

EZ-Pile Regular

INSTALLATION

Download the installation folder and run the EXE file, which will install the program in your PC

To uninstall use windows program uninstaller via control panel

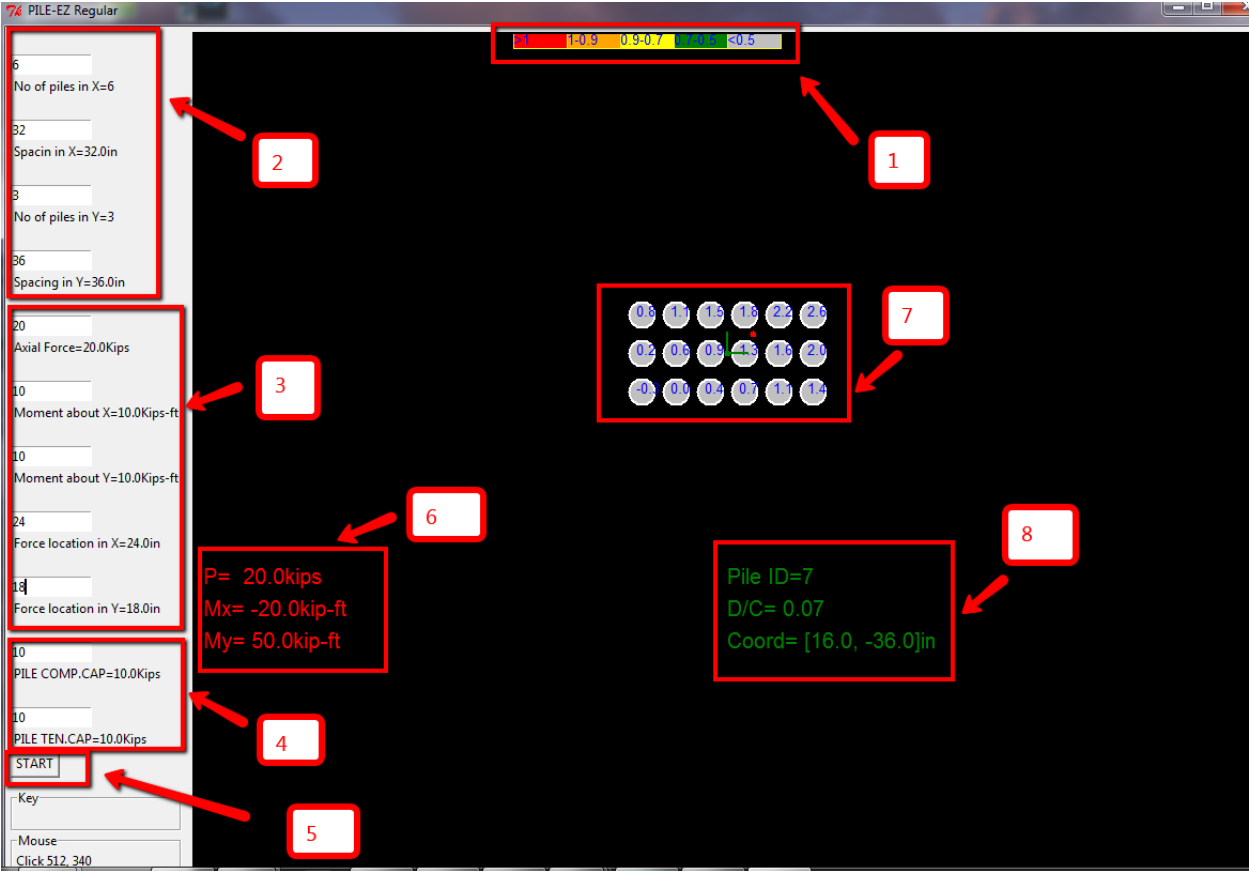
DISCLAIMER

THE USER ACCEPTS AND UNDERSTANDS THAT NO WARRANTY IS EXPRESSED OR IMPLIED BY THE DEVELOPERS OR THE DISTRIBUTORS ON THE ACCURACY OR THE RELIABILITY OF THIS PRODUCT. THE USER MUST EXPLICITLY UNDERSTAND THE BASIC ASSUMPTIONS MADE, AND SHOULD COMPENSATE FOR THE ASPECTS THAT ARE NOT ADDRESSED.

Program Graphic User Interface (GUI) and use

Algorithm Notes:

- The program can be used interactively to design pile groups
- The program assumes rigid pile cap theory to distribute loads
- All piles are assumed rigid and on rigid supports



- 1) D/C (design/capacity) ratio color contour
- 2) Geometric properties of the pile group X direction is horizontal, Y-direction is vertical , change a value and hit **ENTER** , the new value should be indicated below input box
- 3) Applied forces on pile cap, force convention is as follows:
 - Axial compression (+)
 - Axial tension (-)
 - Moments follow right hand side rule X-axis is horizontal and positive is east and Y -axis is vertical and positive is North
 - Location of applied force can be specified at a different location than the group centroid which is at (zero, zero) coordinates, or Cartesian system origin
- 4) Individual pile capacity , the piles can have different compression and tension capacity as is the usual case (in most case tension capacity is zero)
- 5) **START** button starts initializes the GUI and starts the calculation for the first time, subsequent changes will be automatic when clicking **ENTER** after a variable numerical value has been changed , the analysis becomes interactive until an acceptable solution has been found
- 6) Equivalent Forces at systems origin, centroid of group
- 7) Pile group representation, numbers inside indicate amount of force (compression or tension) distributed to that specific pile, color indicates D/C ratio contour
- 8) User can click on any pile to review detailed information about the pile, this includes current Pile Id, D/C ratio , and coordinates with respect to origin.

Note:

Maximum pile cap size can be about 600in by 600in, this is simply a practical limit. Pile caps that are too large will not behave rigidly as assumed by the program

A screen shot of the final design can be copied via screen shot capture and pasted in reports, there is not an option to save currently but recreating any configuration takes a few seconds

VERIFICATION EXAMPLE

The example below can be found on the NCEES practice problems for the SE exam

Vertical Forces

135. A rectangular footing for a single square column is supported by six piles as shown in the figure.

Design Data:

Unfactored loads at the bottom of the column are:

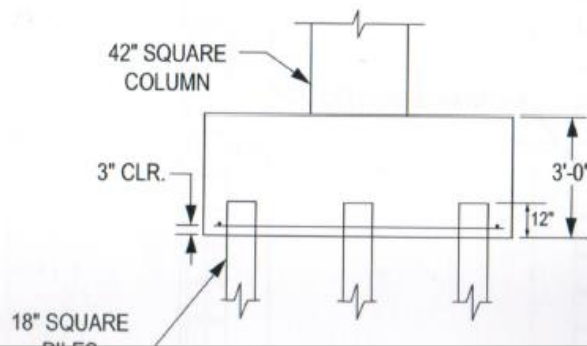
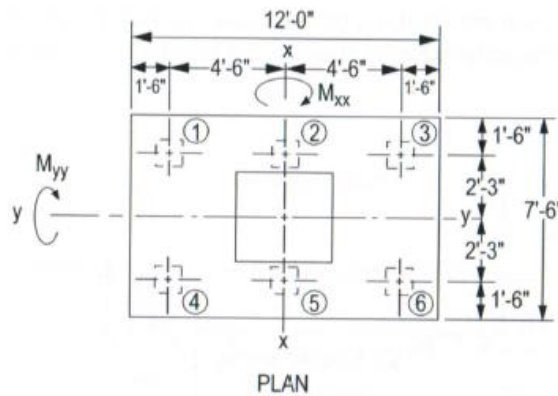
Axial vertical load, P	250 kips
Moment M_{xx}	320 ft-kips
Moment M_{yy}	225 ft-kips

Assumption:

Both moments occur at the same time.

The maximum unfactored axial load (kips) in a pile is most nearly:

- (A) 34
- (B) 48
- (C) 76
- (D) 83



Vertical Forces

135. I_{xx} pile group = $4(4.5)^2 = 81$ pile-ft²
 I_{yy} pile group = $6(2.25)^2 = 30.375$ pile-ft²
 Footing weight = $(7.5 \text{ ft})(12.0 \text{ ft})(3.0 \text{ ft})(150 \text{ pcf}) = 40.5$ kips
 Maximum pile reaction = $\frac{250 \text{ kips} + 40.5 \text{ kips}}{6 \text{ piles}} + \frac{(320 \text{ ft-kips})(4.5 \text{ ft})}{81 \text{ pile-ft}^2} + \frac{(225 \text{ ft-kips})(2.25 \text{ ft})}{30.375 \text{ pile-ft}^2}$
 $= 48.42 + 17.78 + 16.67$
 $= 82.87$ kips

Note: Axial force in input below includes self-weight of footing

The screenshot shows the PILE-EZ Regular software interface. On the left is a control panel with various input fields and buttons. The main area on the right displays a pile layout diagram with six piles arranged in a 2x3 grid. A red arrow points to the bottom-right pile, which is highlighted in yellow. Text overlays provide specific data for this pile.

Input Parameters (Left Panel):

- No of piles in X=3
- Spacin in X=54.0in
- No of piles in Y=2
- Spacing in Y=54.0in
- Axial Force=290.5Kips
- Moment about X=225.0Kips-ft
- Moment about Y=320.0Kips-ft
- Force location in X=0.0in
- Force location in Y=0.0in
- PILE COMP.CAP=100.0Kips
- PILE TEN.CAP=0.0Kips
- START
- Key
- Mouse
- Click 554, 354

Pile Layout Diagram (Right Panel):

- Diagram shows 6 piles in a 2x3 grid.
- Bottom-right pile is highlighted in yellow and labeled with ID 1.
- Red arrow points to the highlighted pile.

Text Overlays (Bottom):

- P= 290.5kips
- Mx= 225.0kip-ft
- My= 320.0kip-ft
- Pile ID=1
- D/C= 0.83
- Coord= [54.0, -27.0]in

