

Concrete Masonry Paving Base and Paver Thickness			
Application	Aggregate Sub-Base Thickness (in.)		Thickness of Concrete Masonry Paving Units (in.)
	Well-Drained, Dry Areas	Low, Wet Areas	
Light duty Residential driveways, patios, pool decks, walkways, parking, bicycle paths, erosion control, temporary paving	0–3	4–8	2-1/2–3
Medium duty Sidewalks, shopping malls, residential streets, public parking, bus stops, service roads, cross walks, parking lots, camping areas, mobile home parks, canal lining, safety zones, maintenance areas, farm equipment storage	4–6	10	3–4
Heavy duty City streets, intersections, gas stations, loading docks, loading ramps, industrial floors, stables	8	12	4–6

Note: The sand bed between the sub-base and the concrete pavers is always 2 in. thick.

Figure 14-4 General recommendations for base and paver thickness for concrete masonry pavers. (From NCMA TEK Bulletin 75.)

14.1.3 Setting Beds

Mortar setting beds may be used for rigid paving over concrete bases. A Type M portland cement-lime mortar is generally recommended for outdoor use in horizontal applications. Thickness of the bed may vary from $\frac{1}{2}$ to 1 in. Bituminous setting beds composed of aggregate and asphaltic cement may be used over concrete or bituminous bases for flexible paving installations. The mix is generally designed and prepared at an asphalt plant and delivered to the job site ready for application.

Cushion material is generally placed between mortarless pavers and the base as a leveling layer that compensates for minor irregularities of the surface or the units. Sand for this purpose should be specified in accordance with ASTM C144. Under extremely wet conditions, however, sand cushions will provide poor drainage. Sand cushions over gravel bases require a membrane to prevent settlement. Dry mixtures of 1 part portland cement and 3 to 6 parts damp, loose sand may also be used. The higher sand ratio mixtures will provide little or no bond between paver and cushion. Roofing felt (15- to 30-lb weight) provides some compensation for minor irregularities, can be installed rapidly, and adds a degree of resilience for pavers installed over concrete bases. Felt or special weed block fabric will also prevent the growth of grass or weeds in the joints of flexible pavements.

To prevent horizontal movement of mortarless paving, a method of containment must be provided around the perimeter of the paved areas. A soldier course, railroad ties, metal edging, or concrete curbs will all provide the required stability (see Fig. 14-5). Any new edging that must be installed should be placed prior to the paving units, and the pavers worked toward the established perimeters. Modular planning in the location of perimeter edging can eliminate or reduce the amount of cutting required to fit the units.

14.1.4 Paving Joints

Installing masonry paving with mortar joints may be done in one of three ways:

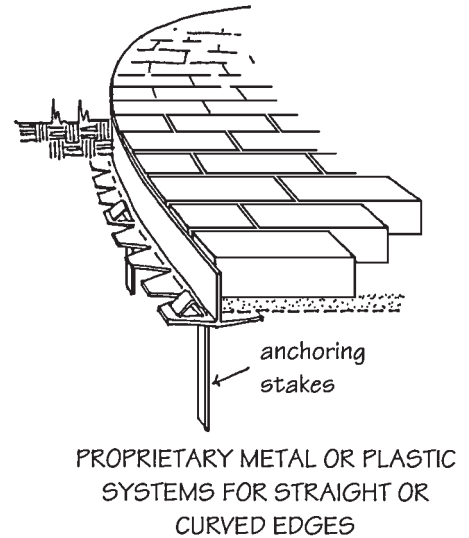
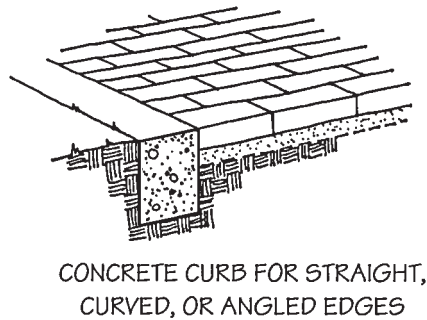
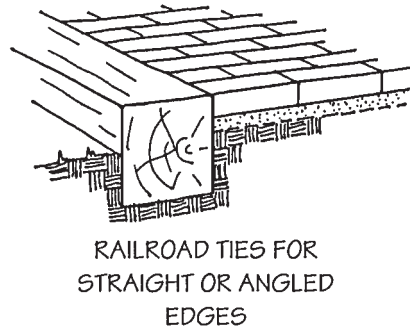
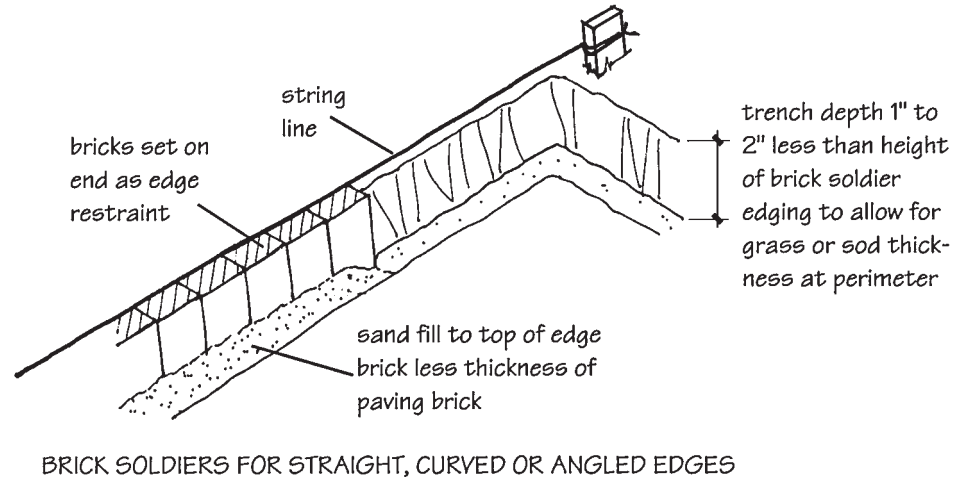


Figure 14-5 Alternative edge restraints for flexible masonry paving.

1. Using a conventional mason's trowel, the pavers may be buttered and shoved into a leveling bed of mortar.

2. The units may be placed on a mortar leveling bed with $\frac{3}{8}$ - to $\frac{1}{2}$ -in. open joints into which a grout mixture is then poured. Grout proportions are normally the same as for the mortar, except that the hydrated lime may be omitted. Special care must be taken in pouring this mixture, to protect the unit surfaces from spills and stains that would require special cleaning.

3. Masonry pavers may also be laid on a cushion of 1 part portland cement and 3 to 6 parts damp, loose sand, and the open joints broomed full of the same mixture. After excess material has been removed from the surface, the paving is sprayed with a fine water mist until the joints are satu-