

Chapter 4

Bridge Program Drawings

Section 4.14-Approach Slabs

Introduction

The approach slab is the transition between the approach roadway and the bridge. There are basically two types of approach slabs: concrete or concrete with an asphalt surface. Both types are supported by a corbel, backfill material, and geotextile.

Approach Slab Types

CONCRETE APPROACH SLABS are used when the approach roadway has a concrete surface and/or in conjunction with a sleeper slab.

CONCRETE WITH ASPHALT SURFACE APPROACH SLABS are used when the approach roadway has an asphalt surface. This type is comprised of a concrete slab with an asphalt overlay and wearing course. There is usually a 2'-0" wide slab of concrete, full depth, at the abutment end to allow for placement of the expansion joint material.

General Design and Detail Information

Use Class A Concrete for the approach slabs. The depth of the concrete slab shall be 10". If an asphalt overlay is used, the asphalt depth shall match that shown on the Road Plans, if possible. Otherwise, it shall be one lift of 2".

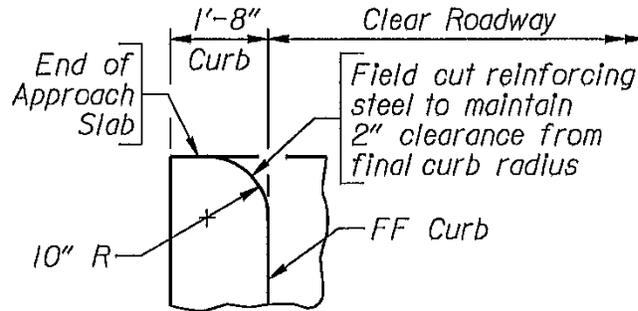
The total depth of the concrete slab plus the asphalt overlay, if required, shall not exceed the depth of the corbel. If the corbel depth is greater than the total approach slab depth, the bottom of the approach slab shall be provided with an upward 45 degree bevel at the end of the corbel.

Approach slabs are constructed using backfill material, geotextile, and an underdrain pipe. This system is used to reduce pressure on the backwall, aid in drainage, and support the approach slab. These slabs are typically 25'-0" long on a normal bridge or on the short side of a skewed bridge. The clear roadway shall match that of the bridge with curbs, concrete barrier rail, and/or sidewalks. Geometry at the end of the approach slabs on skewed bridges shall

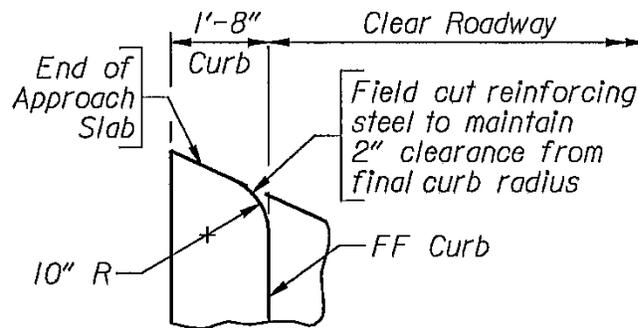
be normal to the approach roadway or parallel to rear face abutment at the discretion of the Squad Team Leader.

TRANSVERSE CURB REINFORCING STEEL shall be spaced at 4" in an area 2'-0" minimum on both sides of the bridge railing end posts to help reinforce the railing anchorage system.

A **CURB RADIUS** of 10" shall be placed at the approach roadway end of each curb, unless the approach roadway has curbs.



CURB RADIUS DETAIL



CURB RADIUS DETAIL

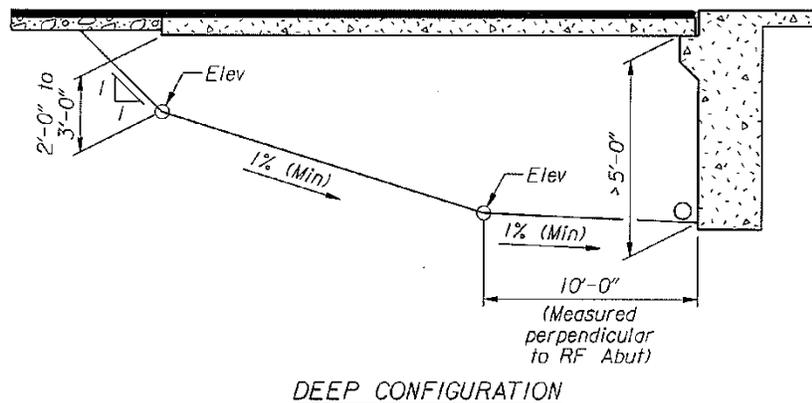
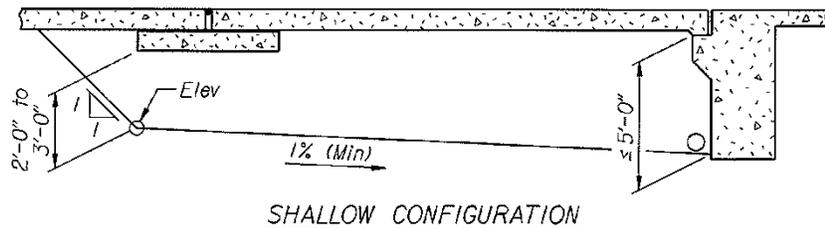
BRIDGE APPROACH BACKFILL is a pervious material consisting of crushed gravel, crushed rock, or manufactured sands and placed prior to the approach slab. It is divided into lifts separated by Geotextile, Emb and Retaining Wall. Each lift is governed by a minimum and a maximum thickness designated by the Geology Program as follows.

Minimum Thickness: 8"
 Maximum Thickness: 2'-0"

GEOTEXTILE, EMB AND RETAINING WALL is re-embedded 4'-0" at the abutment backwall and on each side of the excavation. The geotextile shall not be re-embedded at the back end of the approach slab. One layer of the geotextile shall line the bottom and extend up the side limits of the excavation to the bottom of the first layer of the geotextile and up the back limit of excavation to the bottom of the roadway subgrade. There shall be a 2" to 4" gap between the abutment and the geotextile to help keep earth pressure off the backwall.

If the bridge is on a normal crown, each layer of geotextile shall be placed level in both directions. If the bridge is on a superelevation, then each layer of the geotextile shall generally be placed parallel with the superelevation in the transverse direction. The geotextile shall always be placed level longitudinally.

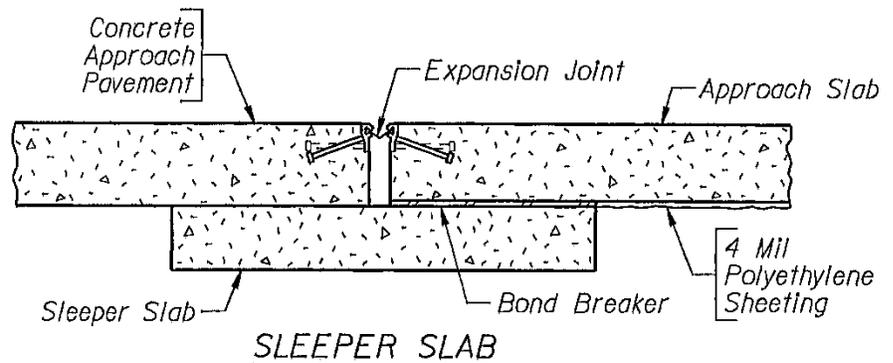
The **LIMITS OF EXCAVATION AND BACKFILL** generally depend on the depth of the abutment backwall. If the backwall is 5'-0" or less below the top of the corbel, a shallow configuration is used. If the backwall is greater than 5'-0" below the top of the corbel, a deep configuration is used. The depth of the excavation and backfill shall be 2'-0" minimum and 3'-0" maximum measured from the bottom of the approach slab or sleeper slab at the back edge of the approach slab or sleeper slab. For further information on limits of excavation and backfill see the details below.



All dimensions for the excavation and backfill shall be rounded to the next smallest whole three inches, and all elevations shall be rounded up to the next tenth of a foot. Show elevations for new construction only.

COMPRESSED JOINT MATERIAL is joint filler usually placed between rear face abutment and the end of the approach slab when there is an expansion device anywhere on the bridge. The gap width is ½" and is filled with 2" deep x 2" wide uncompressed joint material. If there is no expansion device on the bridge, then an **ELASTOMERIC COMPRESSION JOINT SEAL** will be used between rear face abutment and the end of the approach slab at each end of the structure. The compression seal will be sized for the expansion and contraction of the structure. This type of joint is used when the approach slab is not connected to the abutment.

A **SLEEPER SLAB** is a reinforced concrete block supporting the end of the concrete approach slab at the approach roadway end. It is typically used when preformed elastomeric compression joint seals are not used between the concrete pavement sections.



UNDERDRAIN PIPE (PERF) 6 in is a pipe wrapped in geotextile and placed inside the lift at the bottom of the excavation. It is used to gather and divert water away from the abutment. The pipe will typically lie adjacent to the abutment backwall or on top of the footing, depending on the type of abutment. The pipe can also be placed at the back of or in the deepest part of the excavation. When the pipe is placed adjacent to the abutment backwall, it should be set so that the entire length of the pipe remains above the bottom of the abutment cap. The pipe shall run the entire bottom width of the approach slab, be sloped to drain 1.0% minimum, and be dimensioned to the nearest whole foot.

UNDERDRAIN PIPE (NON-PERF) 6 in is a pipe that connects to the perforated pipe and diverts the water to daylight. It shall be sloped the same as the perforated pipe and dimensioned to the nearest whole foot.

Cells

Name	Description
APSECCJM	Appr Slab Section w/Comp Jt Mat
APSECECJ	Appr Slab Section w/Elasto Comp Jt Seal
BARTAPER	Barrier Rail Taper at Appr Slab
CURRAD	Curb Radius Details

Approach Slab Checklist

Plan

- Centerline Bridge Roadway
- Working Line/Construction Line Call-out
- Complements
- Clear Roadway/Curb/Sidewalk/Out-to-Out Dimensions
- Edge of Approach Slab Lengths
- Skewed Dimension at RF Abutment
- Reinforcing Size/Spacing/Location/Lap/Call-outs
- RF Abutment Call-out
- Joint Material/Seal Call-out
- See Curb/Sidewalk Radius Detail Call-out
- Section Symbols
- Line Styles/Patterning

Section (longitudinal)

- Approach Slab Length at Centerline Bridge Roadway/Working Line
- Re-embedment Fold Dimensions
- Bottom Limits Dimensions
- Approach Slab/Geotextile Layers/Backfill Depths
- Elevation Call-outs
- RF Abutment Call-out
- Slope to Match Road Grade Call-out
- Pavement Call-out
- Geotextile, Emb and Retaining Wall Call-out
- Level Call-out (if center crown)
- Level Longitudinal Direction Only Call-out (if superelevated)
- Approach Roadway Call-out
- Bridge Approach Backfill Call-out
- Excavation and Backfill Call-out
- End Limits Bevel Call-out
- Underdrain Pipe Call-out
- Type C Joint Call-out (concrete roadway)
- Sleeper Slab/Polyethylene Sheeting Call-out
- Line Styles/Patterning

Section (transverse at concrete blackout)

- ❖ Curb/Sidewalk/Gutter Dimensions/Radius
 - Slab Thickness
 - Slab Reinforcing Size/Location/Clearance/Lap/Call-outs
- ❖ Curb/Sidewalk Reinforcing Size/Location/Clearance/Call-outs
 - Slope to Match Roadway Call-out
- ❖ Level Call-out (curb)
- ❖ Slope in Percent (sidewalk)
 - Construction Joint Call-outs
 - Line Styles/Patterning
 - Showing Approach Slab Only (under title)

Section (transverse at asphalt)

- ❖ Curb/Sidewalk/Gutter Dimensions/Radius
 - Slab/Asphalt Thicknesses
 - Slab Reinforcing Size/Location/Clearance/Lap/Call-outs
- ❖ Curb/Sidewalk Reinforcing Size/Location/Clearance/Call-outs
 - Slope to Match Roadway Call-out
 - Pavement Call-out
- ❖ Level Call-out (curb)
- ❖ Slope in Percent (sidewalk)
 - Construction Joint Call-outs
 - Line Styles/Patterning
 - Showing Approach Slab Only (under title)

- ❖ Required in one transverse section only

Section (transverse, showing backfill)

- Centerline Bridge Roadway/Working Line
- Re-embedment Fold Dimensions
- Topsoil Dimensions
- Underdrain Pipe Lengths
- Level (if center crown)/Parallel (if superelevated) Call-out
- Slope Pipe to Drain Call-out
- Wingwall Call-out
- Fill Slope Call-out
- Geotextile Call-out
- Backfill Call-out
- Side Limits Bevel/Call-out
- Bottom Limits Call-out
- Bottom Layer Call-out
- Line Styles/Patterning

Miscellaneous

- Section(s) Thru Joint Material/Seal
- Curb Radius Detail
- Typical Curb/Sidewalk Section (if not in transverse sections)
- Bill of Reinforcement

Notes

- Dimensions/Elevations Preceded by Double Asterisk (**)
- Increase and Decrease Opening
- Prefix Numbers
- Extend Joint Material
- Extend Bottom Layer
- 4 mil Polyethylene Sheeting
- Class B Concrete and Reinforcing for Sleeper Slab
- Sleeper Slab Trowel Finish
- Reinforcing Steel NOT included in quantity