

The relationship between the proposed and current standards in terms of the overall finished top width of the various classes of highway is shown in **Table 3 - Comparison of Finished Top Widths (see page 6)**. Proposed cross-section widths generally fall within the ranges specified by TAC. The top widths vary depending on the functional class and projected traffic volume on the highway facility throughout its length. The maximum shoulder width for a 2-lane Primary Arterial is 3.0 m, 2.5 m for a 2-lane Secondary Arterial and 2.0 m for a Collector. The 2.0 m ceiling on the shoulder width of a Collector still allows two-lane operation (2 x 3.7 m) past a 2.6 m wide vehicle parked on one shoulder, although some encroachment on the opposite shoulder would likely result.

A major change in the design standards is the inclusion of partially / fully paved shoulders. The paved shoulder study undertaken by the Virginia Transportation Research Council concluded that the provision of a 0.8 m paved shoulder increased the pavement life of bituminous pavement by 15%. Using these results, an in-house assessment came to the following conclusions:

*Partially Paved Shoulders:*

- The initial cost increase to accommodate a 0.8 m paved shoulder was 2.5 % for a new pavement versus 12.6 % to retrofit for an overlay.
- The maintenance cost saving is \$160.00 per lane km.
- Accidents are reduced by 1.6% as a result of paving 0.8 m of shoulder.
- The threshold AADT for the economic justification of partially paved shoulders is 287 v/d for an overlay and 109 v/d for a new road.

*Fully Paved Shoulders:*

- The cost increase to accommodate fully paved shoulder was 22.8 % for a new road versus 55.8 % to retrofit for an overlay.
- Maintenance saving is \$160.00 per lane km.
- Accidents are reduced by 1.6 %.
- The threshold AADT for the economic justification is 1390 for a new road and 1452 for an overlay.

In addition, partially or fully paved shoulders also offer the following advantages over gravel shoulders:

- increased driver comfort
- improved passing vehicle safety
- reduced shoulder-related accidents
- reduced shoulder maintenance
- added lateral support, leading to increased pavement life
- added allowance for bicycles, pedestrians.