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