

Date: January 12, 1996
To: Staff Bridge Unit Leaders

From: S. W. Horton

Subject: Staff Bridge Worksheets

Updates for your book of worksheets are attached. This update involves 75 sheets, 38 English and 37 metric.

The VAX directory containing the worksheets has a new location. The disk has been changed from PATH5 to PATH7. The new path name is now PATH7:[PCSA.BRGSTDS].

B-INDEX-1 & 2: Updated indexes.

B-000-0: Added wording that splice table is for staggered (Class B) splices with bars at 6" or greater spacing, and splice lengths are to be increased 25% for bars with less than 6" spacing. Increased splice length for #8 bars and larger using 1.5 multiplier for epoxy instead of 1.15. The 1.5 is applicable to these bars when at 6" spacing. Note, as in the past, considerations regarding cover, top bars and Class C splices need to be addressed in the plan details. Added splice table for non-epoxy coated rebar. The non-epoxy coated table is not to be used unless there is a significant amount of non-epoxy coated rebar in the plans. Added 1994 & 1995 Interims to design data. Reworded note regarding unpainted steel. Revised note regarding excavation and backfill by deleting reference to M-206-2 which is replaced by B-206-3 & 4.

B-206-1 & 2: Deleted cross section near end of wingwall. B-206-3 & 4 will now provide this information which is dependent on whether the wingwall is in a cut or a fill. Moved location of end of wingwall. Revised bottom of flow-fill profile to a single slope. Deleted 1" sand bond breaker. Provided for full wrap of geotextile around the filter material. Added note regarding placement of flow-fill. Deleted Item Numbers from quantities table. Added requirement for underdrain to be placed 2" to 4" above bottom of filter material. Added note to designer/detailer regarding drain outlet.

B-206-3 & 4: These sheets would be used in place of M-206-2 to define excavation and backfill for bridges. The revisions clarify, and make the details used for calculating excavation and fill quantities consistent with, our use of flow-fill. For bridges in fill a temporary over-embankment is shown. This over-embankment was requested by Region 6 to help ensure the material under the flow-fill is properly compacted. The use of class 1 backfill outside the wingwalls and at the front face of abutments is replaced with class 2. Please review these sheets carefully. Excavation and backfill calculations shall be based on these sheets. With these sheets you will not have any Class 1 backfill quantities at abutments. Class 2 and flowfill will be used instead. As stated above, the reference to M-206-2 should not show up in the General Notes when using these sheets.

B-509-1A & 1B: Changed worksheet number.

B-509-2A, 2B, 2C, 2D, & 2E: New worksheets providing bearing seat repair details.

B-601-1, 1A, 1EA, & 1EC: Added alpha character to bar list numbers. Corrected slab length dimension line on B-601-1.

B-602-BL: Changed location of alpha character in bar numbers in accordance with our current practice.

B-606-4 & 4A: Reworded the note which establishes the pay item and added wording to call out applicable specifications for concrete and reinforcing steel. Added requirements for smoothness of final surface. Due to these changes THE SPECIAL PROVISION FOR BRIDGE RAIL TYPE 4 IS NO LONGER REQUIRED AND SHOULD NOT BE USED UNLESS THERE ARE PROJECT SPECIFIC REQUIREMENTS WHICH CANNOT BE COVERED IN THE PLANS. The worksheets now contain all the requirements necessary for the construction of these rails. Reworded note regarding open joints at expansion devices.

B-606-10, 10H & 10R: Changed end post space from a fixed 12" to a variable 8" min to 14" max. This will allow flexibility in establishing the intermediate post spacings.

Note, actual post spacings for the project are to be shown on the Construction Layout. Intermediate post spacings do not need to equal 12'-6". Unlike the W-beam for the Type 3 rail, the Type 10 rail components are not prefabricated and therefore dimensions less than 12.5' are not a problem. However, as many as possible of the intermediate post spacings should be made the same, and should be as close to 12.5' as possible, and preferably should be to the nearest inch. The new flexibility in the end post space will help in doing this.

On existing bridges the 8" to 12" end post spacing may not work due to skew, expansion joint, wingwall, or other details. On B-606-10R a note to the designer and detailer has been added to ensure this is addressed for the project.

Note for reflector tabs revised to reference M-606-1 instead of the roadway plans. Note establishing pay item for Type 10 rail reworded. On B-606-10 & 10R, note regarding the tube expansion splice has been reworded. On B-606-10R the threaded rods are now called out as high strength.

B-606-10A: Name of Section through backing plate revised to "Section A-A". End plate called out in elevation view. End post space revised from 12" to 8" min and 14" max.

B-606-10B: Miscellaneous cleanup of dimension lines.
B-607-SB1: New sheet number.

B-607-SB2: New timber sound barrier worksheet. B-607-SB1 is for timber posts and B-607-SB2 is for steel posts.

B-613-C & S: Deleted note instructing connection of box girder internal lighting to local power source instead of providing a plug for connection to a portable generator. Corrected bolt length in plan view of Mounting Detail.

B-618-42, 54, 68 & 72: Revised stirrups projecting from top of girders to #3 hooped bars for safety requirements. Revised end plate dimension normal to the girder centerline. The end plate dimension in this direction for all girders is now 1.5" less than the breadth of bottom flange. Provided centerline of girder reference line on end plate detail for orientation. Removed diaphragm details from BT girder sheets. Clarified call-out of #4 and #6 longitudinal bars in the BT top flanges. Spiral at end of BT's revised from #3 at 8" to #2 at 4" to facilitate fabrication. Made call-out of transverse rebar in top flange consistent among all sheets. Added note to G68 that the bracing angle shall be located perpendicular to the girder, and one located near each end.

Clarified that hooks on ends of BT stirrups are only needed for the end 20 stirrups. Added these hooks to the G-girder sections (on the end 13 stirrups) for uniformity. Added the 2-#6's located at the ends of the webs of the BT's to the G-girders. Lengthened the longitudinal end-block side face steel on the G54 to match the G68. In the "Through End Plate" section, corrected the shear rebar from #5 to #4. Strand substitution for the longitudinal rebar in the top flange of G-girders added to match BT's. Changed the number of outside vertical rebar in end-block of G68 from 10 bars to 7.

B-618-84: New worksheet introducing 84" deep bulb-tee section.

B-618-BX: Added harping as an alternative to debonding in the last note regarding control of extreme fiber stresses at ends of girder. Revised stirrups projecting from top of girders to #3 hooped bars for safety requirements. Shear rebar changed from 6" spacing in debonded zones to bundled stirrups at 8" spacing over end 14' of girder. Fanned stirrups at skewed ends of girders changed from L-bars to C-bars. Moved top flange transverse rebar down (below longitudinal rebar) to provide greater effectiveness as deck rebar for boxes with partial depth decks. Corrected the 4" clearance dimension line to the projected stirrup in the Typical Section.

B-618-DF: Modified diaphragm connection details per fabricator comments. This sheet will provide the diaphragm details for all precast I-girder sections.

B-618-SL: New worksheet introducing precast prestressed slab sections.

C-INDEX-1 & 2: Updated indexes. Changed English units within drawing titles to metric units.

C-000-0: See above notes on B-000-0. Added note providing for English rebar substitutions. Note regarding metric units revised to state that elevations and stations are in meters.

C-100-1, 2, 3 & 4: New metric worksheets.

C-202-1C & 1S: New metric worksheets.

C-206-1, 2, 3 & 4: New metric worksheets.

C-503-1: New metric worksheet.

C-507-1 & 2: New metric worksheets.

C-601-1, 1A, 1EA & 1EC: Corrected slab length dimension lines for consistency between plan and section views. Added alpha character to bar list numbers.

C-601-5S: Changed call-out for 12" extension of reinforcement out of panels to 300mm.

C-602-BL See notes above on B-602-BL.

C-606-4 & 4A: See notes above on B-606-4 & 4A. Rail face vertical dimensions revised for consistency with the M-Standards.

C-606-10, 10A, 10B, 10H & 10R: New metric worksheets.

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C-618-1070, 1370, 1730 & 1830: Revised stirrups projecting from top of girders to #8M hooped bars for safety requirements. Revised end plate dimension normal to the girder centerline. The end plate dimension in this direction for all girders is now 40mm less than the breadth of bottom flange. Provided centerline of girder reference line on end plate detail for orientation. Removed diaphragm details from girder sheets. C-618-DF will be used for diaphragm details. Corrected call-out of #10M and #20M longitudinal bars in the BT top flanges. Spiral at end of BT's revised from #10M at 200 to #6M at 100 to facilitate fabrication. Made call-out of transverse rebar in top flange consistent among all sheets. Added note to G1730 that the bracing angle shall be located perpendicular to the girder, and one located near each end. Changed pay item description to match item book.

C-618-BX: See notes above on B-618-BX. Changed pay item description to match item book.

C-618-2130, DF & SL: New metric worksheets.

Please share this memorandum with the members of your unit. Contact Mark Leonard if you or any member of your unit has any question or comments on these changes, or if they are any additional changes to the worksheets you would recommend.

Attachment

SWH/MAL/mal

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