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CHAPTER 10—SITE WORK

Section 10.1 Landscaping

10.1.1 The designer is referred to the guide specification for landscaping located in Appendix 1. It is noted that this specification is only a guide and must be edited before inclusion in a project specification.

10.1.2 All site access shall be clearly shown on project drawings.

10.1.3 All construction fencing shall be shown on the project drawings, including fencing for protection of trees.

Section 10.2 Parking Lots

10.2.1 All parking lots shall comply with ADA requirements.

10.2.2 The maximum desired slope is 4%. Slopes greater than 4% must be approved by the owner.

10.2.3 All parking spaces for disabled access shall be “universal spaces.”

10.2.4 Paint colors shall be white for general lot stripping, yellow for no parking areas, and blue for disabled access spaces and areas.

10.2.5 Parking spaces shall typically be 9' in width. No compact car spaces shall be permitted.

10.2.6 Asphalt surfaced lots shall have a minimum cross section of 3” of asphalt surface, 6” of crushed stone Type 1 aggregate for base, and an underlayment of geotextile fabric.

10.2.7 Concrete surfaced lots shall have a minimum cross section for 6” of concrete and 6” of Type 1 aggregate for base. The concrete shall be Portland cement concrete with a heavy broom finish. All reinforcement shall be epoxy coated. All joints shall be shown on the plans and shall be sealed with traffic grade caulking.

10.2.8 At locations where a parking lot is adjacent to lawn areas, a mowing strip is a strip of pavement, 18”-24” in width, on the lawn side of the curb or parking bumpers that allows the lawn to be mowed while the parking spaces are occupied.

Section 10.3 Sidewalks and Ramps

10.3.1 Sidewalks shall be designed with positive drainage away from walks. Drainage of surface water shall not cross sidewalks.

10.3.2 Sidewalks and ramps shall be designed to prevent water entering a building. Overflow areas shall be provided if necessary.

10.3.3 All sidewalks shall have a minimum width of 5' and a minimum thickness of 6”. Where a sidewalk is adjacent to a road or driveway, the minimum width is 9'. Walks adjacent to roads or driveways should have a grass strip between the sidewalk and the road or driveway, if space allows.

10.3.4 Lateral slope for sidewalks shall be no less than 1% and no more than 2%.
10.3.5 Curb cuts for disabled access shall use the KSU standard detail. The detectable warning area shall be a contrasting color with a warning texture.

10.3.6 Materials

10.3.6.1 The preferred material for sidewalks, ramps and other paved, exterior walking surfaces is concrete. No material shall be used for a walking surface that may become slippery when wet.

10.3.6.2 Concrete:

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum strength</td>
<td>4000 psi</td>
</tr>
<tr>
<td>Flint &amp; Chert</td>
<td>1% maximum, by weight, of the coarse aggregate</td>
</tr>
<tr>
<td>Lignite</td>
<td>0.07% maximum, by weight, of fine aggregate</td>
</tr>
<tr>
<td>Air</td>
<td>6% (± 1%)</td>
</tr>
<tr>
<td>Reinforcing</td>
<td>Epoxy coated steel, minimum 6&quot; x 6&quot; # 1.4 x 1.4 welded wire fabric</td>
</tr>
</tbody>
</table>

10.3.6.2.1 Base for concrete shall be a minimum of 4" of Type 1 aggregate for base.

10.3.6.2.2 Joints

10.3.6.2.2.1 All joints shall be shown on the plans

10.3.6.2.2.2 Joints may be either tooled or sawn. If the joints are sawn, they shall be sawn within 12 hours of the placement of the concrete.

10.3.6.2.2.3 Joints shall be a minimum of 2" deep or 25% of the slab thickness, whichever is greater.

10.3.6.2.2.4 All joints shall be sealed with traffic grade, non-asphalt, non-extruding gray polyurethane sealant.

10.3.6.2.2.5 Construct control, construction and expansion joints true to line with faces perpendicular to surface plane of concrete. Construct traverse joints at right angles to the centerline, unless indicated otherwise. Existing paving – traverse joints to align with previously placed joints.

10.3.6.2.3 A medium broom finish shall be applied perpendicular to the traffic flow. All brooming directions shall be shown on the drawings and described in the specifications.

10.3.6.2.4 Use of calcium chloride shall not be permitted.

10.3.6.2.5 Testing

10.3.6.2.5.1 The concrete shall be tested for strength, air entrainment, temperature, and slump. The specifications shall indicate allowable limits for each.

10.3.6.2.5.2 The University will retain the services of a testing firm. The contractor shall be responsible for scheduling the tests. The contractor shall be required to notify the owner’s representative a minimum of 48 hours prior to all placement of concrete.
Concrete shall be tested at the minimum rate of one test for each additional 50 CY placed. The concrete may be tested more often at the discretion of the owner’s representative.

The specifications shall make clear to the contractor the responsibility to comply with the specifications.

10.3.6.2.6 Aggregates

10.3.6.2.6.1 Normal-Weight Aggregates: Concrete aggregates shall conform to the “Standard Specifications for Concrete Aggregates” (ASTM Designation: C33) and to Section 1102 of Standard Specifications for State Road and Bridge Construction Kansas Department of Transportation, 1990 Edition.

10.3.6.2.6.2 Coarse Aggregate shall be clean crushed stone or coarse gravel of the following quality:

Soundness, minimum………………………..0.90
Wear, maximum……………………………..50%

10.3.6.2.6.2.1 Gradation for coarse aggregate shall conform to the following gradations:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Retained</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td>0</td>
</tr>
<tr>
<td>¾ inch</td>
<td>0-5</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>40–60</td>
</tr>
<tr>
<td>No. 8 (0.097 inch)</td>
<td>95-100</td>
</tr>
</tbody>
</table>

10.3.6.2.6.3 Fine Aggregate shall consist of natural sand resulting from disintegration of siliceous and/or calcareous rock and shall conform to the following gradations:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Retained</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 4 (0.185 inch)</td>
<td>0</td>
</tr>
<tr>
<td>No. 8 (0.097 inch)</td>
<td>0-24</td>
</tr>
<tr>
<td>No. 16 (0.049 inch)</td>
<td>15-50</td>
</tr>
<tr>
<td>No. 30 (0.0232 inch)</td>
<td>40-70</td>
</tr>
<tr>
<td>No. 50 (0.0117 inch)</td>
<td>70-90</td>
</tr>
<tr>
<td>No. 100 (0.0059 inch)</td>
<td>90-98</td>
</tr>
</tbody>
</table>

10.3.6.3 Paving brick

Brick used as paving shall not be set in a sand base if there will be any vehicle traffic on the paving. If the brick paving will be used in areas for vehicular traffic a concrete base shall be designed to carry the traffic loads required.

10.3.7 Guardrails and Handrails

This standard shall apply to all exterior guardrails and handrails that are not a significant part of a building’s architecture.

All railings shall comply with the latest version of the ADAAG.

Materials
10.3.7.3.1 All guardrails and handrails shall be primarily constructed of steel pipe (or square tubing). The infill for guardrails shall be constructed of vertical balusters only. No panels shall be used for the infill.

10.3.7.3.2 Prior to installation, the bottom 18" of the railing uprights imbedded in concrete shall be dip galvanized. Any repairs or alterations shall receive a galvanizing coating prior to being painted.

10.3.7.4 All railings shall be of welded construction.

10.3.7.5 All railings shall be painted gray with a high gloss enamel paint to match the campus standard.

10.3.7.6 Installation

10.3.7.6.1 The preferred method of installation is to imbed a galvanized pipe sleeve in the concrete of the ramp, sidewalk, etc., that has an inside diameter 1" greater than the outside diameter of the railing post. This space is filled with a non-shrinking grout to secure the post in place. The grout shall fill the space completely and shall be mounded or raised adjacent to the post to drain water away from the post. No welding shall be allowed at this connection.

10.3.7.6.2 If necessary the posts may be secured to the sidewall of the ramp, steps, etc. If this attachment is used, the design shall prevent trapping water.

Section 10.4 Storm Drainage

10.4.1 The return period to be used for the design of areas such as pedestrian malls, streets, and quadrangles shall be 25 years with a 15-minute duration.

10.4.2 The return period for areas such as parking lots, park space, and similar areas shall be 10 years with a duration of 15 minutes. Time of concentration to the utmost inlet shall be 15 minutes. If the “open” areas under consideration is indicated as a future development areas on campus master plan documents, then longer return period shall be used as directed by the owner.

10.4.3 For areas not clearly defined as stated above, the owner shall recommend the design storm. No ponding above the surface of the inlet shall be allowed based on the design storm, except in no-paved areas and only as approved by the owner.

10.4.4 The designer shall compare the above return periods with those required by the City of Manhattan. Any discrepancies shall be discussed with KSU Facilities Planning.

10.4.5 Surface detention areas should be incorporated into site designs. No detention areas will be located on paved areas unless they have received prior approval by KSU Facilities Planning.

10.4.6 The consultant, with the approval of the owner, will select an appropriate back water elevation to be used during the design of the project.

10.4.7 For buildings and other structures as directed by the owner, the site plan shall be developed such that no entry of water shall occur during a 100-year storm.

10.4.8 Site plans shall be designed by, or in collaboration with, a Civil Engineer registered in Kansas.
10.4.9 Particular attention shall be paid to bicycle and wheelchair safety in the design of storm drainage systems. Grate bars shall be placed perpendicular to the direction of traffic flow.

10.4.10 Pipe systems for storm drainage is discussed in Section 7, Mechanical Systems.

Section 10.5 Site Furnishings

10.5.1 Standards

10.5.1.1 Waste Receptacles – Victor Stanley #SC-4 LFI CC 5001 – 24 – 41 Redwood with metal sand pan (25 ½” x 25 ½”) – 1-800-521-2546. Receptacle should be placed 1 foot away from walk to prevent damage from snow removal equipment. Pad should be adequately sloped so as to allow for proper drainage. Pad should be concrete 3500 psi in 28 days, broom finished surface parallel to existing walk. Opening of receptacle should face direction as specified by designer.

10.5.1.2 Bench – Landscape Forms Inc. #106 S Bench 6’ or 8’ Bench LFI Forum FR 3005-BS-72 Redwood, PS Support. Post stand of bench should be welded to 8” square metal plate with 4 mounting holes, and mounted to concrete pavement with anchor bolts. Bench is to be level as possible.

10.5.1.3 Campus Light – Sterner #GS 24 RIAN 250H 208N; 24” Acrylic globe or equal / Sterner # RTS02HADN; 12’ Pole.