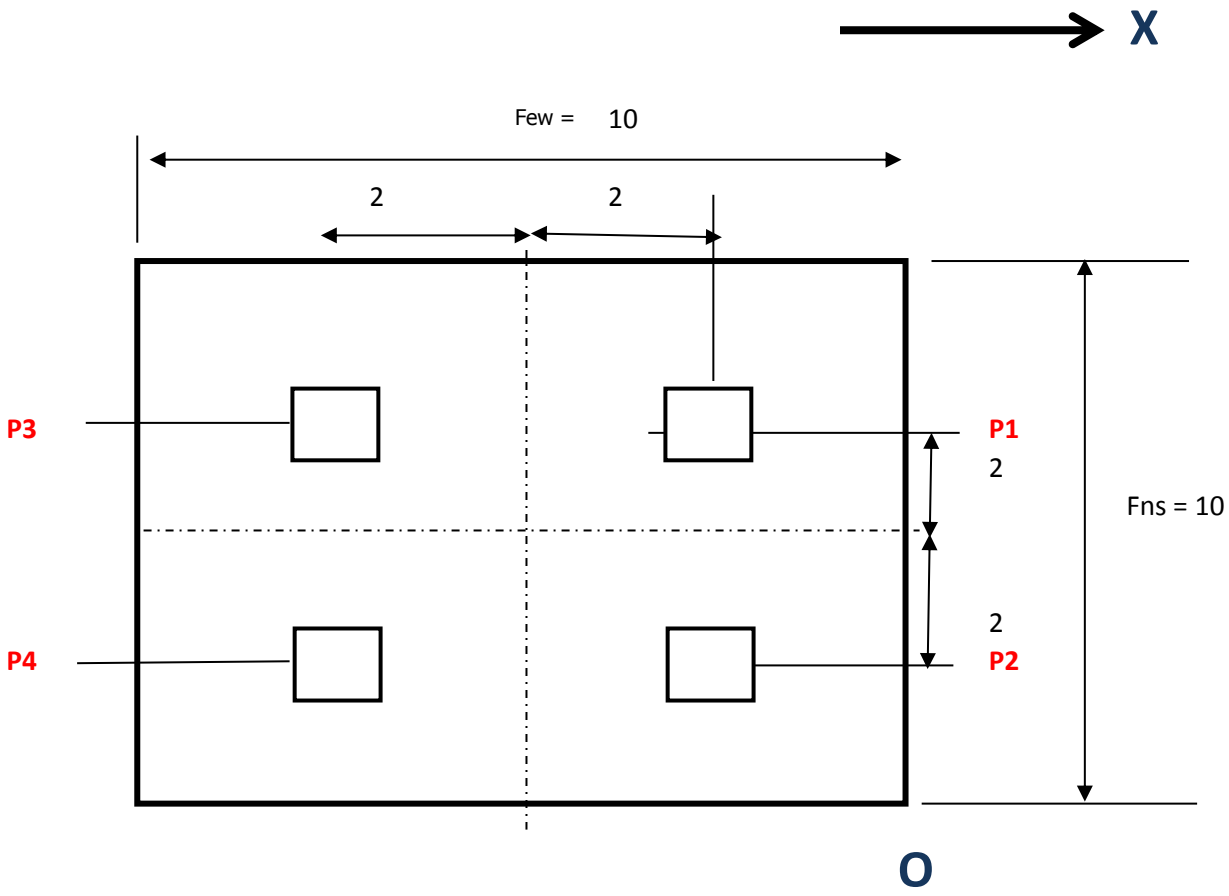
Overturning Calculation

Footing and Pedestal Geometry



Loads	P1	P2	P3	P4
Axial	10	10	-8	-8
Shear	2	2	2	2

Footing Self Weight	20
Soil Self Weight	5
Pier Self Weight (EA)	1
Distance from top of piers to bottom of footing	6

Method 1

Overturning Moments calculated @ O in the positive X direction:

Due to applied shear = (2 X 6) X 4	48
Due to tensile load from P3 & P4 = =2 X 8 X 7	112
Total overturning moment Mo =	**160**

Resisting Moments calculated @ O in the positive X direction:

Due to pier self weights = (2 X 1 X 3) + (2 X 1 X 7)	20
Due to footing & soil self weight = (20 X 5) + (5 X 5)	125
Due to compressive load from P1 & P2 =(10 X 3) X 2	60
Total Resisting Moment = Mr =	**205**
Stability Ratio = Mr/Mo =	**1.28125**

Method 2

Vertical loads at base of footing:

Due to applied loads on piers = 2 X 10 - 2 X 8	4
Due to self weights =(4 X 1) + 20 + 5	29
Total Vertical load = P	**33**
Overturning Moment due to shear at CL of footing = 2 X 6 X 4	48
Overturning Moment due to axial loads at CL of footing = 2 X 10 X 2 + 2 X 8 X 2	72
Total Overturning Moment Mo =	**120**
Eccentricity e =	3.636363636
Stability Ratio = Few/2e	**1.375**