

ODTÜ KIBRIS'LA BİLİM EĞLENCELİDİR.

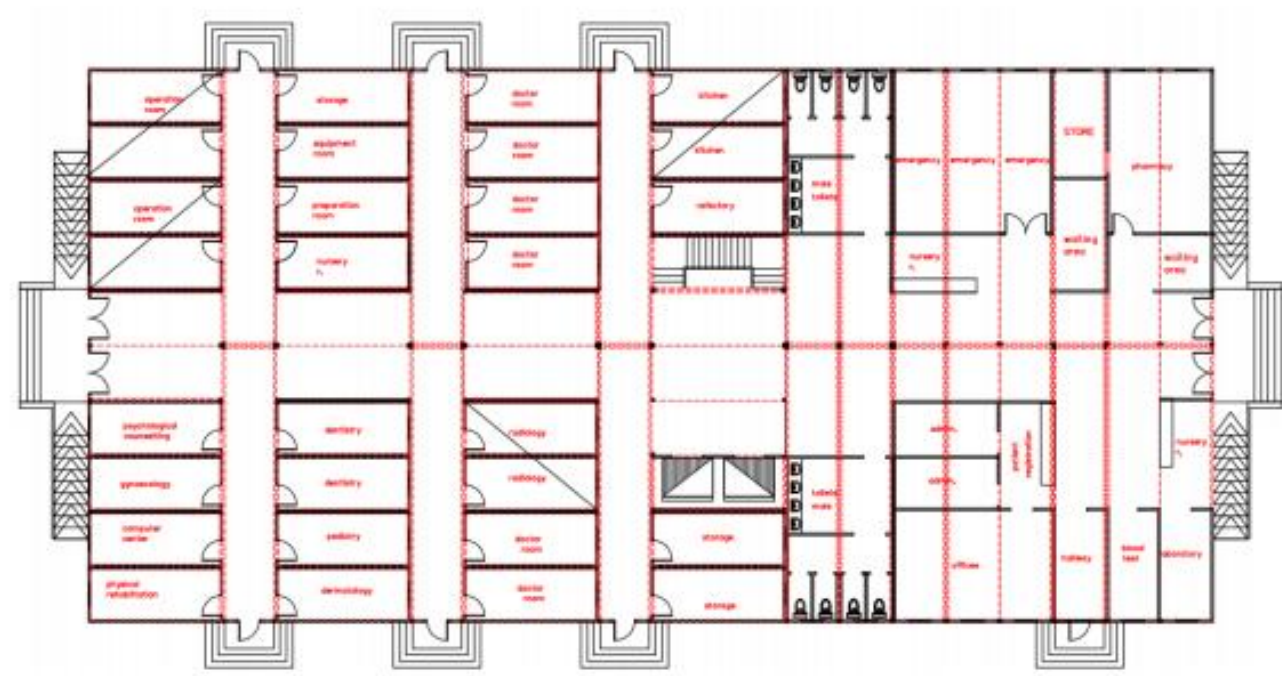
METU NCC Pandemic Hospital

Öykü Kazova ,Mohammed Hegazi ,Abdullah Abbasi ,Tuğçe Çetinkaya ,Neslihan Akbulut
Supervised by: Assist. Prof. Dr. Ali Şahin TAŞLIGEDİK

Civil Engineering Department, METU Northern Cyprus Campus

Introduction and Statement of the Problem

As it is known, Cyprus does not have enough hospitals and equipment against any pandemic disease. Therefore , the implementation of this project is extremely important for the well-being and safety of students living on the campus. The fact that local people living outside the campus will benefit from this project will increase the prestige of the university. There are three main advantages of container hospital: first of all, it is the fastest way for the project to start patient acceptance, secondly, the strength and durability of the building is another factor, lastly, the construction of the hospital with the most economical method is using containers.



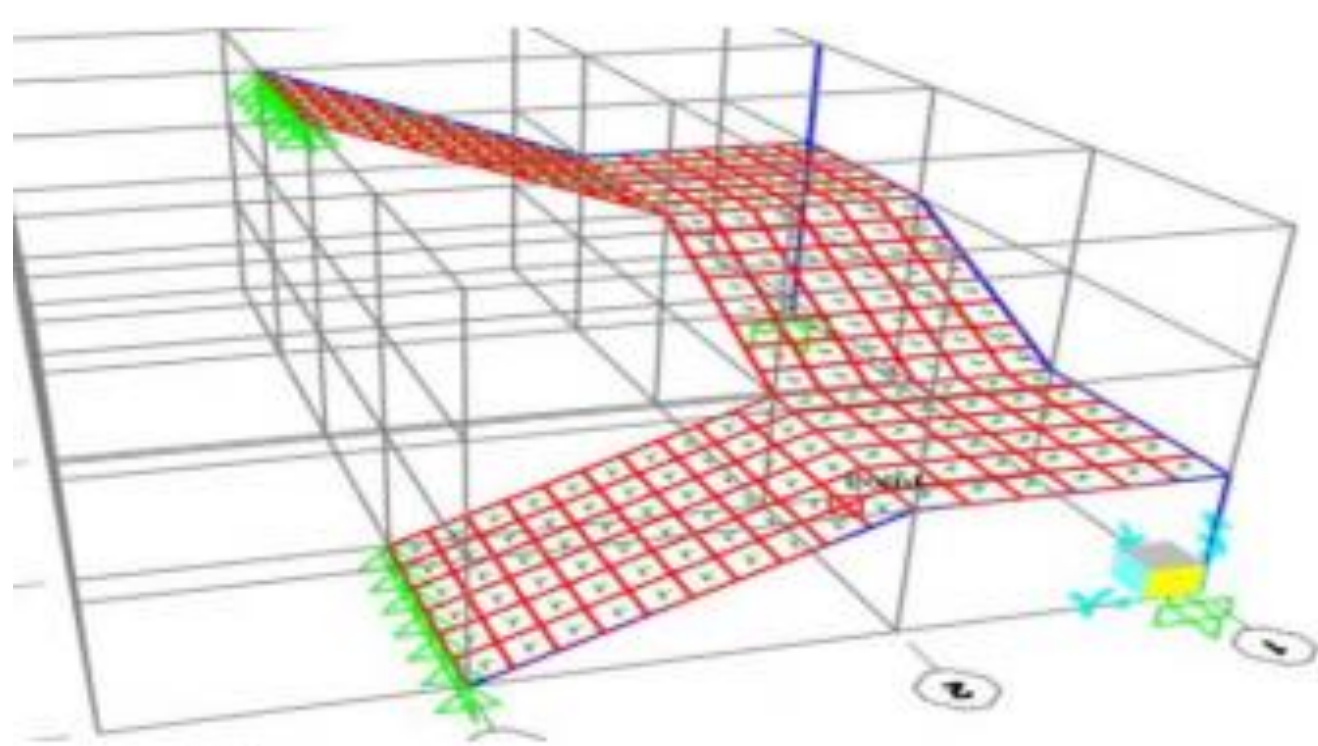
Architectural Plan



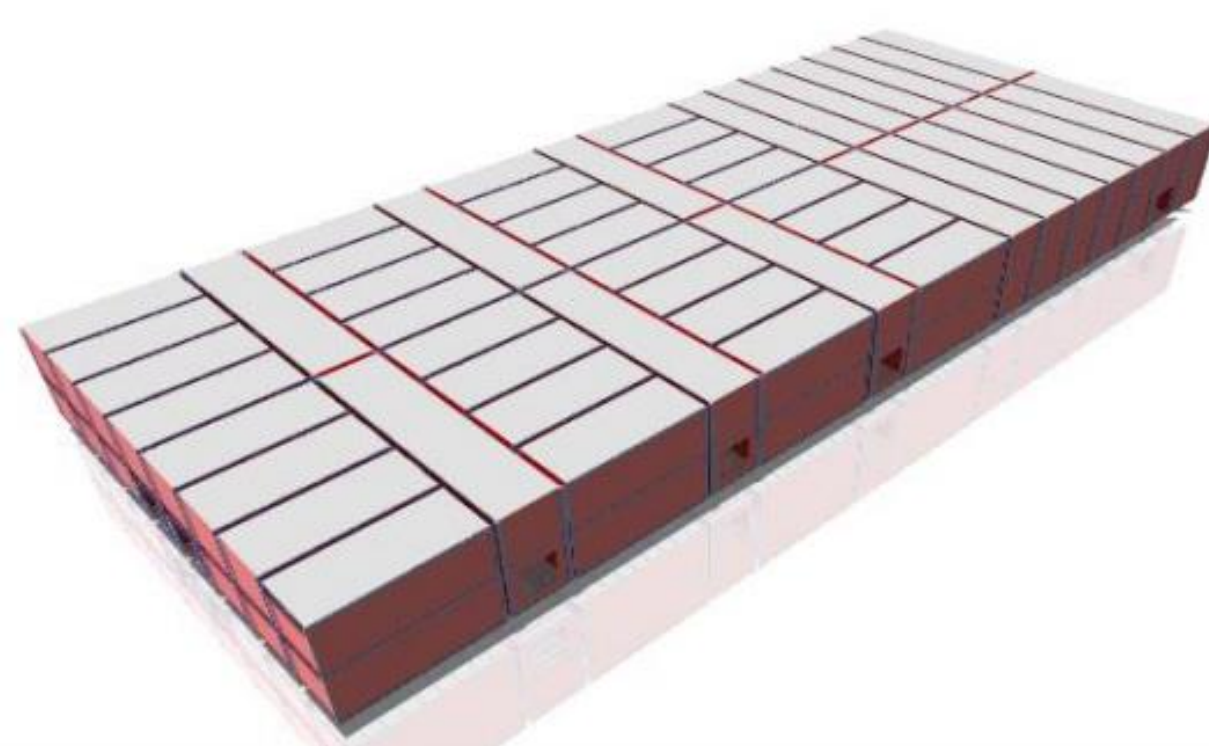
Modelling of the Project



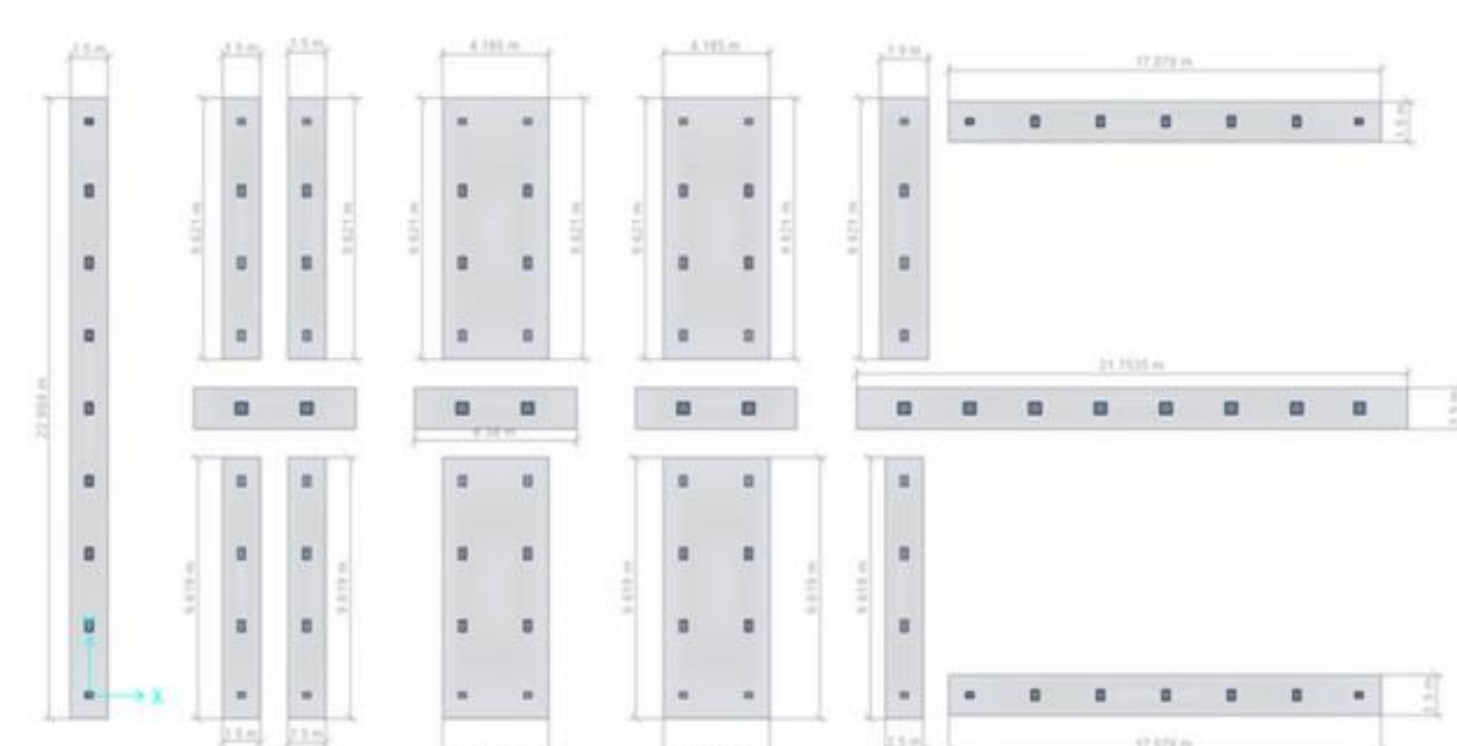
Location of Site



Staircase Modelling



Container arrangement on Etabs

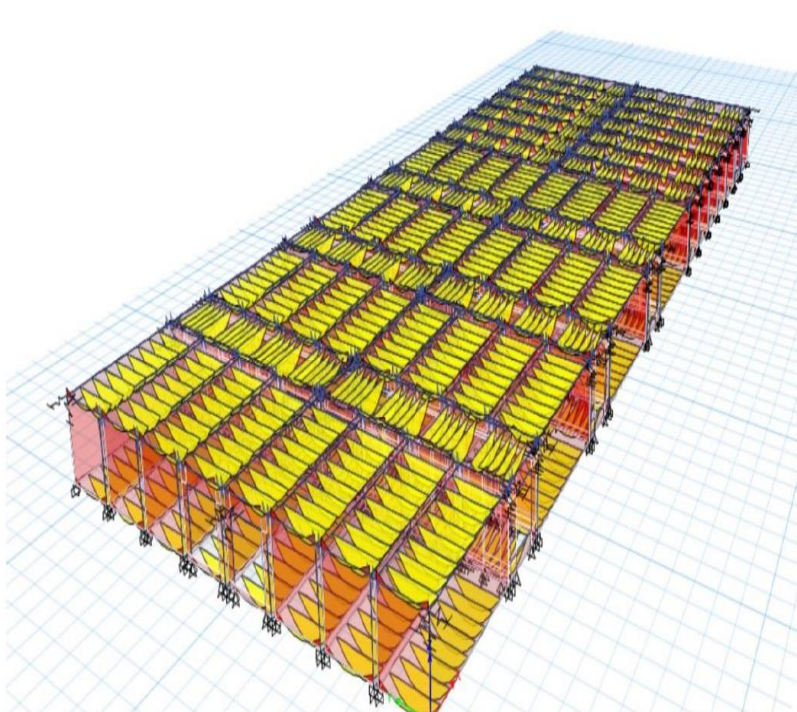


Footing Design

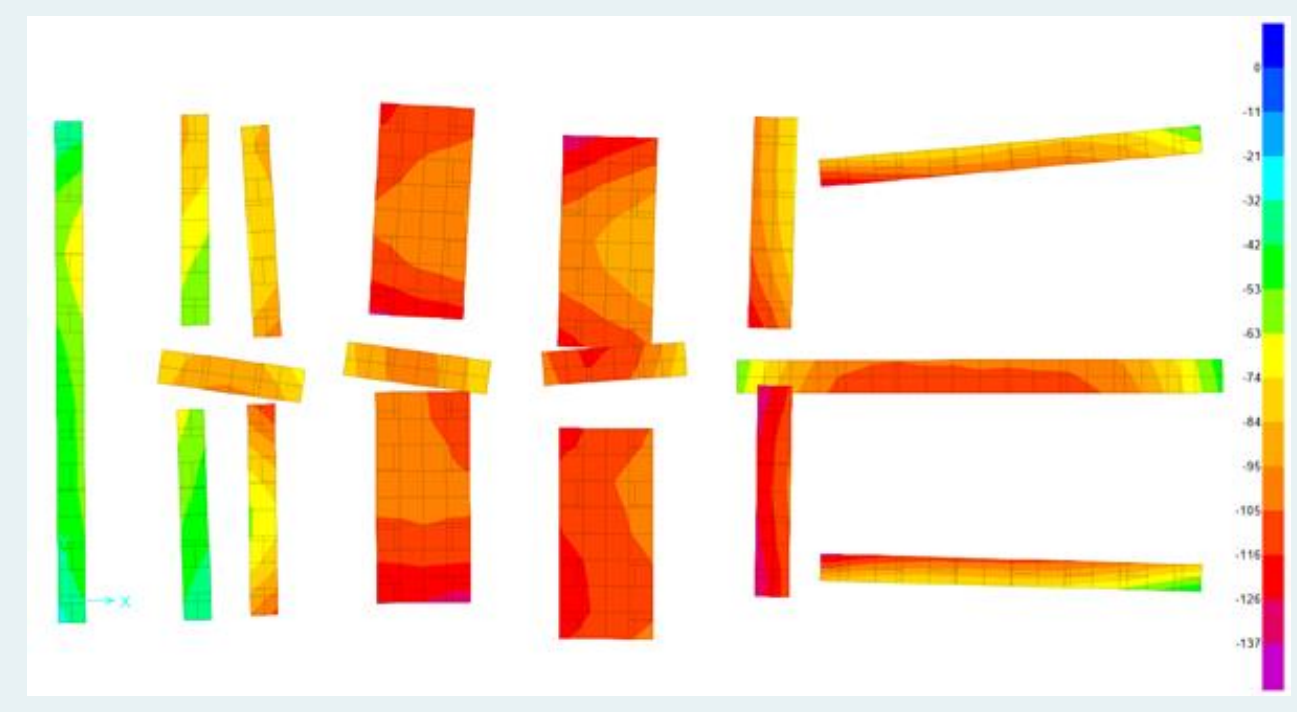
Metu Ncc Pandemic Hospital Project designed to use shipping containers to keep the project sustainable, low cost, expandable and structurally safe.

Precautions : Lack of built-in container wall can lead to over-deflection and even failure. ISO container resist significant forces, but an excessive cutout can cause instability, So, it is suggested to use strengthen members to overcome this problem. Considering the linkages between these containers, they must be held together as much as possible so that in the case of large lateral loads applied to the system, they retain their integrity better

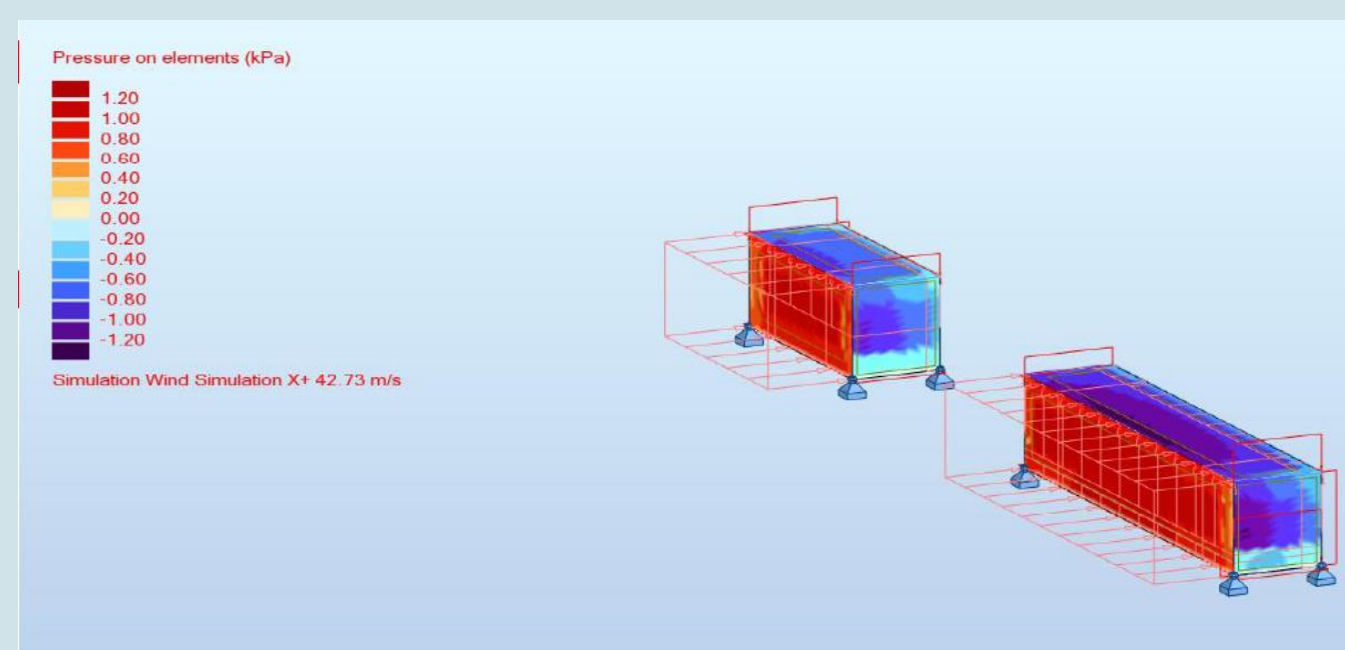
Aspects of the Project



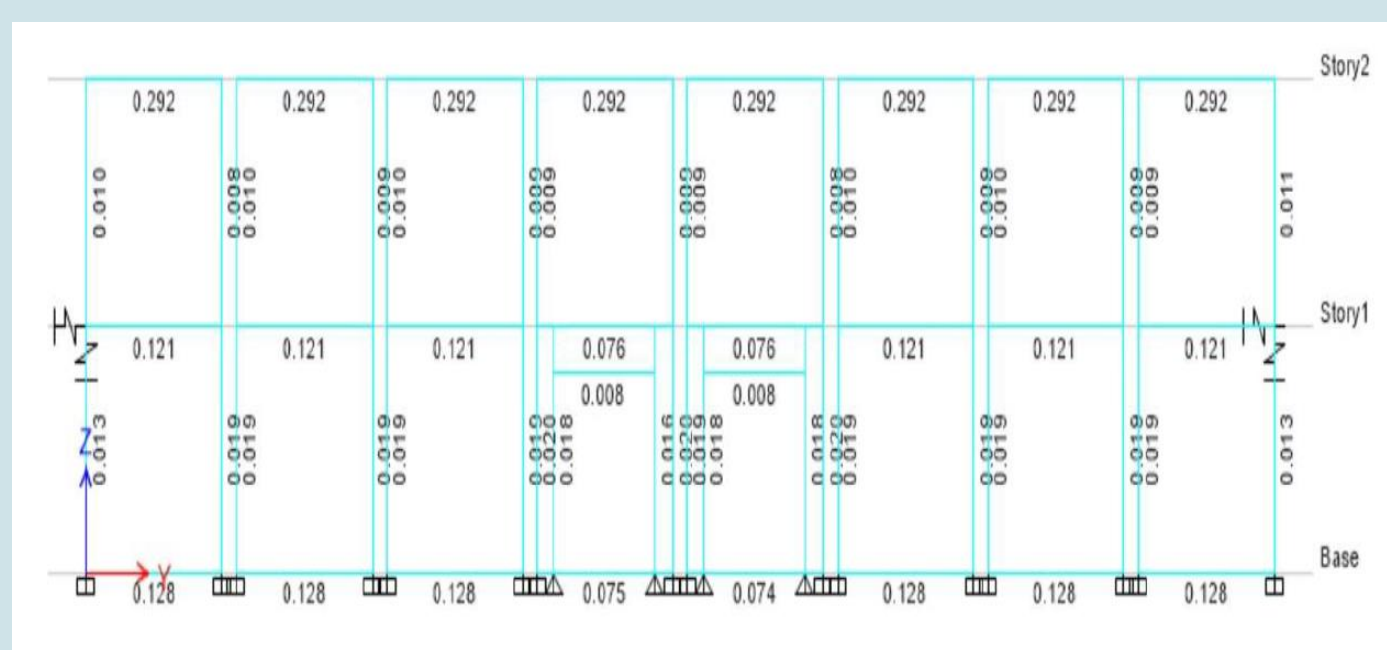
Analysis shows the bending moment diagram of the structure using ETABS 18V as well as the axial forces for Staircases Using SAP2000.



Soil pressure is less than the allowable bearing pressure so everything is within limits using SAFE 12



Wind analysis shows the forces on the structure generated by wind loading and all forces are within limits using Robot Structural Analysis



Demand and capacity shows that the structure is safe to use as all requirements of the structure are less than the capacity.

Table 41 - Test bed stiffness values		
Direction	Value	Unit
Longitudinal	(X)	140.0 kN/mm
Transverse	(Y)	250.0 kN/mm
Vertical	(Z)	750.0 kN/mm

Figure 13 Stiffness values

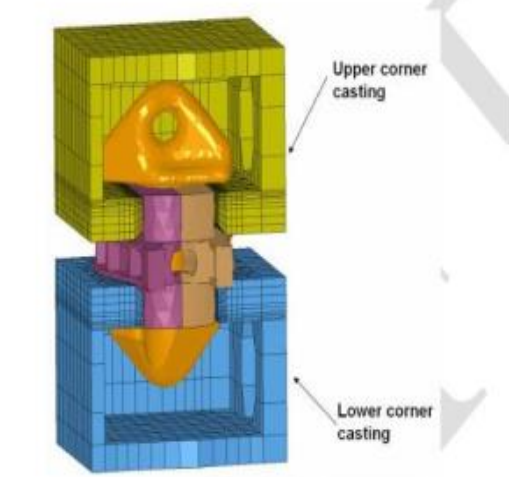


Figure 14 Tri-dimensional solid elements

Every twist lock acts in three different directions as a spring element. The values of stiffness were derived through the use of tri-dimensional solid elements. These were designed to resist torsion, compression and tension loads.

Work	unit	amount	average price per unit	total price for work
Excavation	m ³	24000	40	960000
Foundation/footwork/reinforcement/concrete/etabs/SAFE included	m ³	24000	141	3384000
20 ft containers	piece	80	4000	320000
40 ft containers	piece	42	6000	252000
fire exit	piece	7	800	5600
main doors	piece	2	3000	6000
doors	piece	81	1000	81000
windows	piece	88	500	44000
toilets	piece	12	1500	18000
elevators	piece	2	20000	40000
isolation	m ²	6558.944	20	131178.88
flooring (terrace)	m ²	2272.216	15	34083.24
interior painting	m ²	6040.408	12	72484.896
exterior painting	m ²	912.536	15	13688.04
ceiling paint	m ²	2272.216	10	22722.16
roof	m ²	1108.148	40	44325.92
connection plates on containers	piece	1068	150	160200
hinges on connections	piece	658	50	32900
labour wage	hour	0	18	0
strengthening bars	kg	993150.4	18	17876707.2
Total (TL)				34145800.88

Cost estimated for the Project is 34145800 TL.