

9.10 EQUIPMENT

9.11 TEMPLATE FOR CHECKING GRADES ON DRIVES ON URBAN PAVING PROJECTS

An attempt is made to standardize grades for residential drives constructed in conjunction with urban paving projects. Standardization reduces property owner complaints about their cars dragging when using their drives. A special design will be shown on plans for commercial drives such as shopping centers. The Office of Design uses a standard design detail for driveways as well as a typical automobile template to check driveway cross sections. These details are included in [Appendix 9-2](#). Refer to the Design Manual, Chapter 3k-2, for additional information.

If field conditions necessitate a change in driveway grades, vehicle clearances should be checked using typical automobile template dimensions. This can be accomplished by using a scale model template to check plotted grades for new driveways. Keep in mind that there are exceptions to all rules and there may be cases when more clearance may be required than indicated by the template. In critical locations it may be necessary to contact the Office of Design for help in determining a revised driveway design.

9.12 OPERATION OF EQUIPMENT ON GRANULAR SUBBASE

[Specification 2111.03, E](#) states that hauling equipment and other traffic are not to be operated on the granular subbase material. The intent of this requirement is to limit degradation of the granular subbase. Granular subbase is intended to be a fully drainable base material. It is often composed of recycled PCC or limestone and can be very susceptible to breakdown due to abrasion. This breakdown of material can generate excess fines which can inhibit the intended drainability of the material.

In addition to the requirement above, [Specification 2111.03, C](#) also limits operation of trucks on the subgrade to only those areas of unloading. The intent of this requirement is to minimize disturbance of the subgrade and to provide a uniform platform for placement and compaction of the granular subbase material.

The combination of the above requirements places some pretty severe limitations on a contractor's operations when considering the practicality of dropping stringline to allow haul vehicles onto the subbase or subgrade to unload and also provide an additional location for them to exit the unloading area. For this reason, it is permissible to allow a contractor an area of 500 to 1000 lineal feet (depending upon breakdown of the granular subbase material) to enter the unloading area, unload, and exit the unloading area. These limitations should be discussed prior to start of granular subbase placement.

When discussing and defining hauling and unloading limitations, it is important to keep in mind that [Specification 2111.03, D, 5](#) allows trimmed granular subbase material to be processed and used for any purpose for which it can be approved under the specifications. This means that the trimmed material must meet the gradation requirements for granular subbase if the contractor wishes to reuse the trimmed material as granular subbase. Therefore, breakdown is an important factor when considering reuse of trimmed granular subbase material.

Once the hauling and loading limitations for granular subbase placement are established for the project, the contractor is expected to adhere to those limitations. While there may be external factors that require exceptions to the agreed upon limitations (i.e. - side road locations, accesses, or other work in progress), in cases where the contractor exceeds

the agreed upon limitations, a price adjustment of \$500 should be assessed. The level of price adjustment may be increased based upon frequency and severity of violations.

9.13 ACCUMULATION OF MATERIALS IN TRANSPORTING VEHICLES

[Specification 2301.02, C, 4](#) requires periodic cleaning and flushing of any transporting equipment, such as transit mixers, agitators, and wet batch trucks, to prevent accumulation of hardened concrete in the compartment. This specification also includes central plant mixing equipment. The receiving hopper for the elevating belt conveyor on auto- graders (Iowa Specials) and belts on placer/spreader machines should be checked for hardened concrete. Frequent inspection of transporting vehicles and hoppers should help assure prevention of accumulation and build-up of hardened concrete.

9.14 PCC FINISHING MACHINES

[Specification 2301.03, A, 3](#) allows for use of various types of concrete pavement finishing machines subject to project engineer approval. Mainline paving is intended to be placed with a finishing machine designed for concrete paving. Approval may be given for alternate types of finishing equipment based on satisfactory field performance. Should a new machine be brought on the job and the contractor's staff is not experienced with its operation, a qualified manufacturer's representative should be present until equipment is in proper adjustment and functioning as intended.

Equipment normally associated and approved for hand methods shall not be substituted for a finishing machine on mainline paving. Bridge deck finishing machines are not approved for placement of slipform paving when a finishing machine is required, due to their lack of adequate consolidation equipment.

Repeated breakdown of a piece of paving equipment is sufficient reason to suspend paving operations until the machine is repaired and brought in proper operating condition or replaced.

9.15 OPERATING FINISHING EQUIPMENT ON PREVIOUSLY PLACED CONCRETE IN MULTIPLE-LANE CONSTRUCTION WORK

Concrete paving train equipment may be permitted to travel on an adjacent lane when concrete has attained the age of three days **and** beam breaks show a modulus of rupture of 3.45 MPa (500 psi) or more when the maturity method is not used. When the maturity method is used, the required strength must be obtained. This allowance is not intended to allow concrete batch trucks to haul on the newly placed concrete pavement. Concrete batch truck traffic will need to use other means to reach the paving operation until the pavement has reached the strength and age requirements of [Specification 2301.03, U](#) or the Maturity Method per [Materials I.M. 383](#).

Protection of Pavement

Wheels of finishing equipment operating on previously placed pavement shall be rubber faced. Track propelled equipment shall be equipped with rubber protective pads on crawler tracks or tracks shall travel on cushions of wood or belting. The near edge of wheels or tracks shall not be closer than 75 mm (3 inches) from edge of pavement. Provisions must also be made to prevent the screed from damaging the existing pavement surface.

Surface Cleaning

When placing a lane adjacent to completed pavement, any spillage or flow of concrete slurry on the surface of existing pavement must be cleaned off prior to hardening. This helps prevent the tined grooves from being filled with concrete which would reduce the effectiveness of the textured surface.

Other Equipment

All other traffic and equipment, except as provided in [Construction Manual 9.16](#), must be kept off pavement until age requirements specified in [Specification 2301.03, U](#) are met.

9.16 EQUIPMENT WEIGHT LIMITATIONS ON NEW PAVEMENTS & PCC OVERLAYS

Construction equipment operated on pavement prior to minimum age and strength requirements of [Specification 2301.03, U](#) is limited to the weight restrictions in the following paragraphs. In no case should equipment not essential for work activity in progress be operated on pavement. Where equipment is moved on and off pavement, the pavement edges should be protected to eliminate chipping.

Joint Cleaning & Sealing Equipment Used on New Pavement & Unbonded PCC Overlays

A minimum pavement age of 24 hours and strength of 1 MPa (150 psi) is required prior to allowing cleaning and sealing equipment on the new pavement slab. Both the tow vehicles and trailers must meet the axle weight restrictions in [Appendix 9-4](#). Equipment used in the initial joint cleaning only may be operated on the new pavement slab after a minimum pavement age of 18 hours, as long as axle loadings do not exceed 75% of the axle weight restrictions ([Appendix 9-4](#)). All vehicle tires must be pneumatic. The vehicles used must have a minimum axle spacing of 1.5 m (5 feet). A maximum of 3 axles may be used on any trailer. These restrictions do not apply when concrete strength is measured by the maturity method and the opening strength is reached prior to the time restrictions.

Sawing Equipment Used on Bonded PCC Overlays

Sawing equipment, including span saws, can be operated on bonded PCC overlays as soon as the new pavement will support the equipment without damage to pavement surface or joint edges.

Joint Cleaning and Sealing Equipment Used on Bonded PCC Overlays

Only equipment for initial joint cleaning may be operated on new pavement, following joint sawing, provided pavement surface and joint edges are not damaged. Axle weights are restricted to 75% of values specified in [Appendix 9-4](#).

Weight limitations and conditions listed above for new pavements apply for all other equipment used after initial joint cleaning, until opening strength (and age without maturity) is reached.

