

## Breadth – Mechanical

Current Parkridge Center – Phase VI utilizes a VAV system with additional air conditioning, A/C, units located on each floor. I have proposed to remove the A/C from each floor and replace with a more efficient chiller system on the roof.

To design the chiller the loads on the A/C units were needed in units of tons. The following table lists the loads on each of the A/C units:

AC Unit	Tot. MBH	Tons
1	425.38	35.45
2	414.35	34.53
3	597.29	49.77
4	638.33	53.19
5	0.00	0.00
6	0.00	0.00
7	529.65	44.14
8	616.16	51.35
9	643.47	53.62
10	640.49	53.37
11	596.72	49.73
12	638.07	53.17
13	637.75	53.15
14	634.91	52.91
15	596.34	49.70
16	637.47	53.12
17	593.51	49.46
18	613.58	51.13
19	596.54	49.71
20	637.50	53.13
21	592.84	49.40
22	612.88	51.07
23	0.00	0.00
24	0.00	0.00
	<b>Total:</b>	<b>991.10</b>

**Table F.21 – A/C Unit Loads**

Using the total load in tons I selected an air cooled chiller model 30XA from Carrier. The 30XA chiller is capable of handling 500 tons of load. I selected to use two chillers as to maintain uninterrupted service for maintenance of a unit or unexpected failure of a unit.

After talking with the mechanical team for the original project I learned that using chillers on the roof is indeed a more efficient system. However, this building is a commercial office building meaning each floor has the possibility of being rented by a different tenant and the billing of each floor would be possible using the individual A/C units. The billing using the chillers on the roof would possibly yield lower total energy costs for the building but a process to divide the costs between the individual tenants would need to be agreed to by each current tenant and any tenant in the future.