

December 5, 2017

## Complicatedly Simple

*The Jasper County Rest Area*

Iowa is a traditional kind of place. While as up-to-date as the next person, Iowa folks like things the way they've been. When it came time to create a new rest area off westbound I-80 in Jasper County, the Iowa DOT looked back instead of forward.

Their goal was to give a nod to some of Iowa's agricultural history and the century farm scene by modeling the new structure on a traditional barn design. Many of those old barns have a line of clerestory windows high up in the roof, creating an open structure with lots of natural light. Of course, modern building and structural codes preclude building it like they used to and WHKS engineers were called upon to design a structure that imitated the old while providing all the stability and safety of the new.



The roof is supported by large 'glulam moment frames.' A moment frame is an elaborate beam. And 'glulam' beams are built up of a series of laminated layers of wood that are then glued together, hence the name. A beam constructed in this way can not only be curved and engineered to span long distances, its natural wood has a much more attractive appearance than painted steel. In this case, the beams are up to 36 inches deep and span up to 45 feet, creating a large, uninterrupted open feel in the rest area. The same look is repeated in the numerous, but much smaller picnic shelters that are scattered throughout the rest area site.

While the structure is far more complicated than that of a simple barn built in the 1800's, that complexity is necessary to achieve both the desired look and the structural integrity needed in the 21<sup>st</sup> Century.

In another 'simple-looking, but complex' structural maneuver, the engineers designed precast and pre-stressed hollow core concrete panels to support the first floor and outside patio area. It's an unusual application of this kind of structure but the need to maximize vertical clearance in the basement put a distinct limit on the depth of the beams.

The finished buildings in the rest area are beautiful, giving the appearance of simple structures from an older time. But sometimes you have to get complicated in order to achieve simplicity.

