Virginia Ready-Mixed Concrete Association

Concrete Essentials

The Five Essentials For Building Quality Concrete Driveways, Sidewalks and Parking Areas

Whether you are paving your driveway or a city street, the contractor must follow these five essentials to provide you with an attractive, long lasting pavement.

Concrete is an environmentally friendly product that has been used throughout the world for hundreds of years.

It is the very best material for driveways, sidewalks and parking areas -- when it is installed properly.

As an architect, engineer, contractor or owner, you will want to make sure the following five essentials are followed in placing exterior flat work.

Firm Subbase - In most instances, stone is not necessary under the concrete -- as long as the earth is well compacted and uniform across the area to be paved. It must be smooth and free of tire ruts so the concrete will be the same thickness throughout. If the ready mixed concrete truck makes indentations as it backs onto the area to be paved, additional compaction is needed. Areas where the subgrade areas are soft or wet must be replaced with compacted earth or stone.

Select the **proper thickness** according to the type of traffic that will use it. For passenger cars and pickups, 4" thick concrete will give long term performance and low maintenance. For light trucks, 5"-6" thick concrete should be used -- and thicker should be used if heavy trucks are to use the site. The concrete should be of uniform thickness throughout the slab.

Use the **Proper Amount of Water**. Every gallon of water added to the concrete at the job site reduces the strength of the concrete substantially. Proper air entrainment will provide freeze/thaw durability, and chemical admixtures in the concrete will improve the workability of

the concrete while it is being installed without decreasing the strength. 4000 psi strength concrete should be ordered.

Proper Joint Layout & Depth must be accomplished to control cracking and the longevity of the pavement. Joint spacing should not exceed 24 to 30 times the pavement thickness with a maximum spacing of 15 ft. (4.6 m).

Lay out joints to form square panels. When this is not practical, rectangular panels can be used if the long dimension is no more than 1 * times the short. Control joints should have a depth of at least 1/4 the slab thickness. Isolation joints should extend the full depth and should be used only to isolate fixed objects abutting or within the paved area.

Joints should run continuously and extend through integral curbs. Joints can be terminated and offset at isolation joints. Adjust jointing layout or location of manholes, catch basins, small foundations, and other built-in structures so that the joints will line up with the corners of the structures.

Offset control joints to avoid acute angles or small pieces of slab at curves. Offset should be at 1 ft. (0.46m). When sawing control joints, begin as soon as possible without raveling the new concrete. Construction joint location should be determined by the contractorµs equipment and procedures.

Use a Liquid Curing Compound. This minimizes surface cracking. The following additional procedures will also help ensure a quality project:

- Slope pavement 1% or 1/8-in. Per foot (10 mm per meter) for drainage.
- Moisten subgrade just prior to placement of concrete.
- Avoid over finishing slabs. Generally a bullfloat finish is adequate. Sometimes a burlap drag of broom is used in the finishing process to provide a textured surface. Metal trowels or trowel machines should not be used on concrete paving.
- Keep automobile traffic off the slab for 3 days and truck traffic off the slab for 7 days, unless tests are made to determine that the concrete has gained adequate strength.
- When placed in cold weather, protect from freezing.