



The following is Calderwood Engineering's response to VTrans comments regarding the DVEP proposal for Rockingham VT Rte 121 over the Saxtons River.

1. The original bridge design accounted for a future sidewalk in the widened shoulder. This load doesn't appear to be part of the DVEP. The future sidewalk loading must be included.
Design calculations have been modified to account for a future sidewalk and sidewalk loading, as have load rating calculations. (ie once sidewalk is added the load rating need not be modified as it is already reflected in the comps)
2. The original bridge design accounted for a future utility loading under the bridge. This load doesn't appear to be part of the DVEP. The future utility loading must be included.
Design calculations have been modified to account for a future utility loading, as have load rating calculations. (ie once utility is added the load rating need not be modified as it is already reflected in the comps)
3. The designs for multiple components of this bridge don't use the full temperature range identified in the Structures Manual and Integral Abutment Bridge Design Guide. The documents defines a temperature range of -30 to 120 for design. This revised temperature range may affect the design for bearings and piles.
Structures manual does allow the use of either procedure A or B for temperature range, however we have modified the design to account for the larger temperature range noted here.
4. The temperature range in which the steel beams must be set and integrated with the substructures shall be clearly identified on the DVEP plans.
The temperature range at which the steel beams must be set is as per the structures manual recommendations – thus is typical for bridges in Vermont – most integral abutment bridges do not have this stipulated on the planset.
5. Per the spec book, the bearing design shall be based on elastomeric material with a hardness of 50 on the Shore A scale.
The bearing is designed for construction with either a shore A durometer hardness of 50 or 60, we have modified the details to indicate the 50 material is desirable.
6. The bearing design shows a construction tolerance of 0.0005 radians. Should this value be 0.005 radians?
This has been revised to be 0.005 radians construction tolerance
7. Per Jeff Clark's comments, please make the appropriate revisions to the welding procedures for the piles and resubmit.
This has been addressed



8. The load rating must be completed in accordance with the Structures Manual and must include the structural shape that is being provided in construction (not necessarily the design shape).

The Load rating has been revised to accommodate the full design section and has been modified to include all the rating vehicles as shown in the Structures Manual.

9. VTrans has concerns with a steel structure where the load rating is controlled by shear and where the load rating is so close to 1. This leaves very little space for VTrans to analyze/allow special loads with tight wheel spacing in the future.

Once the load rating was modified to account for the full constructed section the shear does not control the load rating any longer. Also in order to provide some additional "cushion" a blank stiffener was added near the piers to provide some additional shear capacity, as shear is highest near the piers.

10. Per comments that were already sent, the pier diaphragm orientation will need to be revised.

Pier Diaphragm orientation has been revised and is clearly presented in the shop details shown.

11. Per comments that were already sent, we will need to see revised end of bridge details.

End of bridge details are as shown and as attached.

12. Why are the pile spaces at odd numbers? The center spacing exceeds the 10'-0" maximum defined by the Structures Manual.

Spacing of piling is to provide for lesser live load on the extreme pile locations. Power lines limit the piling locations at the extreme outer edges. The slight increase above the 10' minimum spacing should be a non consideration – abutment is designed to accommodate the passive pressure between either piling or girders as appropriate

Respectfully Submitted,

Eric T. Calderwood