Division 32 Exterior Improvements

32 05 00 Common Work Results for Exterior Improvements

32 05 10 General Requirements for Exterior Improvements

1. Exterior Improvements for all UW Madison facilities shall comply with all of the provisions of the latest version of the Division of Facilities Development & Management (DFDM) Civil, Site, and Utility Design Guidelines, which is available from the DFDM website.

2. References within the DFDM Guidelines regarding the DFDM Project Manager shall apply to the UW-Madison Project Manager on UW-Madison Managed Projects.

3. Project Specifications shall use as their basis all appropriate sections of the latest edition of the DFDM Master Specifications.

4. Deviations from DFDM’s Minimum Design Guidelines or the DFDM Master Specification sections shall be made only upon approval from the UW-Madison Project Manager.

5. The Guidelines for Planning and Design of UW-Madison Facilities shall take precedence over DFDM Guidelines, but the A/E shall discuss all conflicts within the guidelines and specifications with the UW-Madison Project Manager.

6. The goals and guiding principles of the UW-Madison Campus Master Plan (latest edition) shall be considered and referenced as part of the planning, design, detailing, and material section for every project.

32 05 20 Drawing Requirements for Exterior Improvements

Projects involving site construction shall typically include the following site plans. Site plans shall be arranged in the plan set to represent the progressive sequence of work as much as possible. Each plan shall include the features typically provided as well as the specific items found below. This is not an all-inclusive list of plan requirements.

On all site plans, Use only the appropriate number of significant digits in the site dimensions and elevations. Site elevations shall be in feet and decimal feet, not in inches.

1. Existing Conditions Plan:

1.1. All projects involving exterior site construction shall include a site survey performed by a registered land surveyor. The consultant shall be responsible for all site survey and land survey services.

1.2. An “Existing Conditions Plan” shall be provided with the field survey that was performed for the project. The survey map shall include the typical site features as well as the date of the survey, benchmarks, existing signs (w/ text), utilities, legend, table of existing site storm and sanitary pipes & structures with inverts & rims etc., tree types and sizes, tree drip lines, critical spot grades, etc. Occasionally, the Existing Conditions map may be combined with another plan such as the Demo plan but all the survey info will still be required.

1.3. The consultant is responsible for identifying and obtaining documentation for all easements, public right of ways and property lines that affect the project. The
consultant shall accurately depict these easements and property lines on the existing conditions plan and include all pertinent restrictions.

1.4. Dane County Coordinates shall be used stated on the plan, for all surveys.

1.5. The Dane County USGS vertical datum shall be used for surveys and stated on the plan.

1.6. The date of the field survey shall be provided.

1.7. Locations of Section Corner Monuments and Campus Control points and Benchmarks shall be indicated on all surveys.

1.8. A table that shows the benchmarks and the control points shall be provided per DFDM requirements.

1.9. The location of the UW-Madison property corners and public right of way and monuments when within or adjacent to the project site shall be indicated on the plan.

1.10. A note stating that property corner markers shall be replaced as needed shall be on the drawings.

1.11. Clear graphical distinction between asphalt, concrete, sidewalk, building, and vegetated areas shall be provided.

1.12. Existing site dimensions including width of existing roads and driveway shall be provided.

1.13. Structure numbers in the drawing at all sanitary and storm structures shall be provided.

1.14. Sanitary and storm pipe table and structure table with structure numbers, pipe numbers, invert elevations, pipe lengths, pipe size, pipe material, rim elevations, top of casting elevations, etc. shall be provided.

1.15. The names of the owner of any utility or site feature that are not owned by UW-Madison shall be provided.

1.16. Indication of what is printed or depicted on each site sign shall be provided.

1.17. All stand-alone trees and all individual trees within a massing having 2 inch calipers and larger, shall be indicated on the plan.

1.18. Trunk caliper at 4 feet high (DBH) and common species name shall be provided on the plan.

1.19. Show drip lines for all stand-alone trees and tree massings shall be provided on the plans. However, insure the tree symbols are large enough to be seen on the given scale of the drawing.

2. Demolition Plan:
2.1. A note indicating that all Campus Benchmarks and Control Points shall be protected and the Contractor shall be required to replace any that are disturbed during construction shall be on the drawings.

2.2. All site features to be removed from the site shall be indicated and explanation of any special salvage requirements shall be provided on the plan.

2.3. Limits and appropriate dimensions of each type of pavement and buildings to be removed shall be indicated.

2.4. The location of the pavement saw cuts shall be shown on the plan.

2.5. A note indicating that all sanitary sewer castings, storm sewer castings, and hydrants that are not being reused shall be salvaged and given to the UW-Madison Plumbing Shop shall be on the drawings.

3. Traffic Control and Pedestrian Access Plan

3.1. See requirements for Traffic Control Plan in Division 1 General Requirements.

4. Erosion Control Plan (EC):

4.1. The Erosion Control Plan may typically be combined with the Grading Plan.

4.2. The location of the construction staging area and project limits for all projects (even if exclusively interior work) shall be graphically indicated on the plans.

4.3. The proposed grading with the erosion control shall be indicated.

4.4. The type of inlet protection at each inlet shall be called out. Type D protection is preferred but make sure it is appropriate for the inlet size and depth. Inlet protection details shall be provided.

4.5. A short statement on the Erosion Control Plan of what the Wisconsin DNR (WDNR), City of Madison and UW-Madison requirements are for sediment and storm water runoff control and how they are being met shall be shown. If the site is exempt, the plans shall indicate the exemption with an explanation.

4.6. A table on the Erosion Control Plan with areas for total site area, and pre & post development impervious areas, roof area, and disturbed area shall be provided.

4.7. Detailed drawings for all erosion control practices, call out detail number, and a detail page on the erosion control plan shall be provided.

4.8. A note directing the Contractor to remove sediment from the storm facilities after completion of all site construction and prior to substantial completion shall be provided.

4.9. This first note on the Erosion Control Plan shall be a General Description of the Site Work to be performed, with phasing and dates as applicable. AE shall provide this description unique to the project.

4.10. All the Erosion Control Plan notes, as shown below, shall be provided.

4.10.1. Construction Site Erosion Control Notes (to be added to EC Plan):
1. Additional erosion control measures, as requested by state inspectors, campus inspectors, and/or the A/E shall be installed within 24 hours of request.

2. All measures indicated on the plans shall be considered minimums.

3. All erosion control measures shall be constructed and maintained by the contractor in accordance with the Wisconsin DNR Construction Site Erosion & Sediment Control Technical Standards. It is the Contractor’s responsibility to obtain a copy of these standards.

4. Install erosion control measures prior to any site work, including grading or disturbance of existing surface materials as shown on the plan. Modifications to sediment control design may be conducted to meet unforeseen field conditions if modifications conform to WDNR Technical Standards.

5. Inspections and maintenance of all erosion control shall be routine (once per week and after each ½ inch rainfall) to ensure proper function of erosion controls at all times. Erosion control measures are to be in working order at the end of each work day.

6. Contractor shall keep records on site of all erosion control inspections and available for review by inspectors when requested.

7. Install erosion controls on the downstream side of stockpiles.

8. All slopes exceeding 4:1 shall be stabilized with Class 1, Type B Erosion Matting and all drainage swales shall be stabilized with Class II, Type B erosion matting.

9. Cut and fill slopes shall be no greater than 3:1

10. Incidental mud tracking off-site onto adjacent thoroughfares shall be cleaned and removed by the end of each working day using proper disposal methods.

11. Any disturbed area that remains inactive for greater than seven (7) days shall be stabilized with temporary stabilization methods such as temporary seeding, soil treatment, erosion matting, or mulch.

12. Prevent excessive dust from leaving the construction site in accordance with local and state regulations.

13. Contractor shall remove erosion control measures after site construction is complete and all soil surfaces having an established vegetative cover.

14. Contractor shall file a Notice of Termination upon vegetative stabilization in accordance with WDNR and WCOMM requirements.

15. Silt fencing shall not be installed within the Critical Root Radius or drip line of any trees or shrubs to be protected. Use silt socks which do not require excavation and cutting roots.

16. Silt fence may be substituted with silt sock.

4.10.2. Grading and Temporary Seeding Notes (to be added to EC Plan):
1. All disturbed areas shall be seeded and mulched immediately following grading activities.

2. The minimum seeding rate for temporary seeding in turf areas is 5 pounds grass seed mix per 1000 square feet used and combined with annual ryegrass at a rate of 1½ pounds per 1000 square feet, unless otherwise specified.

3. All proposed grades shown are finished grades. Contractor shall verify all grades, make sure all areas drain properly and shall report any discrepancies to the engineer prior to completion.

4. Contractor shall water all newly seeded areas during the summer months whenever there is a 7 day lapse with no significant rainfall.

5. All disturbed areas to be seeded shall receive a minimum of 12 inches of topsoil, fertilizer, seed and mulch.

5. Grading Plan:

   5.1. The location of the construction staging area and project limits shall be graphically shown on the plans.

   5.2. The plans shall show construction fencing along the entire length of the construction limits. The construction fencing shall be chain link per the UW-Madison Guidelines and completely close off the site to pedestrians. If it is not appropriate for fence to be placed along the entire construction limits for the entire project, a phasing plan and schedule for moving the fencing/construction limits throughout the project shall be provided.

   5.3. Slopes shall be no flatter than: (DFDM Requirements)

   1. 2% across turf areas or,
   2. 1% across pavements.

   5.4. Slopes shall be no steeper than: (DFDM Requirements)

   1. 4:1 for mowed turf slopes.
   2. 3:1 for turf slopes that are not mowed or,
   3. 12% on short driveways that will be snow plowed or,
   4. 10% on sustained grades along driveways and minor road that will be snow plowed or,
   5. 8% on sustained grades on major roads that will be snow plowed.

   5.5. Existing contours in addition to the proposed grades and proposed contours on the plan shall be provided.

   5.6. The First Floor and Basement Floor elevations shall be shown on the Grading Plans.
5.7. The percent slope for critical areas such as long runs of grass or pavement, sidewalk and pavement cross slopes, storm basin side slopes, and flat slopes shall be provided. In particular any locations where slopes are 1% or less and 5% or more for paved areas and 2% or less and 5:1 or more for vegetated areas shall be indicated.

5.8. Proposed spot grades and contours for all new or replacement concrete and asphalt shall be provided. Calling out “replace in kind” is not acceptable.

5.9. Spot grades at 25 feet to 50 feet intervals and at high and low points along prolonged stretches of pavement and/or curbs shall be provided.

5.10. Specific location of spot grades shall be provided. (i.e. top-of-curb, edge of pavement, flag of curb, ground, etc.)

5.11. Utility structures shall be shown in the drawing as well as the structure numbers and rim elevation at all storm structures, sanitary manholes, steam vaults, electric vaults, etc.

5.12. Overland storm water overflow route shall be indicated.

5.13. ADA accessible route and the percent slopes along the route shall be provided.

5.14. Location and type of all sidewalk ramps shall be indicated.

6. Site Layout Plan:

6.1. Dimensions for all proposed site features including new and replacement pavements shall be provided. Calling out “replace in kind” is not acceptable and does not provide enough information for proper site restoration. This includes existing road widths adjacent to the site when curb is being replaced.

6.2. Detail number and sheet number for proposed site features shall be called out in the plan.

6.3. Required fire lanes and their widths as approved by the City of Madison shall be provided.

6.4. All existing and proposed easements, property lines, and right of way lines shall be provided on the proposed site plan with the existing and proposed building and validation that there are no conflicts or encroachments.

6.5. A table with the number of parking spaces for vehicles, ADA, bikes and mopeds shall be provided.

6.6. X and Y coordinates for a few significant site features as a check to field staking crews shall be provided per DFDM requirements.

6.7. The consultant shall accurately depict all easements and property lines on the plan and determine if anything within the project conflicts with easements and property lines.

6.8. Show all signs and pavement markings on the plan.
6.9. Site plans for any green roofs shall be located in the plan set with the other site plans. If possible, group all site plans, landscape plans, plant schedules, and detail drawings (above the roof membrane) together with other site related plans.

7. Site Paving Plan:

7.1. Location and limits of each type of pavement shall be provided.

8. Site Utility Plan:

8.1. First floor and basement building floor elevations shall be provided on the utility plans.

8.2. Structure numbers for all new and existing utility structures shall be provided.

8.3. A table on the plan that shows all sanitary and storm structures with rim elevations, invert elevations, casting types, pipe sizes in and out, and designate if it’s is a new structure, structure to remain, or structure to remove shall be provided.

8.4. Existing utility structures which will receive new castings and those castings which will be reused shall be indicated on the plans.

8.5. The name of the owners of any utility or site feature that are not owned by UW-Madison shall be provided.

8.6. All existing and proposed utilities with the existing and proposed building shall be graphically shown to validate there are no conflicts.

8.7. It shall be clear to the contractor that all utility castings within newly paved areas and turf areas within the project limits shall be adjusted and reset per the specifications even if the casting is not being replaced. This includes adjusting rings and mortar.

8.8. Different line types for existing utilities and proposed utilities shall be used.

8.9. The plan shall clearly demonstrate there are no vertical or horizontal conflicts for all underground utilities by providing utility profiles or a table of dimensional clearances between utilities.

9. Site Details:

9.1. Silt fence, gravel construction entrance, and inlet filter detail drawings based on City of Madison standard details shall be provided.

9.2. Provide concrete pavement and sidewalk joint detail drawings that incorporate UW-Madison guidelines which explicitly state expansion joint material shall not be used.

9.3. Appropriate curb details which include the following notes shall be provided:

9.3.1. No expansion joint material shall be used in or behind curb and gutter.

9.3.2. Curbs shall be backfilled with the appropriate soil material after curb has achieved specified strength and prior to placing the adjacent base course and pavement.
9.4. Detail drawing with ADA accessible ramps that adhere to campus standard details and Technical Guidelines shall be provided.

9.5. Utility details shall be provided.

9.6. Detail drawing of crosswalks shall be provided.

9.7. Detail drawings for all site retaining walls with structural computations shall be provided.

10. Landscape Plan:

10.1. Plant Schedules shall be on the same sheet as the planting plan.

10.2. Include planting plan for green roofs, if any, with other planting plans. If possible, group all site plans, landscape plans, plant schedules, and detail drawings (above the roof membrane) together with the other site related plans. If not, include reference on planting plan where other green roof plans and details are located.

10.3. Show all existing site vegetation. Use graphic symbols that show current size of vegetation.

11. Landscape Details:

11.1. Include detail drawings for all site furnishings at the 35% review. This includes but is not limited to trash cans, recycling containers, ash urns, outdoor tables, bike racks, bollards, benches, seating areas, signs, light pole bases, etc.

32 05 30 Design Parameters for Exterior Improvements

1. Consider the site and landscape surrounding the project boundaries when developing the site and landscape design for the project. This will insure there is a seamless transition between the new design and existing adjacent sites.

2. The goals and guiding principles of the UW-Madison Campus Master Plan (latest edition) shall be considered and referenced as part of the planning, design, detailing, and material section for every project.

3. Driveway and Roadway:

3.1. The standard two-lane street width is 34 feet (curb face to curb face), with (2) 11 foot wide travel lanes, (2) 5 foot bike lanes, 18 inch curb & gutter with a 12 inch gutter pan. A 30 inch curb & gutter may be used if an exceptionally large area for roads exists. Where bike lanes do not exist, streets shall be a minimum of 24 feet wide, including a 12 inch gutter pan. Design issues regarding four-lane streets and streets with parking turn lanes, and other features should be addressed in consultation with the transportation planner.

3.2. When using 18 inch curb & gutter, storm drain inlets in the gutter shall not extend beyond the gutter pan and additional inlets shall be installed to manage runoff as needed. Inlets shall be designed to avoid endangering bicyclists with grates running perpendicularly or diagonally to the street.
3.3. In locations where inlet castings extend beyond the 12 inch gutter pan, the pan shall taper out 3 feet on both sides of the casting to meet the edge of casting. Provide a detail drawing of this in the site details sheet.

3.4. Driveway intersections on campus shall be either be an “at-grade” asphalt intersection or a City of Madison Standard Commercial Drive concrete apron which shall be determined on a case by case basis. All driveways intersecting with a public street shall follow City of Madison requirements.

3.5. Unless otherwise specified, intersection corner radii shall be 25 feet and designed to minimize the length of crosswalks and to be pedestrian-friendly. A larger radius of 35 feet is required where regular bus activity is expected, especially where pedestrian traffic is limited. Design of effective corner radii shall take into account the increase in turning radius created by bike lanes and by on-street parallel parking, etc. Moreover, where possible, widening the appropriate leg of an intersection shall be considered as a more effective solution to facilitating bus turning movements than larger radii.

3.6. The street design shall match or fit the design of the adjacent existing street unless those areas do not meet current standards or do not satisfy the goals and recommendations of the UW-Madison Campus Master Plan (most recent edition).

4. Sidewalk:

4.1. All sidewalks shall be a minimum of 8 feet wide to accommodate snow removal and maintenance equipment.

4.1.1. Sidewalks 10 feet and wider shall be considered in very high pedestrian volume areas, especially in the eastern and central areas of campus.

4.1.2. Exceptions for narrower sidewalks shall be considered when building footprint and minimum street widths restrict sidewalk width.

4.2. Sidewalks shall be on both sides of a street or driveway

4.3. All interior angles of sidewalks shall be rounded, so that the grass on the inside angle is not damaged by snow removal equipment and service vehicles.

4.4. Corner radii for sidewalks shall be no greater than 5 feet at intersections but shall be designed sufficiently enough in other circumstances to minimize “short cuts” off the sidewalk.

4.5. Sidewalks shall be designed to provide an efficient and straight (versus circuitous or meandering) path between a building entrance and the street or another significant point of departure.

4.6. The placement and design of sidewalks shall be attractive enough to pedestrians that “short cuts” across turf areas, planting beds, streets, and other campus areas are minimized.

5. Street Terrace and Planting Area Considerations:

5.1. Street terraces shall be provided and shall be 6 feet to 10 feet wide, especially in the absence of on-street parallel parking.
5.1.1. Exceptions for a narrower terrace or no terrace may be considered where existing building footprints and minimum street widths do not allow for standard widths or in very low pedestrian traffic areas.

5.1.2. The cross slopes of the terrace shall match the adjacent sidewalk to create a larger streetscape for site amenities and use.

5.2. The street terrace dimensions shall match or fit the design of the adjacent existing street unless those terraces do not meet current standards.

5.3. Parallel parking shall be considered to provide a safety buffer between motor traffic and pedestrians on a sidewalk and where access to cars parked on the street needs to be provided in the terrace.

5.4. Landscape considerations shall be the dominant factor in the design if there is a street terrace. See UW-Madison Campus Master Plan.

5.5. Consider sustainable design, storm water management, and other innovative best practices for street terrace design. See UW-Madison Campus Master Plan.

5.6. The size of the terrace, the soil used, and the placement of utilities near a terrace shall allow, wherever possible, for the planting of trees.

5.7. The soil volume provided for street trees, turf and other plants shall be maximized to create plant environments that maximize growth potential and good health. Potential options to accomplish this include, but are not limited to, the following:

1. Structural soils
2. Engineered Soils
3. Modular suspended pavement system products such as Deep Root Silva Cells.
4. Street terraces that maintain deeper soil volumes for longer distances, creating a “soil trench.”

6. Bicycle Routes and Multi-Use Paths

6.1. All campus and city streets shall be bicycle friendly and promote safe bicycle travel.

6.2. All bicycle route planning and design shall follow current published guidelines from the American Association of State Highway and Transportation Officials (AASHTO) and as further specified by Wisconsin Department of Transportation’s (WDOT) Wisconsin Bicycle Facilities Design Manual.

6.3. Bicycle lanes in the street shall be a minimum of 5 feet wide, not including the gutter pan, unless otherwise specified.

6.4. Bicycle and multi-use paths shall be a minimum of 12 to 14 feet wide with 2 foot shoulders and 3 feet of total clearance on each side. A center line shall be provided and the path shall be striped for each direction of bicycle use and for pedestrian use unless wider than 14 feet.
6.4.1. Bicycle paths shall be designed for 20 mph speeds. (Note: As determined by UW-Madison Facilities Planning and Management, University right-of-way conditions may require different standards to meet special circumstances).

6.5. Refer to Division 32 17 00 Paving Specialties for bike lane and multi-use path pavement markings.

7. Bus Stops:

7.1. The location of bus stops shall be determined in consultation with Madison Metro and UW-Madison Transportation Services.

7.2. Bus stop pads located within the terrace shall use an integral curb and gutter. Terrace shall be at least 8 to 10 feet wide from the edge of the sidewalk to any bus shelter if one is used.

7.3. If a bus pullout is used (especially in the case of a bus stop that cannot be located at a corner) the cut out shall be 10 feet wide and 120 feet long. Corner radii at the ends of the cutout should be 25 feet long.

8. Bus Shelters:

8.1. All campus standard bus shelters shall be purchased by the project though UW-Madison Transportation Services using either Line 3 or 4 funds. Alternate bus shelter designs are not acceptable.

8.2. The concrete pad shall be provided by the general contractor as a part of the project. Size shall be 7 feet by 13 feet for a single shelter, larger for double shelters.

8.3. The bus shelters shall be installed by the general contractor.

8.4. Bus shelter locations shall be coordinated with UW-Madison Transportation Services, Madison Metro, and UW-Madison Facilities Planning and Management (FP&M).

8.5. One campus standard trash container and one campus standard recycling container shall be provided at each bus stop shelter. See Division 12 93 23 Waste, Recycling, and Ash Receptacles.

9. Surface Parking Lots and Service Areas

9.1. Refer to Division 34. Transportation for Automobile Parking Structures

9.2. The UW-Madison campus parking stall quantity is defined through the ongoing transportation demand management efforts between UW-Madison Transportation Services and the City of Madison in accordance with the campus Long-Range Transportation Plan. UW-Madison Transportation Services manages the type and quantity of stalls on a campus wide basis and not on a lot by lot basis. Projects dealing with vehicular parking shall coordinate with UW-Madison Transportation Services.

9.3. Parking lots should be designed to satisfy Crime Prevention Through Environmental Design (CPTED), including adequate illuminance, uniformity, and glare of lighting,
landscaping/natural surveillance, placement of signage, security infrastructure (per UWPD), and to ensure an adequate field of vision.

9.4. The following note shall be added to the Site Plan notes: *Parking facility design standards are established to meet the State of Wisconsin requirements and are identified in UW-Madison Technical Guidelines Division 32 Exterior Improvement, Section 8.*

9.5. Parking lot landscape and screening design shall adhere to the minimum standards set forth by the City of Madison standards (28.142 Landscaping and Screening Requirements). With the following modification to meet the unique challenges of UW-Madison.

9.5.1. Landscaping and Screen Requirements - Interior Parking Lot Landscaping:

9.5.1.1. A minimum of eight percent (8%) of the asphalt or concrete area of the parking lot shall be devoted to interior planting islands, peninsulas, or landscaped strips. There is no requirement for the location of planting islands every twelve (12) contiguous stalls. Landscaped strips shall be at least seven (7) feet wide between parking bays.

9.6. Surface parking lots shall employ a landscape design that emphasizes simple, properly scaled vegetation and elements that avoid garden effects better suited to courtyards or more intimate campus environments. Surface parking lots and service areas shall employ a limited number of pavement, wall, and planting material types.

9.6.1. Overall composition and location of landscaped areas shall complement the scale of the development and its surroundings. In general, larger, well-placed contiguous planting areas shall be preferred to smaller disconnected areas.

9.6.2. Use landscape to break up large expanses of vehicles and pavement.

9.6.3. Provide groups of shade trees to reduce the heat-island effect.

9.6.4. Use topography and vegetation to visually screen parking areas.

9.6.5. Plan adequate space for snow storage.

9.6.6. Contribute to campus goals of stormwater mitigation using best management practices (BMPs).

9.7. Islands and peninsulas internal to parking lots shall be sized to support the growth of the proposed plants within them.

9.8. Wheel stops shall not be used.

9.9. Each stall shall be eight (8) feet six (6) inches wide and be measured from the edge of any columns or other obstructions. Parking stalls shall be eighteen (18) feet in depth.
9.9.1. See Division 32 Detail 1 for parking striping detail

9.10. Drive aisles shall be a minimum of twenty-four (24) feet wide for two-way traffic. The width of drive aisles for one-way traffic-oriented parking areas shall be decided on a case by case basis taking into account the geometry of the parking stalls relative to the drive aisles.

9.11. Motor cycle parking stalls shall be four (4) feet wide by eight (8) feet long and shall be paved with concrete.

9.12. Accessible stalls shall comply with ADA and their location shall be in the stalls nearest to an accessible route and accessible entrance.

9.12.1. ADA symbols for accessible stalls shall not be painted on the parking stall surface.

9.12.2. Accessible stalls shall be eight (8) feet wide with a five (5) foot access aisle.

9.12.3. Accessible van stalls shall be eleven (11) feet wide with a five (5) foot access aisle.

9.12.4. Two accessible stalls can share one access aisle.

9.12.5. Signs for accessible stalls shall be provided by UW-Madison Transportation Services to be installed by the contractor in consultation with UW-Madison Transportation Services.

9.12.5.1. See Division 10 14 18 Traffic Signage and Sign Posts for standards.

9.13. UW-Madison Transportation Services will provide two (2) lot identification signs to the project, to be installed by the contractor (contractor shall provide posts) at all vehicle entrances to the facility. Signs shall be posted before final completion.


9.14. Surface parking lots shall be lit with full cut-off light standards and provide an average foot-candle of .5 fc across the lot.

9.14.1. See Division 26 50 00 Lighting for campus standard fixtures.

9.15. Information on gates, ticket booths, and other parking equipment is located in Division 34. Transportation

10. Moped and Scooter Facilities:

10.1. Specifications for the number and location of moped parking spaces shall be fully incorporated into the site design and included in the 35% review drawings.
10.2 UW-Madison Transportation Services shall be consulted as early as possible in the site development phase to determine number of moped stalls required.

10.3 Moped/scooter parking spaces shall be 3 feet by 6 feet with a 6 foot vertical clearance and a 5 foot 6 inch drive aisle.

10.4 Moped parking areas shall be paved with concrete.

10.5 Moped spaces may be located close to bicycle parking areas but shall be kept separate to avoid conflicts.

10.6 Moped spaces shall be located to prevent conflicts with pedestrians, bicycles, and other motor vehicles.

10.7 Moped spaces shall be located to prevent mopeds from using or crossing pedestrian facilities such as wheelchair ramps, crosswalk curb cuts and sidewalks.

10.8 Access to moped areas shall be provided using a separate curb ramp (without truncated domes) or mountable curb with a reduced slope after taking into account traffic movements on the street from which safe access must be provided.

10.9 Individual moped stalls must be marked with a 4 inch painted white non-reflective stripe. Moped parking signs will be provided by UW-Madison Transportation Services (See Standard Detail)

10.10 Signs for Moped parking shall be provided by Transportation Services to be installed by the contractor in consultation with Transportation Services.

11. Traffic Control Devices:

10.1 See Division 10 14 18 Traffic Signage and Sign Posts for sign post standards.

10.2 Regulatory vehicle signs shall conform to the type, size, and/or color scheme described in the MUTCD.

10.3 Sign posts shall be provided and installed by contractor.

### 32 10 00 Bases, Ballasts, and Paving

#### 32 12 00 Flexible Paving

#### 32 12 16 Asphalt Paving

1. All current DFDM/civil design guidelines shall be followed in designing asphalt paving.

2. The UW-Madison requires the following minimum thicknesses for asphalt pavements. Where geotechnical reports are available, use the thicker design of either the UW-Madison minimum or the geotechnical report.

2.1. All bus routes: 5½ inches of asphalt (1 ¾ inch surface + 3½ inch binder) and 8 inch base course.

2.2. Standard pavement for parking lots, driveways, and side roads: 4 inches of asphalt (1 ¾ inch surface + 2 ¼ inch binder) and 8 inch base course.
2.3. Heavy Duty Asphalt Pavement for areas with heavy truck use: including the campus roadways 5 inch of asphalt (2 inch surface + 3 inch binder) and 10 inch base course.

2.4. Bicycle/Pedestrian Paths: 3 ½ inch (1¾ inch surface + 1¾ inch binder)

3. All partial removal of pavements shall be saw cut to full depth at removal limits and saw cuts shall be at the nearest existing pavement joint. This note shall be included in the plan set.

4. Contractor shall be directed to adjust all utility structure castings within proposed paving areas. This note shall be included in the plan set.

5. Asphalt patching for utility trenches shall follow the cross section of City of Madison Standard Detail for Type III Pavement Patch. A detail for this shall be included in the plan set as needed.

6. Patching for Curb & Gutter Replacement:

6.1. Where curb replacement abuts existing asphalt pavement, the Contactor shall saw cut the existing asphalt to full depth 12 inch from edge of gutter and then patch with appropriate depth of asphalt between saw cut and the new curb after the new curb has sufficiently cured. The contractor shall not use the existing edge of the asphalt as their concrete form. Using the asphalt as a concrete form causes poor quality curb and gutter by creating uneven gutter line and can cause a short concrete depth on the new gutter. A detail shall be included in the plan set, when needed.

7. Pervious Asphalt shall only be used with UW-Madison FP&M approval. Past installation performance on campus has been poor.

7.1. Pervious asphalt shall be limited to locations that do not experience heavy vehicle traffic and contribute significantly to storm water infiltration.

7.2. Pervious asphalt specifications and mix design shall be submitted to UW-Madison FP&M for approval with the 35% review.

7.3. All contractors installing pervious asphalt shall provide proof of experience and certification in the construction of the product.

7.4. Pervious asphalt shall include the appropriate depth of base course for storm water storage.

7.5. Final design submittals shall include a maintenance plan for proposed pervious asphalt.

7.6. Pervious asphalt shall be vacuum cleaned after all site work is complete and before substantial completion when the site is turned over to the UW-Madison.

8. Street Patching Criteria:

8.1 For Arterial Streets and Streets with PACER pavement rating > 6

8.1.1 Length of Patch

1. Minimum 50 feet long
2. Minimum of 15 feet beyond the excavation
3. Where multiple patches are created and the separation between them is less than 100 feet, the patches shall be combined into a single patch.
4. The patches shall be adjusted in the field to meet special conditions such as previous paving or patching limits.

8.1.2 Width of Patch (all dimensions are curb face to curb face)

1. All Streets except Divided Roadways or One-Way Streets
   i) Street width shall be 0 to 24 feet wide – patch entire street width
   ii) Street width shall be 25 to 37 feet wide – patch one half the street width (curb to centerline of roadway). Note – Utility Engineer may adjust paving limit to correspond with a painted centerline in situations where the painted centerline is not in the center of the street.
   iii) Street width shall be 38 feet and up - patch width of entire lane for each lane which was disturbed by the excavation.

   (1) If the lane is adjacent to a bike lane, the bike lane shall be included. (except when there is a parking lane between the bike lane and the curb)

   (2) If the lane is a bike lane and adjacent to a parking lane, the parking lane shall be included.

   (3) If the lane is a bike lane and not adjacent to a parking lane, the adjacent travel lane shall be included.

2. Divided Roadways and One-Way Streets
   i) Street 0 to 19 feet wide shall patch entire street width
   ii) Street width 20 feet and up shall patch the width of entire lane for each lane which was disturbed by the excavation.

   (1) If the lane is adjacent to a bike lane, the bike lane shall be included. (except when there is a parking lane between the bike lane and the curb)

   (2) If the lane is a bike lane and adjacent to a parking lane, the parking lane shall be included.

   (3) If the lane is a bike lane and not adjacent to a parking lane, the adjacent travel lane shall be included.

32 13 00 Rigid Paving

32 13 13 Concrete Paving

1. All current DFDM/civil design guidelines shall be followed in designing concrete paving.

2. Colored concrete may be used in special design situations near major building entries and plazas. Coloring shall be integral to the full depth of concrete and not shaken onto the surface.
2.1. Include the color and brand used in the design specifications.

2.2. Color shall be approved by UW-Madison Facilities Planning and Management

3. Stamped concrete may be used in special design situations near major building entries and plazas.

3.1. Include the pattern and brand used in the design specifications.

3.2. Pattern shall be approved by UW-Madison Facilities Planning and Management

4. Contractor shall adjust all affected utility structure castings as necessary within the project limits, even when the project includes no other utility work. This note shall be provided in the plan set.

5. All partial removal of pavements shall be saw cut to full depth at removal limits and saw cuts shall be at the nearest existing pavement joint. This note shall be provided in the plan set.

6. Concrete Pavement Thickness Standards

6.1. **Standard Duty:** 6 inch thickness with no reinforcement and 6 inch base course.

   6.1.1. Sidewalks
   6.1.2. Bicycle parking areas
   6.1.3. Bus shelter and bus stop pads.
   6.1.4. Moped and motorcycle parking
   6.1.5. Plaza and patio areas with little or no vehicle traffic

6.2. **Heavy Duty:** 7 ½ inch minimum thickness with minimum epoxy coated 6x6, W2.9xW2.9 WWF placed 3 inches above subgrade into the slab. 8 inch base course.

   6.2.1. Loading docks
   6.2.2. Fire lanes
   6.2.3. Sidewalk and plaza areas where motor vehicles are routinely expected or cranes for construction or renovation work.

6.3. **Extra Heavy Duty:** 9 inch minimum thickness with minimum epoxy coated reinforcement per WDOT specifications. 8 inch base course.

   6.3.1. Street intersections
   6.3.2. Bus pullouts

7. Rebar:

7.1. All rebar for exterior concrete shall be epoxy coated and all scratches and chips in epoxy shall be repaired prior to placing concrete. Epoxy coat all cut ends.

7.2. Typically for Standard Duty Concrete

   7.2.1. There shall be no rebar in curb when abutting sidewalk.

   7.2.2. There shall be no rebar between site pavement slabs and exterior stairs.
8. Concrete Joints:

8.1. Construction and expansion joints usage shall be as follows: Construction joints, commonly called control joints or contraction joints, in concrete slabs shall be hand tooled and then sawed ¼ inch per 1 inch of depth of the concrete slab. (For example, a 6 inch concrete sidewalk should be tooled then sawed ¼ inch per 1 inch making the cut depth 1 ½ inches).

8.1.1. Joints may be hand tooled with a bullet trowel as long as same depth of control joint can be obtained as hand tooled and sawn. Consult with UW-Madison Project Manager.

8.2. Saw cut joints without hand tooling are not acceptable except for streets and other larger paved areas of thickened pavement primarily intended for vehicular traffic.

8.3. Control joints shall be placed so that the total square footage of the slab does not exceed 80 square feet total surface area and be placed to give the concrete work some artistic continuity.

8.4. There shall be no expansion joint material placed in concrete sidewalks, curb/gutters, between curb and abutting sidewalk, between sidewalk and stairs, or in drive approaches unless reviewed by UW-Madison Civil Engineers in UW-Madison FP&M. Decision to place expansion, placement of the joints and type of expansion joint will rest with UW-Madison FP&M if they are deemed necessary. A detail drawing with descriptive notes shall be provided in the plan set.

9. A bond breaker shall be used between building foundation and the abutting concrete pavement.

10. Bond breaker and expansion joint material shall be closed cell material and not felt. Ethafoam 220 skinless by Dow Chemical or approved equal.

11. Curb and Gutter

11.1. Curb & gutter details shall be based on the following City of Madison (COM) Standard Details.

11.1.1. 30 inch curb & gutter shall use COM Type “A”.
11.1.2. 30 inch mountable curb & gutter shall use COM Type “A” Mountable
11.1.3. 18 inch curb and gutter shall use COM Type “D”.
11.1.4. 18 inch reject curb and gutter shall use COM Type “G”
11.1.5. 18 inch mountable curb & gutter shall use COM Type “A” mountable and adapt a 12 inch gutter width with ¼ inch gutter slope.
11.1.6. 24 inch curb and gutter, with 12 inch head shall use COM Type “E” for standard and Type “H” for reject.

11.2. A custom design mountable curb with a reduced slope for bicycle or moped parking access may be necessary and shall be developed in consultation with the UW-Madison FP&M.

11.3. The use of 24 inch curb & gutter (COM Type E & H with 12 inch head) shall be used for street islands and may be considered for other locations when approved by FP&M.
11.4. Unless otherwise specified in the construction documents, the lengths between joints in curb and gutter shall be a minimum of six (6) feet and a maximum of fifteen (15) feet.

11.5. When replacing or reconstructing curb & gutter, the new curb shall match the size of the old curb (i.e. 18 inch c&g replaced with 18 inch c&g and 30 inch c&g replaced with 30 inch c&g). Typically, “standup” curb (with no gutter) shall be replaced with appropriate sized curb and gutter.

11.6. “Standup” curb (i.e. 6 inch curb without a gutter) shall not be used for parking lots, driveways, and roads unless approved by UW-Madison FP&M.

12. Accessible Curb Cuts and Ramps:

12.1. Paired perpendicular accessible ramps shall be installed per City of Madison Standard Detail for Type 2 Curb Ramp unless special conditions require otherwise. Any alternate designs must be approved by UW-Madison FP&M. See Division 32 Detail 2 at end of division.

12.2. Detectable warnings surfaces shall be required for all pedestrian curb ramps. See Division 32 17 26 Tactile Warning Surfacing for product details.

12.2.1. Detectable warning surfaces shall be recessed into the sidewalk so that the top of the truncated domes align with the top of the adjacent concrete. Adjacent concrete surface shall not be more than ¼ inch above the detectable warning surface base plate.

12.3. See UW-Madison standard details for curb cuts.

13. Colored Concrete Crosswalks:

13.1. Colored concrete crosswalks shall be used at major campus street intersections.

13.2. The formwork shall be installed and the slab thickness shall be 9 inches.

13.3. Control joints shall be at a minimum spacing of 6 feet or in accordance with the plans.

13.4. The concrete shall be placed and screened to the finished grade and floated to a uniform surface in the standard method.

13.5. While concrete is still in the plastic stage of set, the imprinting tools shall be applied to make the desired impression to the surface. The pattern shall be BRICKFORM texture mats; Ashlar Cut Slate, mold #FM-3125.

13.6. The color shall be BRICKFORM liquid color; Terra Cotta #LC-2235.

13.7. The stamped concrete shall be sealed after the concrete has cured.

14. Porous Concrete:

14.1. Porous concrete is encouraged.

14.2. Porous concrete shall be limited to locations that do not experience heavy vehicle traffic and will contribute to storm water infiltration.
14.3. Porous concrete specifications and mix design shall be submitted to UW-Madison FP&M for approval with the 35% review.

14.4. All contractors installing porous concrete shall provide proof of experience and certification in the construction of the product.

14.5. Porous concrete shall include the appropriate depth of base course for storm water storage.

14.6. Final design submittals shall include a maintenance plan for proposed porous concrete.

14.7. Porous concrete shall be vacuum cleaned after all site work is complete and before substantial completion when the site is turned over to the UW-Madison.

32 14 00 Unit Paving
1. One pallet’s worth of paver units total shall be provided as attic stock for future repairs. Extra pavers will be stored in building adjacent to space where pavers are used.

2. Landscape features such as stepping stones and stone blocks must be set so lawn mowers can access the lawns and will not damage the blades when riding over. Riding lawn mowers need gaps greater than 6 feet between objects.

32 14 13 Precast Concrete Unit Paving
1. Concrete pavers may be used in situations where regular vehicular traffic is not anticipated.

2. Pavers shall be dry laid on a 1 inch to 2 inch bed of clear limestone chips over a 6 inch layer of 3/8 inch limestone gravel base.

3. Firmly compact limestone chips and base to minimize shifting, sinking, and frost heave.

4. Use polymeric sand in joints where sand washing out of joints will be an issue.

32 14 16 Clay Brick Unit Paving
1. Pavers shall be dry laid on a 1 inch to 2 inch bed of clear limestone chips over a 6 inch layer of 3/8 inch limestone gravel base.

2. Firmly compact sand and base to minimize shifting, sinking and frost heave.

32 14 43 Pervious Unit Paving
1. Pervious pavers are strongly encouraged in areas where there is little or no vehicle traffic such as outdoor seating areas or patios.

2. Pervious pavers shall follow current ADA guidelines.

3. Manufacturer’s specifications shall be followed for installation.

4. Design shall meet site conditions and soil type.

5. Design and underground water storage capacity shall meet site conditions and soil type.
32 17 00 Paving Specialties

32 17 23 Pavement Markings
1. Pavement markings shall be applied in accordance with MUTCD and industry standards.
   1.1. Consult with UW-Madison Transportation Services for use and location of bike lane arrows.
2. All roadways, bike lanes/paths and crosswalks shall use reflective epoxy markings with glass beads rated to last 3 to 5 years.
   2.1. Pavement markings to designate traffic and bicycle lanes shall follow standard AASHTO and WisDOT standards as further specified by campus lane width guidance.
   2.2. There are three types of campus crosswalks: minor, major, and major with colored concrete. All shall use 8 inch parallel lines. See Division 32 Detail 5 at end of division.
   2.3. There are two kinds of centerlines: Dashed yellow and double solid yellow lines. Both shall be painted yellow 4 inch wide lines.
3. All non-roadway surfaces including parking stalls, loading docks, and motocycling parking shall use yellow non-reflective paint markings.
   3.1. Single line painting shall be used for surface parking lots. Use 4 inch wide yellow painted lines. See Division 32 Detail 1 at end of division.
   3.2. The ADA symbol for accessible stalls shall not be painted on the parking stall surface.
4. At parking structures, pavement markings must be applied wherever necessary in accordance with MUTCD and industry standards, including directional arrows and center lines, especially at corners, entrances, and exits.
5. Dual stall line painting shall be required in parking structures using 4 inch-wide yellow painted lines 24 inches from outside edge to outside edge centered on the division between stalls. Single stall lines shall be sufficient inside parking structures. Stall lines shall be applied with two separate coats of paint. See Division 32 Detail 1 at end of Division 32.

32 17 26 Tactile Warning Surfacing
The campus standard for the detectable warning surfaces at the bottom of accessible ramps and curb cuts shall be a non-galvanized, non-painted, natural finish, cast iron truncated dome product. This product is also specified by the City of Madison. Neenah Foundry Detectable Warning Plate R-4984 or equivalent is acceptable. See Division 32 13 13 Concrete Paving, Item 12 for installation details. See Division 32 Detail 2 at end of division.
32 30 00. Site Improvements

32 31 00 Fences and Gates

1. If a non-structural barrier is needed to discourage pedestrian access, a campus standard black post and chain shall be used. See Division 32 Detail 4 at end of division.

2. On paved surfaces, hardscape or walls fence posts shall be surface mounted.

3. In planted beds and lawn areas fence posts shall be embedded in below grade footings.

32 31 13 Chain Link Fences and Gates

All permanent chain link fencing shall be vinyl coated black. Plastic or vinyl inserts for screening are not acceptable as they tend to fade, become brittle and breakdown in sunlight.

32 31 19 Decorative Metal Fences and Gates

1. A brick pillar with black iron fencing design is used along the edges of campus. (Babcock Drive entrance, Botany Garden, Breese Terrace, Allen Centennial Gardens, Olin House, etc.). This style shall be replicated to help define the campus edge.

   1.1. Brick color for the columns shall be selected to compliment the surrounding buildings and shall be approved by UW-Madison FP&M.

   1.2. The cap and base for the pillars shall be similar in design to the existing pillars on campus and shall be approved by UW-Madison FP&M.

   1.3. Stainless steel flashing under the pillar caps shall be provided.

   1.4. Anchoring of the decorative fence to the pillars shall be in the mortar joints, not within the brick units. This is to avoid the pillars and the brick units from cracking.

32 32 00 Retaining Walls

1. Construction and plans for all retaining walls shall be pre-approved by UW-Madison FP&M to ensure walls are built of appropriate materials, are structurally sound, and are not in the way of snow removal equipment.

2. Natural limestone is the campus standard for retaining walls and raised planting beds.

   2.1. Limestone shall be hard enough to avoid cracking and fracturing.

   2.2. UW-Madison recommends dolomitic limestone buff color range.

   2.3. All walls 3 feet in height or lower shall be dry laid.

   2.4. All walls above 3 feet in height shall be an engineered wall and the designs shall be stamped by licensed structural professional engineer to insure the wall is structurally sound.

3. Modular concrete retaining wall systems shall only be used when natural, dry laid limestone stone walls are not appropriate based on surrounding site conditions and overall height of wall. Use of this system shall only be used if approved by UW-Madison Campus Planning & Landscape Architecture.
3.1. Color and type of modular concrete retaining wall systems shall be approved by UW-Madison Campus Planning and Landscape Architecture during the design process. Tan or buff is the recommended color.

4. All non-cast-in-place retaining walls above 3 feet in height shall incorporate geotextile or deadmen wall tie backs for every 2 feet in vertical height.

5. All non-cast-in-place retaining walls shall have a batter for increased structural stability.

6. All exposed surfaces of exterior cast-in-place concrete walls shall have at minimum a sand blast finish.

7. Creative design of the exposed surface for cast in place concrete retaining walls is encouraged. This includes but not limited to the finish type, use of concrete form liners, color applications, location and orientation of control joints, sand blasting, batter of walls, and reveals etc.

8. All cast in place retaining walls, with or without a masonry or stone veneer, shall be sealed on the side which contacts soil to prevent efflorescence from appearing on the outside of the wall.

9. All cast in place retaining walls with a masonry or stone veneer shall not have veneer extend below grade or below the surface of the adjacent pavements and sidewalks. At least 2 inches of the foundation shall be exposed above the level of the grade / pavement / sidewalk.

10. Skate Board Prevention: Exterior-planters, seat walls, retaining walls, sculptures, art work, railing and other masonry features in the landscape shall be designed to deter skateboard use.

10.1. The preferred methods for skateboard deterrence includes but is not limited to the following list:

10.1.1. Create breaks or interruptions every 3 feet to 4 feet along the retaining wall or raised planter. These can be raised bumps, deep cuts, or objects such as arm rests. These applications shall be integral to the site element design whenever and wherever possible.

10.1.2. Use rounded edges which are less likely to be ground down.

10.1.3. Obstructions building into the site design.

10.1.4. Strategically placed paver units, stamped concrete, porous concrete or any other surface application with joints or a rough surface. This method shall be ADA compliant.

10.1.5. Strategically placed landscape beds.

10.1.6. Skateboard deterrence hardware affixed to site features shall be a last option if methods integral to the design of the site feature is not feasible.
32 39 00 Manufactured Site Specialties

32 39 13 Manufactured Metal Bollards (Also includes masonry bollard info)

1. Include any proposed bollards, along with detail drawings, in the 35% review plans.

2. The preferred finish for new metal exterior bollards on the campus is galvanized steel that is primed and then powder coated black. Stainless steel is another acceptable finish for metal bollards. Anything different shall be approved by Campus Planning and Landscape Architecture during the review process.

3. Any bollards used in loading dock areas shall be the color red with two or three horizontal reflective white stripes at the top.

4. Use stainless steel hardware when surface mounting bollards.

5. Masonry bollards are also acceptable. Provide details and material samples at the 35% plan review.

5.1 Use materials that relate to adjacent buildings, site features, and/or the site.

32 90 00 Planting

32 91 00 Planting Preparation

32 91 13 Soil Preparation

1. Before installation of soil takes place, the subgrade shall be deep tilled at minimum 12 inches deep to eliminate soil compaction from construction activities.

2. For a successful planting and long term survival of plants, planting area soil shall be engineered such that it can support the plants, eliminate conflicts with sidewalks and utilities, and provide water, oxygen and cation exchange needed by the plants and turf to survive.

3. Minimum depth of topsoil desired after construction for the given situations:

3.1. Turf: 24” Minimum. 12” if no trees will be planted in area and approved by UW-Madison Landscape Architect.

3.2. Trees: The depth of the root ball or 24 inches, whichever is greater.

3.3. Beds for Shrubs or perennials or both: 18 inches

3.4. If no soil depth is specified, consult with UW-Madison Landscape Architect for soil depth.

3.5. Soil tests shall be performed in accordance with NR 151 regulations and the results of these tests shall be submitted to the appropriate campus representatives for approval prior to installation.

4. No construction debris or rocks shall be buried near root systems of any tree or shrub or anywhere else on site. All debris shall be removed completely from site.
5. All crews planting shall have proper machinery and staffing to carry out the installation.

6. Include mycorrhizal application in soil per manufacturer’s specifications.

32 92 00 Turf and Grasses

32 92 19 Seeding
1. All material and installation guidelines shall be followed as specified in the Division of Facilities Development master specifications.

2. Use site appropriate seed mixes approved by UW-Madison Facilities Planning and Management.

3. A liquid broadleaf herbicide shall be applied in the second growing season of all seeded areas with a three year maintenance period.

4. Any seeded area shall be a minimum of ten square feet in size.

5. Curb surrounding a seeded area shall have a mountable curb for mower access.

32 92 20 Native Seeding
Weed control in all native seeded areas shall be addressed by the contractor before the project is turned over to campus. Weed control shall be accomplished by hand-pulling in all seasons of the maintenance period; beginning in the second growing season, herbicide may be used for weed control under the supervision of a campus representative.

32 92 23 Sodding
1. Areas requiring new turf or turf restoration shall be sodded.

2. Sod shall be approved by a campus representative before it is laid at a project site.

3. All sod used on campus shall be comprised of at least 25% fescue lawn grasses.

4. Sod shall be sourced from locations where it is grown in mineral soil.

5. Weeds shall be hand-pulled from all sodded areas by the contractor before the project is turned over to campus.

6. Any sodded area shall be a minimum of ten square feet in size.

7. Curb surrounding a sodded area shall have a mountable curb for mower access.

32 93 00 Plants

1. Restoration for a project site shall not be called out on plans simply as “Restore in kind.” This does not provide enough information and often leads to improper restoration. A landscape plan and site plan detailing all site restoration work shall be provided.

1.1 Any trees and shrubs removed shall be replaced with a similar species unless specified by UW-Madison Facilities Planning and Management.

1.2 Landscape plans shall call out quantity, type, condition and name of all plants to be installed and include planting details.
See Division 32 Detail 3 at end of division.

2. Lime deposits on any site furniture, building signs, lights, build facades or any other surfaces due to irrigation shall be removed by the contractor as part of substantial completion.

3. Consult with UW-Madison Campus Planning and Landscape Architecture for site restoration. Replace “like kind” instead of “In kind” may be required.

4. Plants shall be from local nurseries that are within our hardiness zone and do not use neonicotinoids.
   
   4.1. Provide documentation for neonicotinoids. If no nursery can be found, include documentation from at least three nurseries.

32 93 05 General Guidelines for Plants and Trees

1. The University requires a minimum of 2 years and preferably 3 years of maintenance by the landscape contractor on new plant materials.

2. Fruiting trees and shrubs shall not be planted near walks or drives where the fruit may cause tripping or falling hazards or where fruit will be tracked into buildings.

3. Do not plant perennials and ornamental grasses within 2 feet of tree trunks.

4. The maximum tree caliper that shall be specified is 2½ inches.

5. Trees, shrubs and other planting species shall be pre-approved by UW-Madison Facilities Planning and Management prior to bidding.

   5.1. Use of Wisconsin native plants is encouraged where site conditions are appropriate, especially if a site is adjacent to or in close proximity to the Lakeshore Nature Preserve.

   5.2. Plant schedules shall be on the same page as the landscape plan.

6. UW-Madison reserves the right to inspect and choose the trees, shrubs and other plantings in the nursery field prior to planting.

7. Plant installation processes and maintenance after planting shall be periodically reviewed by university representatives. A pre-installation meeting shall be held for each project to address proper installation techniques. Any plants not installed according to campus standards shall be removed and re-installed to meet campus standards.

8. Prior to installation, all plants shall be protected from root and foliar drying sources.

9. Use native topsoil from site when planting trees, shrubs or perennials.

   9.1. Engineered or structural soils may be used if site appropriate and approved by UW-Madison Facilities Planning and Management.

10. Planting soil mixtures shall only be used for perennials or annuals in containers. All soil mixtures shall be approved for use by the UW-Madison Facilities Planning and Management.

11.1. Planting details shall expose the root collar of the trees and shrubs. Current nursery practices tend to bury the root collar plate and soil shall be removed from this area prior to planting. The planting pit shall be narrower at the bottom, same size at the root ball and wider at the top, 3 times the width of the root ball. See Division 32 Detail 3 at end of division.

11.2. All wire baskets, burlap, twine and any other binding materials shall be removed from around the entire root ball.

12. Fertilizers shall not be used when planting trees, shrubs and perennials for the first year after installation.

13. Do not use any plants from the Wisconsin DNR Invasive species list.

13.1. Do not use any cultivars or varieties of plants found on the Wisconsin DNR Invasive Species List.

14. No plants shall be placed under eves or in the rain shadow of buildings unless automated in-ground irrigation is provided for plant bed areas.

15. All planting beds shall have a shovel cut edge. Do not use metal or plastic edging.

16. All single specimen trees and shrubs (existing and proposed) located within lawn areas of the project limits shall have at least a 3 foot diameter bark mulch ring around the trunk.

16.1. Any groupings of single specimen trees and shrubs within lawn areas may have one large bark mulch planting bed around them.

16.2. Show the bark mulch locations on the planting plan.

17. Weed control in all plant bed and mulch areas is to occur on a weekly basis for the duration of the maintenance period. Weeds shall be hand-pulled or spot-treated with herbicide. Weeds taller than four inches are to be hand-pulled.

18. Weed barrier fabric shall only be used in areas with stone mulch.

19. Plants shall not be installed between July 1st and August 15th due to the heat and the added stress it creates. Plants shall not be installed after October 15th due to the cold temperatures, dry weather, and stress it puts on the plants.

32 93 13 Ground Covers

1. Highly aggressive and/or invasive ground covers shall not be used where they cannot be controlled.

32 93 53 Grasses and Ornamentals

1. Grasses shall be confirmed as non-invasive by the project landscape architect.

1.1. Do not use any plants from the Wisconsin DNR Invasive species list.

1.2. Do not use any cultivars or varieties of plants found on the Wisconsin DNR Invasive Species List.
2. The use of tall grasses and other tall plants near entryways driveways, etc. shall be limited to avoid blocking sight lines.

32 93 63 Annual and Perennial Plantings
1. Do not include any annuals in planting plans unless pre-approved by UW-Madison Grounds and UW-Madison Campus Planning and Landscape Architecture.

32 94 00 Planting Accessories

32 94 43 Tree Grates
1. Campus standard tree grates include:
   1.1. Neenah Foundry Tree Grate R-8707
   1.2. Neenah Foundry Tree Grate R-8707-A
   1.3. Neenah Foundry Tree Grate R-8784
   1.4. Neenah Foundry Tree Grate R-8809
   1.5. Neenah Foundry Tree Grate R-8815
   1.6. Neenah Foundry Tree Grate R-8815-B
   1.7. Tree grate and frame components shall be from the same manufacturer. Frames shall be set into wet concrete and grates shall be placed after curing.

32 96 00 Transplanting
1. Planting details shall expose the root collar of the trees and shrubs. Current nursery practices tend to bury the root collar plate and soil shall be removed from this area prior to planting. The planting pit shall be narrower at the bottom, same size at the root ball and wider at the top, 3 times the width of the root ball.

2. Stakes: Use Arbor tie or other flexible strap tree tie for staking. Do not use wire or hose in any situation.

3. The campus does not recommend transplanting between July 1st and August 15th due to the heat and the added strain it puts on transplanted materials.

4. Any plant material that is transplanted within the project limits shall be maintained by the contractor through the duration of the contracted maintenance period.

Division 32 Detail 1

Refer to Division 32 17 23 Pavement Markings, Item 3.1 for surface parking lot painting information.

Refer to Division 34 09 05 Automobile Parking Structures, Item 5.6 for stall line painting information.

NOTE:
1. There must be at least 7'-4" vertical clearance. 8'-4" is desired.
2. Accessible stalls shall not have ADA logos painted on them.
3. Accessible stalls shall have ADA symbols painted at their center.

NOTE:
1. There must be at least 6'-4" vertical clearance.
2. Measure dimension of parking stall from center of painted line to center of painted line.

NOVEMBER 22, 2019

Guidelines for Planning and Design of UW-Madison Facilities
Division 32 Exterior Improvements
University of Wisconsin – Madison
Division 32 Detail 2

Refer to Division 32 13 00 Rigid Paving, Item 12.1 for accessible curb cuts and ramps information.

Refer to Division 32 17 26 Tactile Warning Surfacing for product details.
Division 32 Detail 3

Refer to Division 32 93 00 Plants, Item 1.2 for required landscape plan information.
Refer to Division 32 93 05 General Guidelines for Plants and Trees, Item 12.1 for campus planting standards.
Division 32 Detail 4

Refer to Division 32 30 00 Site Improvements, Item 1 for the prerequisite for post and chain usage.

Notes:
1. Space posts about 10'-0" apart. Use " Dayton Chain", steel grade 304. You can purchase in 250 foot or 800 foot amounts. Granger item # JT8 (250 ft) or DJ77 (800 ft).
2. Acorn cap, painted black. 1" diameter hole drilled in post, both sides. 1/8" diameter double top chain to thread through posts.

Facilities Planning and Management
Campus Planning and Landscape Architecture
Suite 930 WABF
610 Walnut Street
Madison, Wisconsin 53726

Post and Chain Barrier

10'-0" 2'-0"

Finish grade

Post and Chain Barrier 1" = 10'-0"

1 1/4" OD post, painted black

Chain Detail NTS

Note: Chains shall be approximately 2'-3" above grade in the center.
Division 32 Detail 5

Refer to Division 32 17 23 Pavement Markings, Item 2.2 for campus crosswalk information.