DIVISION 32 EXTERIOR IMPROVEMENTS

PARKING LOTS

A. **Standard Layout:** Layout parking lots with nine by eighteen foot (9’x18’) stall perpendicular to the drive lane. Widths of all drive lanes will be twenty-four feet (24’) minimum. Consider opportunities for snow storage in parking lot layout. Provide parking for persons with disabilities as required by ADA.

B. **Slope:** Design asphalt parking lots with no less than two percent (2%) and no more than five percent (5%) slope in any portion of the lot. In concrete parking lots provide surfaces with no less than one percent (1%) slope and no more than five percent (5%) slope in any portion of the lot. Design parking lots with uniform slopes and subtle changes in grade between water sheds.

C. **Storm water Drainage:** Locate storm water drainage inlets between parking bays, at the edges or corners of lots, and out of drive lanes and roadways. Storm water shall be retained on site.

D. **Structural Road Section:** Design pavement structural section following the recommendations given in the soils report. All USU roadways shall be designed for large vehicle access (i.e. fire trucks).

E. **Parking Lighting:** Design lighting layout to provide a minimum light level of 0.5 foot candles at ground level. Coordinate locations of light poles with landscape designer to ensure that light fixtures do not become obscured by tree canopies. See electrical division ____ for USU lighting standards.

F. **Landscaped Islands:** Landscape islands are desirable to provide shade for parking lots. Design shall accommodate planting types to withstand winter snow removal and stockpiling.

WALKWAYS

A. **Walkways:** The Consultant shall design walkways to run straight and true to accommodate future pedestrian movements. Use large smooth radii where curvilinear circulation is required. Ensure proper compaction for base material. Compaction testing may be performed by owner. Grading design shall provide for positive drainage away from walkways and to avoid excessive cross drainage. The minimum walkway width is six feet (6’) on minor walkways and eight feet (8’) on major walkways. Show the location of all joints on the drawings.
B. Materials: All walkways shall be constructed of concrete. Other paving materials for accent areas must be approved during the design of the project. Refer to Division 3 for detailed concrete flatwork requirements.

C. Landscapes Along Walkways: Select and locate plant materials that will not spread into walkways at mature growth limits.

32 31 00 FENCES AND GATES

A. Design Standard: The Consultant shall only use fences and gates where required for screening and security.

B. Types Allowed: Design fences of solid masonry or ornamental iron with a continuous 8” x 8” concrete mow strip.

32 80 00 IRRIGATION

A. Modification of Existing Irrigation Systems: Existing irrigation systems affected by construction are to be modified to accommodate the new construction. This includes but is not limited to the following items:

1. Relocation of existing heads, valves, drains, controllers, etc., or the replacement of the same as required by site conditions and the new project.

2. Relocation of existing irrigation main lines, isolation valves, and drains, or the replacement of the same.

3. Providing irrigation water for other areas of campus affected by the construction of the project through temporary mains or other methods.

4. Providing water to all existing landscaping to be protected on-site during construction.

B. Design of New Irrigation Systems: All new systems shall be designed to DFCM guidelines and provide the following performance standards as a minimum:

1. Head-to-head coverage of all areas irrigated. Coverage shall be designed at 90% of manufacturer’s listed radii for spray heads and 85% of manufacturer’s listed radii for rotors, maximum.
2. Matched precipitation rates in all areas of coverage, or full circle and part circle rotors on different values.

3. Prevention of over spray onto buildings, parking areas and walks next to irrigated areas.

4. Complete drainage of system using only manual drain valves for mainlines and compressed air for laterals (automatic drains are acceptable for laterals).

5. Locate valve boxes at the edges of irrigated areas, adjacent to pavement when not subject to damage by vehicles. Group valve boxes side-by-side when more than one box is required in a given location. Provide ball valve to isolate each valve manifold.

6. Average mainline static pressure is 90 psi. Pressure reduction is required for smaller heads and rotors. Design the system using the products specified below. Any questions about other equipment not listed shall be directed to FD&C.

7. Flushable inline filters are required for 3” and larger sub mains. Upstream from filters install a master valve and flow sensor with connections to the central control system.

C. **Irrigation Products:** Due to maintenance requirements, specify only the following Rainbird products for uses listed:

1. For small turf, shrub and flower beds use Rainbird 1800-PRS pop-up sprays with matching precipitation nozzles. All pop-up heights shall be four inches (4”) or greater. Use 6” pop-ups in shrub beds. Design pressure 30 psi maximum.

2. For medium to large turf and shrub areas use Rainbird 3500 and 5000 rotor pop-ups. Matched precipitation rates may be achieved by varying nozzle sizes for areas covered. Design pressure 45 psi maximum.

3. For large turf areas use Rainbird Falcon 6504, 7005, 8005, or Talon rotor pop-ups. Match precipitation rates by varying nozzle sizes or separating part circle and full circle heads on different control valves. Design pressure 70 psi maximum.

4. Automatic control valves shall be Rainbird PESB-(PRS-D if required) valves ranging in size from one inch (1”) to two inches (2”) in size as required by each irrigation circuit. Install valves in jumbo valve boxes...
located adjacent to sidewalks or curbs. For valves one inch (1") and smaller, two (2) valves per jumbo box. For one and one-half inch (1-1/2") valves and larger, one (1) valve per jumbo box. Group multiple valve boxes together.

5. Manual drain valves shall be three-quarter inch (3/4") Mueller Orseal valves. Provide two inch (2") Class 200 PVC sleeves to valves and cap with 6" round valve box. Automatic drain valves shall be King mainline drain valves (red).

6. a. Control wire shall be 14 Gauge to turf and shrub areas and shall be different colors. Turf area hot wires shall be red in color with one (1) spare each, hot and ground wires, run to the most distant valve. Shrub area hot wires shall be green in color with one (1) spare each, hot and ground wires, run to most distant valve. Ground wires shall be white in color with blue spare. All wire connections shall be soldered and be sealed water tight. All connection shall be located in valve boxes with an eighteen inch (18") coil for each wire.
   b. Multi-strand control wire, 18 ga., may be used with 14 ga. Ground wires, with approval from Facilities Design and Construction.

7. Irrigation controllers shall be Rainbird ESP SAT-LINK, radio ready 12-40 station controllers. The controllers shall have lightning and electrical surge protection. Controllers shall include Maxicom compatible radio set to USU frequency and antenna. Contact Facilities Design and Construction for signal test and frequencies.

D. Irrigation System Installation: The irrigation system shall be installed by a licensed landscape or plumbing contractor. As-built drawings are required on all new system and existing system changes.

32 90 00 PLANTING

A. Street Trees: All projects which front on a public street will have street trees integrated into the design of the remainder of the project. When existing shade trees are adjacent to the project, new street trees shall maintain same alignment, spacing, species, and variety as existing.

B. Landscapes around Parking Lots: Wherever practical, screen parking lots from public view. Surround all parking lots by shade trees spaced 2/3 of the mature canopy apart but never more than thirty (30) feet on center. Specify trees that have a uniform head, are capable of being pruned high, will not lift
paving, and provide maximum shade. Design parking lots for snow removal. Where cars overhang the curb of the lot, provide low growing plants to prevent damage to the landscape. Do not place trees and shrubs within the overhang.

C. **Drought Tolerant Planting:** USU encourages the use of drought tolerant plant material and design in conjunction with LEED and DFCM requirements.

D. **Planting Design:** Specify plant materials that have a history of vigorous growth on the campus of Utah State University. While the campus is in USDA Hardiness Zone 4, some plants known to grow in this zone will not survive on the campus. Strong canyon winds and very low annual temperatures are the main detractors to plant hardiness. Encourage variation in plant material. The USU campus is part of the State Arboretum. The USU Arboretum committee will review all plant material specified for compliance with objectives stated above.

E. **Design Coordination:** Coordinate all levels of landscape and site design with the Campus Landscape Architect.

F. **Nursery Stock Sizes:** Generally specify trees with a trunk diameter no greater than two (2) inches, particularly in high traffic or highly visible areas. The minimum size tree to specify shall be one and one half (1-1/2) inch trunk diameter.

G. **Warranty:** Require Contractor to guarantee trees and shrubs for one year after date of installation.

H. **Topsoil:** See division 31, Earthwork.

I. **Organic Mulch:** Specify only fine ground bark mulch with no material sizes exceeding 3/8 inches and free of foreign matter. Mulch specification must include submittal to be approved by USU Facilities LOAM.

J. **Headers and Edgers:** Provide mowing strips surrounding all turf areas, except where adjacent to concrete flatwork at the same grades as the turf. Concrete mow strips may be appropriate in some instances at 8x8 inches. All lights, signs, poles, utility boxes and other structures placed in turf areas must also be designed with a mow strip.

K. **Slope:** Minimum slope in swales, design grades for drainage swales, to be no less than two (2) percent in any portion of the swale. Also, provide
drainage away from buildings and walled structures at a minimum of two (2) percent in all areas. Avoid surface drainage across walkways.

L. Tree Wrapping: Specify tree wrapping for all trees upon planting.

M. Turf Areas: Specify sod only for turf areas. Grasses other than Kentucky Bluegrass may be used with approval from FPD&C.

32 72 00 PLANTING RESTORATION

A. General: The following requirements shall be incorporated into the Contract Documents:

1. Landscape Repair and Restoration:
   a. Maintain and repair all landscape material on the site, both new and existing, from any damage or any deterioration during the duration of the contract.
   b. Sod damaged by construction shall be cut along straight lines with a sod cutter and damaged turf removed. New sod shall be laid to tightly match existing turf and follow finish grades.
   c. The finished landscape in restored areas shall be consistent with a new landscape in appearance, quality of materials and workmanship. Provide FPD&C with written notice and dated photographs of any existing damage to the landscape before the commencement of work.

2. Irrigation Repair and Restoration:
   a. Where existing irrigation systems are damaged during construction, the Contractor shall repair the damaged irrigation system.
   b. Where construction of this project will affect other existing irrigation systems outside the construction area the Consultant shall show the affected area on the drawings. The Contractor shall be responsible to make modifications to existing irrigation systems to maintain water coverage outside construction area. In the event that such modifications are not made, the Contractor shall be responsible to restore landscape damage resulting from neglect.