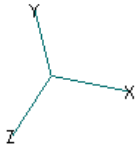
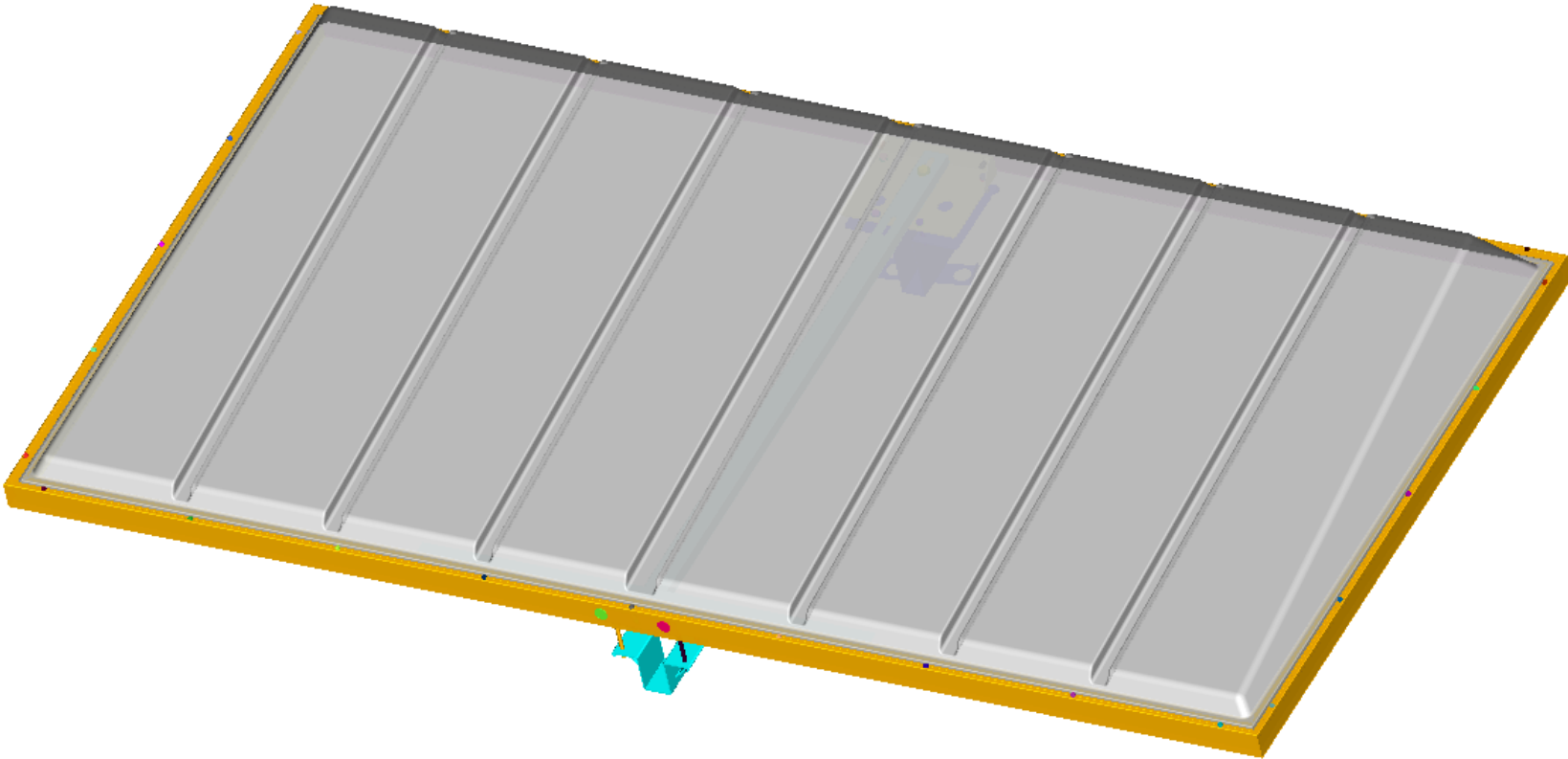
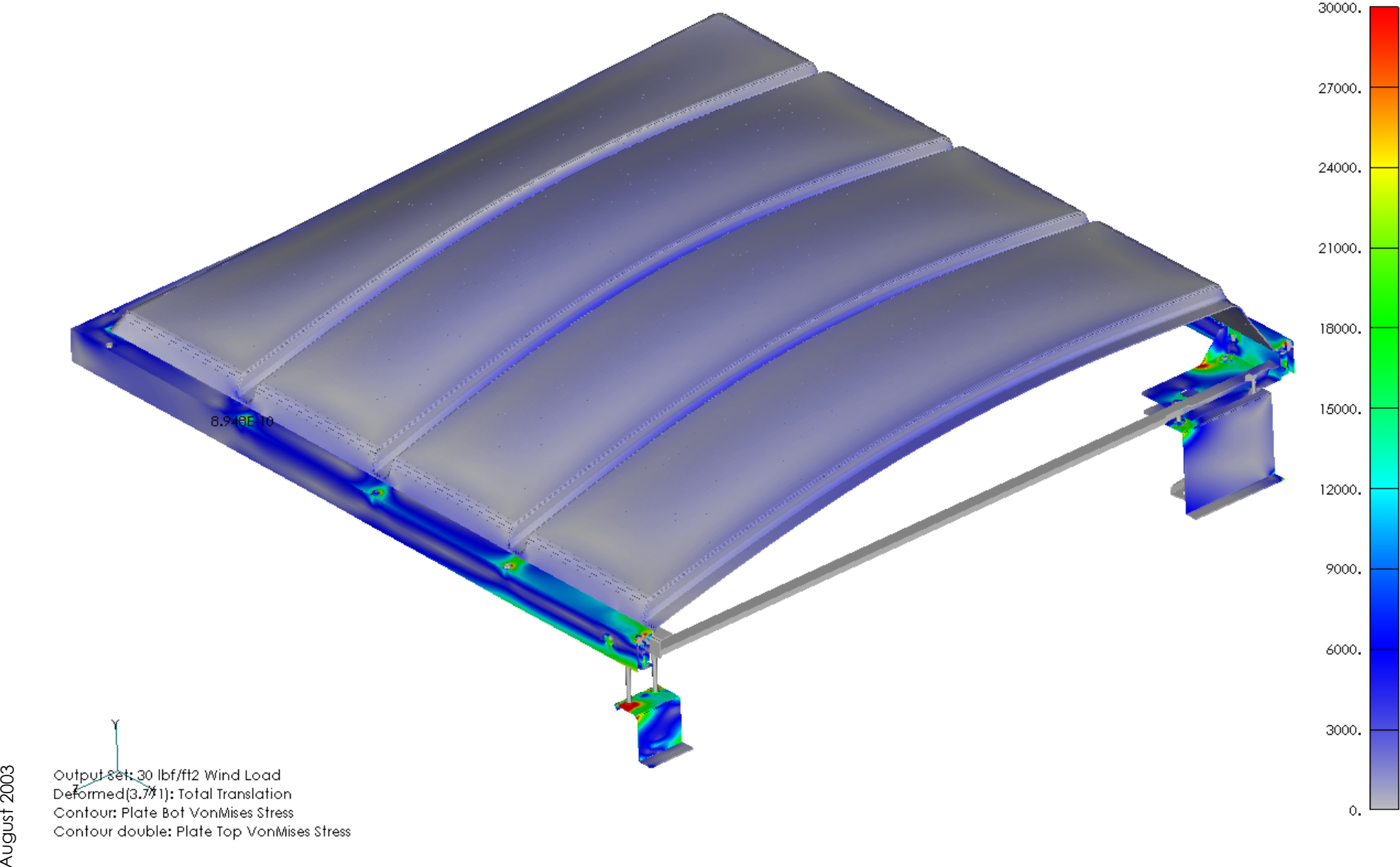


Davis Energy Group / National Energy Renewal Laboratory (NREL):  
Structural analysis modeling and optimization of a low-cost, plastic solar panel for the heating of water. FEA results were used to ensure the structural integrity of the panel under high wind loads. Modeling notes: stress-stiffening was incorporated into the model to more accurately predict the polycarbonate glazing's deflection and stress behavior.

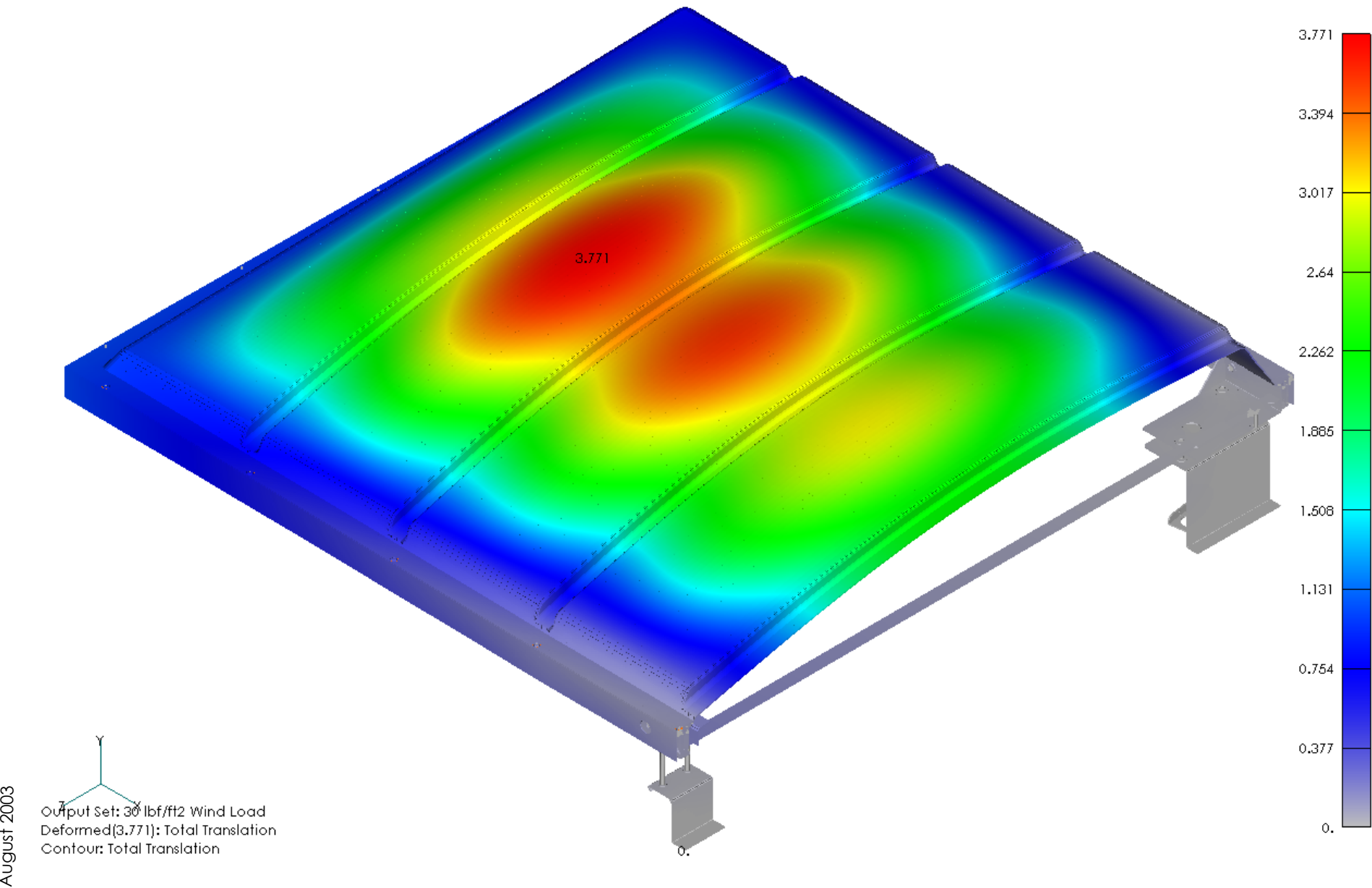


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Davis Energy Group (DEG) SunCache CAD geometry used for this analysis.



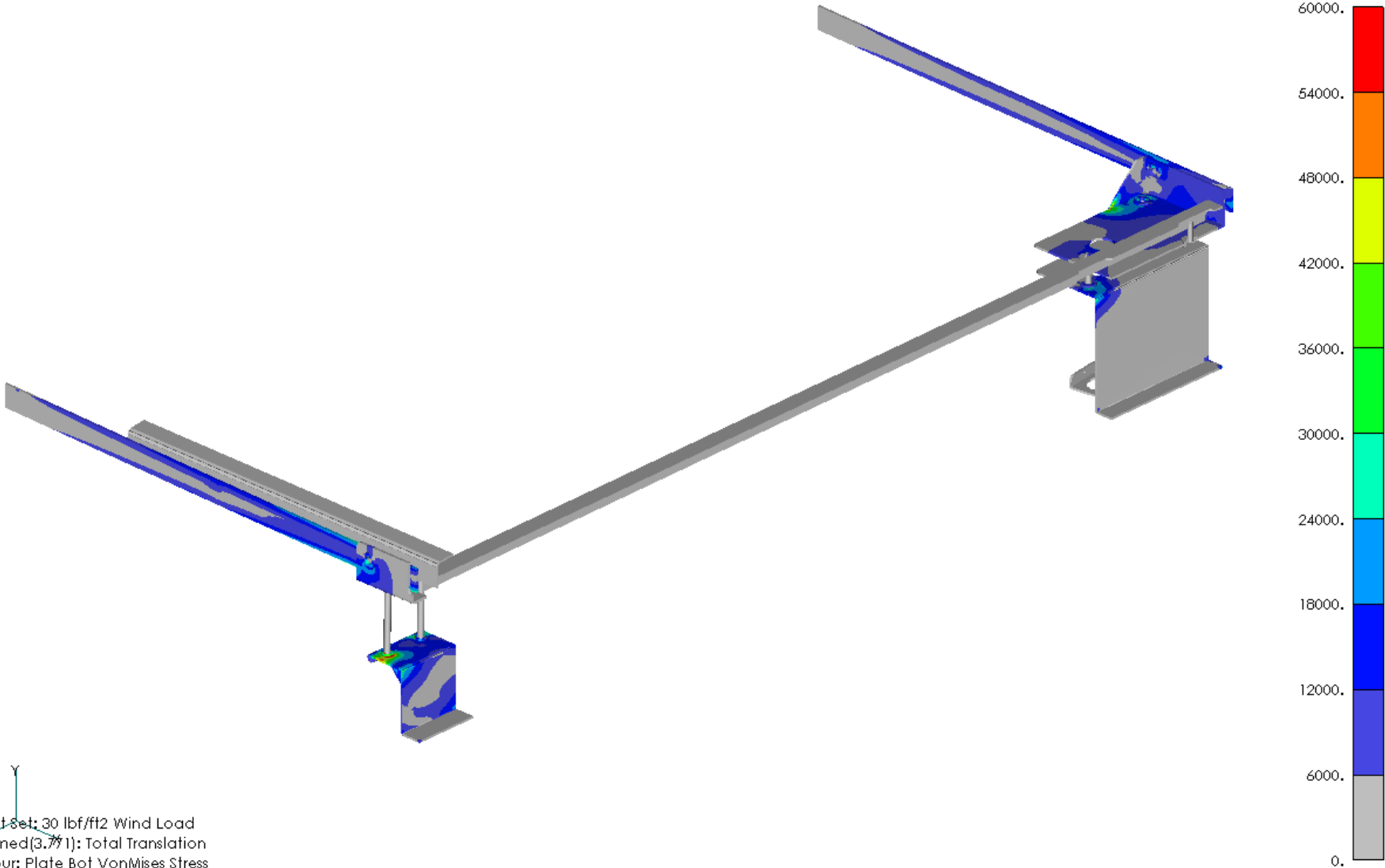
The von Mises stress is contoured over the structure. The stress legend is capped at 30,000 psi. Additional, more detailed structural information is given later in this report.



Peak deflection in the panel is 3.8 inches.

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Y  
Output Set: 30 lbf/ft2 Wind Load  
Deformed(3.771): Total Translation  
Contour: Plate Bot VonMises Stress  
Contour double: Plate Top VonMises Stress



The structural steel components all fall within the targeted stress level of 60,000 psi.