

# Dynamic Structural Analysis Suite - DSAS

## Introduction

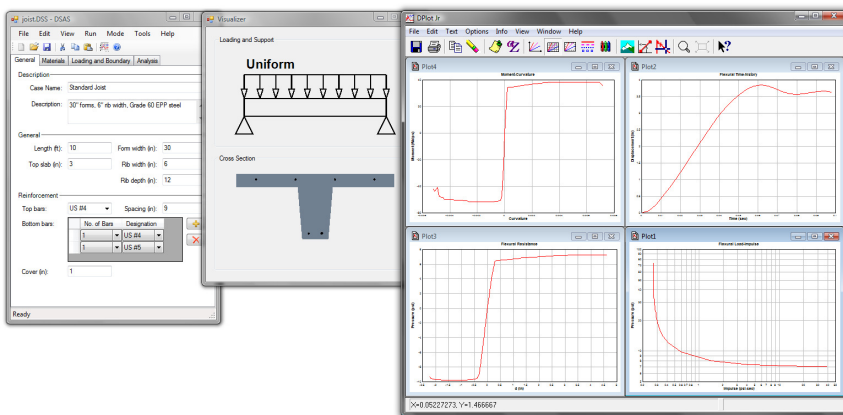
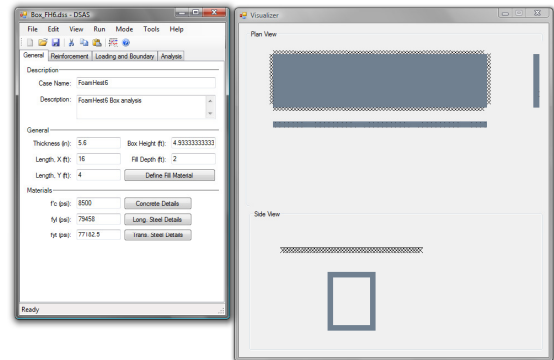
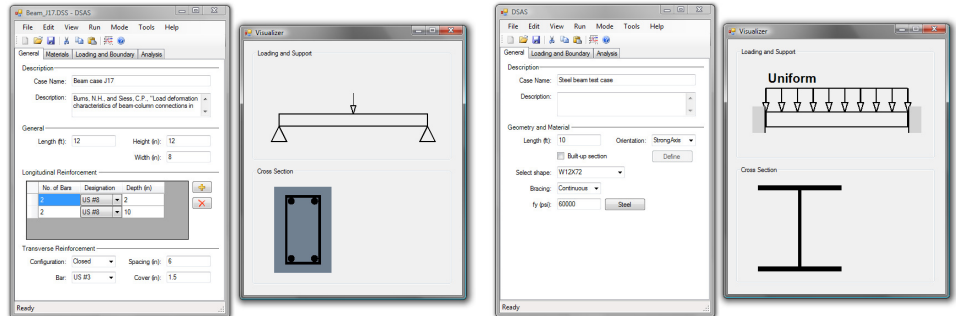
DSAS is a multifunctional structural analysis and assessment program capable of modeling efficiently and expediently the behavior of a wide range of structural components under extreme dynamic loading conditions.

## Components

- Reinforced concrete beams and columns with rectangular or round cross-sections
- Standard reinforced concrete joists
- Steel beams and columns for various steel shapes
- Masonry block (CMU) and multi-wythe masonry brick walls
- Reinforced concrete slabs
- Reinforced concrete buried boxes
- Wood panels
- Simple and advanced mass damper systems

## Resistance Functions

- The resistance function is generated automatically by the program based on the geometric and material properties, boundary conditions, and loading function utilizing a nonlinear displacement controlled solution procedure.
- The user also has the option to provide a custom resistance curve, instead of having DSAS generate, it using the simple or advanced user-defined component modules.



## Results

The numerical results of the analysis are presented in spreadsheets. The users can either copy and paste the data tables into a spreadsheet program of their choosing or plot them in DPlot or DPlot Jr. The output includes :

- Time-history analysis for each DOF : time vs. displacement, plastic displacement, velocity, acceleration, load, resistance, support reactions, etc.
- Resistance function for each DOF: displacement vs. load, equivalent resistance, equivalent mass, etc.
- Moment-curvature relationship (if applicable).
- Shear slip-shear force relationship (if applicable).

## Pressure-Impulse Diagrams

DSAS can derive the pressure-impulse diagram of any component under a prescribed load-time history. If the component has more than one DOF (e.g. flexural and direct shear), the diagram is plotted for each DOF. By adjusting the failure criteria, a family of pressure-impulse diagrams can be generated for different damage levels for all structural responses.

