In analyzing Jeremiah’s design, the model came in as a solid part with 70 faces and 183 edges. The stainless steel bracket had a total volume of 0.00230 m3 and a total mass of 18.11kg. The part was discretized into 63410 nodes which generated 41751 elements. Quadratic geometry elements were selected because the imported geometry did not allow abaqus to apply a quadrahedron mesh and a finer mesh could be attained with this discretization than with other methods.

The face load was applied as a pressure across the entire top surface of the bracket. Abaqus automatically spread the load across the total area of the face. Validation for the face loading was performed using the total x-force reaction forces at the bolt holes and comparing the abaqus output to the moment generated from the distributed load. The torque loading was applied as a surface traction against the inner surface of the hole that the flag post is to sit in. Validation for this load was performed by again comparing the calculated reaction force of the bolt holes to the expected values from a moment taken about the center of the post mount.

