

Code of Practice

Approach slabs

1. Scope and application

BTN011 Approach slabs states VicRoads' for the design of approach slabs.

Bridge Technical Notes are a Code of Practice. Compliance with Bridge Technical Notes is mandatory.

Other than as stated in this document and relevant VicRoads standard specifications, the provisions of AS5100:2017 shall apply. Where this document differs from AS5100:2017, its requirements override those of AS5100:2017.

2. Terminology

Approach slab (relieving slab, run-on slab or transition slab) describes the reinforced concrete slab which supports the road-surface at the transition from an approach embankment to a bridge abutment or culvert or adjacent to a retaining wall.

3. General

3.1. Purpose

Approach slabs serve to reduce the step which can result from settlement of approach embankments caused by consolidation of embankment fills and the underlying material. The smooth transition provided by approach slabs reduces dynamic vehicle loads on bridges.

3.2. Criteria for use

Approach slabs shall be used for bridge structures on:

- freeways, state highways, arterial roads and urban roads
- local roads where AADT exceeds 300 vpd and embankment height exceeds 1.5 metres
- if long-term settlement is expected.

Approach slabs shall be used on culverts if the above criteria apply **and** there is insufficient depth over the culvert for the road pavement.

If traffic lanes run close to the rear face of a retaining wall, an approach slab shall be provided to ensure that the design profile of the road-surface is maintained in the event that settlement of fill at the rear of the retaining wall occurs.

Approach slabs shall not be used as foundations for bridge approach barriers as settlement of the approach slab can lead to:

- deformation of the barrier
- reduction in effective barrier height below the required minimum.

If an existing bridge which does not have an approach slab is to be widened or modified, approach slabs shall not be provided unless specified.

4. Design

4.1. Length and width

The minimum length shall be 4.0m measured parallel to the abutment centreline. A longer approach slab might be warranted if large settlements are expected. Specific advice shall be obtained from a geotechnical engineer.

Approach slabs shall be provided for the full width of the roadway (including pedestrian and/or cyclist paths).

The ends of the approach slab shall be parallel to the edge of the roadway.

4.2. Design and detailing

Approach slabs shall be designed for vehicular dead load, superimposed dead load live load.

It shall be assumed that the slab is simply-supported with a span of 0.9 x actual length.

Approach slabs shall be connected to the structure with a reinforcement detail that combines vertical and horizontal fixity at the support. The connection shall have sufficient rotational capacity to prevent spalling of the slab or support if settlement of the slab occurs.

If approach slabs have 2-way cross-fall, designers shall detail the support to allow the slab to rotate about a single hinge line.

If the bridge deck joint is fixed to the approach slab, it shall have capacity for rotation and vertical movement (uplift) compatible with the expected settlement of the approach slab.

Designers shall provide adequate lateral clearances from other parts of the structure (e.g. from wing walls) to allow settlement of approach slabs.

The gap between an approach slab and the adjacent wing wall shall be sealed to prevent entry of surface drainage water.

A bedding layer consisting of 100mm of compacted crushed rock shall be used under approach slabs. For integral bridges, an alternative of 50mm of compacted sand may be used.

An edge beam or additional reinforcement shall be provided to stiffen the transverse free edge of the approach slab.

4.3. Design of supports

AS 5100.2:2017 Cl14.2 states that the support structure (e.g. abutment or retaining wall) shall be designed for live load surcharge irrespective of provision of an approach slab.

4.4. Drainage

A sub-surface drain shall be installed at the ends of approach slabs to prevent water penetration into the underlying pavement and subsequent settlement of the approach slab.

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Bridge Technical Notes are subject to periodic review and may be superseded.