*FE Model Proposal*

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Scope of Work

An FE analysis will be performed for a three-dimensional carport structure located in San Diego, CA. The carport must be able to withstand environmental loading conditions such as wind and snow, as well as live load on the top of the carport. The carport should also meet minimum height and width requirements for vehicles to park underneath the carport. The carport will consist of several “T” shaped frames made of either wide flange hot-rolled steel or box section cold-formed steel. The purlins will be made of light-gauge cold-formed steel, and the deck to be supported will be made of corrugated sheet metal.

Dimensions/Layout

See attached sketches of plan and section views.

Beam/Shell/Plate Elements

The beam-column and purlin members of the carport will be modeled as beam elements, and the metal decking will be modeled as plate/shell elements.

Loads

The loads that will be applied to the [model] will include dead load, live load, wind load and snow load. The load combinations will be per ASD (Allowable Strength Design). A summary of the loads is as follows:

All loads per the 2013 Edition of the California Building Code (ASCE 7-10 is applicable)

DEADLOAD: Self-weight of structure

LIVE LOAD: 20 PSF (reducible)

WIND LOAD: Risk Category 1, Exposure D, 3-Sec Wind Gust = 100 MPH (Report will include specific CC and MWFRS wind pressures)

SNOW LOAD: 5 PSF (elevation greater than 1800’)

Material Properties

BEAM-COLUMN: Wide-Flange Hot-Rolled Steel, A992 (Fy = 50 KSI) or Box-Beam-Column Cold-Formed Light-Gauge Steel, A446 (Fy = 75 KSI)

PURLINS: CEE Shape (ribbed) Cold-Formed Light-Gauge Steel, A446 (Fy = 75 KSI)

METAL DECK: Corrugated Light Gauge Metal, A446 (Fy = 80 KSI)