

## DUCT DESIGN INSPECTION PROTOCOL

Duct design paper work packet must be on site at HRR inspection. Packet can be found either at the permit card or at the furnace, no other locations allowed. Packet must be stamped "Released for permit" by plans examiner. Residential equipment certificate may be included in packet but is not required.

Packet will contain the following:

1. Load short form, entire house: Project information. Design information. **Heating/cooling equipment specifications**. Room names with area, heating/cooling loads, and cfm's.
2. Drawings of all floor layouts. Drawings will show room name and layout, supply and return air trunk lines with sizes, supply lateral runs with sizes, supply register locations with cfm's, return register locations with cfm's. Outside air duct if installed.
3. Duct system summary, entire house: List of heating/cooling static pressure, pressure loss etc. Heat/cool actual air flow. Total effective length of ducts. Supply trunk and branch detail table, return trunk and branch detail table.

### HRR INSPECTION FOR A HOUSE WITH FINISHED BASEMENT

Verify the following items:

1. Equipment sizing.
2. Supply/return trunk line sizing.
3. Supply air lateral sizing.
4. Supply laterals come off of trunk lines where shown on prints.
5. Supply/return plenum sizing at equipment equals 2 square inches/1000 btu's of output.
6. All supply/return air registers are accounted for.
7. Outside air installed if shown on prints or vice versa.
8. Sealant, hangers, headers, etc.
9. Regular HRR inspection for other mechanical items in house.
10. Duct design packet is left with furnace installation instructions at furnace.

### HRR INSPECTION FOR HOUSE WITH UNFINISHED BASEMENT

Same inspection as above except, contractor does not have to completely develop the supplies and returns in basement even though the drawings show them being installed.

## VARIABLES THAT MAY OCCUR.

1. Equipment is not on site at HRR? Put in the HRR notes that equipment is not on site and will need to verify sizing at final.
2. Equipment does not match what is listed in duct design packet? Put in HRR notes that equipment does not match and contractor will need new equipment declaration sheet on site by final.
3. Lateral size is different than what is shown on prints? Laterals cannot be down sized. One lateral can be upsized to allow for extra fittings in run.
4. Lateral length has been increased? Extra length on a lateral will be allowed when register location was changed due to a conflict with a sliding door, window, future furniture etc.
5. Return air laterals do not seem to match prints? It is very difficult to see the return air lateral sizes on the drawings (especially the 8 ½ X 11). Verify the returns meet the 2 square inch/1000 btu output required by code and that returns are in same room as shown on prints.
6. Registers/grilles not in same place as shown on prints: Supply/return registers must be located in the same room as what is shown on prints but do not have to be in exact same location.

## REASONS TO NOT PASS THE HRR INSPECTION

1. Lateral comes off of trunk line in a different location than what is shown on prints.
2. More than one lateral has been upsized.
3. Lateral has been down sized from what is on prints.
4. No outside air is installed as shown on prints or vice versa.
5. Extra fittings installed in multiple laterals.
6. Paperwork not on site.
7. Flex duct installed but not shown on prints.

## FINAL INSPECTION FOR HOUSE WITH FINISHED BASEMENT

If condenser is installed verify that it matches what was specified in equipment declaration. Leave duct design packet at furnace inside installation instructions.

Final inspection notes must have the following:

1. Basement: finished or unfinished.
2. Outside air: installed or not (if outside air has been noted at HRR, does not have to be repeated in final notes).
3. A/C: complete or a/c rough (lineset only, coil and lineset, etc.). If a/c is left in rough state final notes must include something similar to “future a/c design to be 3 tons”.

## FINAL INSPECTION FOR HOUSE WITH UNFINISHED BASEMENT

Same inspection as above. Remember, unfinished basements must have some supply and return to keep basement conditioned

1. Supply air: Does not have to be fully developed as per the prints. Take offs and laterals may be scaled back to trunk lines with a minimal number of registers installed.

2. Return air: Does not have to be fully developed as per the prints.
3. Draft hood or indirect vent (single vent pipe) appliances installed in unfinished basement: If supply air is not fully developed, supply into basement must be greater than or equal to return air in basement. Any suggestion of a negative pressure in basement must be addressed with extra supply air, transfer air grill into stairs, etc.

### FINAL INSPECTION VARIABLES

What if equipment was not on site at rough inspection? Verify equipment installed matches equipment declaration in duct design packet.

What if equipment installed at rough did not match original equipment declaration paper? Contractor must have new equipment declaration sheet on site by final inspection. Verify equipment installed matches new paperwork. You will also need to verify that new equipment sizing is close to what was originally called for, i.e. furnace btu's approximately the same, a/c tonnage the same. If equipment matches new paperwork and is close to original sizing, complete inspection and bring new equipment declaration sheet back to RBD to be scanned onto the permit. If equipment does not match, partial inspection and put in notes that equipment does not match and contractor must bring new equipment declaration sheet to RBD.