DATE: February 7, 1994

TO: Jim Siebels

FROM: A. J. Siccardi

SUBJECT: Bridge Rail

The requirements for bridge rails can be divided into two categories. The requirements for new bridge rails and the requirements for evaluating existing bridge rails. The evaluation of existing rails takes place on projects where the bridge rails do not otherwise need to be removed; e.g., safety/paving jobs.

The Department's policy for new bridge rails has remained unchanged since your 4/18/88 memorandum to the Region Engineers and Branch Heads. FHWA concurrence is documented in Larry Lutz's 1/20/87 and 5/1/87 memorandums to Mr. Clevenger. In summary, the policy is, the Department's FHWA approved bridge rails must be used for all new construction. New construction consists of new bridges and bridges being rehabilitated or widened in a manner that requires removal of the existing railing. The Department's approved rails are Bridge Rail Type 3, Type 4, Type 8, and Type 10 as defined by Staff Bridge's standard working drawings.

The policy for evaluating existing rails has remained unchanged since my 3/15/91 memorandum to the Region Engineers and Branch Heads. In summary, the policy is, bridge rails that meet or can be modified to meet the current AASHTO Standard Specifications for Highway Bridges may remain in place; otherwise, they must be replaced with one of the above FHWA approved rails if they fall within the limits of a federal aid project.

Before these requirements for new and existing rails were established, the design and selection of bridge rails was governed by the AASHTO Standard Specifications for Highway Bridges. The additional requirement for FHWA approved rails came from FHWA's objective to provide crash tested bridge rails. It is this objective that is paramount in many peoples minds, leading to some confusion when evaluating existing rails.

The Type 4 and Type 10 bridge rails are used for nearly all new construction on state highway projects. Of the four approved rails, these two offer the overall optimum solutions given safety, cost, maintenance, appearance, and guardrail compatibility (i.e., connection to roadway guardrail) issues.

Because of its 27" height, the Type 3 Bridge Rail has limited application on the state highway system (Type 4, 8, and 10 rails are 31" to 32" high). Given the Type 3's lower height and higher cost relative to the Type 10, we have elected to use the Type 10 for all new construction requiring a steel bridge rail on the state highway system.

The Type 8 has received limited use outside of Glenwood Canyon. It is used for new construction on urban jobs where its appearance is deemed desirable. Staff Bridge has not kept the standard working drawing of this rail up-to-date, but could readily resume doing so if needed.

My staff has been working since last December on providing detailed guidelines for evaluating existing rails. These guidelines will address each of the rail types that have been used in the past on the state highway system, and are still present on existing bridges, and will show whether the rails meet or, if suitable, can be modified to meet the current AASHTO Standard Specifications for Highway Bridges. The purpose is to reduce the time necessary to review and make recommendations on these rails, especially for safety/paving projects. It will also provide greater uniformity in the design decisions.

The policies and guidelines described here apply to federal aid projects and to projects in CDOT right-of-way. To my knowledge, local agency projects without federal funding and outside CDOT right-of-way are not required to follow these policies and guidelines; however, it would be good engineering practice for them to do so.

AJS/MAL/ld

cc: Gust Chocas
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