

### **2.07.03.02 Safety Evaluation for 3R Projects**

3R Projects are now required to have a TSM&O Evaluation and are no longer required to have a separate safety evaluation.

The TSM&O (Transportation Systems Management and Operations) Evaluation, which is required on all projects, consists of three parts: a Safety Analysis, an Operations Analysis, and an ITS Analysis.

Refer to the new section 4.12 for details on the TSM&O Evaluation.

### **2.07.03.03 Field Inspection Review/Final Office Review (FIR/FOR) for 3R Projects**

FIR and FOR meetings shall be conducted in accordance with the procedures outlined in Sections 2.17 and 2.28.

At the Field Inspection Review, the Resident Engineer shall identify any exceptions to minimum design standards for 3R projects, and record those on the Form 463a when a variance is required, including a safety letter.

### **2.07.03.04 Safety Issues Related to Geometric Design Criteria**

The designer will adhere to the following procedures for designing and documenting the 13 geometric design criteria if a safety evaluation is not done. (Design Standards, Boxes 3 and 4 of CDOT Form 463 and CDOT Form 1327). For definitions of the 13 geometric design criteria, see the [CDOT Roadway Design Guide](#). For Freeway and Interstate 3R projects, full AASHTO standards apply. For the purposes of these procedures, Freeways are arterial highways with full control of access (for further information see AASHTO's *A Policy on Geometric Design of Highways and Streets* and the CDOT Transportation Data Set [http://www.dot.state.co.us/App\\_DTD\\_DataAccess/index.cfm](http://www.dot.state.co.us/App_DTD_DataAccess/index.cfm) ). For all other 3R projects, the 3R standards are intended to provide reduced limits in design. However, these

lesser standards should not be used automatically, but only if higher values are not possible, practical, or cost effective (See Section on 3R standards in the [CDOT Roadway Design Guide](#) for these standards).

The project team should address all documented safety issues identified through the Safety Evaluation, DSR, FIR, and FOR processes. Existing roadway design features may be retained where they are performing in a satisfactory manner with regard to accident history. The proposed design should not worsen an existing condition (guardrail height, edge drop-off, drainage, etc.). Safety issues identified as being related to any of the 13 geometric design criteria will be addressed in the design process. Only those geometric design criteria directly related to the identified safety issue need to be addressed. Refer to the “Process for Addressing Safety Requirements on 3R Projects” flowchart (Figure 2-1) for guidance.

If a geometric design criterion is identified as being related to accident causality, then the designer will either bring this design element up to the relevant standard, or will complete a design variance according to the procedures described in Section 2.05 Design Exception (Variance) (Form 464) and the process flowchart (Figure 2-1). Design variances for Interstate projects require FHWA approval.

All existing guardrail, bridge rail, and transitions not meeting NCHRP 230 and end and median terminals not meeting NCHRP 350 shall be upgraded to meet NCHRP 350 requirements. End terminals and cable guardrail terminals must be upgraded to NCHRP 350. See the AASHTO Roadside Design Guide and Sections 2.09 and 5.12 of the this manual for additional information. For assistance contact the Standards and Specifications Unit and Staff Bridge.

The Resident Engineer may implement safety improvements not specifically identified in the Safety Evaluation, DSR, FIR, and FOR if funding and special circumstances exist and written approval is obtained from the Program Engineer.

#### **2.07.03.05 Safety Issues Not Related to One of the 13 Geometric Design Criteria**

Safety mitigation recommendations identified through the Safety Evaluation, DSR, FIR, and FOR processes that are not related to one of the 13 geometric design criteria should be incorporated into the plans. If the decision is made not to implement recommendations for improvement, this decision should be documented in the meeting minutes or explained in a design decision letter.