

Mechanical Breadth

Introduction

The mechanical breadth is an analysis of the required cfm in the electrical rooms on floors one through five. This analysis is based on the distributed and central transformers. I will size the cfm for the distributed transformers and the central transformers. This will show the amount of cfm is needed with and without a 150 kVA transformer in the electrical room.

Heat Gain for Transformers

Tag	Floor	kVA	Heat Gain (Btu/hr)	CFM
T-1	1	150	2700	125
T-2	2	150	2700	125
T-3	3	150	2700	125
T-4	4	150	2700	125
T-5	5	150	2700	125
T1-6	1	1000	18000	833
NOTE:	Assume power factor = 0.90 $Q = 1.08 * CFM * \Delta T$ Assume Delta T = 20 degrees			

Table 44: Heat Gain for Transformers

Conclusion

Therefore, the total CFM added to the electrical rooms by the distributed transformers is 625 cfm. The central transformer adds 833 cfm to the space. This only proves once again that the distributed transformers are the best possible solution to the DH Hamilton Building design.