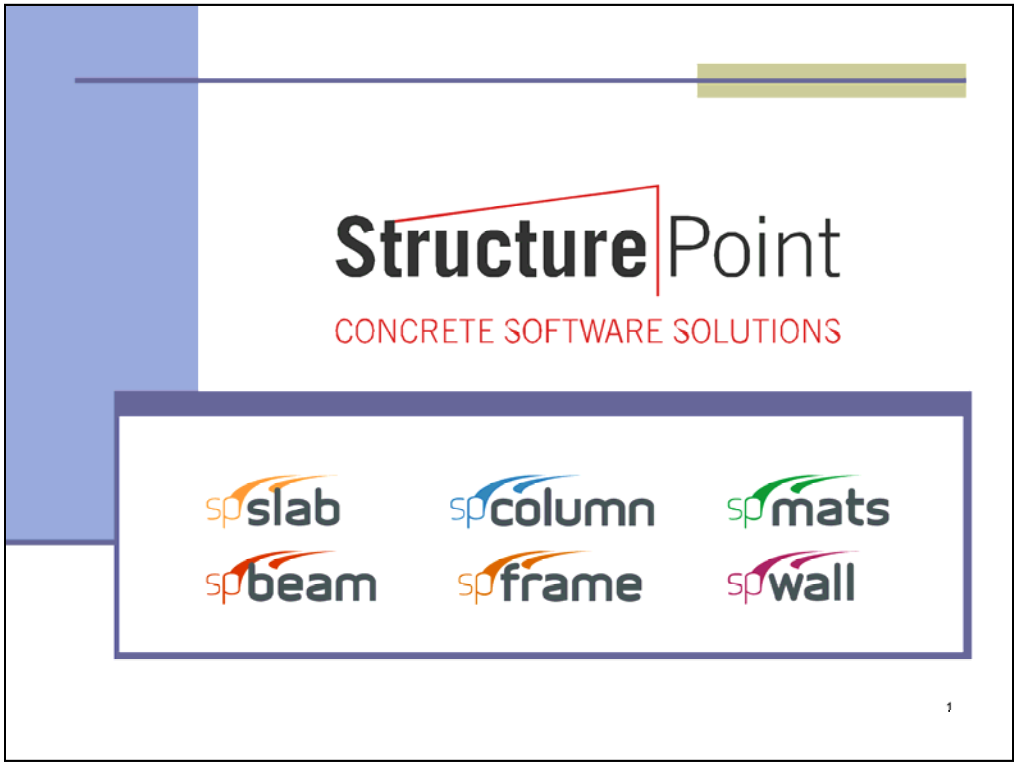
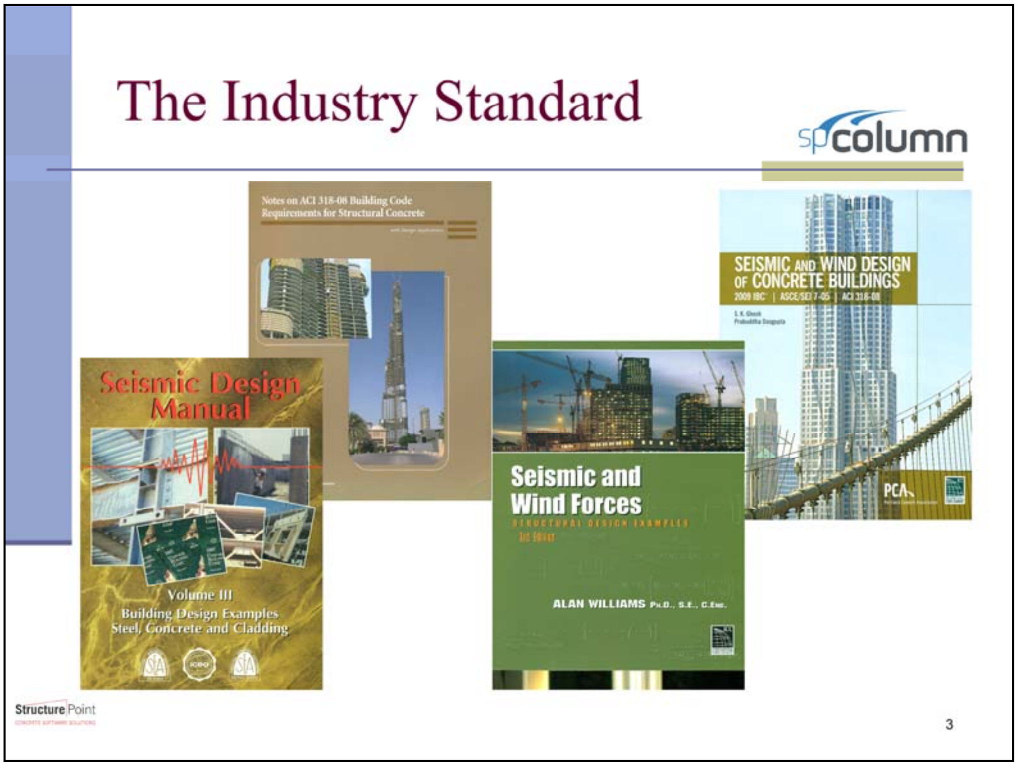
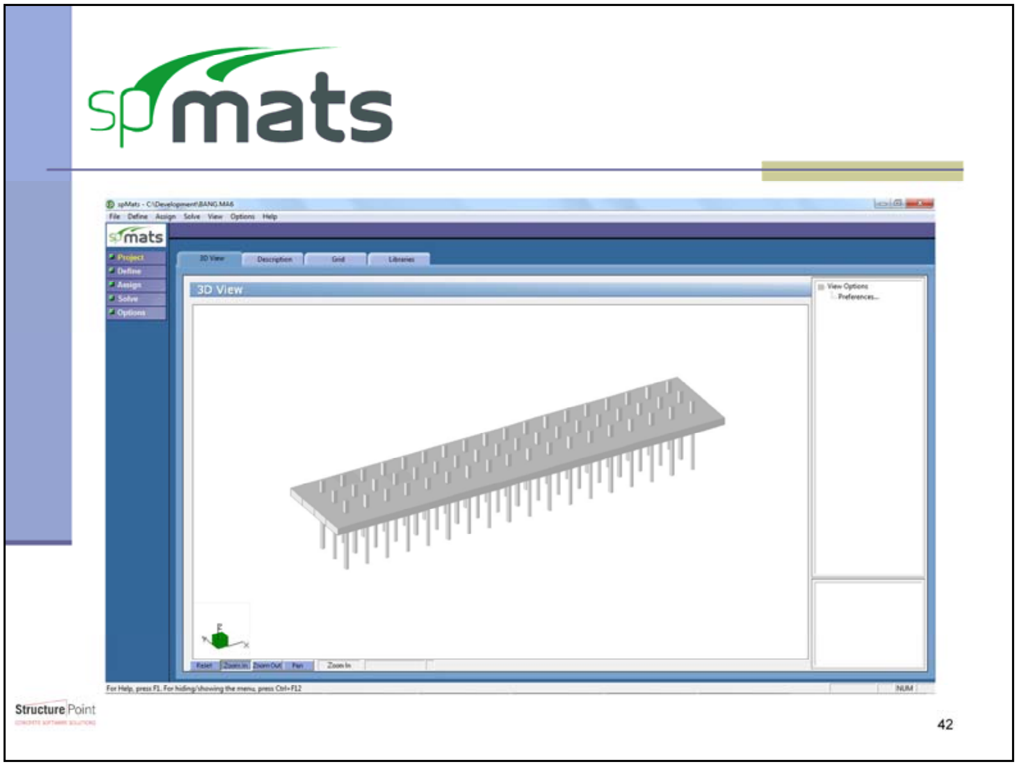


StructurePoint is a software company that provides concrete design solutions. Formerly the engineering software group of the Portland Cement Association (PCA), StructurePoint (SP) is located in Chicago and does business all around the world with clients in North America, the Middle and Far East. SP has representatives in India, Thailand, Saudi Arabia, Lebanon and the UAE. Formerly PCA products, the SP product line include design and analysis software for reinforced concrete beams, columns, mats, walls, slab systems, and frame analysis. These six programs make up the SP Suite. The software programs can be purchased as the Suite or individually to meet your specific needs over a large business computer network or as single standalone serving one laptop.

The SP Suite has the capability to design an entire concrete structure from foundation to roof. These programs are based on the methods, equations, and procedures found in ACI 318 and CSA 23.3 in English and Metric units. Due to the schedule of updating the concrete codes, the five code driven software are given a major upgrade every three years along with annual updates. The SP suite is designed to allow the user to work quickly, simply and accurately. In essence, you can get to a final design solution fast with confidence and little training and wasted time.

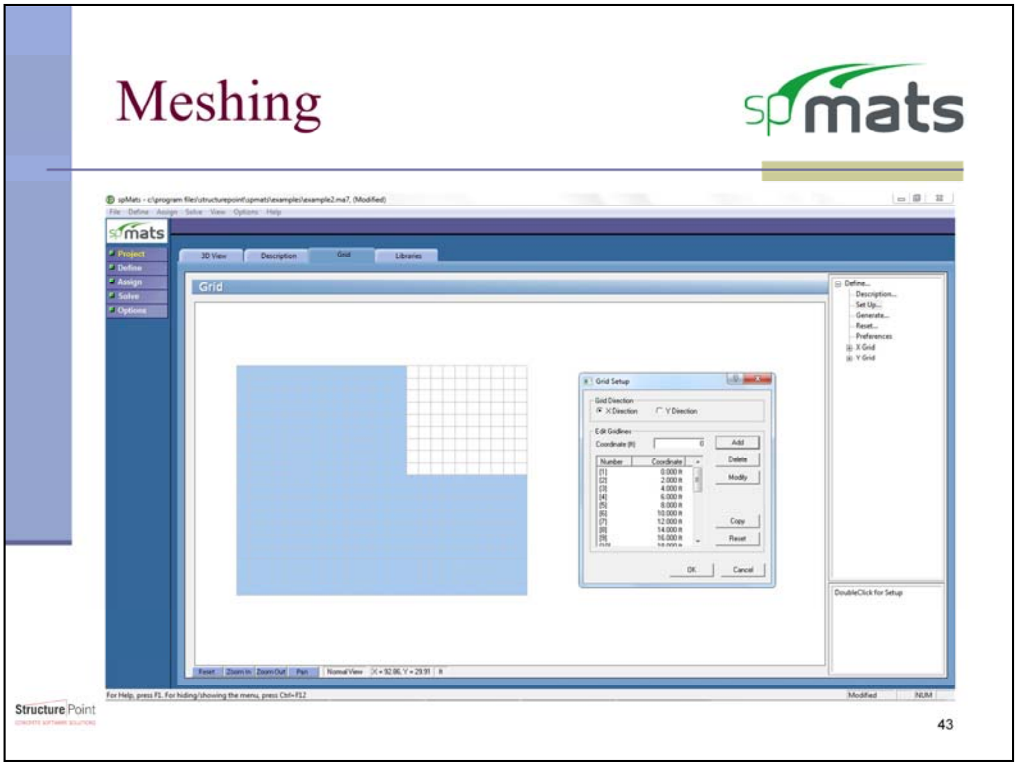


Use of the StructurePoint software can be found in many publications regarding reinforced concrete design and analysis.

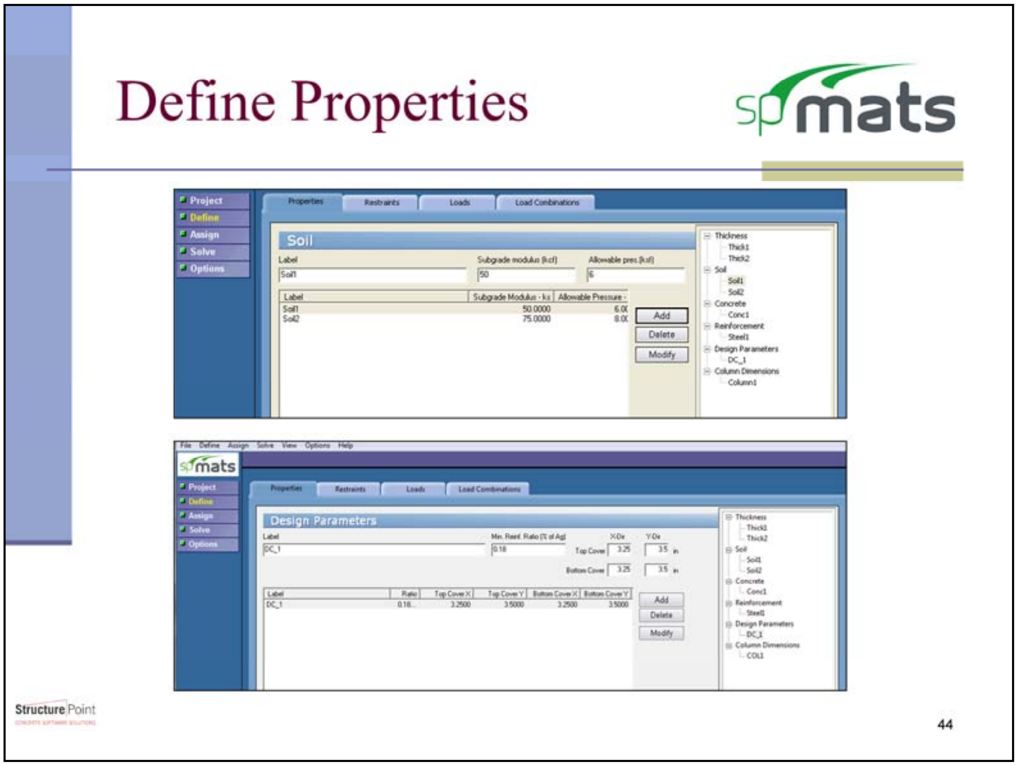


spMats is used for the analysis and design of concrete foundation mats, combined footings, and slabs on grade. The slab is modeled as an assemblage of rectangular finite elements. The boundary conditions may be the underlying soil, nodal springs, piles, or translational and rotational nodal restraints. The model is analyzed under static loads that may consist of uniform surface and concentric loads. The resulting deflections, soil pressure, and bending moments are outputted. In addition, the program computes the required area of reinforcing steel in the slab and checks the punching shear around columns and piles.

spMats uses the plate-bending theory and the Finite Element Method to model the behavior of the mat or slab. The soil supporting the slab is assumed to behave as a set of one-way compression-only springs. If during the analysis, a loading or the mat shape cause any uplift creating a spring in tension, the spring is automatically removed. The mat is re-analyzed without that or any other tension spring. The program automatically iterates until all tension springs are removed and the foundation stabilizes.



spMats breaks the system up into unique elements and nodes by utilizing a meshing or grid system. The grid can be defined gridline to gridline, or generated by specifying a starting location, the number of grids, and the spacing between each. Once the grid is generated the user can still define new gridlines at nonstandard spacing.



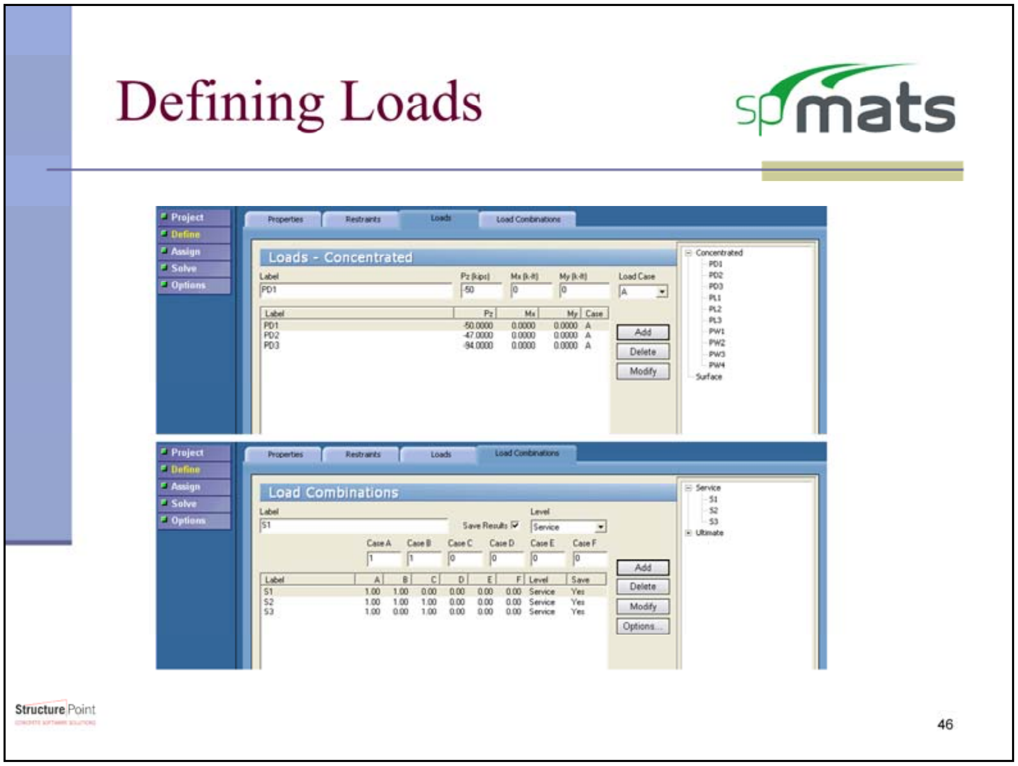
With the elements created, the system requires certain definitions to be assigned to each element. These required definitions are concrete thickness, soil properties, concrete properties, reinforcing properties, and the design parameters concrete cover and minimum reinforcing ratio.

There are three different types of restraints: nodal springs, slaved nodes, and piles.

Nodal springs are useful for situations that involve uneven ground and walls or columns that support the foundation instead of a soil.

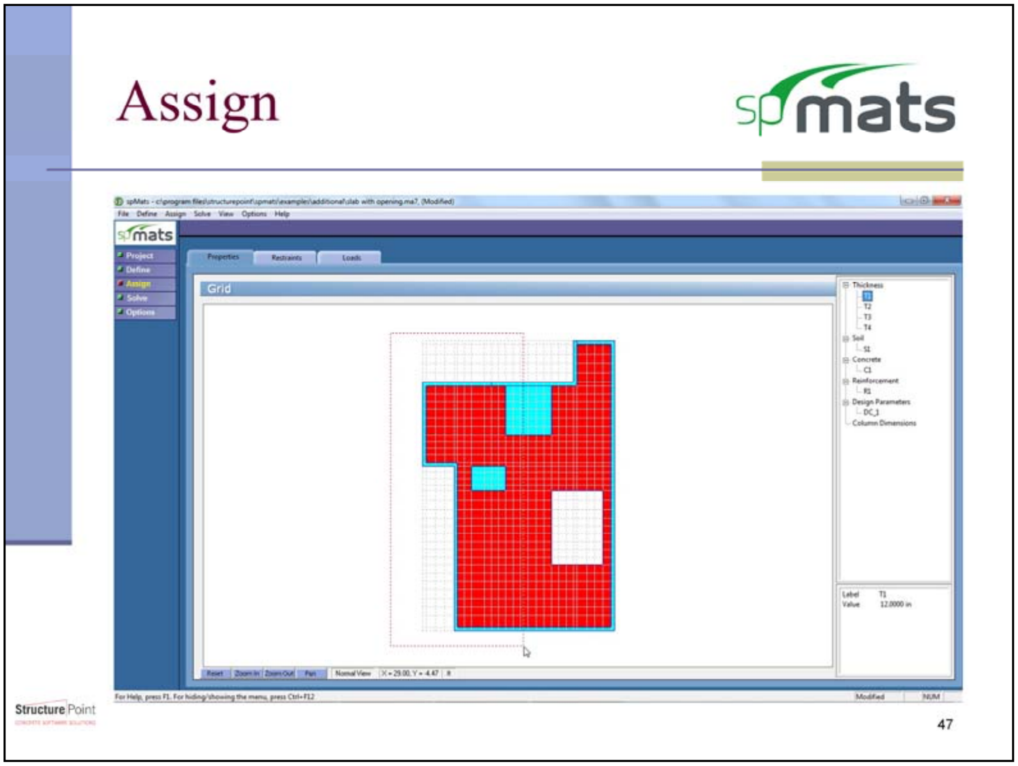
Slaved nodes are used to more accurately represent the effect a column or wall has on the concrete mat. Nodes assigned to the same slaved nodes group will share the same displacement or rotation as defined by the user. For example, it can be assumed that a column will experience uniform displacement and rotation across its cross section. So since a column's shadow may lay on top of many nodes these nodes should be slaved together so they accurately represent the movement of the column.

Within the program, piles are represented as springs, and as such spMats allows for piles to be defined as nothing more than a spring constant and a name. If the spring constant isn't known for a pile, the program can calculate the spring constant. The formula for the spring constant combines the axial deformation equation with a factor that accounts for the pile's skin friction and the total force acting on the pile. These piles can be defined as round, square, rectangular, or H-piles. If the properties of a pile are not known but the spring constant is, the user may bypass the spring constant calculation by entering the pile as a nodal spring.



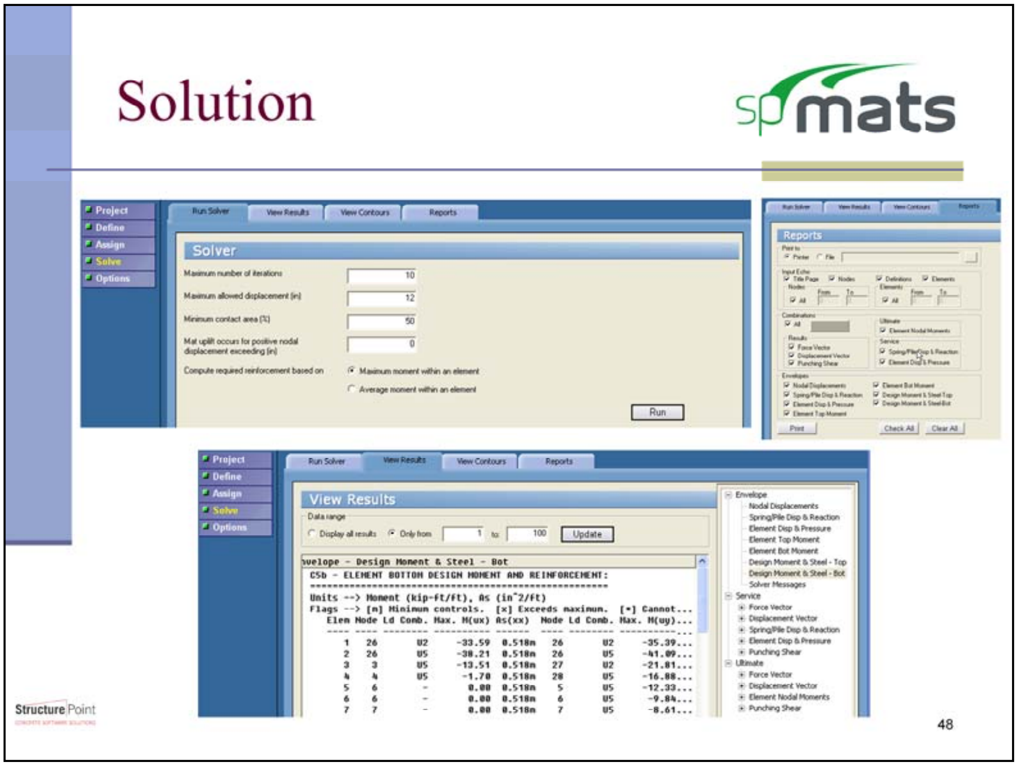
Loads acting on the mat can be modeled as either concentrated point loads or surface loads. These loads can act as a vertical force or as moments acting along the x and y directions. Each of these loads must be assigned to a load case.

Load cases are then combined in the typical way into load combinations for both service and ultimate conditions.

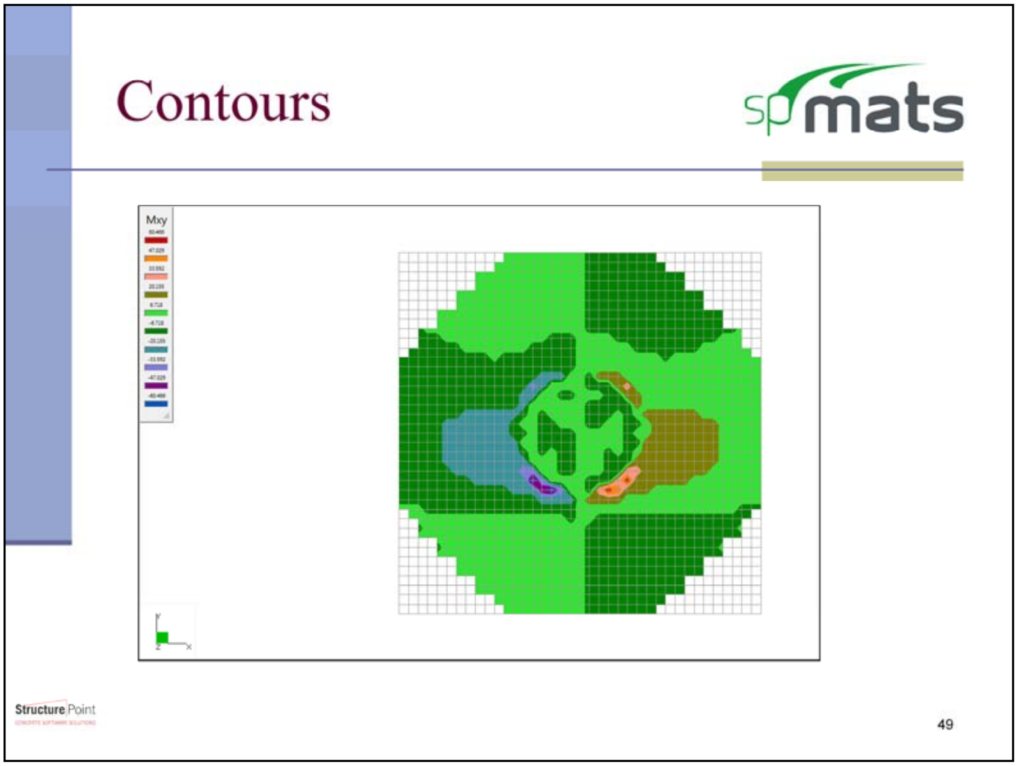


Each element is a unique part of the system that can be given any of the previously defined system definitions. When assigning these definitions, the teal elements represent a part of the meshing that has been assigned a thickness, but not the currently selected definition, red represents that the current definition is assigned, and white indicates unoccupied space. This is to allow for quick visual checks of the system.

Assigning definitions to an individual element is as easy as left clicking on it and assigning definitions to many elements as dragging the cursor around each. Unassigning is the same method but by using the right mouse button.

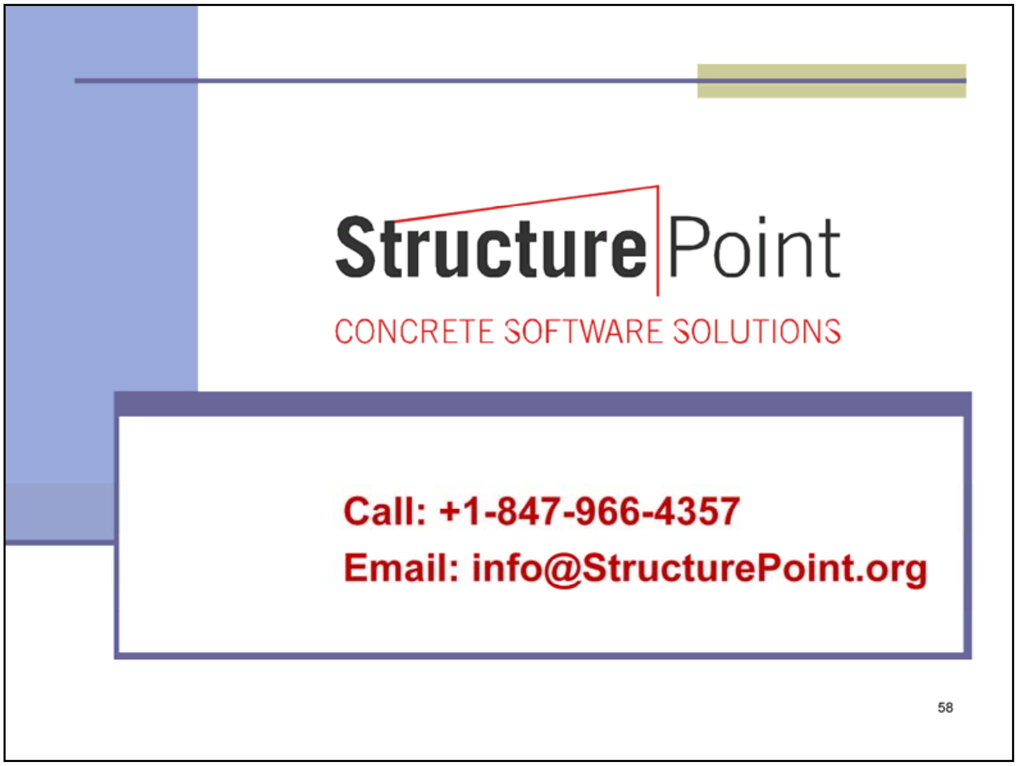


Before solving the system there are six important inputs required of the user. The maximum number of iterations along with the maximum displacement limit are the controlling factors for most typical models. The computation of reinforcement is based on either the maximum moment or the average moment within the element. This flexibility allows the engineer the ability to use industry standards.



The reason that spMats is such an essential tool for mat design is that it takes the user's specifications and provides contour maps of the moments, displacements, and reinforcing required of the foundation. These contour maps give the engineer instant recognition of how the foundation will behave and the corresponding required reinforcing.

The program designs the steel reinforcing based on the user inputs for design parameters. If the model is unable to produce a reinforcing design that meets the design criteria the model will still run and all the results are available as well as the contour maps. The program flags these failed elements in the required steel reinforcing contour maps.



StructurePoint would be glad to hear from you and receive your feed back as well as answer any questions regarding the program features, capabilities, price, and licensing options