

Chapter 4

Bridge Program Drawings

Section 4.14-Approach Slabs

Introduction

The approach slab is the transition between the approach roadway and the bridge. Approach slabs are supported by a corbel at the abutment end, and a sleeper slab at the roadway end. Reinforced fill consisting of layers of geotextile and bridge approach backfill are used to support the approach slab.

General Design and Detail Information

Use Class A Concrete for the approach slabs. The depth of the concrete slab shall be 12".

Standard Approach Slab details are available and shall be used on all projects unless modification is required at the discretion of the Squad Team Leader.

The total depth of the concrete slab shall preferably 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 connected to the abutment or slab with bent bars or dowel bars.

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. Standard approach slabs are 21'-0" long on a normal bridge or are 21'-0" on the short side on a skewed bridge. Sleeper slab stems are 4'-0" long, with a 6'-0" footing for asphalt approach pavement. For concrete approach pavement, the Materials Program and Project Development Program should be consulted. In this case, the sleeper slab may need to be extended underneath the roadway pavement. Geometry at the end of the approach slabs on skewed bridges shall be normal to the approach roadway or parallel to rear face abutment for large skews or wider roadway widths 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 for WYOMING TL-3 (TL-4) Tube Type Railing (NCHRP 350). Special curb end reinforcement is required for MASH TL-4 Tube Type railing, see Standard Approach Slab Details.

For curb end and radius details, see Standard Approach Slab Details for requirements.

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 and the first layer on the back end of the approach slab. For staged construction, a 4'-0" re-embedment fold shall be provided adjacent to the sheet piling for each layer of geotextile. 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. For further information on limits of excavation and backfill see Appendix A.

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. Elevations shall be shown for new construction only.

UNDERDRAIN PIPE (PERF) 6 in is a perforated 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 footing or sill. 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 non-perforated 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

Standard Sheets

Name	Description
Std_Left Skew MASH Approach_ap1_ap3	Standard Approach Slab Details for TL4BRGRAIL_MASH Railing, Left Skew
Std_Right Skew MASH Approach_ap1_ap3	Standard Approach Slab Details for TL4BRGRAIL_MASH Railing, Right Skew
Std_No Skew MASH Approach_ap1_ap3	Standard Approach Slab Details for TL4BRGRAIL_MASH Railing, No Skew
Std_Left Skew 350 Approach_ap1_ap3	Standard Approach Slab Details for TL3BRGRAIL_NCHRP350 Railing, Left Skew
Std_Right Skew 350 Approach_ap1_ap3	Standard Approach Slab Details for TL3BRGRAIL_NCHRP350 Railing, Right Skew
Std_No Skew 350 Approach_ap1_ap3	Standard Approach Slab Details for TL3BRGRAIL_NCHRP350 Railing, No Skew
Std_Sleeper_sr1_ Elasto_Crown	Standard Sleeper Slab Details for elastomeric compressions seal and center roadway crown.
Std_Sleeper_sr2_ Elasto_Super	Standard Sleeper Slab Details for elastomeric compressions seal and roadway superelevation.
Std_Sleeper_sr3_ Strip_Crown	Standard Sleeper Slab Details for strip seal and center roadway crown.
Std_Sleeper_sr4_ Strip_Super	Standard Sleeper Slab Details for strip seal and roadway superelevation.
Std_Erosion_1er	Standard Erosion Chute Detail

Approach Slab Checklist (Non Standard)

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)
- ❖ Notes items addressed in the standard detail

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

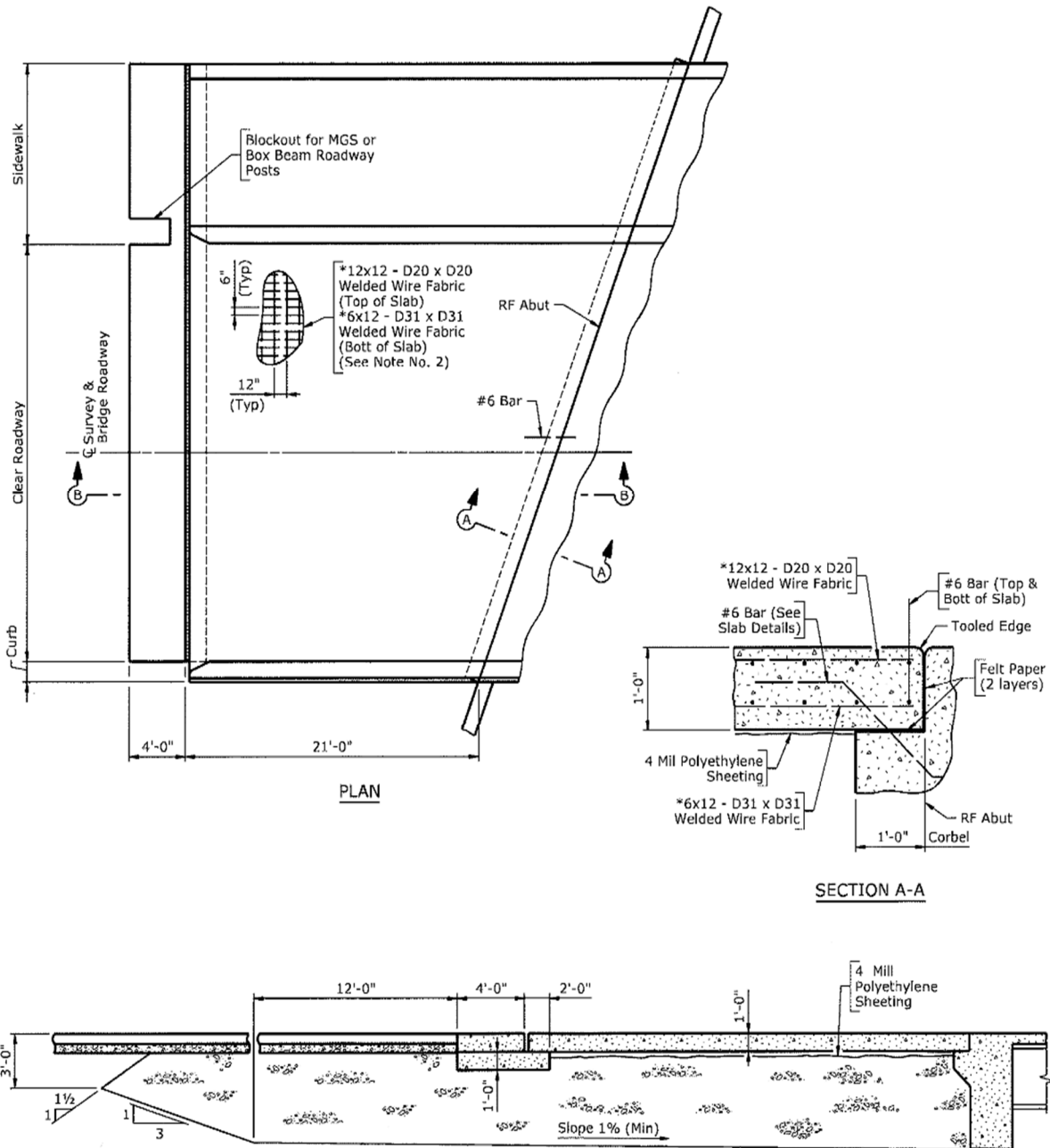
Miscellaneous

- 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

APPENDIX - A GENERAL APPROACH SLAB LAYOUT



SECTION B-B
(Geotextile not shown)

Note: See Standard Approach Slab Details for reinforced backfill, drain pipes and side slopes perpendicular to approach slabs.