

**DIVISION 32 – EXTERIOR IMPROVEMENTS**

**32 0000 SITE PERFORMANCE REQUIREMENTS**

**32 0001 General Design Requirements**

- A. Site design shall be in a manner that storm water drainage is directed away from any building. The consultant shall also plan for an emergency overland flow of storm water as a secondary storm water management plan.
- B. When designing a parking lot, the minimum grade shall be no less than 1.5%.
- C. Parking lot drainage shall be design in a manner that no storm water can pond above 0.75 feet. The Engineer shall design an overland flow that allows water above 0.75 feet to flow to the next downstream storm sewer structure.

**32 0002 Landscape Design Requirements**

- A. The Architect shall hire CMU's current Landscape Architect of record for all landscape design. The Landscape Architect shall set direction by developing the landscape design concept; and review the implementation documents at every SD, DD, and CD review defined in the contract for each project.

**32 0003 Landscape Installation Requirements**

- A. All landscaping is to be installed by one of the following three Contractors:
  - a. Servinski Sod and Landscape, Midland MI
  - b. Murin Company, Freeland, MI
  - c. Bay Landscaping, Essexville, MI

**32 1200 Parking Lots**

- A. Paint shall conform to the Michigan Department of Transportation "Pavement Marking Material Usage Guidelines". Regular Dry pavement marking material is to be used unless otherwise directed by the CMU Project Manager.
- B. Parking Lot Striping Color
  - a. Yellow – Regular Parking Spaces
  - b. Blue – Handicap Parking Spaces
  - c. White – Pedestrian Cross Walks
  - d. Yellow – Cross Hatches and Non-Parking Zones
- C. Handicap Parking Spaces
  - a. All Handicap parking spaces shall be marked in accordance with the American with Disabilities Act.
- D. Refer to CMU standard "Parking Space Detail" for parking space dimension requirements.
- E. Parking lot pavement section thickness shall be a minimum of 4" (2" leveling course and a 2" wearing course) of HMA, LVSP, 6" of 21AA aggregate base, and a minimum of 8" of sand subbase unless otherwise recommended by a Geotechnical Engineer. Compaction of the materials is to meet current Michigan Department of Transportation Density and Inspection Handbook guidelines.

**32 1300 Sidewalks**

- A. Walk construction to be 6" thick concrete over 6" 22A gravel compacted in accordance with the current Michigan Department of Transportation Density Control Handbook guidelines. Reinforced with 6: x 6: w2.9xw2.9 W.W.F. and #7 2 1/2" tall steel bar chairs spaced 4' O.C.. Minimum width shall be 8'. Poured concrete to be Class C air – entrained not less than 5% or more than 8%. Finish concrete must test a minimum of 4,000 lbs. compressive strength at 28 days to be accepted.
- B. All new sidewalks shall have 3 feet of clearance on each side from any structure to allow for snow storage.
- C. All building entrances shall have an ice melt system installed within 25 feet of the door(s).
  - a. Refer to CMU "Snowmelt Detail" for cross section construction detail.
- D. In locations where the sidewalk is classified as "Primary Fire Access Route" the width of the sidewalk shall be 20 feet.
- E. Refer to CMU "Sidewalk Standard Details" for scoring pattern, sidewalk intersection details, fire lane signage, and construction details.
- F. Refer to CMU "Crosswalk Standard" for details on marking of pedestrian road crossings.
- G. ADA Detectable warning plates shall be Armor-Tile, color yellow. The only exception is when working within the City of Mt. Pleasant street right-of-way in which case the contractor shall follow the City Standard of cast-iron modified to be powder coated yellow.
- H. Concrete Delivery:
  - a. Concrete delivery trucks are to remain on paved streets or parking lots. Any concrete delivery that cannot be accomplished in this manner shall be delivered to the job site utilizing a concrete delivery buggy or by a pumping operation.
  - b. If either of these methods is prohibitive, alternate delivery routes shall be reviewed and approved by the CMU Project Manager. The delivery trucks shall not drive across lawn areas or sidewalks without prior approval by the CMU Project Manager and/or The Director of Plant Engineering and Planning. Any repair work resulting because of not adhering to this standard shall be paid by the contractor/person responsible.

**32 1613 Curb and Gutters**

- A. Curb and gutter construction is to conform with the current version of the Michigan Department of Transportation's Standard Specifications for Construction, Standard Details, and Special Details. CMU's University Engineering and Planning Department shall be consulted and approve the type, size, and dimensions of the concrete curb and gutter used on each project.

**32 8000 Irrigation**

- A. Irrigation system design shall be compatible with CMU's main central control system which is Toro Sentinel.

- B. Irrigation heads shall be installed to the lateral line with flexible poly pipe to allow for the repositioning of the irrigation head in the future.
- C. Any irrigation line, which is 2-inches or larger shall be Schedule 40 PVC.
- D. All irrigation lines shall be installed to a minimum depth (cover) of 12 inches. For athletic fields the minimum depth of cover shall be 18 inches.
- E. The irrigation system is to be installed by a certified Contractor located within a 30-mile radius of campus.

### **32 9100 Topsoil**

#### **32 9110 Lawn Areas and Landscape Beds**

- A. Topsoil: Supplied topsoil proposed for use must meet testing criteria results specified and conform to adjustments as recommended by soil test and Landscape Architect.
- B. Provide 6" of screened topsoil as required to complete the job. Topsoil must meet testing criteria results specified. Material must be incorporated into the existing soil to a depth of 6". All processing, cleaning and preparation of this topsoil to render it acceptable for use is the responsibility of the contractor.
- C. Topsoil shall be screened of any debris, consistent particle sizing, pass through a 3/8" screen, fertile, friable, of soil texture representative of the USDA soil Texture Triangle for sandy loam, capable of sustaining vigorous plant growth and screened free of clay lumps, subsoil, noxious weeds or other foreign matter such as stones, greater than 3/8" in diameter in any dimension, roots, sticks and other extraneous materials: not frozen or muddy. Topsoil shall contain not less than 2% and not greater than 5% organic matter by weight.
- D. Soil Nutrient Content
  - a. Soil Ph: 6.0-7.0
  - b. CEC: 8-12 meg/100g
  - c. Phosphorus: >10 ppm
  - d. Potassium: >100 ppm
  - e. Magnesium: >50 ppm
  - f. Calcium: >1000 ppm
  - g. Boron: >0.5 ppm
  - h. Copper: >0.5 ppm
  - i. Manganese: >10 ppm
  - j. Zinc: >2 ppm
  - k. Iron >5 ppm
- E. The use of existing topsoil is allowed if the existing topsoil conforms to the requirements listed above and is verified through proper testing analysis.
- F. Existing topsoil, if determined to be of poor quality, shall be removed from campus.
- G. Mulch Blankets: Blankets containing nylon netting and steel stakes to secure the blanket are prohibited on campus.

#### **32 9115 Landscape Beds**

- A. Provide 12” of topsoil. Topsoil shall meet the requirements stated in Section 32 9100 TOPSOIL.
- B. Prior to the placement of topsoil contractor shall scarify the subsoil to break up “plow-pan and/or smearing” and allow drainage.
- C. Provide 3” of double shredded hardwood mulch, natural color. Apply pre-emergent herbicide per manufacturer’s instructions.
- D. For stoned landscape area, stone size shall be between 2 and 4-inch diameter, washed river stone, with a minimum depth of 6 inches. Contractor shall place non-woven, five ounce landscape fabric prior to the installation of the stone.

**32 9200 Turf and Grasses**

- A. Grass mix.

| Purity    | Type               | Germ.      |
|-----------|--------------------|------------|
| 50%       | Kentucky Bluegrass | 85%        |
| 50%       | Perennial Ryegrass | 90%        |
| Crop 1.4% | Inert. 1.65%       | Weed 1.15% |

**32 9300 Plants**

- A. Plant deciduous plants from March 1 to May 15 and from October 1 until the prepared soil freezes. If unusual planting conditions exist or if using container-grown material, the Owner may alter these planting seasons. Plant evergreen plants from March 1 to June 1.
- B. Refer to CMU “General Plant List” for approved trees and shrubs.
- C. Provide quality, size, genus, species, and variety of trees and shrubs indicated, complying with applicable requirements of ANSI Z60.1 “American Standard for Nursery Stock.”
- D. Trees, shrubs, and plants to be tagged; tree trunks unwrapped. Codominant leads will be refused unless specified per species. Plants to be inspected and approved by Owner or Owner’s representative upon delivery to job site, prior to planting. Owner reserves the right to reject any plants he/she considers unacceptable.
- E. In locations where trees and/or shrubs are planted near a sidewalk, parking lot or building entrance, CMU requires a clear vision area be established for public safety. Shrubs shall be no taller than 30 inches and tree canopy shall be no lower than 5 feet.
- F. Canopy trees, Understory trees, and Evergreens shall be planted in a manner that when at maturity the drip edge is no closer than 5 feet from a building wall.
- G. No evergreen trees shall be planted within 25 feet of a sidewalk or edge of parking lot.
- H. All plant material shall be cleared to at least one foot from the pavement edge and to a height of 7 feet above walkways, 14 feet above roadways.

- I. No fruit bearing shall overhang a hard surface (i.e. sidewalk, parking lot, etc.).
- J. Consideration of snow plowing and snow storage areas: landscaping shall not impede the storage or removal of snow. Shrubs shall not be planted within 3 feet of sidewalks where snowplows or snow storage may cause damage.
- K. Tree stakes shall be 2"x2" hardwood stake.
- L. Tree guying shall be nylon straps.
- M. The Contractor shall excavate the holes for planting a minimum of 2/3 larger than the root ball. The sides of the hole shall be scarified prior to planting. Circling roots are to be pruned and remove suckers, crossing, dead, or damaged limbs prior to installation. Backfill material shall be topsoil meeting the requirements of section 32 9110.
- N. The Contractor shall remove, at a minimum 2/3 of the burlap, top half of the wire cage and all strapping around the trunk for all new tree plantings. Plastic "burlap" wrap shall be removed entirely. The remaining wire cage shall be bent away from the root ball. The root flare must be above the soil line 2-3" after planting.
- O. All plant material and excavations are to be watered prior to planting. After planting and backfilling, plants shall be watered using a root probe. Contractor is responsible to provide water to plantings until the expiration of the warranty period.
- P. Trees shall receive a mulch ring: 4-foot diameter for small trees, 6-foot diameter for large trees, or to cover the critical root zone where practical and aesthetically appropriate. Mulch to be 4" deep after placement. Pull mulch away from tree trunk to avoid rot and rodent damage. Tree ring should not be mounded into a cone shape that will shed water. The intent is to capture water, prevent weed growth, and protect the tree from mower damage.
- Q. Existing tree protection shall be at a minimum, staked construction safety fence located at the drip edge of the tree.

### **32 9400 Planting Accessories**

- A. Stone landscape bed edging shall be aluminum. Coordinate with CMU as to the extent and location.

END OF SECTION

**DOCUMENT CONTROL PAGE:**

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