



Jan 12, 2012

Duct Design Criteria

- **ACCA approved computer programming**
 - a) Wrightsoft, Elite, ~~Nitec~~, ~~Adtek~~.
- **Design conditions**
 - a) Winter Design Conditions; outside db - 0 deg F inside db – 72 deg F
 - b) Summer Design Conditions; outside db – 90 deg F inside db – 75 deg F
- **Air Changes Per Hour**
 - a) .35(ach) maximum allowed with no minimum. Structures with known infiltration rate of less than .35(ach) must address supplemental combustion air needs for gas fired appliances using indoor combustion air.
- **Latent Cooling Equipment Load**
 - a) our design location is not in a wet coil climate.
 - b) moisture differences should always see negative numbers for grains per pound (gr/lb)
 - c) sensible heat ratio (SHR) default of .75 requires change to (.85 SHR) minimum for our location
- **Program submittal**
 - a) Project Summary, design information, design conditions, AED Entire House
 - b) Component Construction, room by room loss/gain calculations Entire House
 - c) Short Form, equipment schedule, room name, htg/clg loads, cfm Entire House
 - d) Duct System Summary, supply/return duct, trunk/branch detail Entire House
 - e) Floor to floor layout
 - f) Friction loss worksheet
 - g) Equipment performance data
- **HVAC Equipment Certificate**
 - a) Performance testing check box
- **Plan review document submittal**
 - a) requires HVAC Certificate and the components of the computer program submittal
 - b) individual duct design can be submitted as a splice to plans

- **Performance testing**
 - a) document submittal will not require duct system summary
 - b) contractor to provide test data at residential rough inspection, (+ or –) 20% on cfm
- **Unfinished basement layout**
 - a) supply air installations to be performance tested, must have fully developed take-offs. Lateral lengths may be scaled back
 - b) supply air installations by design, may be reduced accordingly. Take-offs and lateral runs may be scaled back to trunk lines with a minimal number of registers installed
 - c) return air may be scaled back
 - d) if draft hooded gas appliances installed, and supply air has been reduced, any suggestion of negative pressure must be addressed
- **Jobsite documents**
 - a) document submittal includes:
 - 1) program short form / room name with htg/clg loads and cfm's
 - 2) program duct system summary
 - 3) program floor to floor layout
 - 4) equipment declaration
- **Inspection procedures**
 - a) verify equipment sizes, site specific (brand and or model) equipment changes may be accomplished with new equipment declaration provided by mechanical contractor by final inspection
 - b) duct inspection, construction, sealing, panning
 - c) lateral runs and placement, system layout and sizing
 - d) alterations, offsets
 - e) square inches at plenum tie-ins
 - f) air conditioning coil and condenser compatibility if installed, if uninstalled design (size) criteria documented on final inspection
 - g) minimal basement distribution requirements
 - h) verify jobsite documents are left in place with appliance installation instructions at final inspection
- **Inspection rejections**
 - a) where lateral take-offs are not installed on the designated trunk line section, an amended design submitted to plan check will be required
 - b) equipment sizes do not correspond with load calculations