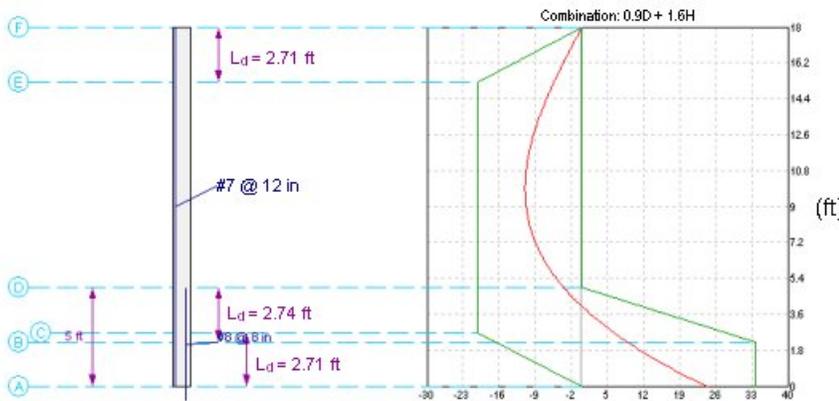




## Decipher Stem Graphs in QuickRWall

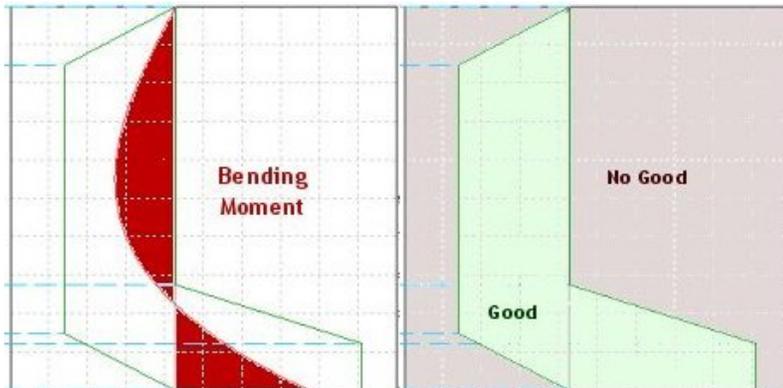
*Make your life easier by leveraging the tool!*

IES QuickRWall is the most comprehensive tool on the market for modeling retaining walls, basement walls, and other propped, cantilevered, multi-stem concrete and masonry systems. In this article we highlight the stem moment graph, and offer a more thorough explanation of its benefits for the designer. QuickRWall's unique method of graphing wall capacity along with the applied moment leads to several immediate benefits:



### Accurate Check Points

In less than a second you can glance at the graph and confirm that the **red line (applied moment)** lies within the shaded **green zone (capacity)** along the entire length of the wall. This is in contrast to viewing numbers calculated at a series of evenly spaced locations and hoping that the most critical location hasn't occurred between them. You can quickly be assured that the wall stem is adequate over its entire length.



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## VA 5.5 Shapes & Materials

*3 ways to define members*

Most IES customers using [VisualAnalysis 5.5](#) have no problem defining member properties and understanding the options available, but if you are new to VisualAnalysis, or wanting to further leverage the power of this tool, you might want to investigate this new ["educational" tutorial](#).

In this tutorial we show how there are three ways to define member shape properties:

- Database Selections
- Standard Parametric
- Custom Blobs

We show how and why you might use each. We also show how to create a new material type from within VisualAnalysis.

## Quickly Identify Over-design

The graph gives a clear visual representation of the amount of extra capacity and where it occurs in the wall. This can be helpful in determining whether to scale back the design, and where to do so - for example you might go to a lesser bar size or thickness just for the top half of the wall.

## Effects Of Bar Development

The moment capacity of the wall at any given location will vary based on to what extent the bars are developed. This is illustrated on the graph by the way that the capacity changes linearly from the free end of a set of bars to the point where they become fully developed.

$$\frac{L_d}{d_b} = \frac{3}{40} \frac{f_y}{\text{sqrt}(f_c)} \frac{\alpha\beta\gamma\lambda}{\left[\frac{c + K_{tr}}{d_b}\right]} = \frac{3}{40} \frac{60000 \text{ psi}}{\text{sqrt}(3000 \text{ psi})} \frac{(1.0)(1.0)(1.0)(1.0)}{2.50} = 32.86$$

where:  $\frac{c + K_{tr}}{d_b} = \frac{2.5 \text{ in} + 0}{1 \text{ in}} = 2.50 \leq 2.5$

## Positive and Negative Capacities

Depending on bar placement, a given location on the wall can have positive capacity, negative capacity, or both. The graph correctly reflects this.

## Bar Cutoff Requirements

A major item of interest is whether or not bars are cut off in a tension zone. Special code provisions apply in this case. When viewing results and verifying that the program has handled this condition properly it can be helpful to look at this graph - a dashed line extends horizontally from the location of bar cutoff to the corresponding location on the moment graph, making it easy to tell (from the sign of the moment) whether the bars are in tension at that location, and whether it is possible to move the cutoff point slightly to avoid being in the tension zone.

## Capacity Point Calculations Displayed

The graph of wall capacity is linear between certain points, such as where bars are cut off or become developed and where the wall thickness changes. Each such point is labeled with a letter (A, B, C...) and full calculations for each such point are displayed and referenced by this letter below the graph. This allows you to personally verify that the points on the graph are calculated correctly.

## Conclusions

In summary, the unique stem moment graph in QuickRWall allows you to benefit from the time savings of having the software do the work while also maintaining the same feel for the design and confidence in the results as if you'd done it all by hand.

## Updates, Arrrgh!

### Ever have a pirate's attitude?

My son is fond of retelling pirate jokes lately:

**Where does a pirate go for fast food? ...Arrrrby's** (You really have to make a 'Pirate Voice' to get it!)

**Why does the pirate go on vacation? ...To get some Arrrr and Arrrr!**

Looking at the [AnalysisGroup Change Log](#), you can imagine the developers were having quite a few Arrrgh! moments as the bug reports were coming in.

In any case, AnalysisGroup 3.00.0008 is a much better product today than it was last month, so be sure to [get the updates](#) if you use this tool!

Also released this month was VisualAnalysis 5.50.0019.

**Why did the pirate engineer fall off the ship?....the Arrrchitect moved the plank!**

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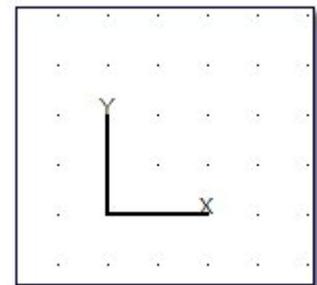
## VA6: Sketch Grids

### 3D Modeling Just Got Easier

[Last month](#) we listed a number of features coming in VisualAnalysis 6, or if it takes us long enough, VisualAnalysis 7. One of those items was simply this:

**Advanced Sketch Grid Types** (lines, cubes, irregular spacing, etc.)

This does not really do the feature justice, because it is really a whole new way of handling the old "Edit Grid" used since VisualAnalysis 1.0 was released.



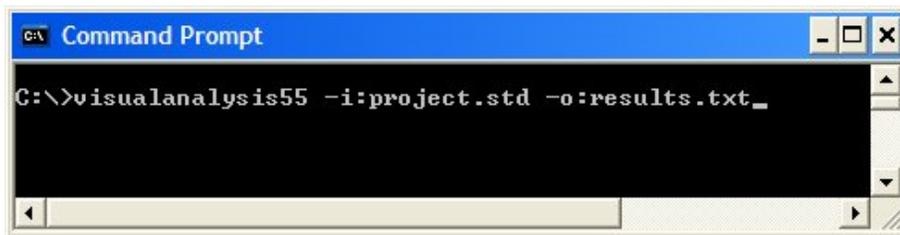
The new implementation can really do a whole lot more to help you create models quickly and easily by helping you layout the locations of

## Batch Processing Anyone?

### *An experiment in old-style automation*

There have been low-level rumblings in the marketplace of a need for batch processing. After all, automated processes, chained together to accomplish bigger things (the traditional UNIX way of working) can be quite effective as well as simple to set up.

VisualAnalysis includes a powerful, sophisticated analysis "engine" that could be leveraged for many tasks beyond that for which VisualAnalysis was intended, or is likely to go. So the engineers at IES are experimenting with a scriptable batch process implementation of VisualAnalysis. The implementation allows you to "feed" VisualAnalysis an input file and simply spit out an analysis results report. The tool could have potential for automating jobs through scripts, spreadsheets, and other tools you may have lying about or were hoping to create.



```
C:\>visualanalysis55 -i:project.std -o:results.txt_
```

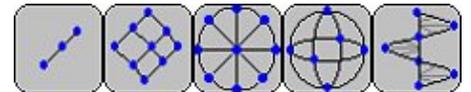
At present we can read POL or STAAD (.STD) input files and perform a static, linear analysis using the features available in those file formats, and generate a tab-delimited text report. The STAAD input is severely limited, but we expect to change that if there is demand for this kind of tool.

If you have an interest in batch processing with VisualAnalysis, please let us know what you would like to do with it. We will have an early test version available soon to those who request it from [IES Technical Support](#).

### VA6: Sketch Grids...continued

future members and nodes in a 3D view. Here is an expanded list:

- Multiple grids can be used.
- Grids are saved with the project
- Grids may be toggled on/off
- Additional Grid Types:



By using multiple grids you can layout floor plans within a grid and draw columns between two grids to connect the floors, for example.

In addition to this, the grids are displayed in a much improved way graphically so that you can more easily see where they are located.

This feature is still in progress, so we may have more to say about it before we release the beta test later this Fall.