

# MAT3D



Dimensional Solutions, Inc.

[www.Dimsoln.com](http://www.Dimsoln.com)



# Mat3D

## ***Advanced Software for Foundation Design***

- Are you on a project that requires you to design a mat foundation in minutes?
- Do you have to estimate the mat foundation's material quantities in seconds?
- Are you requested to quickly sketch a mat plan, elevations and sections through piers?
- Do you have to design a pile supported mat foundation with unsymmetrical pile pattern?
- Would you like to go from design to generating detailed construction drawings in popular CAD engine of your choice such as Autocad, Microstation or SmartSketch?

If the answer to any of the above questions is yes, **you need a powerful, fast and a user-friendly tool that considerably reduces foundation design/analysis time.**

**Mat3D** can significantly reduce the time and effort it takes to analyze/design a foundation and takes the complexity out of the process. Following are some of the reasons why it reduces time and effort while offering simplicity:

1. For foundations with multiple piers, such as those for building columns and other structures, designing a foundation requires inputting minimal foundation design parameters and loads.
2. Whether your mat is soil supported, or pile supported with any unsymmetrical pile pattern, Mat3D designs both the columns and the mat in a few easy steps.
3. You can analyze a number of "what-if" scenarios. Mat3D's messaging system such as failure in wide beam shear or punching shear reduces your guesswork in determining various foundation parameters. This enables you to concentrate on other important tasks.
4. It generates design sketches such as foundation plan and elevation, and pile location plan. It also, allows you to take longitudinal or transverse sections through the mat along any selected piers. Plenty of informative sketches means that you no longer have to hand draw any sketches for your designer.
5. It interfaces with popular CAD engines such as AutoCAD, Microstation and SmartSketch. Therefore, you can produce construction drawings with the touch of a button.

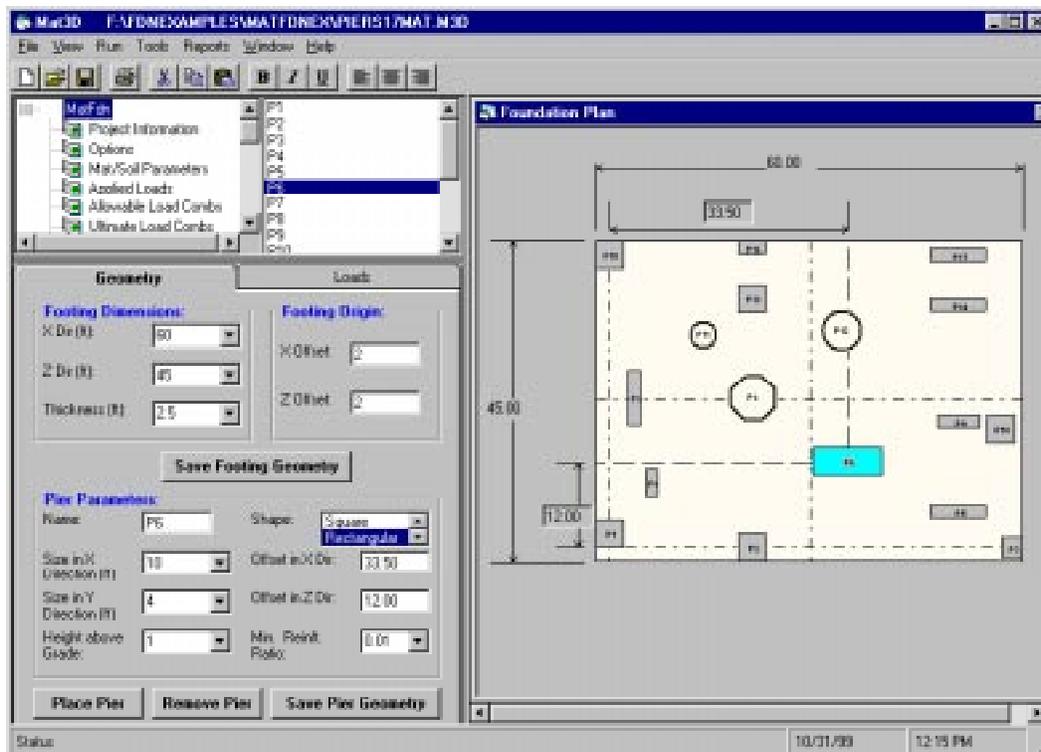
Mat3D has many other features that will simplify your complex work process from designing/analyzing a foundation to producing a construction drawing in a few easy steps. It has been developed by civil engineers for civil engineers. Therefore this easy to use software requires minimal training and enhances productivity.

The following pages briefly describe the product capabilities:



## Mat3D User Interface

MAT3D has a graphical user interface with a familiar windows look. The left pane displays a hierarchical list of input and results dialog items, a list of all the piers supported on the mat and various footing and pier geometric parameters. The right pane displays the dialog corresponding to the hierarchical input/results list. The main menu bar and the tool bar display various options and actions to choose from.



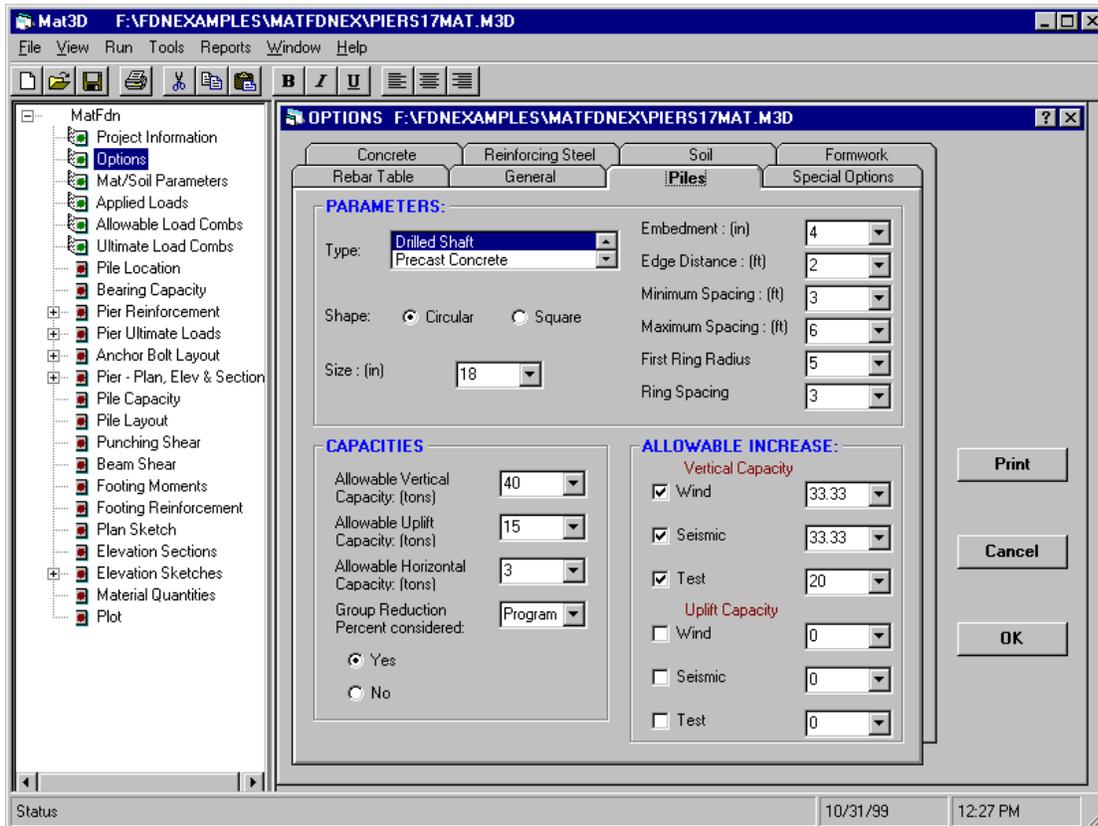
What this means is that you have a perspective of the overall project at any time. Because you constantly have the “big picture,” in the left pane you can quickly view and make the necessary decisions about its “pieces”. You can view multiple dialogs simultaneously to perform many tasks such as verify or change your input data to view the change reflected in the results.

For saved foundation designs, you can view the material quantities and the foundation plan, elevation and section sketches without running the project. This serves as a fast and easy way to retrieve key information about a completed foundation.

## User- Defined Options

Mat3D lets you specify many options required for foundation design such as:

- Material properties for concrete, reinforcing steel, and soil or piles
- Design parameters such as setting minimum and maximum rebar size, allowable increase in soil and pile stresses due to short term loads, and others
- Geometric parameters such as concrete cover over rebar, minimum and maximum pile spacing, pier and footing formwork dimensions, and others

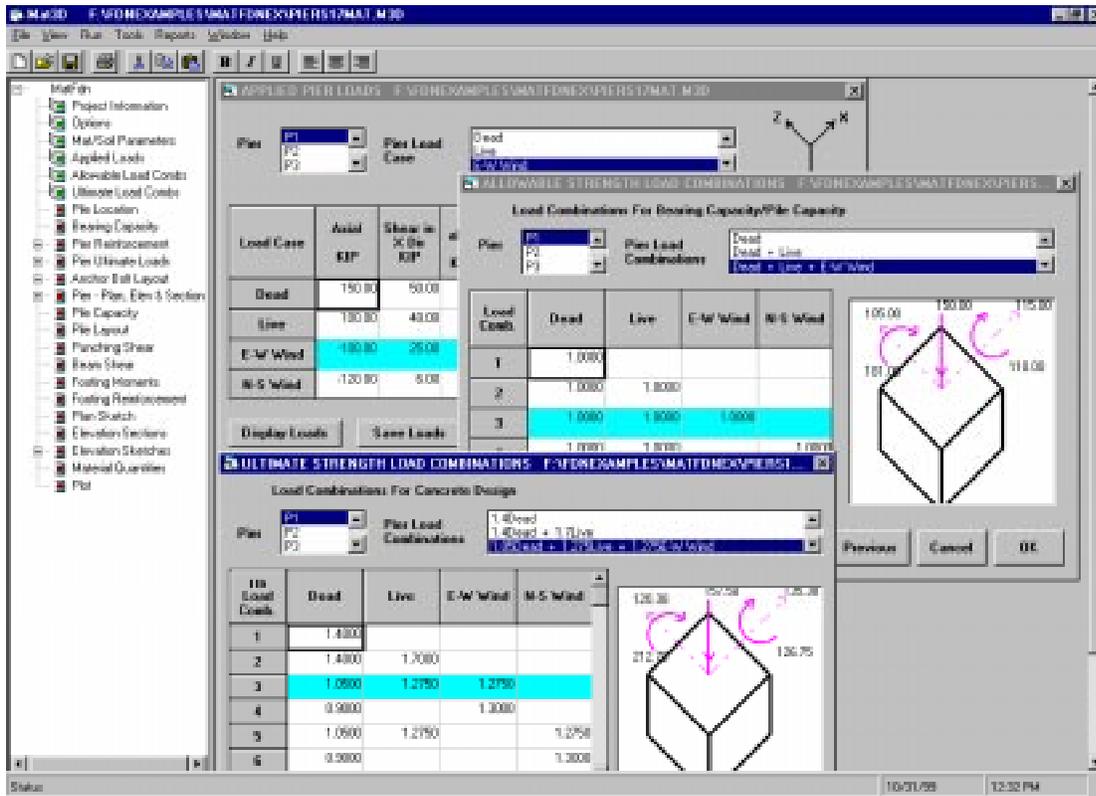


These options give you flexibility in analyzing or designing different types of foundations. They also let you customize parameters such as rebar sizes and formwork sizes to help you adhere to your company and client standards.



## Load Case/Load Combinations

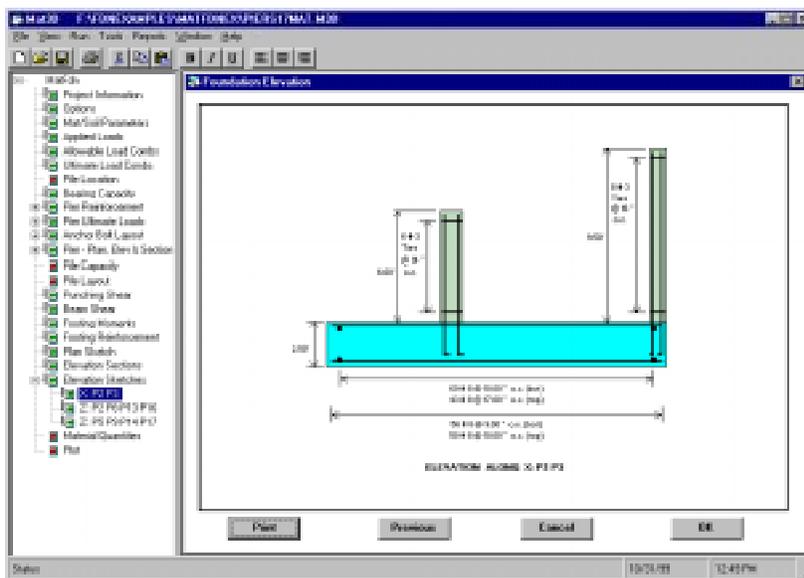
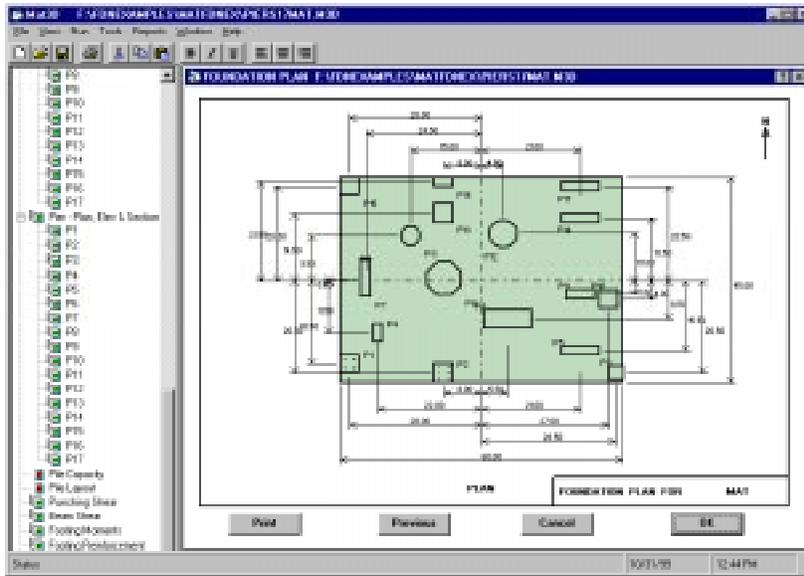
You can enter any load case, for e.g. Dead, Live, Wind, Earthquake, Crane load, Thermal load, Friction load, or any other and any allowable/ultimate strength load combination of the load cases in Mat3D. You can add, modify or delete load cases with a simple mouse right click. You can enter the load combination factors for allowable strength (used for determining bearing capacity of soil and pile capacities) and ultimate strength (used for reinforced concrete design) and/or you can choose the default factors built into the program based on code requirements.



This gives you the flexibility to design foundations supporting structures in any kind of industry such as residential, commercial, industrial or petrochemical. The super structure may be columns in concrete or steel buildings, or columns in pre-engineered buildings, or equipment (exchangers and towers) in petrochemical refineries or chemical plants, or bridge pier in bridges and others. Mat3D with its versatile load case/combination input, will design the concrete piers and the mat in minutes.

## Foundation Plan Sketch

Based on the completed foundation analysis/design, MAT3D generates design sketches, showing the plan, elevation, material quantities and sections through the pier showing reinforcement details. The sketch displays anchor bolt layout on the pier(s), pier and footing dimensions, pier offsets from the centerline of the footing if any, pier POS (point of support) elevation, pier longitudinal and transverse rebar information, footing rebar information, and material quantities of the foundation.

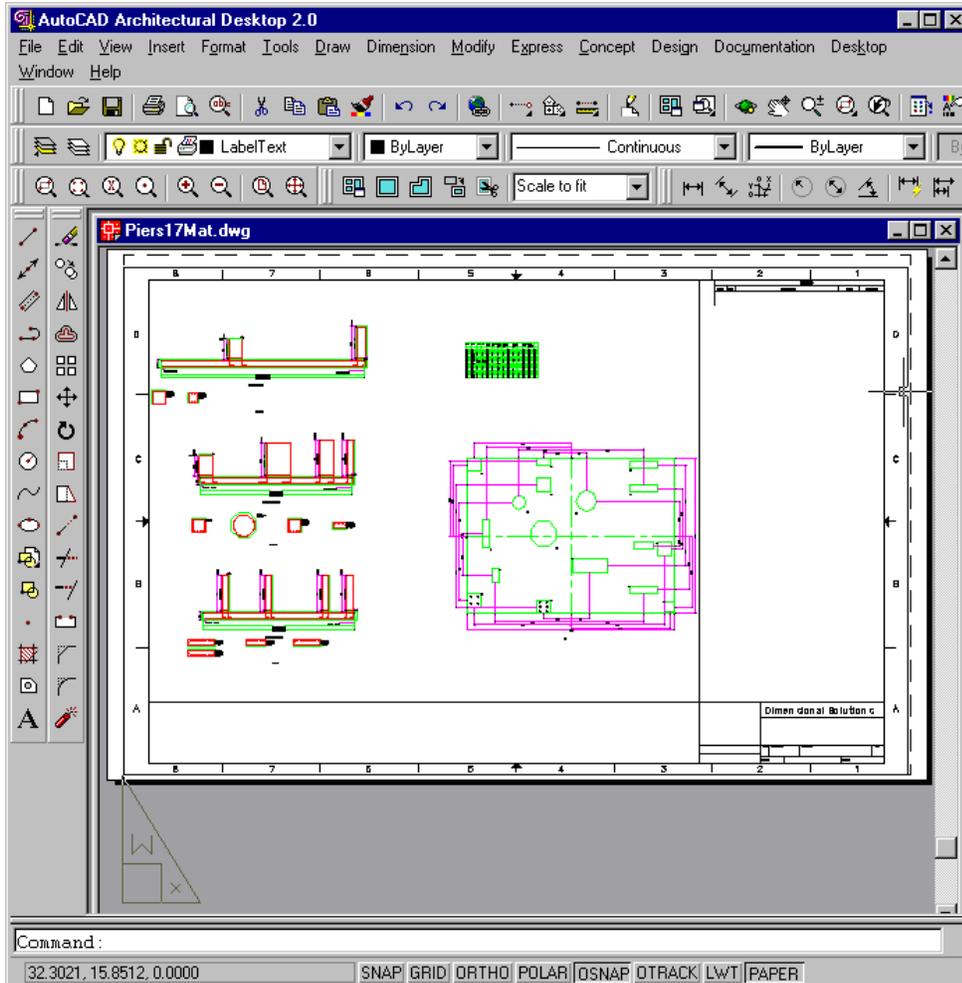


You no longer have to hand draw design sketches for your designer/draftsperson. You can now spend the realized timesavings in doing other important tasks. This detailed sketch serves as a valuable tool to all of your customers, be they your clients, or your estimators or your construction contractors.



## **Construction Drawing**

You can plot a detailed construction drawing in the CAD software after you complete foundation analysis/design in MAT3D. Shown below is a drawing created automatically in Microstation SE. You can draw your company border or title sheet, North arrow symbol and even specify drawing settings such as text size and others.



Since a construction drawing is the final deliverable after any foundation analysis or design, Mat3D automates this process and completes the entire drawing in a few seconds. Think of the significant time that you will save in performing this process.

**Mat3D is an integrated and complete solution to foundation design. It will increase your productivity and reduce your work hours significantly. To gain a competitive advantage, call us now.**

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