* 1. Direct Drive Plenum Fans (APH Model)
     1. General
        1. Base fan performance at standard conditions (density 0.075 lb. /ft3).
        2. Fans selected shall be capable of accommodating static pressure and flow variations of +/-15% of scheduled values.
        3. Each fan shall be direct drive in AMCA arrangement 4 only according to drawings.
        4. Fans are to be equipped with lifting points.
        5. After fabrication all carbon steel components shall be cleaned and chemically treated by a phosphatizing process to ensure proper removal of grease, oil, scale, etc. Fan shall then be coated with a minimum of 2-4 mils of Permatector (Polyester Urethane), electrostatically applied and baked. Finish color shall be RAL 7023, concrete grey. Coating must exceed 1,000-hour salt spray under ASTM B117 test method. No uncoated steel fan parts will be allowed.
     2. Fan Housing
        1. Plenum fans shall be of the unhoused direct drive centrifugal type.
        2. Fan plate shall be aerodynamically designed with high-efficiency inlet, engineered to reduce incoming air turbulence.
        3. Panels and framework shall be constructed of heavy gauge, precision laser cut and die formed ASTM A-569 low carbon steel to provide a rigid structure to support the shaft and bearings and reduce low frequency vibration.
        4. Fan base angles shall be recessed to reduce overall width of the assembly.
        5. After fabrication all carbon steel components shall be cleaned and chemically treated by a phosphatizing process to insure proper removal of grease, oil, scale, etc. Panels and framework shall be coated with a minimum of 2-4 mils of Permatector (Polyester Urethane), electrostatically applied and baked. Finish color shall be RAL 7023, concrete grey. Coating must exceed 1,000-hour salt spray under ASTM B117 test method. No uncoated steel fan parts will be allowed.
     3. Fan Wheel
        1. The fan wheel shall be non-overloading airfoil centrifugal type. Wheels shall be statically and dynamically balanced to balance grade G6.3 per ANSI S2.19.
        2. The fan wheel shall be manufactured with a minimum of 12 continuously welded aluminum airfoil blades to move the blade pass frequency into the mid-octave bands.
        3. The entire wheel shall be constructed of aluminum to reduce the rotational weight of the wheel and reduce vibration. Fan sizes through 49 shall use 6063-T5 extruded aluminum blades, fan sizes greater than 49 shall use 5052-H32 laser cut and die formed aluminum blades to ensure precision blade tolerances, improve efficiency and reduce vibration.
        4. Wheel hubs shall be cast of 319 aluminum alloy.
        5. Aluminum fan wheels shall not require finish coating.
        6. The wheel and fan inlet shall be carefully matched and shall have precise running tolerances for maximum performance and operating efficiency.
     4. Fan Motor
        1. Motors shall meet or exceed EISA (Energy Independence and Security Act) efficiencies. Motors shall be NEMA T-frame, 720, 900, 1200, 1800 or 3600 RPM in 60 Hz (750, 1000, 1500 or 3000 RPM in 50 Hz), Open Drip Proof (ODP) [or optional Totally Enclosed Fan Cooled (TEFC), or optional Explosion Proof (EXP)] with a 1.15 service factor.
        2. Structural steel bases to be designed and manufactured by the fan supplier to ensure proper alignment of the fan and motor and structural integrity of the base to prevent vibration.