C9.4.3

Add a new last Paragraph as follows:

The superstructure capacity would be compromised if a future modification required removal of the appurtenance.

9.5.2 Service Limit States

Revise the 1st Paragraph as follows:

At service limit states, decks and deck systems shall be analyzed as fully elastic structures and shall be designed and detailed to satisfy the provisions of Sections 5, 6, 7, and 8. Deck slabs shall be designed for Class 2 exposure condition as specified in Article 5.7.3.4.

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Revise as follows:

9.7.1.1 Minimum Deck Thickness ~~Depth~~ and Cover

Unless approved by the Owner, the minimum thickness of the ~~depth of a~~ concrete deck, excluding any provision for grinding, grooving, and sacrificial surface, should conform to the deck design standards developed by the Owner ~~not be less than 7.0 in~~.

Deck reinforcement to be used in conjunction with the minimum deck thickness should also conform to the deck design standards developed by the Owner.

Minimum cover shall be in accordance with the provisions of Article 5.12.3

C9.7.1.1

Revise the 3rd Paragraph as follows:

The combinations of minimum concrete cover, concrete mix design and the need for protective coatings on reinforcement described in Article 5.12.3 are based on the results of monitoring bridges in California. ~~Minimum cover requirements are based on traditional concrete mixes and on the absence of protective coating on either the concrete or steel inside. A combination of special mix design, protective coatings, dry or moderate climate, and the absence of corrosion chemicals may justify a reduction of these requirements provided that the Owner approves~~.

9.7.1.4 Edge Support

Revise the 2nd Paragraph as follows:

Where the primary direction of the deck is transverse, ~~and/or the deck is composite with a structurally continuous concrete barrier,~~ no additional edge beam need be provided.

9.7.2.2 Application

Revise the 1st Paragraph as follows:

Empirical design of reinforced concrete decks may not be used ~~be used if the conditions set forth in Article 9.7.2.4 are satisfied~~.

C9.7.2.2

Add a new 1st paragraph as follows:

The durability of empirically designed decks has not yet been proven in high ADTT applications.

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9.8.3.6.2 Limit States

Revise the 5th Paragraph as follows:

For the fatigue limit state, the provisions of Article 6.6.1.2~~, Table 6.6.1.2.3-2,~~ shall apply for load-induced fatigue.

C9.8.3.6.2

Add the following before the 3rd Paragraph

Components and supporting elements of orthotropic steel decks, along with their connections, should be designed for infinite life using the Fatigue I load combination. Since most components of a bridge deck are subject to individual cycles from each passing axle, the number of applied cycles will generally exceed the number of cycles associated with the finite-life limits of most orthotropic deck details that are used. Connor and Fisher (*2006*) discuss a consistent approach that is recommended for calculating the stress range for fatigue design of welded rib-to-diaphragm connections in steel orthotropic bridge decks. For details on the diaphragm or web of orthotropic steel decks at the connection of the diaphragms and/or bulkheads to the longitudinal ribs, research suggests that the load factor for the Fatigue I load combination instead be taken as 2.25 (*Connor 2002*).

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9.8.3.7.4 Deck and Rib Details

Revise as follows:

Deck and rib splices shall either be welded or mechanically fastened by high-strength bolts using details as shown in ~~Table 6.6.1.2.3-2 and~~ Figure 1. Details whose fatigue resistance has been established through testing are also acceptable as permitted by the Owner. Ribs shall be run continuously through cutouts in the webs of floorbeams, as shown in Figure 1. The following fabrication details shall be required by the contract documents where identified in Figure 1:

a) No snipes (cutouts) in floorbeam web
b) Welds to be wrapped around
c) Grind smooth
d) 1.0 in. minimum if internal diaphragm not extended to the bottom of the rib (see commentary)
e) Combined fillet-groove welds may have to be used in cases where the required size of fillet welds ~~needed~~ to satisfy the fatigue resistance requirements ~~specified in Table 6.6.1.2.3-2, Case (10)~~ would be excessive, if used alone.

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REFERENCES

Add the following References:

Connor, R.J. 2002. "A Comparison of the In-service Response of an Orthotropic Steel Deck with Laboratory Studies and Design Assumptions." Ph.D. diss. Department of Civil Engineering, Lehigh University, Bethlehem, PA, May 2002.

Connor, R.J., and J.W. Fisher. 2006. "A Consistent Approach to Calculating Stresses for Fatigue Design of Welded Rib-to-Diaphragm Connections in Steel Orthotropic Bridge Decks." *Journal of Bridge Engineering*, American Society of Civil Engineers, Vol. 11, No. 5, September/October 2006.

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