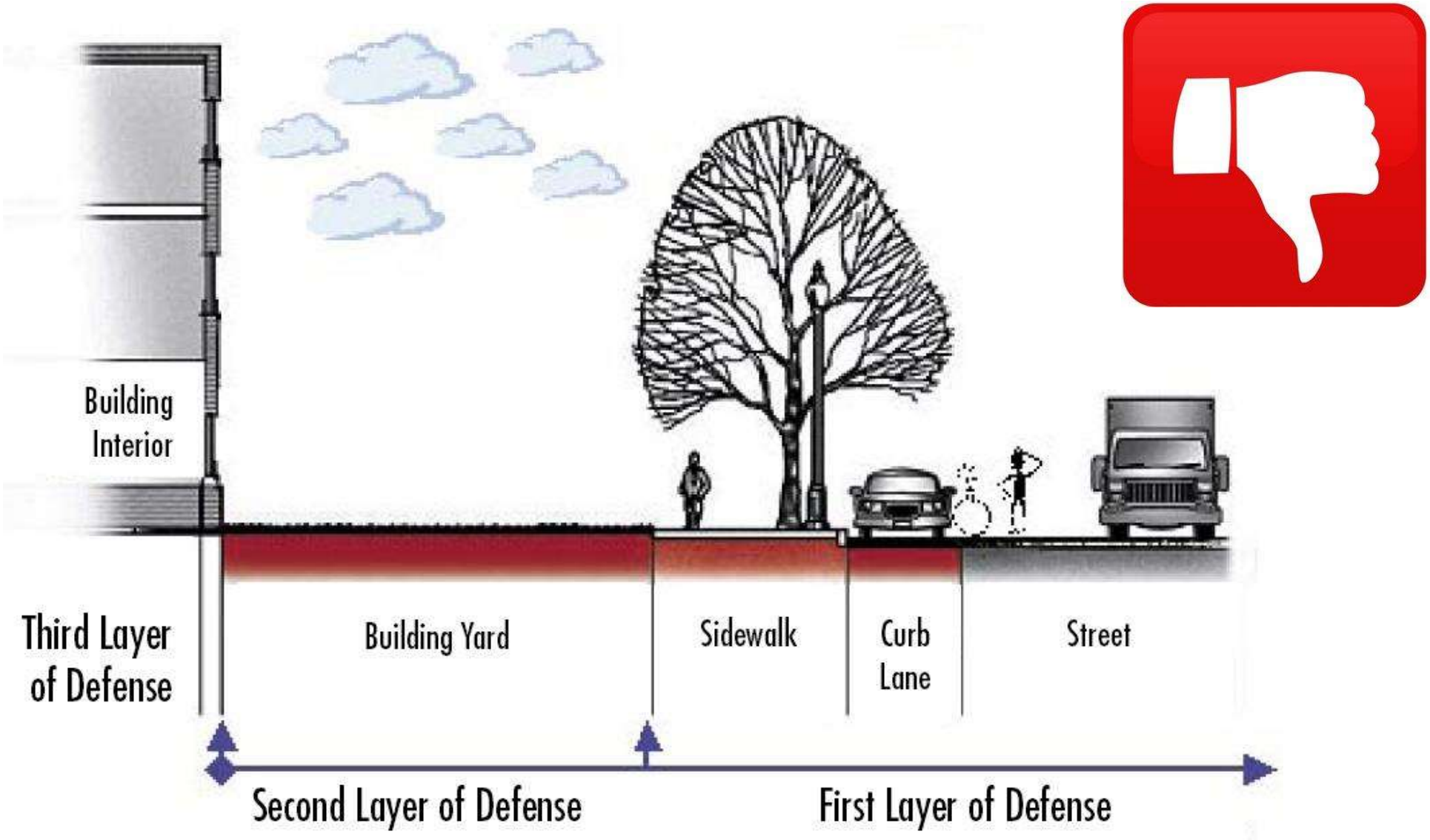
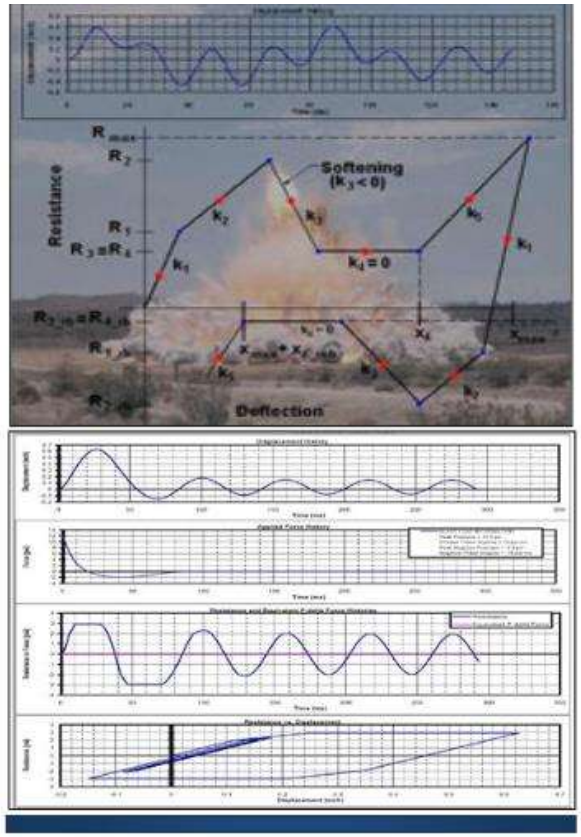

Building
Interior
Third Layer
of Defense
Building Yard
Sidewalk
Curb
Lane
Street
Second Layer of Defense
First Layer of Defense

# SBEDS - Single-degree-of-freedom Blast Effects Design Spreadsheet

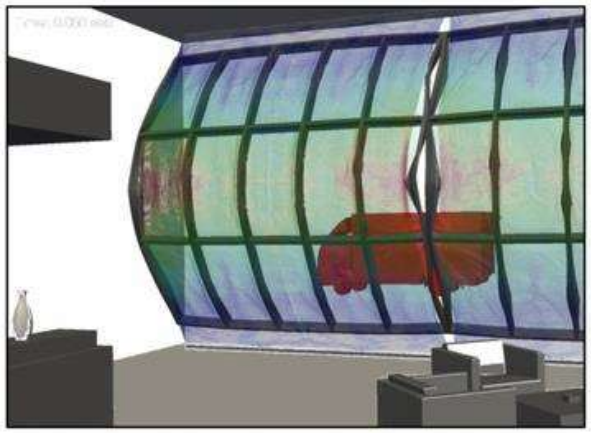


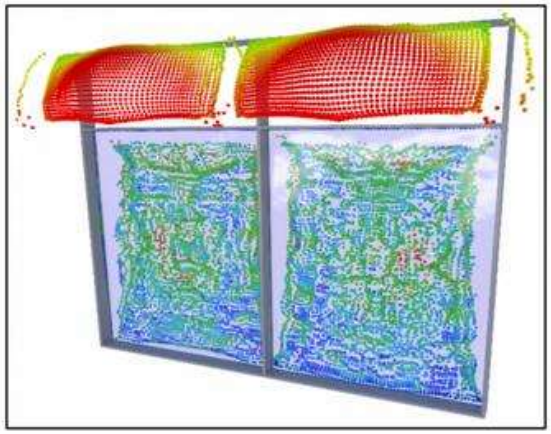

**POINT OF CONTACT**

U.S. Army Corps of Engineers
Protective Design Center

- Excel-based tool
- Suitable for design of structural components subjected to airblast using single-degree-of-freedom (SDOF) methodology
- It can generate Pressure-impulse (P-i) curves of the component object of analysis, for use in assessment or preliminary design
- The component library includes masonry, concrete, steel, aluminum, cold-formed, and wood members
- The user can select standard component shapes and materials using drop-down menus, or can manually input the component section and material properties
- Developed by Baker Engineering and Risk Consultants for the U.S. Army Corp of Engineers Protective Design Center (USACE, 2009)

# SBEDS-W - Single-Degree-of-Freedom Blast Effects Design Spreadsheets **for Windows**

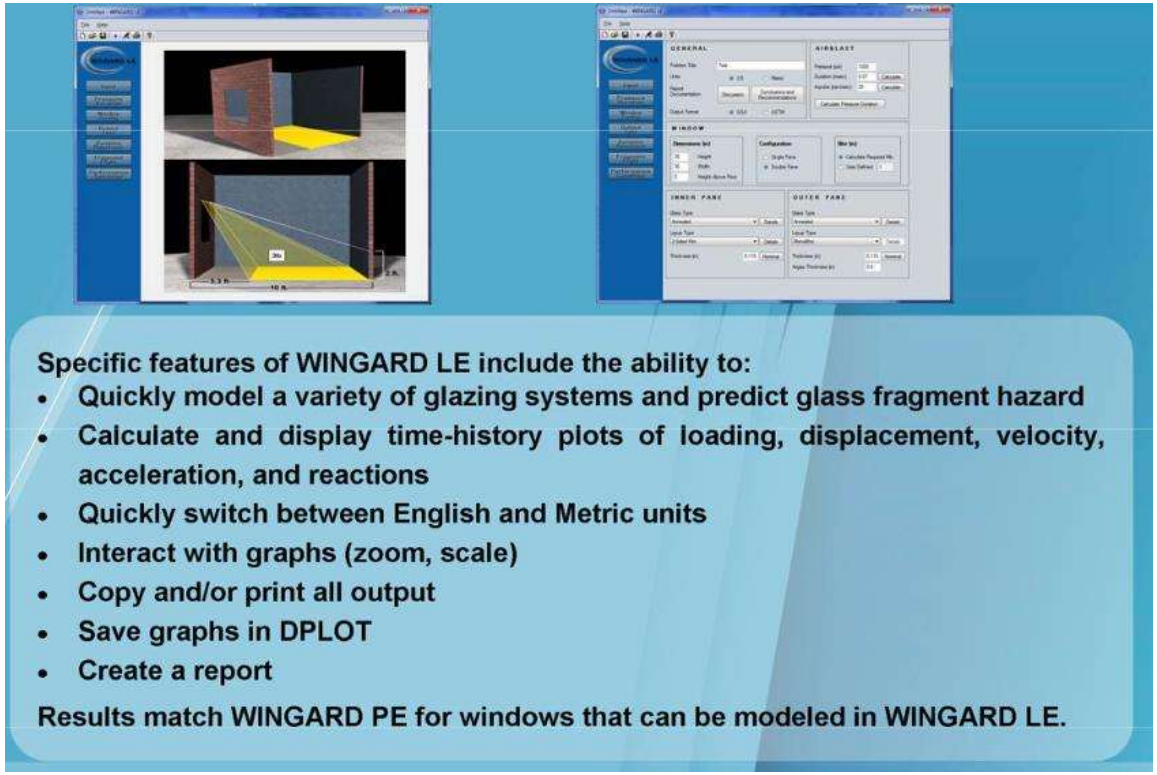




- Excel-based tool
- Suitable for design of structural components subjected to airblast using single-degree-of-freedom (SDOF) methodology
- Enables the user to choose different glazing types or framing components with readily available parameters related to material properties, geometry, and failure probability models for glazing
- Users can also choose prescribed mullion shapes or directly enter user-defined properties for geometry, accounting for thermal breaks as required
- A two-degree-of-freedom approach is used to model insulated glass units (IGUs)

https://www.protection-consultants.com/case-studies/specialty-structural-engineer-facade-design/

# WINGARD - Window Glazing Analysis Response and Design




WINGARD LE
LIMITED EDITION

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K. Spiller (2015). "Response of Annealed Glass Windows to Blast Loads". Master of Applied Science, University of Toronto

M. Parrat (2016). "Behaviour of Multi-Layered Laminated Glass Under Blast Loading". Master of Applied Science, University of Toronto

https://tspace.library.utoronto.ca/bitstream/1807/74456/3/Spiller_Kevin_T_201511_MAS_thesis.pdf