

LETTERHEAD: FHWA  
03/02/87

Mr. Henry Gray, Director  
Arkansas State Highway and  
Transportation Department  
Little Rock, Arkansas

Dear Mr. Gray:

We have reviewed the information and supporting documentation contained in your February 9, 1987, letter regarding typical urban curbed roadway and bridge sections. The majority of the supporting data are applicable to rural roadway sections or urban expressways and freeways. In these cases, we wholeheartedly agree that a minimum 4-foot offset to any barrier or obstacle should be provided. In actual practice, 8 to 10-foot shoulders provide more than the minimum required offset to barriers.

The AASHTO Geometric Design Manual indicates that high speed designs should prevail for the above conditions. However, it also indicates that curbed sections are appropriate in urban type locations when the speeds are less than 50 mph (Green Book, pg. 372). It is precisely the design of these low and intermediate speed urban curbed sections that is in question. Therefore, any reference to the AASHTO design specifications must be in the context of urban arterials, collectors, and streets rather than rural sections or freeways.

Your letter used the term "raised shoulder." We are unable to find any reference in AASHTP to "raised shoulders." Shoulders, when appropriate, are flush with the roadway section.

Your letter also referenced the AASHTO Guide for Selecting, Locating, and Designing Traffic Barriers. Page 371 of the green book states: "The Guide should be used for freeways, rural arterials, and high-speed collectors." It does not propose that the Guide be used in the design of urban curbed sections. In referencing the AASHTO green book, in the context of designing an urban roadway section with curbs, page 525 states: "Barrier curbs 6-inches high or more adjacent to moving traffic lanes should be offset from 1 to 2-feet. Where there is combination curb and gutter construction, the gutter pan width (normally 1 to 2-feet) may be used as the offset distance.

The above references to the green book adequately defines when the use of a curbed urban roadway section is appropriate and the location of the curb from the travel lane. The major question now becomes: what type of section to provide on the bridge and where to place the bridge rails.

The green book and the AASHTO Standard Specification for Highway Bridges both agree that the same approach roadway section should be carried across the bridge. Section 2.3.1 of the AASHTO Bridge Specification states: "Where curbed roadway sections approach a structure, the same section shall be carried across the structure." Section 2.2.5 of the bridge specification addresses the question of where to place the bridge rail: "In the cases where a New Jersey type parapet or a curb is constructed on a bridge, particularly in urban areas that have curbs and gutters leading to a bridge, the same widths between curbs on the approach roadways will be maintained across the bridge structure." This same section also states that the maximum offset from the face of the curb is not to exceed 9-inches if a sidewalk is not warranted.

When sidewalks are warranted the green book indicates that they should be from 4 to 8-foot wide, except when they are placed adjacent to a curb, they should be 2-feet wider. This means a 6-foot sidewalk will be necessary in Arkansas because of your current sidewalk placement practices. Therefore, for low speed facilities (40 mph and less) we would recommend that the 6-foot sidewalk be extended across the bridge without a carrier between it and the travelway. Sidewalks on higher speed sections should be offset from the approach roadway curb and extended across bridges behind a traffic barrier.

In consideration of the above information, we do not agree that your proposed sections meet the AASHHTP bridge specifications and green book for urban curbed roadway sections. We therefore request that you adopt sections which meet AASHTO for future Federal-aid projects. In any case, the use of raised shoulders is considered unacceptable. We would be happy to meet and further discuss this matter at your convenience.

Sincerely yours.

R. G. Fairbrother  
Division Administrator