

CHAPTER 3: PRELIMINARY DESIGN

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3.1 GENERAL

The primary purpose for developing preliminary pavement marking sketches is to ensure lane continuity and develop cost estimates. Early development of the preliminary pavement marking sketches will help ensure proper development of the sign design, traffic signal design and roadway geometric design.

3.2 DEVELOPING PRELIMINARY SKETCHES

Preliminary pavement marking sketches support the development of the traffic control device designs for signs and traffic signals. It can also reveal geometric discrepancies that may otherwise appear to be properly designed.

The sketches only need to illustrate the lane line layout and may not be needed for the entire project. The level of effort in preparing the preliminary pavement marking sketches should be kept to a minimum.

3.3 EVALUATING PROJECT LIMITS

A key area that can be overlooked during the early stages of design is the project limits. What may appear to be a good location for the project to terminate for the other design disciplines may not be adequate for traffic control devices. Inadequacies in the transition from the project's cross-section to the existing roadway cross-section will be revealed when the preliminary pavement marking and sign designs are developed at the project limits. Ensuring proper transitions at the project limits also includes all intersection side streets for primary and secondary road projects. Proper evaluation at the project limits will eliminate the need for obtaining additional right of way at the late stages of design or accepting less than ideal design conditions.

3.4 SUPPORTING THE PRELIMINARY SIGN DESIGN

Preliminary pavement marking sketches and preliminary sign design should be developed concurrently when the road project involves complicated lane configuration design. The lane configurations can become difficult to evaluate without pavement marking sketches, when a combination of lane changes (lane drop or exit only lane, acceleration lane, deceleration lane, and lane reduction transition) is being designed within an interchange. Preparing the preliminary sign design requires a clear understanding of the lane configurations. An illustration of the importance of developing the pavement marking sketches for the preliminary sign design follows:

Signs are posted to identify a lane change, such as a lane drop or exit only lane, acceleration lane, deceleration lane, and lane reduction transition. These signs must be located in accordance with the MUTCD, which provides sufficient time to alert drivers to the lane change ahead. The location of these signs is predicated on the location of the lane change. When a combination of lane drop or exit only lane, acceleration lane, deceleration lane, and lane reduction transition is proposed within a complex interchange, spacing between signs and maintaining clarity for the driver becomes a challenge. Developing pavement marking sketches

will clearly illustrate the lanes and transition areas. The sign designer can then determine whether adequate separation is provided between lane changes to properly sign. The objective for the sign design is to ensure that the signs for different lane changes do not overlap or create confusion for the driver.

3.5 SUPPORTING THE PRELIMINARY TRAFFIC SIGNAL DESIGN

Developing a preliminary traffic signal design involves coordination between the pavement marking design, signal design and road design. Locating the crosswalk is the first step in the traffic signal design process. The stop bars, traffic signal poles, and curb ramps are all based on the location of the crosswalk. Therefore, coordination between the three design disciplines is necessary to clearly establish the best location for the crosswalk. In the event the crosswalk location has to be adjusted during the design phase, all three design disciplines must be informed so that their design can reflect the revised location and adjustments to each design plan can be made. Detailed instructions for locating curb ramps and crosswalks are provided in the [Instructional and Informational Memorandum IIM-LD-55.7](#).