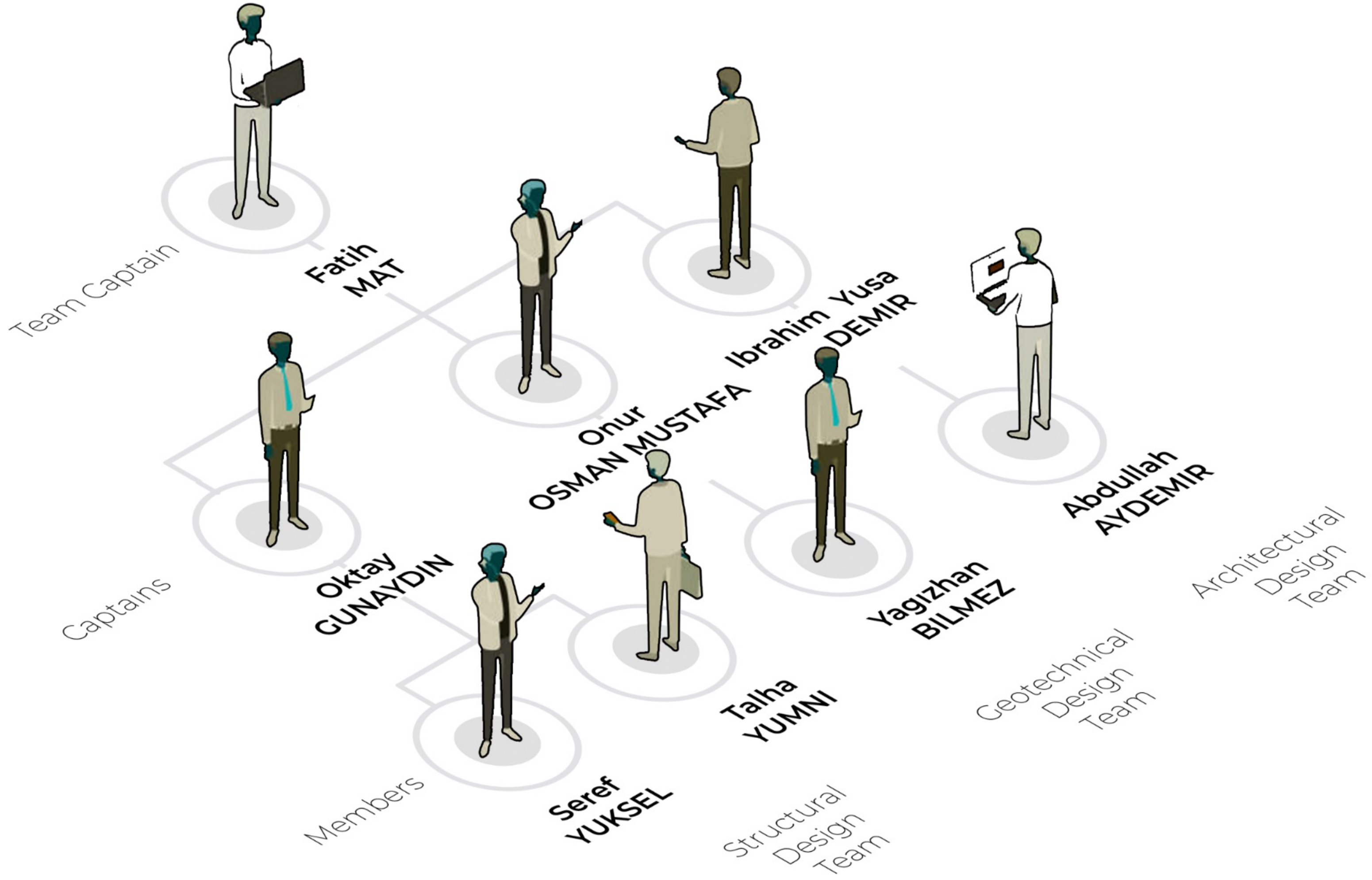
ISTANBUL TECHNICAL UNIVERSITY
SEISMIC DESIGN COMPETITION TEAM



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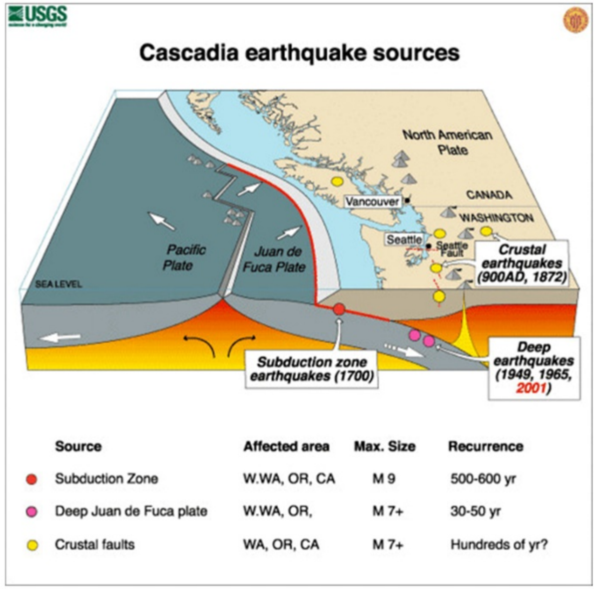
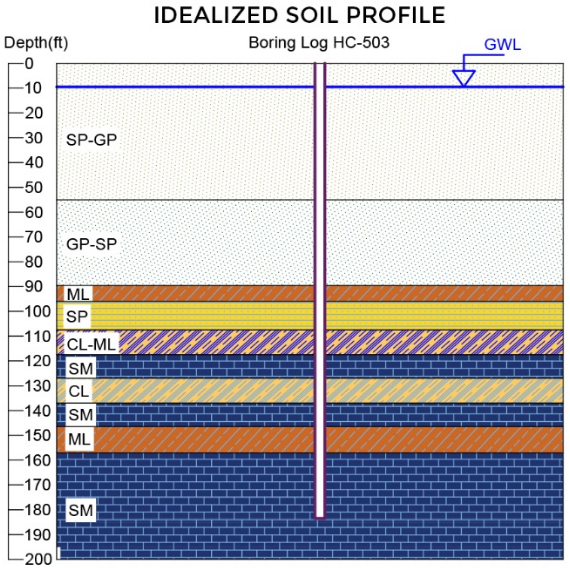
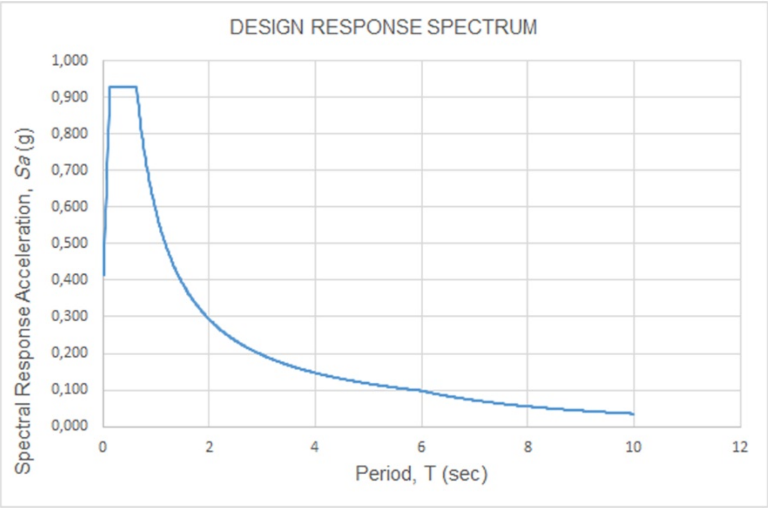
Geotechnical/Seismicity



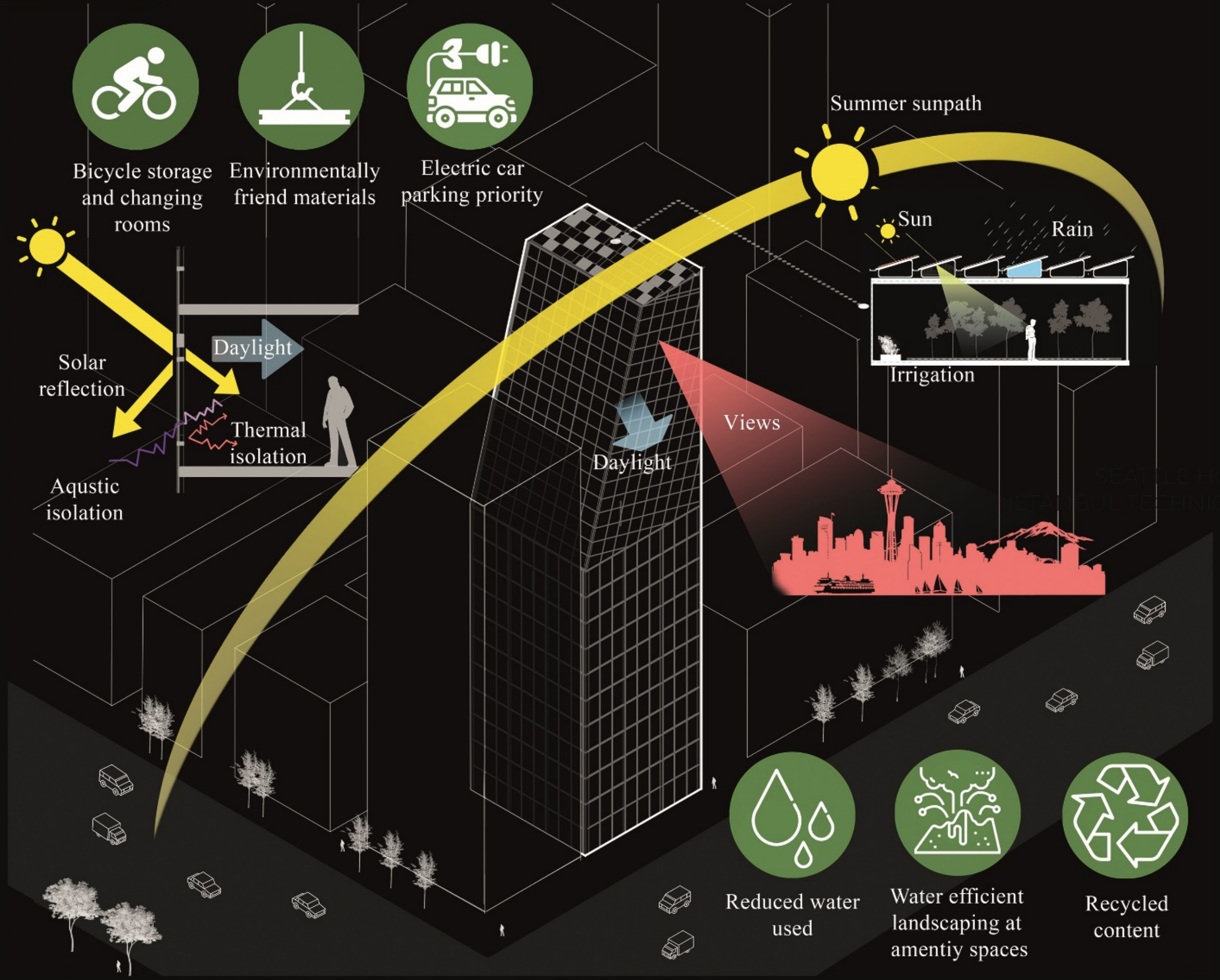




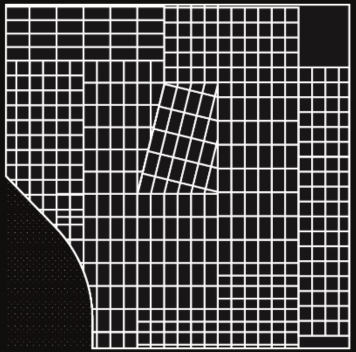
Contributing Sources	T = 2.0 sec			
	m	r (km)	Percentages (%)	New percentages %
Seattle - northern	7,01	5,21	17,31	24,95
Seattle - middle	6,85	7,93	5,86	8,45
Seattle - southern	6,81	10,33	3,89	5,61
Cascadia Megathrust - whole CSZ Characteristic(bottom)	9,11	88,48	22,9	33,01
Cascadia Megathrust - whole CSZ Characteristic(mid)	8,93	121,24	16,25	23,43
Cascadia Megathrust - whole CSZ Characteristic(top)	8,83	150,6	3,16	4,56
Total			**69,37**	**100**

→ 1978 Tabas, Iran at Tabas station
→ 1985 Nahanni Canada at "Site 1" station
→ 1985 Nahanni Canada at "Site 1" station
→ 2011 Tohoku, Japan at "Tajiri" station
→ 2010 Maule, Chile at "Cien Agronomicas" station
→ 2010 Maule, Chile at "Cien Agronomicas" station

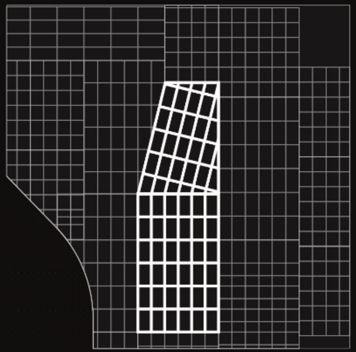
Architectural Design



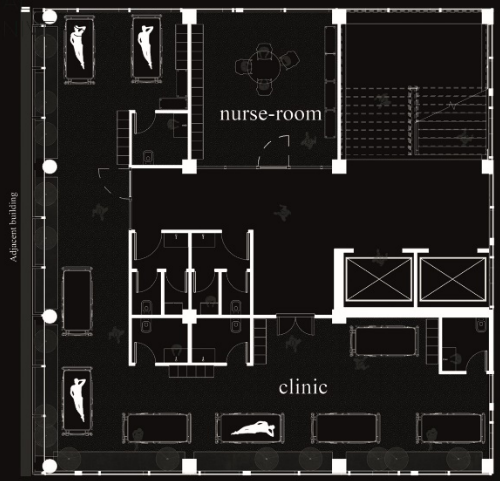
Urban texture of Seattle



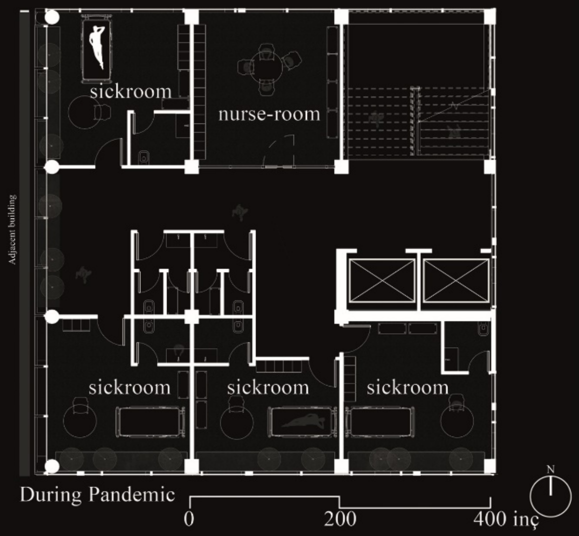
Abstraction



Facade design with inspiration from this texture



After Pandemic



During Pandemic

Layout of Floor 11

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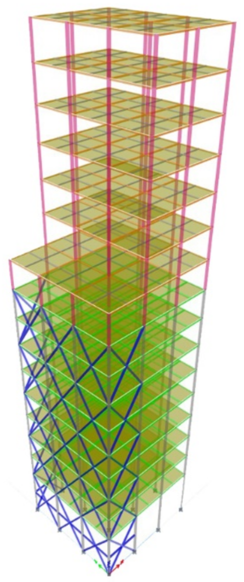
Structural System Concept for the Addition

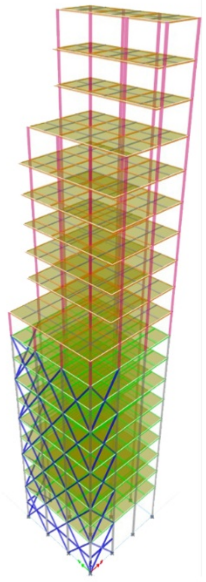
Period and Modal Participating Ratio of First 3 Mode of Design

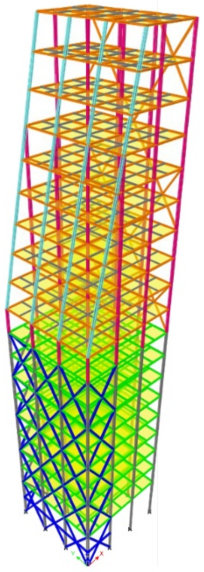
Iterations	Mode	Period(sec)	UX	UY
Design 1	1	0.403	0.000	0.488
Design 1	2	0.343	0.417	0.000
Design 1	3	0.227	0.000	0.014
Design 2	1	0.330	0.000	0.495
Design 2	2	0.265	0.408	0.000
Design 2	3	0.181	0.000	0.001
Design 3	1	0.291	0.000	0.631
Design 3	2	0.240	0.662	0.000
Design 3	3	0.156	0.000	0.019
Design 4	1	0.412	0.000	0.505
Design 4	2	0.304	0.501	0.000
Design 4	3	0.202	0.000	0.003

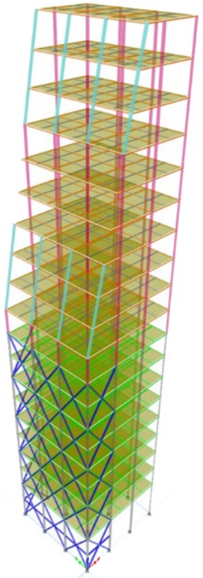
Maximum Intern Drift Ratio of Design

Design	X-Dir	Y-Dir
Design 1	0.076542	0.086188
Design 2	0.056727	0.071997
Design 3	0.070922	0.074367
Design 4	0.055131	0.101821


1. Design


2. Design


3. Design


4. Design

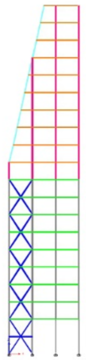
SDC 2021 GANTT-CHART

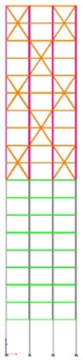
ISTANBUL TECHNİCAL UNIVERSITY SDC TEAM

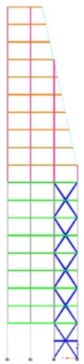
Project Start Date: 6.06.2021

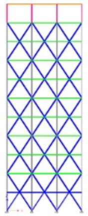
TİME LİNE (WEEKS)

WBS	TASK	LEAD	START	END	DAYS	% DONE	1-5 W	6-10 W	11-15 W	16-20 W
1	Taking environmental safety measures at the construction site		6.06.2021	8.06.2021	3	0%				
2	Tower crane installation		8.06.2021	14.06.2021	7	0%				
3	Rough construction		12.06.2021	26.07.2021	45	0%				
4	Exterior cladding installation		30.07.2021	17.09.2021	50	0%				
5	Fine building works		27.07.2021	22.05.2022	119	0%				
	Total Project Time				140 days					


South Elevation


East Elevation


North Elevation


West Elevation

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Retrofit Concept

Total Weight of Building

Elements	Size (inch)	Total length(inch)	Volume (inch3)	Weight (Ib)
Exisiting Building 1st Floor Column	0.2*0.2	96.00	3.840	0.018
Existing Building Column	0.2*0.2	384.00	15.360	0.071
Cross sectional Column	0.2	110.64	3.476	0.016
Extension Building Column	0.12*0.16	336.00	6.451	0.030
Existing Building Beam	0.12*0.12	1439.64	20.731	0.096
Extension Building Beam	0.12*0.12	2199.52	31.673	0.147
Extension Building İnterior Beam	0.09*0.09	510.78	4.137	0.019
Existing Building Braces	0.16*0.16	355.87	9.110	0.042
Existing Building 1st Floor Additional Braces	0.16*0.16	85.97	2.201	0.010
Existing Building 2th and 3rd Floor Additional Braces	0.18*0.18	28.85	0.935	0.004
Existing Building Additional Braces	0.09*0.09	190.80	1.546	0.007
Extension Building Braces	0.09*0.09	149.92	1.214	0.006
Total			100.674	0.467

Max Inter-Story Drift Story of Time History Analysis

Time History	X-Dir	Y-Dir
TH1 EW	0.040	0.001
TH1 NS	0.022	0.029
TH2 EW	0.028	0.000
TH2 NS	0.027	0.037
TH3 EW	0.019	0.000
TH3 NS	0.028	0.037
TH4 EW	0.030	0.001
TH4 NS	0.033	0.047

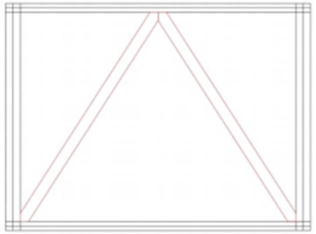
Model Participating Mass Ratio

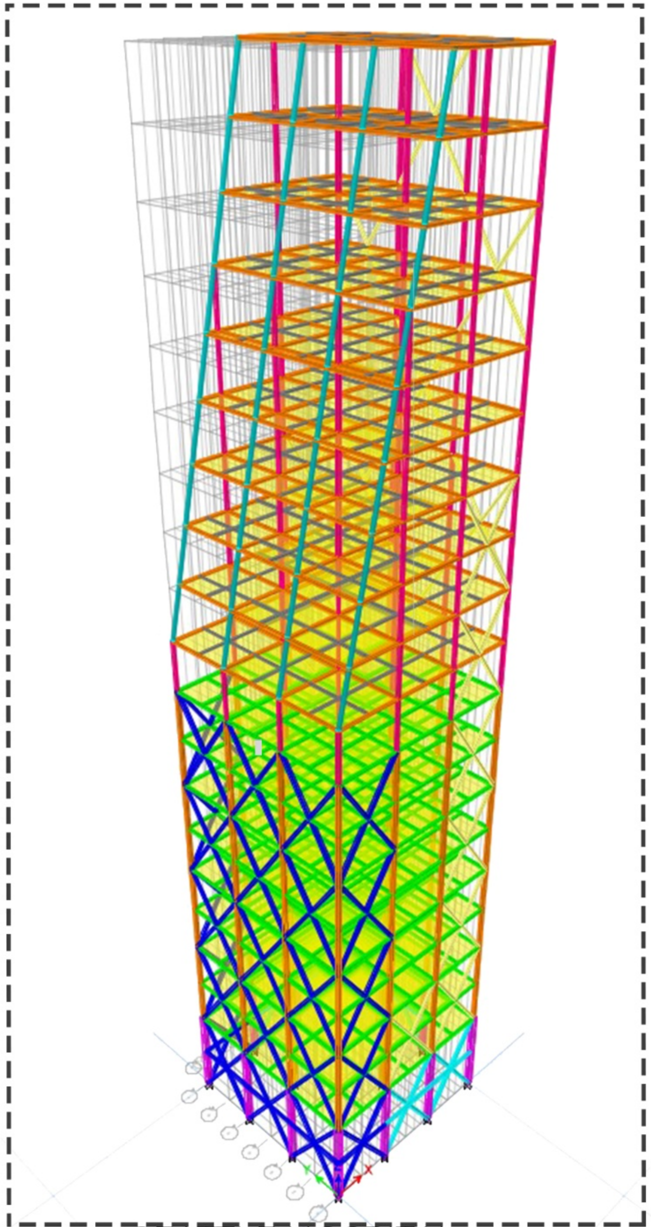
Mode	Period(sec)	UX	UY
1	0.198	0.000	0.539
2	0.151	0.510	0.000
3	0.113	0.000	0.088

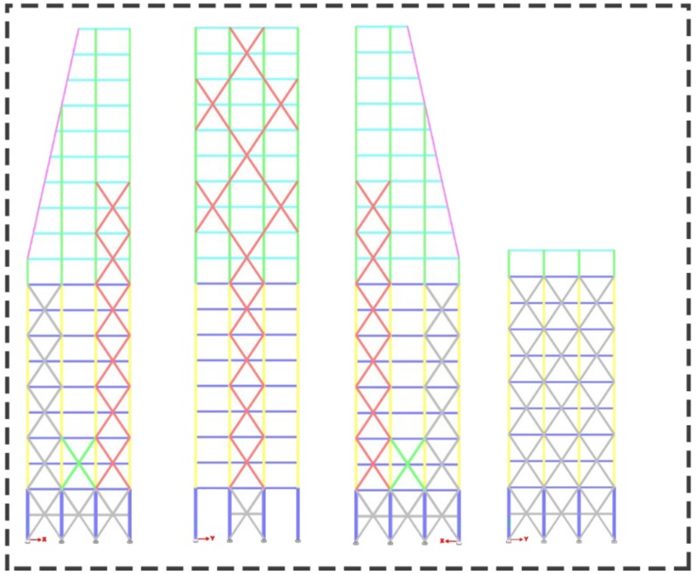
Total Rentable Floor Areas

Floor	Area (inch2)	Floor	Area (inch2)
1~11	144	16	104.04
12	135.96	17	96
13	128.04	18	87.96
14	120	19	80.04
15	111.96	Roof	72
		Total	2520

Connection Detail of Braces







The floor plans will not be disturbed with the braces because they will be built on the exterior of the building. It requres less time compared to other methods. It can be applied section by section without interfering completely with daily operations of the hospital.

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