

CASE STUDY

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5,200 Cubic Foot Covered Hopper Design

Company Profile

A North American manufacturing company entering the railcar build industry

Business Challenge

The customer created a covered hopper railcar design and sought BNSF Logistics' expertise to perform a stress Finite Element Analysis (FEA) for submission to the Association of American Railroads. When it became clear that significant structural design changes would be needed to be AAR compliant, the customer requested a larger scope of work beyond FEA verification. Consequently, BNSF Logistics was tasked with delivering both a new design and the supporting structural analysis submission to AAR.

Solution

BNSF Logistics' engineers carefully reviewed the governing car requirements to produce a three gate covered hopper design capable of carrying a gross rail load of 286,000 lbs. that met all AAR structural load cases. Finite Element Analysis (FEA) methods were used to verify the design.

Process/Procedure

BNSF Logistics successfully completed the product design by fully understanding both the customer's needs and AAR's structural requirements for this type of railcar build.

- Worked closely with the customer to create a satisfying product design
- Performed FEA to meet AAR design requirements
- Completed the major design work and stress report AAR submission in 8 weeks
- Delivered the full drawing package 4 weeks after the AAR report submission

Results

- Created a new covered hopper design with a full drawing package
- Submitted an AAR compliant stress report
- Met and exceeded customer's expectations

