCLING RECEPTACLES

- A. To insure the availability of repair parts and well as a consistent appearance, aesthetically across the university, the university has identified specific manufactures and models that are to be utilized.
 - 1. Trash Receptacle: Victor Stanley Ironsites Series 36 Gallon Side Opening Litter Receptacle with Standard Tapered Formed Lid and Black Plastic Liner [SD-42] Finish: VS Bronze
 - 2. Recycling Receptacle: Victor Stanley Ironsites Series 36 Gallon Side Opening Litter Receptacle with Custom Recycle Lid and Plaque as per ECU approved layouts [SD-42] Finish: Custom Proper Purple

End of Section 32 33 23

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SECTION 32 33 43 SITE SEATING AND TABLES

PART 1 - GENERAL

1.1 SUMMARY

- A. All proposed site improvements shall be required to incorporate site furniture, including but not limited to, benches and outdoor tables into design and cost of project.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type product

PART 2 - PRODUCTS

2.1 BENCHES AND TABLES

- A. To insure the availability of repair parts and well as a consistent appearance, aesthetically across the university, the university has identified specific manufactures and models that are to be utilized.
- B. Victor Stanley, Inc.
 - 1. Benches: Victor Stanley Steelsites RB (Ribbon) Series 6' or 8' Bench [RB-28] Finish: VS Bronze
 - 2. Tables: Victor Stanley Steelsites Collection RND-363 Table with Hole and Guide for Umbrella Pole and Round Pattern Perforated Tabletop Finish: VS Bronze insert details

End of Section 32 33 43

SECTION 32 39 13 MANUFACTURED METAL BOLLARDS

PART 1 - GENERAL

1.1 SUMMARY

- A. All proposed site improvements shall be required to incorporate manufactured site specialties, including but not limited to, manufactured metal bollards into design and cost of project.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type product

PART 2 PRODUCTS

- A. To insure the availability of repair parts and well as a consistent appearance, aesthetically across the university, the university has identified specific manufactures and models that are to be utilized.
 - 1. Bollards: Reliance Foundry, R-7539-RE Bollard (Ductile Iron), 36" high, 10" dia. base, Decorative Iron Bollard with Option "C" Mounting Installation (Removable and Retractable), Finish: Powder coated textured black.

End of Section 32 39 13

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SECTION 32 80 00 IRRIGATION

PART 1 – GENERAL

1.1 RELATED SECTIONS

- A. Refer to Section 01600 for requirements regarding Preferred Manufactures.
- B. Refer to Section 02200 for requirements regarding earthwork and the University Utility Locate process.
- C. Refer to Section 02500 for requirements regarding pavement and surfacing including the repair of pavement disturbed by construction.
- D. Refer to Section 02600 for identification requirements for underground utilities and piping.
- E. Refer to Section 02900 regarding landscaping requirements including resodding/ reseeded requirements for areas disturbed by construction.
- F. Refer to Section 15050 regarding requirements for backflow assemblies and basic mechanical requirements

1.2 SUMMARY

- A. This section contains the requirements relating to transmission and distribution systems for irrigation water, except, the requirements for potable water transmission lines used for providing irrigation water are described in Section 02660.
- B. All irrigation must be designed by a licensed Landscape Architect or Professional Irrigation Designer. Design/Build systems are not allowed.
- C. Irrigation installation to be performed by a NC licensed Irrigation Contractor

(Division 2 items are generally considered to be located outside of buildings starting at a maximum distance of 5' outside of the building. However, that statement does not apply to the irrigation system, which may be located within 5' of buildings and may extend to areas within buildings.)

1.3 GENERAL

- A. WATER SOURCE:
 - 1. Water service for irrigation systems shall be obtained from:
 - a. Separate metered service tap to Greenville Utilities Commission (GUC) water distribution system. Services shall have backflow prevention as required by GUC and Section 15050.
 - b. On site rain collection system such as a cistern

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Piping - Pipe shall be SCH40 PVC type with 200 psi or greater. Solid PVC connection laterals or approved pre-manufactures swing joint shall be used to all irrigation heads.
- B. Valves - Electric valves shall be Rain Bird® PE series, or equal. Valves shall be tagged with permanent appropriate zone number on corrosion resistant tags.
- C. Zone Control Wiring - Control wires shall be a minimum of 14 gauge copper single-conductor wire with vinyl insulation. Wiring connectors shall be waterproof connectors, equal to Rain Bird. Wire color code: Provide control or "hot" wires with a separate color for each zone. Provide white for common or "ground" wires. Provide a minimum of two spare wires color blue along Main Line pipe

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- D. Valve Boxes - In areas that may be subject to vehicle traffic, valve boxes are to be traffic-rated. In other areas, valve boxes shall be green PVC with locking lid. All lids shall be marked "Irrigation."
- E. Irrigation Head Fittings – Fittings at the irrigation heads shall be flexible swing joints.
- F. Irrigation Riser Pipe - Spray risers shall not be used.
- G. Turf and Shrub Pop-Up Sprays - Turf POP-UP sprays shall be 1806 SAM-PRS Rain Bird® bodies. Shrub POP-UP sprays shall be 1812 SAM-PRS Rain Bird® bodies. Nozzles shall be Rain Bird® MPR (matched precipitation rate) nozzles or Rain Bird® HE-VAN (high efficiency variable arc) nozzles.
- H. Pop-Up Rotors - Pop-up rotors shall be Rain Bird® 5006 SAM-PRS.
- I. Automatic Controllers - Automatic controllers shall be Rainbird ESP-LXMEF or ESP-LXD series compatible with Rain Bird® IQ central control system. Controller will be able to communicate with the University IQ network. Components needed will be based on the campus IQ communication site report. Install in a lockable water-proof, rustproof wall-mounted cabinet. Provide internal transformer with 115 VAC input and 24 VAC, 30 VA output.
- J. Flow Sensors and Master Valve - Flow sensor and Master Valve shall be Rain Bird® or compatible with IQ central control system and installed per manufacturers specifications.
- K. Backflow Prevention Devices - Backflow prevention at the meter per GUC Standards.

PART 3 – EXECUTION

- A. Piping – Minimum depth of irrigation piping shall be 18” below grade. Piping installation shall include warning tape and tracer wire as described in Section 02600.
- B. Sprinkler Heads, Valve Boxes, etc. – Shall be installed at finished grade.
- C. Valve Wiring – Wires are to be bundled and taped together every 10 feet. Lay the wire beneath pipe.
- D. WIRE Diagram – Provide a written description keying each wire color to the appropriate zone and post it on the outside of the cabinet door. Also, provide a separate diagram for owner’s records.
- E. Wire Splicing – Where needed use water-proof splice kits as directed by irrigation manufacturer. Irrigation field splices need to be installed in a box and indicated on record drawings.
- F. Irrigation Record Documents – Provide a minimum of three paper copies to University and one AutoCAD file (version 2013) to Facilities Services Grounds Department. Diagram shall show location and type of all control valves, irrigation heads, irrigation piping, sleeving, controllers, power source, water meter source, and all field splicing locations.
- G. Provide approved earth fill or sand to a point 4” above the top of pipe.
- H. Backfill shall be free from all foreign materials larger than 2” diameter.
- I. Compaction of subgrade within 6” of surface shall be in 6” layers with 95% compaction.

End of Section 32 80 00

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SECTION 32 90 00 PLANTING

PART 1 – GENERAL

1.1 RELATED SECTIONS

- A. Refer to Section 02200 for requirements regarding earthwork and the University Utility Locate process.
- B. Refer to Section 02500 for requirements regarding pavement and surfacing.
- C. Refer to Section 02810 regarding irrigation requirements.

1.2 SUMMARY

- A. This section contains the requirements relating to lawns, trees, shrubs, and ground cover; including subsoil scarification, soil preparation and finish grading involving topsoil and landscape accessories.

1.3 GENERAL

- A. Any construction project which disturbs existing landscaping (sidewalks, benches, fountains, retaining walls, streetlights, accent lighting, trees, shrubs, ground cover, grass, flowers, etc.) shall include appropriate new landscaping. This landscaping effort shall include an analysis of the impacts the proposed development shall have upon adjacent land uses and provide any required buffering. Buffering shall be required whenever there is a potential incompatibility between adjacent land uses due to noise, incompatible visual elements such as loading docks or solid waste storage, or conflicts in circulation. Under these conditions, landscaping strategies may include the use of dense plant material, walls, berms or other improvements designed to provide a physical separation.
- B. Landscape design must be completed by a licensed Landscape Architect

1.4 PROTECTION DURING CONSTRUCTION

- A. Trees within the general construction area, as shown on drawing or marked in the field by the University, shall be protected in accordance with the latest standard accepted by the International Society of Arboriculture and/or the University's Grounds Department.
- B. Any vegetation, including trees and shrubs, severely damaged or destroyed shall be replaced by the Contractor with like species or another species approved by the Grounds Department through Project Manager or his/her designee. The Contractor shall be held liable for the difference in value between the replacement tree and the original tree. (See Section 1.8 Replacement of Trees.)
- C. Items A and B above shall be a standard contract clause in all University construction contracts.

1.5 SUBSOIL SCARIFICATION

- A. Scarify or cultivate subsoils in order to break-up, crush or otherwise make subsoils capable of drainage. Scarification should be done to the following depths:
 - 1. Seeding or Sodded and Groundcover Areas 12 inches.
 - 2. Shrubbed Areas 24 inches.
 - 3. Tree Areas: 42 inches deep.
 - 4. Building perimeter: 42 inches deep by 20 feet wide.

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- B. Work must be approved by Grounds Department prior to placing topsoil. Prohibit travel over scarified areas except for placing topsoil and installation of plant material.

1.6 TOPSOIL

- A. Topsoil to have a soil analysis conducted and amended as necessary. Do not place topsoil until soil scarification and has been approved by the Grounds Department through the Project Manager Place topsoil during dry weather. Depth of Topsoil should be placed as follows after rolling:
 1. Seeded or sodded areas: 6 inches
 2. Planted areas: 12 inches

1.7 LAWNS AND GRASSES

- A. Normal procedure shall be to use sodding for new grassed areas. Seeding shall only be considered in large areas with low public visibility, and shall be approved by the Grounds Department through the Project Manager. Make special provision for control of soil erosion. Sod shall be sand grown; mud-grown sod is not acceptable.
- B. Grass types shall be Compadre Zoysia or Tifton 419 Bermuda. Grass type shall be approved by the Grounds Department through the Project Manager. All new grass areas shall be irrigated.
- C. Resodding and Reseeding – Any area of vegetation that is damaged during construction shall be restored to its original state within 72 hours of the completion of the associated construction work. Grassed areas shall be resodded. Special care shall be taken before and after the restoration to ensure the area is not subject to erosion. Reseeding shall only be allowed in special cases with individual case approved by the Grounds Department through the Project Manager.

1.8 TREES, PLANTS, AND GROUND COVERS

- A. Selection
 1. Plant material shall be obtained from a source in plant hardiness Zone 8.
 2. Zones are defined on U.S. Department of Agriculture Plant Hardiness Zone Map. Selection of plant materials shall be subject to the approval of the Grounds Department through the Project Manager.
- B. Replacement of Trees – Trees that are removed or damaged as a result of construction activities shall be relocated or replaced.
 1. Design Consideration: Whenever possible, existing trees that cannot be incorporated into proposed plans should be relocated. Relocated trees shall be planted in accordance with the International Society of Arboriculture Best Management Practices, Tree Planting. New locations shall be approved by the Grounds Department through the Project Manager or his/her designee.
 2. Design Consideration: When trees are unable to be relocated, the University requires the Project to replace trees at a minimum of a two for one basis (at least two new trees for each tree removed). This ratio can change at the discretion of the Grounds Department depending on the quality and size of the trees being removed. Each replacement tree shall be a minimum of 4-inch caliper for deciduous trees and 12 feet for Evergreen Trees. A list of acceptable replacement trees is maintained by the Grounds Department through the Project Manager. Replacement trees shall be selected from this list with the advice and concurrence of the Grounds Department through the Project Manager or his/her designee. A variety of replacement trees should be selected to enhance the beauty of the Campus and mitigate tree loss through disease.

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3. If an existing tree not designated on the construction plan to be removed is damaged during construction, the contractor is responsible for reimbursing the University for the Value of that tree. The Value will be determined by a North Carolina Certified Arborist at the discretion of the University. Part of the reimbursement will be allocated to the replacement of the tree as addressed in section 2.

C. Tree Preservation

1. The University has a policy concerning the preservation of trees on campus. To ensure that this policy is followed, the Architect/Engineer is responsible for incorporating measures into the landscape design of all projects.
2. Appropriate tree protection measures based on ISA best management practices. Tree protection shall be approved by the Grounds Department through the Project Manager.
3. In cases requiring resolution or assistance, the Grounds Department or Project Manager can be consulted.

D. Mulch

1. Double shredded hardwood mulch minimum thickness 3" to a maximum thickness 4".

End of Section 32 90 00

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