

# Design Standards Letter

**Letter Number: D-1998-05**

**Letter Date: 07/01/1998**

**Effective Date: 07/01/1998**

**Section/Plan No.: D2-01, D2-02, D2-03, D2-04, D2-06, D3-02, D4-02, D4-03, D4-05, D4-08, D4-09, D5-02, D5-03, D6-02, D6-03, D6-04, D6-05, D6-07, D7-03, and D8-04**

**Subject: Sections 2-01, 2-02, 2-03, 2-04, 2-06, 3-02, 4-02, 4-03, 4-05, 4-08, 4-09, 5-02, 5-03, 6-02, 6-03, 6-04, 6-05, 6-07, 7-03, and 8-04, Figures 2-02.1, 2-03.1 through 8, 2-06.1 through 3, 4-01.1, 4-02.11 through 17, 4-03.8, 4-04.1, 4-06.6, 4-09.3 through 9, 5-03.10, 6-03.3 through 10, 6-03.14, 8-03.23, and 8-04.1 through 2, Microstation drawings 2BS sheets (D-size and resurfacing plan size), Leveling Course Traffic Control Plan Special Sheets, and Bridge Strengthening Traffic Control Plan Special Sheet.**

## Body

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Enclosed are English and metric revisions to the Design Division's dual unit *Policy, Procedure, and Design Manual* for the above noted sections and figures. Revisions are summarized as follows:

**Contents, Volume I.** Revision date changed to 7-1-98 for the Contents sheet and Sections 2-01, 2-02, 2-03, 2-04, 2-06, 3-02, 4-02, 4-03, 4-05, 4-08, and 4-09.

**Table of Contents, Chapter I.** Revision date changed to 7-1-98.

Added titles to Subsection 1-01.6 (omitted during creation of dual unit manual).

**Table of Contents, Chapter II.** Revision date changed to 7-1-98.

Section 2-02 was previously 2-06; Section 2-03 was previously 2-02; and Section 2-06 was previously 2-03. The titles in this Table of Contents were revised to reflect these changes.

**Section 2-01, Conceptual Study.** Revision date changed to 7-1-98.

In Subsection 2-01.2, added sixth paragraph to state that the conceptual study letter should include the anticipated method of disposition of the existing route.

**Section 2-02, Location Study/Environmental Report.** Revision date changed to 7-1-98.

This section was previously 2-06.

Added Subsection 2-02 (7) (c) detailing route disposition and the methods of disposing of routes. **PLEASE REVIEW THIS SUBSECTION CAREFULLY.**

**Figure 2-02.1.** Revision date changed to 7-1-98.

Renumbered from Figure 2-06.1.

**Section 2-03, Public Hearings and Meetings.** Revision date changed to 7-1-98.

This section was previously 2-02.

Revised Subsection 2-03.5, first paragraph, stating that the material presented in this section should be considered as minimum criteria for requiring public hearings. Revised second paragraph to explain that public hearings, though perhaps not required, may be held in an effort to inform, and gather comments from, the general public.

Revised second bullet in Subsection 2-03.11 to require jobs with right of way or permanent easements to exceed the limits set forth in Subsection 2-03.5 before requiring commission approval.

**Figures 2-03.1 through 8.** Revision date changed to 7-1-98.

Renumbered from 2-02.1 through 8.

**Figure 2-03.1:** Revised contact person for FHWA.

**Figure 2-03.2 (3/3):** Revised guidelines to follow when preparing location sketches for presentation to the commission.

**Section 2-04, Environmental Document.** Revision date changed to 7-1-98.

Revised Subsection 2-04.4 (1), first paragraph, stating that the *Traffic Noise Policy* should be used in conjunction with this sections' material. Copies of this policy are in the districts. Also in other parts of this subsection, the Noise Abatement Criteria (NAC) has been increased from 65 dBA to 66 dBA. This change occurs in numerous places in this subsection.

**Section 2-06, Preliminary Plans.** Revision date changed to 7-1-98.

This section was previously 2-03.

No other revisions to this section.

**Figures 2-06.1 through 3.** Revision date changed to 7-1-98.

Renumbered from 2-03.1 through 8.

**Table of Contents, Chapter III.** Revision date changed to 7-1-98.

Added and revised titles in 3-02.5 and 3-02.13.

**Section 3-02, Conventional Surveys.** Revision date changed to 7-1-98.

In Table 3-02.1, changed the distance allowable error to 1:20,000.

Changed Subsection 3-02.5 (2) to 2D Control Points and added Subsection 3-02.5 (3) detailing 3D Control Points. Please review these two subsections carefully.

Revised Subsection 3-02.8 (1) detailing the duties of a state land surveyor when performing land survey ties.

In Subsection 3-02.13 (1), added first paragraph encouraging designers to consult with the Bridge Division on issues requiring considerable judgement when preparing bridge surveys. In second paragraph, added photographs as part of the required information for bridge surveys.

Revised Subsection 3-02.13 (3), first paragraph, second sentence, to no longer require the drainage area be met before showing contours.

Revised Subsection 3-02.13 (9), added first paragraph detailing the centerline and offset profile criteria.

Revised Subsection 3-02.13 (11), first paragraph, now requiring three valley sections. Criteria for determining placement of valley sections is also given in this paragraph.

Added Subsection 3-02.13 (18). This new subsection details using photographs for bridge survey reports.

**Table of Contents, Chapter IV.** Revision date changed to 7-1-98.

Added titles to Subsections 4-02.3, 4-02.16, 4-04.3 and 4-08.3. Removed titles from Section 4-09 (due to removal of Subsection 4-09.4).

**Figure 4-01.1.** Revision date changed to 7-1-98.

Under metric accuracy, changed area accuracy to 0.001 hectare.

**Section 4-02, Right of Way Plans.** Revision date changed to 7-1-98.

Revised Subsection 4-02.3 (1) to redefine normal right of way.

Added Subsection 4-02.3 (3) to define and explain break in access. **PLEASE REVIEW THIS SUBSECTION CAREFULLY.**

Revised Subsection 4-02.14 to clarify the filing of right of way plans. **PLEASE REVIEW THIS SUBSECTION CAREFULLY.**

Added Subsection 4-02.16 to this section. This subsection was taken from Section 4-09 and rewritten entirely and in greater detail. **PLEASE REVIEW THIS SUBSECTION CAREFULLY.**

**Figure 4-02.11.** Revision date changed to 7-1-98.

Added the "Design Approval by commission on: (date)" line.

**Figure 4-02.12.** Revision date changed to 7-1-98.

At bottom of figure, added the statement requesting three certifications be forwarded to the district for proper filing. Also added a contact person for questions.

**Figures 4-02.13 and 14.** New date is 7-1-98.

These two new figures are to be completed in the district and submitted with a cover letter. For standard certifications, use Figure 4-02.13 and for amended certifications, use Figure 4-02.14. These two figures have been made into Design Forms (Right of Way) in Ami Pro.

**Figure 4-02.15.** Revision date changed to 7-1-98.

This figure was previously 4-09.3 and has been rearranged for presentation purposes.

**Figures 4-02.16 and 17.** New date is 7-1-98.

These two new drawings show examples for determining route disposition termini.

**Section 4-03, Plans-Specifications-Estimates.** Revision date changed to 7-1-98.

Revised Subsection 4-03.16 (2) to now require submittal of all interstate plans 14 weeks prior to the letting date. The revision to this section is in conjunction with a revision to Section 8-04.

**Figure 4-03.8.** Revision date changed to 7-1-98.

Changed "Give 'em a Brake" signs to single unit prices.

Revised R10-3B and R10-4 sign designations to correspond to the MUTCD.

**Figure 4-04.1.** Revision date changed to 7-1-98.

**Metric:** For Locals < 400, Flat, added Footnote 17. This footnote (detailed on Sheet 2/4) refers the designer to the AASHTO Green Book for ADTs < 250.

**English:** For Locals < 400, Flat, changed design speed to 40 mph and added Footnote 17. The 40 mph design speed corresponds to AASHTO's recommendation for ADT < 400. The footnote (detailed on Sheet 4/4) refers the designer to the AASHTO Green Book for ADTs < 250.

**Section 4-05, Intersections at Grade.** Revision date changed to 7-1-98.

Removed Subsection 4-05.1 (4), Break in Access. This subsection was moved to Section 4-02.

In Subsection 4-05.2, second paragraph, added last sentence referencing Subsection 6-03.4 (3) for joint information.

In Subsection 4-05.8, added last sentence detailing driveway width determination based on use, development served, and associated traffic needs.

**Section 4-08, Grading.** Revision date changed to 7-1-98.

Reworded Subsection 4-08.3 (1) (b). Moved "The commission will acquire..." sentence to make the paragraph read better.

**Section 4-09, Miscellaneous.** Revision date changed to 7-1-98.

Removed Subsection 4-09.4, Disposition of Existing Roads and moved to Section 4-02.

Revised Subsections 4-09.21 (1) and (2) extensively. **PLEASE REVIEW THESE SUBSECTIONS CAREFULLY.**

In Subsection 4-09.22, second paragraph, added third sentence detailing the handling of monuments by the resident engineer. In the third paragraph, added fifth and sixth sentences detailing the location to place monuments.

**Figures 4-09.3 through 9.** Revision date changed to 7-1-98.

These figures were only renumbered due to the moving of Figure 4-09.3 to Section 4-02.

**Contents, Volume II.** Revision date changed to 7-1-98 for the Contents sheet and Sections 5-02, 5-03, 6-02, 6-03, 6-04, 6-05, 6-07, 7-03, and 8-04

**Table of Contents, Chapter V.** Revision date changed to 7-1-98.

Revised titles in Section 5-03.

**Section 5-02, Procedure.** Revision date changed to 7-1-98.

Revised Subsection 5-02.2, second paragraph, second sentence eliminating the four copies if the FHWA is involved. Only three copies of the bridge memorandum will be sent to the

district for review and signature.

Revised Subsection 5-02.3, last bullet changed the coordination of the disposition of historically significant bridges to be replaced from Design Division to the Preliminary Studies Division.

**Section 5-03, Preparation of Bridge Survey Report.** Revision date changed to 7-1-98.

Revised Subsection 5-03.1 so that designers no longer need to estimate the discharge at the bridge site.

Revised Table 5-03.3 English required clearances.

Revised Subsection 5-03.9 extensively to correspond to the new Bridge Survey Report (Figure 5-03.10). **PLEASE REVIEW THIS SUBSECTION CAREFULLY.**

**Figure 5-03.10.** Revision date changed to 7-1-98.

This figure has been extensively revised. The Bridge Survey Report is available through Design Forms in Ami Pro.

**Table of Contents, Chapter VI.** Revision date changed to 7-1-98.

Revised titles in numerous sections.

**Section 6-02, Underdrains.** Revision date changed to 7-1-98.

Changed title of section from Underdrainage to Underdrains.

Corrected underdrain terminology in numerous locations.

Revised Subsection 6-02.3, third paragraph, stating that pavement edge drains are now required for new rigid or flexible pavements. This subsection also gives some criteria where pavement edge drains may be eliminated.

**Section 6-03, Pavements.** Revision date changed to 7-1-98.

Revised Subsection 6-03.3 (2), first paragraph, to refer designers to Section 6-07 for mixture guidelines. Revised second paragraph to explain mixture payment by the square meter (square yard).

Revised Subsection 6-03.3 (3) to specify the uppermost base lift of SP250 mixture may be 50-100 mm and should be shown on the plans.

**Figures 6-03.3 through 10.** Revision date changed to 7-1-98.

**Figures 6-03.3 through 9:** Added, changed or deleted flexible pavements mixtures.

**Figure 6-03.6 through 8 and 6-03.10:** Changed terminology of "Non-Stabilized Permeable Base" to "Drainage Aggregate."

**Figure 6-03.14.** This figure has been incorporated into Section 6-07. Delete this figure.

**Section 6-04, Shoulders.** Revision date changed to 7-1-98.

Revised Subsection 6-04.2 to state that design year traffic is used as a shoulder selection criteria.

**Section 6-05, 3R/4R Projects.** Revision date changed to 7-1-98.

Revised Subsection 6-05.6, to include superpave mixtures. Also, Type IC and IB mixtures may now be used on light duty pavements with ADT > 3500. For light duty pavements with ADT < 3500, specify plant mix bituminous pavement.

Revised Subsection 6-05.7, to specify SP125 on heavy and medium duty resurfacing projects. For light duty pavements with ADT > 3500, specify Type IC. For light duty pavements with ADT < 3500, specify plant mix bituminous pavement.

**Section 6-07, Bituminous Construction Materials.** Revision date changed to 7-1-98.

This section has been extensively revised to give guidance on selection and use of performance graded asphalts and bituminous mixtures. **PLEASE REVIEW THIS SECTION CAREFULLY.**

**Table of Contents, Chapter VII.** Revision date changed to 7-1-98.

Revised numerous figure titles to correspond to combining of similar figures.

**Section 7-03, Policy, Standards and Regulations.** Revision date changed to 7-1-98.

Subsection 7-03.1, Missouri State Statutes concerning the location and relocation of utility facilities on state highways, has been revised in numerous places. **PLEASE REVIEW THIS SUBSECTION CAREFULLY.**

**Table of Contents, Chapter VIII.** Revision date changed to 7-1-98.

Added new titles for Section 8-04 titles.

**Figure 8-03.23.** Revision date changed to 7-1-98.

Revised sign sizes to correspond to the MUTCD.

**Section 8-04, Traffic Control Plans.** Revision date changed to 7-1-98.

Revised Subsection 8-04.1, fifth paragraph, requiring plan submittal for interstate projects 14 weeks prior to letting date. Also, detailed the process for submitting interstate traffic control plans for FHWA approval.

In Subsection 8-04.2, revised many subsections to reflect new or revised MUTCD designations.

Changed Subsection 8-04.4 (4) (b) to 60 km/h (35 mph) posted or design speeds.

Revised figure references to the new or revised Section 8-04 figures.

**Figures 8-04.1 through 21.** New or revision date changed to 7-1-98.

These figures are a result of the Work Zone Standards Quality Circle (WZSQC). Though these figures were issued to participants of the "Design and Operation of Work Zone Traffic Control" classes given in Kansas City and St. Louis, they were never properly implemented into the Design Manual. Thus, these figures have been given the official date of 7-1-98 and are now part of the manual. The WZSQC is currently revising Section 8-04 for these figures to be associated with, but at this time, this section revision is not ready for implementation. The section will be released at a later date.

**2BS Sheets.** Effective date changed to 07-01-1998.

These sheets have been updated to correspond to Standard Plan 616.10 changes. The 2BS sheets are available in D-size and resurfacing plan size.

**Leveling Course Traffic Control Plan Special Sheets.** Effective date changed to 07-01-1998.

These four special sheets have been revised to incorporate changes made in the Section 8-04 figures. Please be sure to use these special sheets when preparing leveling course projects.

**Bridge Strengthening Traffic Control Plan Special Sheet.** Effective date changed to 07-01-1998.

This special sheet has been revised to incorporate changes made in the Section 8-04 figures. Please be sure to use this special sheet when preparing bridge strengthening projects.

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