

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 13 00 RIGID PAVING

32 13 13 CONCRETE PAVING

PART 1 - GENERAL

1.01 REFERENCES

1. WSDOT Specifications: All paving design and construction on the WSU campuses shall conform to the current adopted edition of the Washington State Department of Transportation (WSDOT) Standard Specifications for Road, Bridge and Municipal Construction.
2. All cast-in-place Portland Cement Concrete (PCC) addressed in this section shall comply with WSU Design Standard 03 30 00 “Cast-in-Place Concrete.”
3. Coordinate work schedule with parking, emergency vehicle, bus, and truck travel areas. Work shall be scheduled to limit the impact of heavy equipment near occupied buildings, particularly noise and vibration during regular university work hours. See WSU Design Standard 31 00 00 “Earthwork” for requirements on selecting and specifying project haul routes.

B. DESIGN CRITERIA

1. Subgrade: The Engineer of Record shall specify the required depth and degree of compaction. Compact at least the top 6 inches of subgrade to 95% of maximum theoretical density using ASTM D1557 (Modified Proctor method).
 - i. See WSU Design Standard 31 00 00 “Earthwork”: native soils are generally not suitable as structural fill.
2. Base Course and Top Course: The Engineer of Record shall specify the required structural fill, depths, and degree of compaction. Compact at least to 95% of maximum theoretical density using ASTM D1557 (Modified Proctor method). Minimum depths of base course and top course are identified in the paragraphs below.
3. Streets, Service Areas, and Service Access Roads: Shall be constructed of 8-inch minimum PCC pavement over a 6-inch minimum compacted crushed surfacing base course.
4. Sidewalks: Shall be constructed of 5-inch minimum PCC pavement over a 6-inch minimum compacted crushed surfacing base course.
 1. Sidewalks shall be designed a minimum of 7-feet wide to accommodate standard snow removal equipment.

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- B. Drainage Slope: Design exterior sidewalks, stairs, ramps, and slabs to slope 1% minimum. Slope away from adjacent structures (building face, retaining walls, etc.).

- C. Concrete Sidewalks within the zone of influence of tree roots (i.e., within the dripline of existing trees, or within the anticipated dripline at maturity for new trees): Consult with WSU Grounds staff to confirm the zone of influence of existing trees.
 - 1. Minimum 5.5-inch concrete thickness.
 - 2. Install longitudinal and transverse #4 rebar at a maximum 24-inch spacing. Longitudinal rebar shall extend 5-feet beyond the zone of influence. Transverse rebar shall be installed within 2-inches of the sidewalk outer edge.
 - 3. Rebar shall be connected with two tie wires at every joint and lap splice. Discontinuous rebar shall have a lap splice or development length according to the requirements of ACI 318.
 - 4. Install control joints as close to square as possible; construct expansion joints at maximum 28-foot intervals.

- D. Utility Vaults and Manholes:
 - 1. To the greatest extent possible, locate utility vaults and manholes outside of main traffic lanes.
 - 2. Specify precast vaults and manholes. Built-up utility vaults are not acceptable.
 - i. Vaults shall be manufacturer-rated to at least H20 traffic loads.
 - ii. Vaults and manholes shall be assembled of the fewest components possible (i.e., minimize “stacking” of grade adjustment rings). The combined height of manhole grade adjustment rings and cover frame shall not exceed 20”.
 - iii. Pre-Approved Manufacturer: Wilbert Precast
 - 3. Lids/Covers:
 - i. Specify steel or concrete lids for utility vaults.
 - ii. Manhole covers per City of Pullman Standard Construction Drawing #10.

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4. Subgrade and Base Course Compaction Requirements: Compaction depth and testing for vaults and manholes shall be the same as that required for Streets, Service Areas, and Service Access Roads above:
 - i. Subgrade: Compact at least the top 6-inches to 95% max theoretical density per ASTM D1557 (Modified Proctor method).
 - ii. Base Course: Minimum 6-inch crushed surfacing base course compacted to 95% max theoretical density per ASTM D1557 (Modified Proctor method).
 - 1) Controlled Density Fill (CDF) is an acceptable alternative for base course beneath vaults and manholes. See WSU Design Standard 31 00 00 “Earthwork”.
- E. ADA Curb Ramps per City of Pullman Standard Construction Drawing #9.

PART 2 - PRODUCTS

PART 3 - EXECUTION

3.01 FINISHING

- A. Exterior Sidewalks, Stairs, and Ramps shall be heavy broom finished, with the broom texture perpendicular to traffic flow. Top flat flange marks of scoring tools and edgers shall be obliterated with broom strokes, leaving only a rounded edge. Limit surface working to maintain air entrainment. Curbs shall not be broom finished.

3.02 FIELD QUALITY CONTROL

- A. See general requirements for all concrete in WSU Design Standard 03 30 00 “Cast-in-Place Concrete.”
- B. Testing of the concrete for vehicular paving shall be in accordance with the most current and adopted ASTM C 78 Standard Test Method for Flexural Strength of Concrete (using Simple Beam with Third Point Loading).

END OF SECTION