



# IES VisualAnalysis Case Study

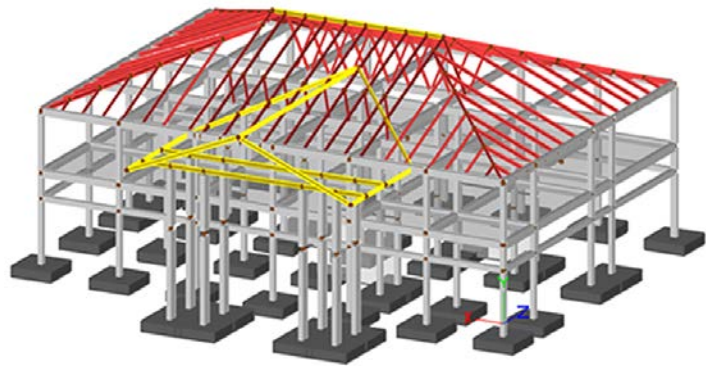
*featuring Jordan Kull – Engineer at PRM*



PR Matthewson & Associates Engineers, Inc. (PRM) provides consulting and structural engineering services for architects developing new projects or rehabilitating old ones. “We produce the structural section of the ‘blueprints’ you might find at a large industrial or commercial job site,” says Jordan Kull,

Staff Engineer at PRM, based in Huntsville, AL. “The majority of our large projects are structural steel, including I-beam, exposed bar joists and decking, and light gauge steel studs. Some of our structures use both concrete beams and columns. We also do some wood design, glulam beams and heavy timber.”

Founded in 2011, PRM has been using the same engineering software since opening its doors - [VisualAnalysis](#) by IES, Inc. VisualAnalysis can be used for everyday projects, as well as unusual or large projects. It can analyze reactions, displacements, forces and stresses in a variety of materials, including steel, concrete, wood, cold-formed and aluminum.



“I use VisualAnalysis because it’s versatile and has design capabilities for structural steel,” Kull states. “It comes with a complete library of materials so you can design to the specifications required for each job, right down to the species of wood of the 2x4s. When choosing an ‘off the shelf’ section of structural steel, VisualAnalysis knows what the default grade of steel should be. If necessary, it’s simple to change the grade.”

VisualAnalysis enables engineers to model practically any material. Extensive libraries are included and customizable. The program also features elastic spring supports as well as tension-only/compression-only members or spring-supports.

“Spring-support is a big one,” says Kull. “When working by hand it becomes cumbersome to account for stresses induced in structural members due to settling (of a foundation), shrinkage

of members (due to temperature) or deflections. However, VisualAnalysis allows you to use spring supports that provide reactions (or stress) proportional to deflections.”

With VisualAnalysis, member elements have different types of displacement (or deflection or drift) reports to satisfy various needs. And, some tables automatically filter out members with certain orientations, like a Beam Deflections table or Column Drift Results table.

“Deflections and drifts can easily be calculated by hand for simple supported beams, as can any single beam in a structure,” Kull says. “However, most beams are supported by girders that bear on columns supported by footings. VisualAnalysis will calculate the total deflection a beam will see due to the drifting and deflecting of all the members supporting the beam being analyzed. This is a huge time saver!”

**VisualAnalysis improves efficiency and productivity, while saving money and time.** It also

provides immediate error-checking of all data input to prevent minor errors from becoming major mistakes.

“Another great feature of the software are the design size constraints,” declares Kull. “When it is designing a beam - searching the database for a shape that will

satisfy all loading conditions - it can impose flange width and beam depth limits. So, it will never select beams that will not fit within the wall space or floor space.”

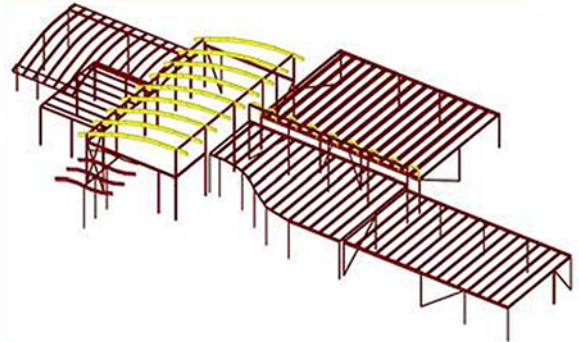
Not every project is a rectangular cookie-cutter building. Many require customization of shapes and materials, and high quality reports that show plan-checkers the details they need to validate the work.

VisualAnalysis integrates well with spread sheets, BIM (Building Information Modeling) tools and CAD programs. It is flexible enough so users can easily build, create, improvise and solve a very wide range of problems.

“We have designed tilt-up panels, where a concrete slab is poured on the ground then lifted by a crane to be positioned as an exterior wall,” Kull states. “We have also designed multi-story concrete structures and steel rocket test stands.”

Kull points out that VisualAnalysis is capable of importing .dxf files, converting lines to members, intersections and end lines to nodes. With this capability, the range of variables that

[VisualAnalysis](#) can analyze is limitless.



“We design structures of steel, concrete and wood all in one model,” says Kull. “VisualAnalysis even analyzes and designs composite beams - steel and concrete. We’ve used VisualAnalysis for finite element analysis, to calculate stress distribution in concrete slabs before and after an industrial equipment upgrade.”

According to Kull, VisualAnalysis played a vital role in the analysis of an ICC 500-2008 Storm Shelter. ICC 500 requires a third-party structural engineer to peer review any proposed design for storm shelters, to ensure all requirements are met. VisualAnalysis allowed PRM to model the concrete structure wall loaded with extreme gale force winds.

“VisualAnalysis is capable of calculating wind IBC (International Building Code) loads,” Kull states. “For those who have never calculated these loads by hand, the process is tiresome and tedious. Fortunately, VisualAnalysis does the busy work for you and allows you to place loads by simply defining a surface as a windward or leeward wall or roof.”

Kull emphasizes that, **“Compared to most engineering software VisualAnalysis is very easy to learn and use.** CAD programs and most 3D modeling software tend to require formal classes before a user can be productive with them. I watched a total of three videos from the IES online library and was able to begin modeling basic structures in 3D.”

Most VisualAnalysis users are able to work productively within hours of installing the software. In the event assistance is needed, free technical support is available.

IES tools are designed to keep engineers focused on their tasks rather than trying to learn a new system. And, the software firm seems to have succeeded, because over 3000 engineers (and related professionals) use the nine different products and just one part-time support person at IES can handle all their questions in about two hours a day.

For anyone on the fence, Kull has the following advice. “Just go for it. The customer service is very responsive. If you have any questions with a model or difficulties with the analysis, you can email them the file and within a timely fashion they will troubleshoot the file and shoot you an email with solutions.”

**IES believes software should stay out of the engineer’s way.** Engineering is difficult enough without having to jump through 'software hoops' or struggle with 'black box' errors.

Offered at three licensing levels and prices, VisualAnalysis can match any needs and budget.

“We are very satisfied with the quality of service VisualAnalysis renders for the ticket price,” says Kull. “It offers a great bang for the buck. Our management decided to keep using VisualAnalysis due to its great value.”