Chicago High Rise Television Studio

Replace Vane Axial Fans with Cube Fans

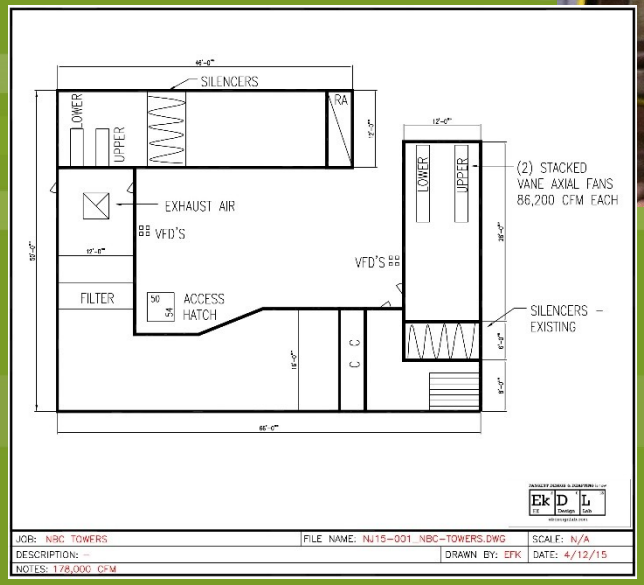
Existing Fan Failure

- Project Description
- Replace existing Vane Axial fans
- Supply and Return Plenum have stacked vane axial fans
- One fan has burned out motor with broken vanes that are no longer fabricated.
- Room located on sixth floor.

Accessibility to Fan Location

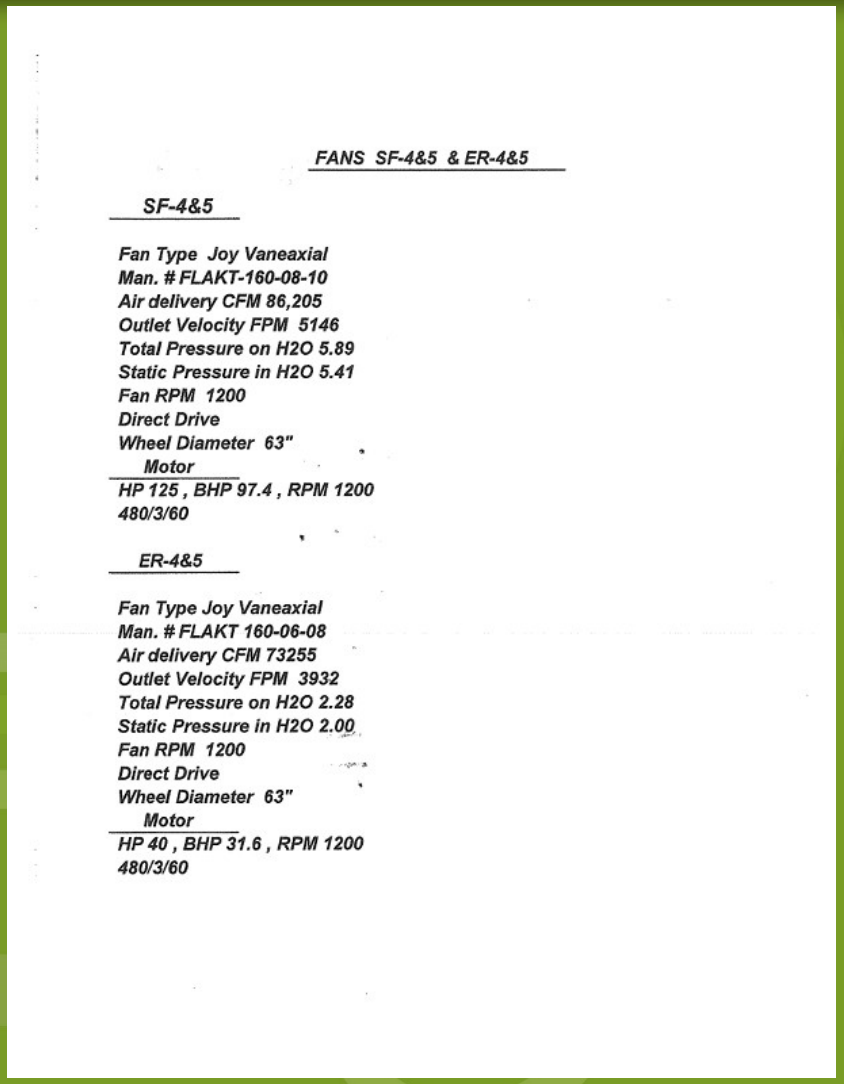
Room Layout

- Only access through 50 x 54 hatch in vestibule floor
- Floor below is very large with elevator access for fans and cubes
- Vane axial fans stacked



Solution – Provide Cube Fans that fit through Hatch

- Existing Vane Axial Fans
- Size Cube fans that fit thru hatch and match capacity
- Eight fans required



FANS SF-4&5 & ER-4&5

SF-4&5

Fan Type Joy Vaneaxial
Man. # FLAKT-160-08-10
Air delivery CFM 86,205
Outlet Velocity FPM 5146
Total Pressure on H2O 5.89
Static Pressure in H2O 5.41
Fan RPM 1200
Direct Drive
Wheel Diameter 63"
Motor
HP 125 , BHP 97.4 , RPM 1200
480/3/60

ER-4&5

Fan Type Joy Vaneaxial
Man. # FLAKT 160-06-08
Air delivery CFM 73255
Outlet Velocity FPM 3932
Total Pressure on H2O 2.28
Static Pressure in H2O 2.00
Fan RPM 1200
Direct Drive
Wheel Diameter 63"
Motor
HP 40 , BHP 31.6 , RPM 1200
480/3/60

Stacked Cube Fan Solution

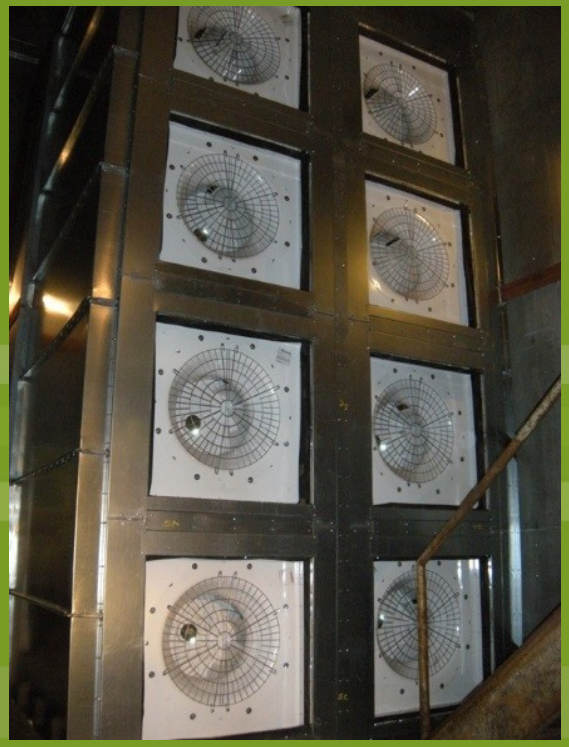
- Cube housing shipped knocked down for field assembly
- Fan assemblies ship separately for field mounting in cubes
- These pieces fit through the floor hatch

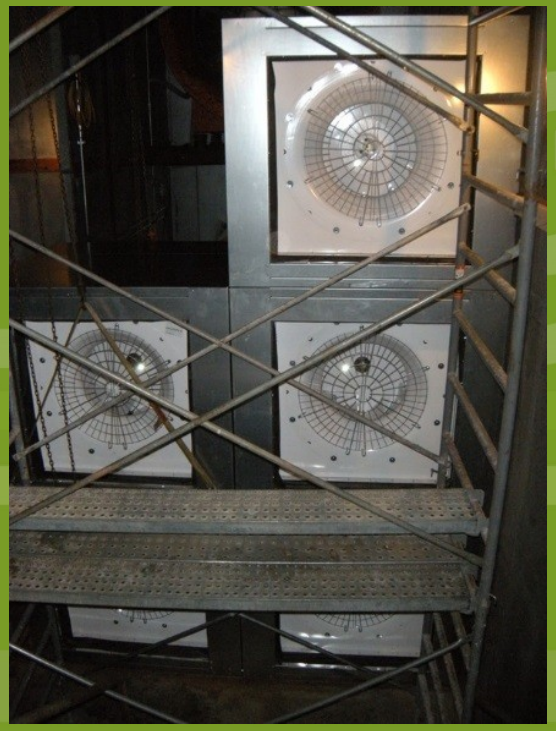
Housing Tested For Stacking Four High

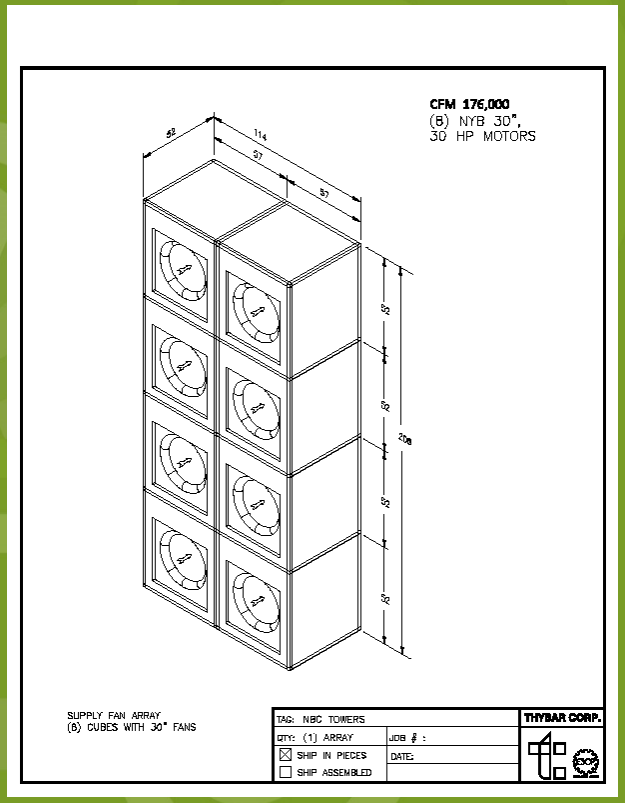
- Fan cube tested with added weight of three more cubes
- Panel construction used for ease of field assembly
- Contractor visited shop for practice assembly in factory

Four Cube Stack

Field Assembly







Advantages of Cube Fan Solution

- Lower fan total static pressure due to the elimination of sound attenuators and even air flow profile through the air house plenum
- Multiple fans so if one fan fails the other fans pick up the load. The building will not lose air flow.
- The possibility that one or two fans may be turned off and used in standby mode after a year of operation.
- System fan analysis may show the fans never run at full capacity therefore are operating at low efficiency, two less fans may operate the complete fan assembly at maximum efficiency.