32 00 00. EXTERIOR IMPROVEMENTS

1. GENERAL PROVISIONS: Specify that construction of roads, drives, service courts, and parking areas, including subgrade and other related work, must be performed by a contractor fully qualified and equipped to construct roads.

.2 DESIGN DETAILS:

.2.1 MINIMUM TURNING RADII FOR STREETS, DRIVEWAYS, & LOADING DOCKS: 20 feet for automobile traffic; 30 feet for truck traffic, and 50 feet for bus and garbage truck traffic. When possible, or appropriate, use greater radii. Loading dock radii should be determined using the largest possible vehicle and must be approved by the University.

.2.2 PLANNING FOR SERVICE AREAS:

.2.2.1 The Project Manager and the Architect/Engineer (A/E) shall meet with FOD's Recycling and Refuse Services and FDC's Engineering Services at the program planning and schematic design phases of the project to review the requirements for Loading Docks and Waste Dumpsters.

2.2.2 LOADING DOCKS: Design for the following conditions unless this requirement is waived by the University Architect. Provide a loading dock at each new building or major renovation for dock space. Design interior space with three slots; one for deliveries, one dumpster for recyclables, and one dumpster for non-recyclables at grade in front of the loading dock to allow dumpsters to be serviced by front-loading truck with a turning radius of 50-feet and overhead clearance of 14-feet.

A minimum of one door from the building to the loading dock shall be at least 9-feet wide and should be a minimum 12'-8" on center when multiple doors are used if design includes outdoor recycling containers. Provide a concrete pad 12-inches-thick of sufficient depth and width of the loading dock to accommodate the dumpsters and approach for waste hauling vehicles. Pavement slope is a serious condition relative to drainage and the truck bed floor/building or floor/canopy relationship. Loading docks shall be at the same elevation as the floor of the building and shall be a minimum of 44 to 46-inches above adjacent pavement or shall be provided with a load leveler. Verify height requirements with the University Project Manager, a different height may be required if step van vehicles only are used. To prevent building occupants from

being exposed to toxic airborne contaminants from idling vehicles, loading docks should not be located near the building's fresh air intakes.

.2.2.3 Any right-of-way provided for service areas is to be of sufficient width (minimum 12 feet width with sufficient swept path clearance to negotiate turns, entrances/exits, etc.). Design waste dumpster servicing area for use by a MAMMOTH Front Loader Series 43F with a vehicle length of 38 feet with fork up and 47.83 feet with forks down and a 210-inch wheelbase. The front loader turning radius is 50-feet. There must be 70 feet of unobstructed approach (truck length + approach clearance) in front of each dumpster for front load/side load service and 100 feet unobstructed approach. Provide an Auto-Turn Model for the vehicle turn access for review by FOD's Recycling and Refuse Services and FDC's Engineering Services.

.2.2.4 Screened dumpster areas are preferred. Provide interior space for two dumpsters (one for recyclables, and one for non-recyclables) at grade in front of the loading dock with 14-foot roll-up doors to allow for front-loading truck to retrieve, empty and replace the dumpster within the space. Front Load Enclosures must contain a minimum of two dumpsters in shared enclosure and must be a minimum of 10 feet deep x 20 feet wide to provide reasonable safe clearance for servicing. Access doors/gates must be mounted to provide a minimum 20 feet wide unobstructed opening to the enclosure for two dumpsters in shared enclosure. Provide a concrete pad 12-inches-thick within the enclosures for the dumpsters to set on. Dumpster placed side by side are preferred. Stacked dumpsters one in front of the another requires a larger concrete pad and more time for servicing. Provide 3-phase power to the dumpster/loading dock area to accommodate future need for either a trash compactor or vertical bailers. In addition to screening, the intent of these requirements is to allow recyclables and trash to be deposited in the dumpsters from the loading dock in a sheltered environment. Typical 8-yard dumpsters sizes are: 82-inches (length) x 80-inches (width) x 76-inches (height). Separation clearance between the dumpsters and the screen is 36-inches. Typical 20-yard roll-off box is 96-inches wide. Provide bollards to protect enclosure doors/gates, structure, screening, and building, etc.

.2.2.5 All dumpsters without enclosures must have a 3-foot obstruction-free clearance zone surrounding the service area. This includes vehicles, poles, buildings, and any other obstructions. Containers

located behind overhead/roll-up doors are subject to the same minimum clearance requirements as containers inside enclosures. Provide a concrete pad 12-inches-thick for the containers to set upon. Provide bollards to project all existing and proposed built structures.

.2.2.6 Containers on casters may not exceed 4 yards in size and must be limited to a required maneuverable distance of less than 50 feet. A smooth, flat, concrete pad 12-inch-thick for the container, and a level paved surface must be provided for all pathways the container must maneuvered and will be expected to travel.

.2.2.7 Construction sites: Include sufficient space and annotate on the site drawings for contractors to provide dedicated dumpsters, minimum one for recyclables and one for non-recyclables.

.2.3 SPECIAL DRAINS: In stairwells, areaways and similar locations where leaf clogging of conventional drains would be expected provide scupper type drains at the junction of the wall and pavement or walk. Piping size shall be 6” in diameter minimum.

.2.4 MANHOLES AND CATCH BASINS: Refer to City of Columbus (COC) Construction and Materials Specifications Item 604 and Standard Drawings for manhole and catch basin materials and requirements for work within Franklin County. Refer to the more stringent jurisdiction between local codes or State of Ohio Department of Transportation (ODOT) Construction and Materials Specification Item 604 and Standard Drawings for work outside Franklin County. Manhole lids shall be a minimum of 30” in diameter.

.3 PROHIBITED CONSTRUCTION:

.3.1 Mortar joints between unit pavers.

.3.2 CHIP SEALING or shoot and chip surfacing for permanent parking lots, walks, streets or drives.

4 WALKS: Minimum width shall be 8 feet. See The Ohio State University walk policy in Appendix P (https://fod.osu.edu/sites/default/files/app_p.pdf). Bollards, sign posts, light poles and other permanent structures must be installed in a manner that provides no less than 6’-6” clearance width for snow plows and maintenance equipment access.

.4.1 University policy dictates concrete walkways in the absence of overriding considerations. Any deviation from concrete walks requires the approval of the University Landscape Architect. Pavers, such as 4”x8” clay brick pavers or natural stone pavers, shall be used as adjunct surfaces for appropriate areas to provide for improved drainage, to protect the viability of plant materials, or for design purposes.

.4.1.1 Deviations from the policy above shall be permitted in those areas where a predominant character has already been established for walkways by use of other materials.

.4.1.2 Deviations from the policy shall also be permitted in especially defined areas (field areas, gardens, natural areas, special feature sites, etc.) where the use of concrete walkways or masonry pavers would clearly be inappropriate or where structural considerations apply.

32 00 01. SUSTAINABILITY

.1 AE shall reference Division 18 “Sustainability” where some of the requirements are related to this division and adopt applicable requirements into the design.

32 12 00. FLEXIBLE PAVING

32 12 16. ASPHALT PAVING

.1 GENERAL PROVISIONS: Specify asphalt paving materials by reference to City of Columbus (COC) or State of Ohio, Department of Transportation (ODOT), Construction and Materials Specifications (CMS) with the exception that limestone aggregate, only, be used in asphalt concrete.

.2 PAVEMENT DESIGN REQUIREMENTS: Architect/Engineer shall employ a geotechnical engineer to conduct subsurface exploration and follow the recommendations with regards to subgrade preparation and pavement composition. Pavement design shall meet the latest COC and ODOT published methodology with a design life of 30 years.

.2.1 Design Considerations:

a. Average Daily Traffic Projections
b. In-situ subgrade soil conditions
c. Construction traffic impact
d. Bus/Heavy Truck impact

e. Life Cycle Cost analysis
f. Location of utilities
g. Recycled properties of materials
h. Heat Island effect
i. Cost of Materials
j. Additional section to be considers, based on importance of road

.2.2 Estimating Guidelines:

.2.2.1 Parking Lots without heavy loads
a. No bus, loading docks, through traffic, and/or trailer parking
b. Less than 300 spaces
c. Composition ~ 8" of aggregate, 2 ½"" of ODOT Item 441, asphalt concrete intermediate course, type 2, (448),1 ½" ODOT Item 441, asphalt concrete surface course, type 1, (448)

.2.2.2 Parking Lots with heavy loads
a. Bus and/or trailer parking
b. More than 300 spaces
c. Composition ~ 12" of aggregate, 3 ½" of ODOT Item 441, asphalt concrete intermediate course, type 2, (448), 1 ½" ODOT Item 441, asphalt concrete surface course, type 1, (448)

.2.2.3 Entrance drives and side roads without heavy loads
a. No bus, construction, loading dock, and/or garbage truck traffic
b. Composition ~ 10" of aggregate, 4" ODOT Item 301, asphalt concrete base, 1 ¾" ODOT Item 441, asphalt concrete intermediate course, type 2 (448), 1 ¼" ODOT Item 441, asphalt concrete surface course, type 1 (448), PG64-22

.2.2.4 Roadways with heavy loads
a. Bus, construction, and/or garbage truck traffic
b. Composition ~ 6" of aggregate, 8" of ODOT Item 305, concrete base, 1 ¾" of ODOT Item 441, asphalt concrete intermediate course, type 2, (448), 1 ¼" ODOT Item 441, asphalt concrete surface course, type 1, (448), PG70-22M

.2.3 Approval:
a. Parking Lot

1. Transportation and Traffic Management
2. University Engineer
3. University Landscape Architect
4. CampusParc

b. Roadway and Sidewalk
   1. FOD - Operations
   2. University Engineer
   3. University Landscape Architect

.2.4 BASE DRAINAGE: Perforated underdrain shall be specified along the edges of pavement as well as at the catch basins in the paved area to help drain the subbase.

.2.5 PROTECTION OF SURFACE COURSE: After completion of surface course, no vehicular traffic or parking shall be permitted on the pavement until the surface is ready to receive traffic without damage.

.2.6 REPAIRS: Depressions and abutments to existing pavement shall be repaired by cutting out the surfacing to a minimum depth of one inch with vertical cuts, filling, and rolling the areas. Feathering of patches and abutments to existing pavement is prohibited.

.2.7 JOINT SEALERS: When new pavement abuts existing, the joint shall be sealed per City of Columbus Item 409 for Main Campus and ODOT Item 448 for Regional Campuses. This applies to all trench repairs.

.3 WALKS: Asphalt walks, when permitted, shall be a full 2-inch compacted thickness of No. 404 on a 4-inch compacted thickness of No. 304 base. The base and the bituminous material shall each be compacted to 98 percent, modified Proctor test procedures (ASTM D-1557).

.3.1 Consider possibility of walks being used as drives, snow removal, etc.

.4 PAVEMENT REPAIR DUE TO UTILITY TRENCHING: Comply with City of Columbus Standard Drawing 1441 DR. A “Pavement & Utility Cut Repair Standards”.

32 13 10. RIGID PAVING

32 13 13 CONCRETE PAVING

.1 PAVING: The use of concrete for roads, drives, service courts, and parking areas is desired if the budget permits such construction. All trash dumpster pads, loading docks, bus pads, bus circulation areas and ramps shall be constructed with concrete. Comply with applicable concrete items in City of Columbus (COC) or ODOT's Construction Specifications and Materials.

.2 WALKS: Thickness shall be 5-1/2 inches minimum over 4 inches of compacted No. 304 gravel base. Thicken the edge to 18"x18" where the sidewalk abuts the curbing. The concrete shall have tooled edges which are then disguised by a light/medium broom finish. Except where required for structural purposes, reinforcing bars or welded wire fabric should be omitted. Use City of Columbus Class QC Misc. or ODOT Class QC Misc. concrete with clean sand, limestone aggregate, and 4 percent to 8 percent entrained air. Recycled concrete material that meets COC item 304 requirements may be used as the gravel base.

.2.1 CURING COMPOUNDS: Specify only non-staining type. It has been found that clear chlorinated rubber compounds cause staining which cannot be removed.

.2.2 CONCRETE SEALER: A concrete sealer shall be applied to all new concrete to better protect it from freezing and thawing.

.3 PAVEMENT REPAIR DUE TO UTILITY TRENCHING: Comply with City of Columbus Standard Drawing 1441 DR. A "Pavement & Utility Cut Repair Standards".

32 13 14. UNIT PAVING

.1 UNIT PAVING: Where installed within vehicular paths of travel, unit pavers shall be installed over concrete. Where installed outside of the vehicular path of travel, unit paver system cross-section shall be discussed with the University Landscape Architect.

32 16 00. CURBS AND GUTTERS:

.1 CURBS: Cast-in-place concrete shall be used unless other design is required per specific instruction from University. Comply with City of Columbus or O.D.O.T. Items 499 and 609. Concrete shall be Class C using No. 57 aggregate at 600 lbs. per cubic yard. Slump shall be 4 inches and minimum 28-day strength shall be 4000 psi with 4 percent to 8 percent entrained air.

.1.1 EXPANSION JOINTS shall be specified and shall be shown on the drawings. Color of the joint sealer shall match that of the concrete.

.1.2 FOUR INCH DRAIN CONDUCTOR in porous backfill shall be installed under all ~~combination~~ curbs and gutters. Conductors shall extend to drainage basins. Combination curb and gutter may be used only to match or repair existing work.

.2 CURB RAMPS FOR PERSONS WITH DISABILITIES:

.2.1 COMPANION RAMPS: State laws require that when a curb ramp is built on one side of a street, a companion ramp is required on the opposite side of the street. When project limits would normally end within a street intersection, the limits must be extended to allow construction of a companion ramp on the far side of the intersection. For projects in which Federal funding is involved, this requirement must carefully be coordinated with Federal requirements regarding limits of Federal participation. Ramps on University property shall match COC accessible ramp design guidelines.

.2.2 ADA RAMPS at roadway intersections shall maintain positive drainage away from the ramp to prevent ponding water. Construction Plans shall provide ample spot grading at ADA ramps to provide contractors with appropriate direction.

.2.3 DETECTABLE WARNING PLATES shall be cast iron and remain unpainted.

32 17 00. PAVING SPECIALTIES

32 17 23. PAVEMENT MARKINGS:

.1 PAVEMENT MARKINGS: All pavement markings shall conform to the City of Columbus and ODOT Item 641. Parking lot lines shall be white (except in Columbus campus, the color shall be yellow) per COC Item 642. All roadway striping, turn arrows, cross walks, stop bars etc. shall be per COC Item 644-Thermoplastic for asphalt pavement and per COC Item 647 Heat-Fused Preformed Thermoplastic Pavement Marking white with black outline (a compatible primer sealer is required to assure proper adhesion) for concrete pavement.

.2 PARKING LOT MARKINGS:

.2.1 Standard Parking Stall: 8.5’ x 18’

.2.2 Standard Parking driveway: 24'

.2.3 Accessible Parking Stall: 8' x 18' with either an adjacent 5' loading space or 8' van loading space.

Commentary: *Vehicles with only a rear license plate are required to park head-in on OSU Columbus campus, therefore provide 60" access aisles on the passenger side of the vehicle. Where possible and for all Medical Center accessible parking provide 60" access aisles on both sides of the vehicle. Provide an accessible route from accessible parking stalls to sidewalks and avoid routes behind parked vehicles.*

.3 CROSSWALK MARKINGS: Comply with University crosswalk marking details which can be obtained through University Project Manager.

32 30 00. SITE IMPROVEMENTS

.1 SITE AND STREET FURNISHINGS: The Ohio State University has standards for a variety of site and street furnishings. Consult a representative of University ~~Architect~~ Landscape Services for a list of acceptable products and the required installation methods.

.1.1 Refer to Division 12 FURNISHINGS, Section 12 93 00 Site Furnishings https://fod.osu.edu/sites/default/files/div_12.pdf

32 34 00. FABRICATED BRIDGES:

.1 Engineering drawings for all bridges shall be sealed by a Professional Engineer registered in the State of Ohio.

.2 Unless the structural elements of the bridge are wood, wood for the bridge deck shall not be used to avoid periodic maintenance problems and damage by snow removal equipment. Asphalt is to only be used with the permission of the University Architect.

.3 Bridge live load is to be designed for a minimum of a non-reducible 100 pounds per square foot, unless actual design factor requires more.

.4 Bridge width is to accommodate snow removal equipment.

.5 Bridges shall be ADA accessible.

.6 Weathered steel finish is not to be used if any element of the bridge could be in contact with soil or vegetation, exposed to winter salting of the deck, or any part of the bridge is capable of trapping moisture. The preferred bridge finish is hot dipped galvanized.

.7 Minimum design standards shall be per ODOT and AASHTO requirements.

32 80 00. IRRIGATION

.1 TURF AND PLANT IRRIGATION: Provide a permanent irrigation system if determined necessary by a representative of a representative University Landscape Services for all new or renovated turf areas and planting beds designed and constructed by the project. All site irrigation system controls shall be compatible with Rainbird IQ central control system. Controllers must include components necessary for communication with central ~~controller~~control system. Irrigation system design shall be reviewed by a representative of university Landscape Services prior to submittal of final drawings.

32 90 00. PLANTING

.1 CONSULTING SERVICES: Refer to Division 00, paragraph 00033 for possibility of the services of a professional Landscape Architect being required. All proposed Planting Plans shall follow the current Design Guidelines for Building and Landscape.

.2 PLANT MATERIALS: Selection of plant materials on the Campus is extremely important. Since this is a teaching laboratory, the varieties selected must be made from a broad range of stock indigenous to the specific locations. Persons selecting materials must not only be knowledgeable about the plants that will survive in the specific area of Ohio but also be able to select those appropriate for the northwest part of Columbus, for example. Be similarly selective for regional campus and OARDC plant materials. A pre-installation meeting shall be conducted with the University Landscape Architect regarding site and landscape work to address the site development and landscape requirements. Refer to the University Landscape Architect for approvals and assistance. See Tree Grading Standard in Appendix Q.

.3 PLANT LISTS should contain both common and technical names, quantities, and notation of planting delivery method (B & B, bare roots, etc.).

.4 KEYS: Indexes or keys identifying plants on drawings are prohibited. All planting must be individually identified without the use of code letters, numbers, etc.

.5 MULCH: Premium grade single shredded hardwood mulch. Exceptions may be taken for the mulch used in storm water best management practices (BMPs). Consult University Landscape Architect for appropriate mulch types used in BMPs.

.6 PROHIBITED MATERIALS: Landscape steel, plastic, or aluminum edging and weed-control plastic mats or film under mulch beds may not be used without specific approval of the University Landscape Architect.

.7 PLANTING SOIL: Blended soil mix consisting of ASTM D 5268-92(96), pH range of 6-8, ASTM C33 course sand, and a minimum of 4 percent organic material content “Com-Til” (or a University approved organic amendment), tested to determine fertilizer and lime recommendations; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth.

.7.1 Planting soil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

Planting soil shall be subject to inspection and approval by University Representative at the source of supply.

.8 STRUCTURAL SOIL: Any tree planted in a tree pit situation and/or surrounded by pavement shall use structural soil in a minimum 8’x8’x3’ depth planting area.

32 91 00. PLANTING PREPARATION

.1 SOIL PREPARATION: Specify that areas to be seeded or sodded will be properly prepared with a rototiller to the depth of 6 inches. If the area has been compacted during construction, rototill 4 to 6 inches depth to break up the pan, grade level, and apply topsoil (see 32 91 00.2 for acceptable topsoil). ALL ROCKS, GRAVEL, DIRT AND TURF CLODS are to be removed prior to seeding. Grade area 1 to 1-1/2" above grade of existing turf; blend edges to existing turf and sidewalks. Over seed areas with seed the rate indicated in 32 92 00.2 and for proper seed selection. The University Landscape Architect must approve any alternate method. Proposed preparation shall be in conformance with the current Design Guidelines for Building and Landscape (https://fod.osu.edu/sites/default/files/buildings-landscape.pdf).

.2 TOPSOIL PLACEMENT AND GRADING: Specify a 6-inch depth of acceptable topsoil for seeded areas and 12-inch depth for planting areas. Acceptable topsoil is defined as a blended soil mix consisting of ASTM D5268-92(96) soil component, ASTM C33 course sand and “Com-Til” – or a University approved organic amendment, tested to determine fertilizer and lime recommendations. Specify a 4-inch depth of acceptable topsoil with an additional 2-inch depth of “Com-Til” for seeded areas or a 10-inch depth of acceptable topsoil with an additional 2-inch depth of “Com-Til” for planting areas.

.2.1 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 depression to meet finish grades. Soil abutting walks should be compacted to 98 percent, modified Proctor test procedures (ASTM D-1557), to prevent settling.

.2.2 Moisten prepared turf areas before planting soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

.2.3 Restore areas if eroded or otherwise disturbed after finish grading and before planting.

32 92 00. TURF AND GRASSES

.1 TURF: Specify that all unpaved areas not indicated to receive planting be considered as turf areas and shall be seeded or sodded. No sod or Hydro-mulch seeding is acceptable on the University grounds without the approval of the University Landscape Architect. Hydro-mulch seeding will only be considered for large areas or sloping terrain. All debris (rocks, bricks,

concrete, clods stumps etc.) will be removed and the area graded before area will be approved for Hydro- mulch seeding.

.2 TURF GRASS SEED SELECTION: Seed selection is dependent on the site. Timing of the seeding is determined by the date; see 32 92 19.1 for details. If seeding is to be split because of the time of planting, multiply each of the following percentage by 2 for the proper mix at each seeding.

~~.2.1 TURF SEED shall be a clean, weed-free mix (a combination of 2 or more different species of turf grass) or blend (combination of 2 or more cultivars of a single turfgrass species); delivered in sealed containers with labels bearing the producer's name and formula of the mix at each seeding.~~

~~.2.1.1 FOR NON-IRRIGATED AREAS: 100% turf type tall fescue with at least 3 different varieties in the mix and 0% weed seed. Apply at a rate of 6-8 lbs. per 1000 sq.ft. No annual rye accepted under any conditions.~~

~~.2.1.2 TURF SEED FOR IRRIGATED AREAS: Standard bluegrass mix with 85% bluegrass with at least 3 different varieties and 15% Perennial Ryegrass and 0% weed seed. Apply at a rate of 6-8 lbs. per 1000 sq.ft. No annual rye accepted under any conditions.~~

.2.1 TURF SEED shall be a clean, weed-free mix, delivered in sealed containers labeled with the producer's name and the mix formula.

.2.1.1 Seed Composition: 100% turf type tall fescue with at least 3 different varieties in the mix, no more than 10% perennial rye and 0% weed seed. Apply at a rate of 6-8 lbs. per 1000 sq.ft. No annual rye accepted under any conditions.

Label must be approved by University Landscape Architect and actual labels from bags should be given to The Ohio State University for both the seed and fertilizer. Proposed improvements shall follow the current Design Guidelines for Building and Landscape.

OARDC: For areas with full sun exposure: use the current “Champion” mix prepared by the Oliger Seed Co. 1-330-724-4810 in Akron, Ohio. Substitute vendor is allowable as long as see mix matches the requirements set forth below or specific permission is granted by the OARDC Grounds Manager.

Special Mix: 50/50 Bluegrass/Perennial Rye: (4-5 ibs/1.000 sq.ft.)

25% Brooklawn Kentucky Bluegrass
25% Camas Kentucky Bluegrass
15% Home Run perennial Ryegrass
15% Paragon GLR Perennial Ryegrass
10% Beacon Hard Fescue
10% Kentucky Bluegrass

OARDC: For areas with less sun exposure: use the current "Champion" mix prepared by the Oliger Seed Co.

20% Intrigue Chewings Fescue
15% Edgewood Creeping Red Fescue
15% Zodiac Chewing Fescue
15% Cardinal Creeping Red Fescue
10% Beacon Hard Fescue
10% Kentucky Bluegrass

32 92 19. SEEDING & MULCHING

.1 SEEDING ~~shall be done either between August 15 and October 15, or between March 15 and May 20.~~ The early fall period is preferred. ~~If seeding must take place after May or October and the turf requires a perennial rye and bluegrass mix, the seeding will be split. The perennial rye seed will be sown at the time scheduled and the bluegrass seed will be split, seeded over the same area in September.~~ Proposed seeding improvements shall follow the current Design Guidelines for Building and Landscape. City of Columbus and ODOT Item numbers 659 will be used for Columbus campus and regional campuses, respectively.

.1.1 Seed: Seed with approved seed mix and rate (see 32 92 00.2 for seed selection); water if necessary for proper rate of germination. Areas that do not germinate must be reseeded and watered for establishment.

.1.2 Starter Fertilizer: Apply starter fertilizer prior to seeding, whether turf area is irrigated or non-irrigated. Apply at a rate of 1 ib. of nitrogen per 1000 sq.ft. Two weeks after seed germination another application of 1 ib. of nitrogen per 1000 sq.ft. should be applied to turf area.

.1.3 Mulch: Straw must be clean, free from seedbearing stalks or roots of noxious weeds, evenly distributed at an approximate thickness of two straws with no piles of straw. Any area that has had too much straw must

be redone with the removal of the straw, touch up grading, if necessary, and the proper depth of straw applied.

.1.4 Cleanup: Clean off sidewalks of soil; sweep walks clean of straw, seed and fertilizer.

.2 "MAINTENANCE: Seeded, sodded and planted areas shall be contractor maintained (including watering, mowing and weed control) until acceptance by the University. Total cover of planted areas shall be guaranteed by the contractor.

.2.1: Begin maintenance immediately after each area is planted and continue until acceptable turf is established. Maintenance period shall be a minimum of 28 days or to final acceptance.

.2.2: When full maintenance period has not elapsed before the end of the planting season, or if turf is not fully established, continue maintenance during next planting season.

.2.3: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting and other operations. Roll, regrade and replant bare or eroded areas and remulch to produce a uniformly smooth turf.

.2.4: In areas where mulch has been disturbed by wind or maintenance operations, add new mulch. Anchor as required to prevent displacement.

.2.5: Provide and maintain temporary piping, hoses and turf watering equipment to convey water from sources. Keep turf uniformly moist to a depth of 4 inches.

.2.6: Schedule watering to prevent wilting, puddling, erosion and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas. Water turf daily for the first two weeks.

.2.7: Provide turf protection fencing around all newly seeded turf.

.3 University Final Inspection and Acceptance:

.3.1. Upon completion of the work and fulfillment of the requirements of the Section, 32 92 19, notify the University Landscape Architect in writing that the work is ready for final inspection. Request a definite date for final inspection.

.3.2. Notify the University Landscape Architect five (5) days prior to the requested final inspection date.

.3.3. Acceptance of seeded turf areas shall be based upon the following criteria:

a. Terms of the maintenance period, as defined in this paragraph have been executed. Seeded turf areas shall be healthy, uniform and a close stand of grass shall be established.

b. The seeded turf areas shall be free of weeds and surface irregularities.

c. In any 10 square foot area within the seeded turf, coverage shall exceed 95%.

d. Scattered bare spots shall not exceed an area 4 inches by 4 inches.

e. Grass shall not exceed ~~3~~4" in height at time of acceptance.

.3.4. Acceptance of sodded turf areas shall be based on the following criteria:

a. Sodded turf shall be free of weeds and surface irregularities. All ends are butted tightly against each other and there are no overlapping joints. A clean edge will be made by using a mechanical sod cutter where sod abuts existing turf. Edge of sod must match the grade of existing turf. Sod will not be installed over existing turf, weeds or un-tilled soil.

b. Grass shall not exceed ~~3~~4" in height at time of acceptance.

32 93 00. PLANTS

.1 GROUND COVERS: must be weeded during the establishment period by the contractor to prevent perennial weeds from becoming established before the University takes over the maintenance of the beds. Proposed improvements shall follow the current Design Guidelines for Building and Landscape.

.1.1 A pre-emergence shall be applied at the time of planting to prevent the seeding in of new weeds.

.1.2 Perennial weeds must be sprayed with an herbicide to completely eradicate them from the bed.

.1.3. Spacing of the plants should be 3" - 6" o.c. to achieve coverage of the area during the first growing period. Planting should be watered and fertilized regularly to promote establishment prior to acceptance by the University.

.2 SHRUBS: must be planted on appropriate spacing. Proposed improvements shall follow the current Design Guidelines for Building and Landscape.

.2.1 All twine must be removed from the stems.

.2.2 Burlap must be pulled away from the stems and down 1/2 the ball.

.2.3 Nylon burlap must be totally removed.

.2.4 Backfill amendments (see trees .3.6)

.2.5 All shrubs must be evaluated and approved by _ the University Landscape Architect prior to planting.

.3 TREES: will be planted according to the planting detail in the appendix. No tree wrap is to be used. All mulch must be 2" away from the trunk of the tree. Mulch should be no thicker than 2". See 32 90 00.5 for type of mulch. The lip of the mound around the tree is to be no higher than 3". Forked trunks on trees are not acceptable; each tree must have one strong leader. Street trees must be limbed to 8 feet minimum. Proposed improvements shall follow the current Design Guidelines for Building and Landscape.

.3.1 All trees that come in wire baskets must have the basket removed. All twine must be removed from the trunk of the tree.

.3.2 All trees that have burlap and are bound with twine, must have twine cut and the burlap pulled away from the trunk down to half of the ball.

.3.3 All trees and shrubs that are bound in nylon burlap must have the burlap totally removed.

.3.4 The stakes of all trees will be removed at the end of the guarantee period by the contractor.

.3.5 No tree will be planted within 10' of a building or overhead structure unless approved by the University Landscape Architect.

.3.6 Backfill amendments: Mix a starter fertilizer (high phosphorus, low nitrogen ratio) and terra-sorb (or equivalent) acrylamide copolymer for water retention; use product's rate of application per tree size.

.3.7 All trees must be watered in thoroughly untill the acceptance by the University.

.3.8 All trees must be evaluated and approved by the University Landscape Architect prior to planting.

32 98 00. EXISTING TURF AND PLANT RESTORATION

.1 EXISTING TURF: Existing turf must be restored when compacted during construction. Repair any ruts or depressions left by equipment or storage of material. Remove topsoil containing foreign materials resulting from contractors operations including oil drippings, fuel spills, stone, gravel and other construction materials, and replace with new topsoil. Mow, dethatch, core aerate at a rate of 9 holes per square foot and rake existing turf. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides. Till stripped, bare and compacted areas to a soil depth of 6”. Apply 1” Comtil over entire surface to be repaired. Slit seed using seed mix and rate appropriate to area (see section 32 92 00, Turf Grass Seed). Apply straw (see section 32 92 19, Seeding).

.2 EXISTING SHRUBS: Existing shrubs within the construction area or staging area: replace or correctively prune if damaged during construction; prune to the height at the beginning of construction; weed/spray if weeds have grown up within the construction area and /or shrubbery.

.3 EXISTING TREES: Existing trees: original grade maintained, no top fill greater than 2" from the original grade out of the drip line; minimal to no grading under the drip line.

.4 RELEASE: Release of the restored area will be approved by the Superintendent of Grounds-Plant Material Section and the University Landscape Architect. The contractor will be recalled to provide a proper growing environment for the plant material.

END OF DIVISION 32 - EXTERIOR IMPROVEMENTS