"WHAT YOU NEED TO KNOW ABOUT LOW LOAD HOMES TO BID THEM AND WIN THEM"

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Today's Topics

- Who am I?
- Why ACCA Wrote *Manual LLH*®
- What it Is and Isn't!
- Review some Marketing Thoughts
- Overview of *Manual LLH*
- Your Questions ???

Disclaimer!!! This presentation covers an overview of the contents of ACCA's new *Manual LLH* and some marketing topics (that you may already know) to help contractors increase their sales. It is not intended to be a design presentation.

Extensive ACCA Involvement

- 41 years of HVAC experience with 24 years as owner
- ACCA Chairman of the Board, 2010 – 2011
- Current Chair of ACCA's *Technical Services Committee*
- Current Voting Member of ACCA's:
  - *Codes Committee*
  - *Technical Services Committee**
  - *Quality Assured Contractor Accreditation Steering Committee*
- Extensively involved in the development / update committees for:
  - ANSI/ACCA 1 **Manual D – 2016***
  - ANSI/ACCA 2 **Manual J – 2016**
  - ANSI/ACCA 3 **Manual S – 2014***
  - ANSI/**ACCA 4 QM – 2019**
  - ANSI/**ACCA 5 QI – 2015**
  - ANSI/**ACCA 6 QR – 2015**
  - ANSI/**ACCA 9 Qivp – 2016**
  - ANSI/ACCA 10 **Manual SPS – 2010** (RA-2017)*****
  - ANSI/ACCA 11 **Manual Zr – 2018***
  - ANSI/**ACCA 12 QH – 2018**
  - ANSI/ASHRAE/**ACCA 180 – 2018**
  - ANSI/ASHRAE/**ACCA 183 – 2007** (RA-2017)
  - ACCA **Manual LLH – 2019***

  ***** *Chaired the respective committee*
- Considerable Code Involvement:
  - Serve on the ICC Plumbing, Mechanical, Fuel Gas, and Swimming Pool Council
  - Previously served on the ICC Mechanical Code Technical Committee
  - Previously served on the IAPMO Uniform Mechanical Code Technical Committee

Why Did ACCA Create *Manual LLH*?

1. HVAC industry said it was needed.
2. New building codes make many new homes LLH's.
3. Impacts of oversizing is worse than ever (many folks do not believe their Manual J calc's are right).
4. Those who size it right, encounter air delivery issues that they do not know how to handle.
5. Lack of small equipment offerings that satisfy design needs … CFM capability, latent capacity.
6. Need for supplemental dehumidification (ratio of latent load to sensible load is higher in low load dwellings).
7. It's what ACCA does for contractors!

What *Manual LLH* is … and What it Isn't!

+ It is based on today's homes that conform to the requirements of the 2015 (and greater) IRC.

  A typical Energy Star Home built four years ago had a HERS score in the low 60's. Today's 2018 IRC is looking for scores in the low 50's.

− It is not aimed at helping a designer to build a "high efficient home", a "Net Zero Home" … or, anything in between.

+ It is an application manual augmenting existing design guidance to deal with the unique low load home challenges related to:
  - equipment low latent capabilities *(an equipment selection problem)*
  - low airflows *(a room air mixing problem)*
  - increased home ventilation *(an equipment selection problem)*
  - higher than normal latent loads *(an indoor humidity control problem)*

− It does not promote any specific design criteria over another.

+ It details a number of solutions that practitioners can employ when their *Manual J*® calculations indicate a low load home.

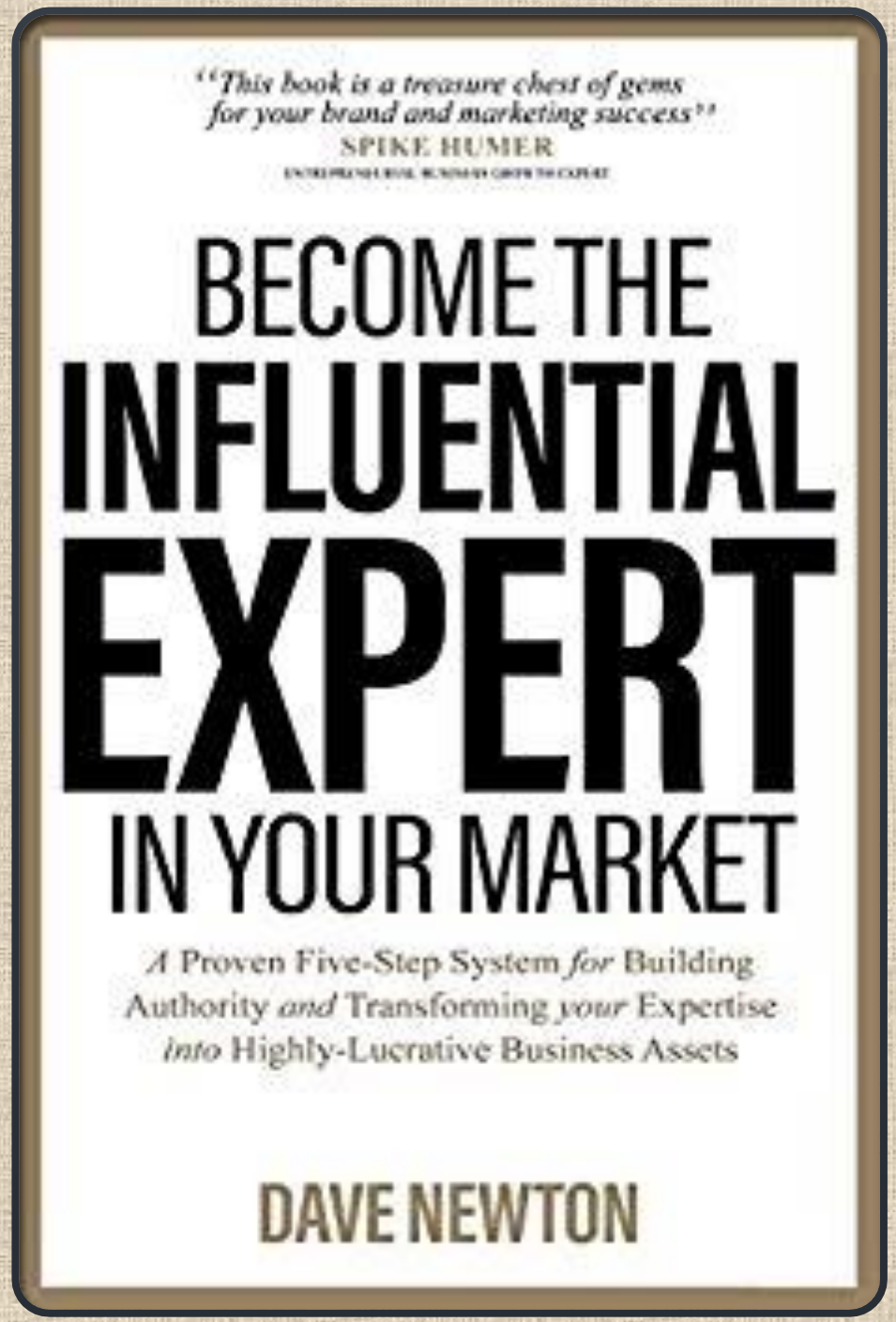
Marketing Thoughts

Set Yourself Apart

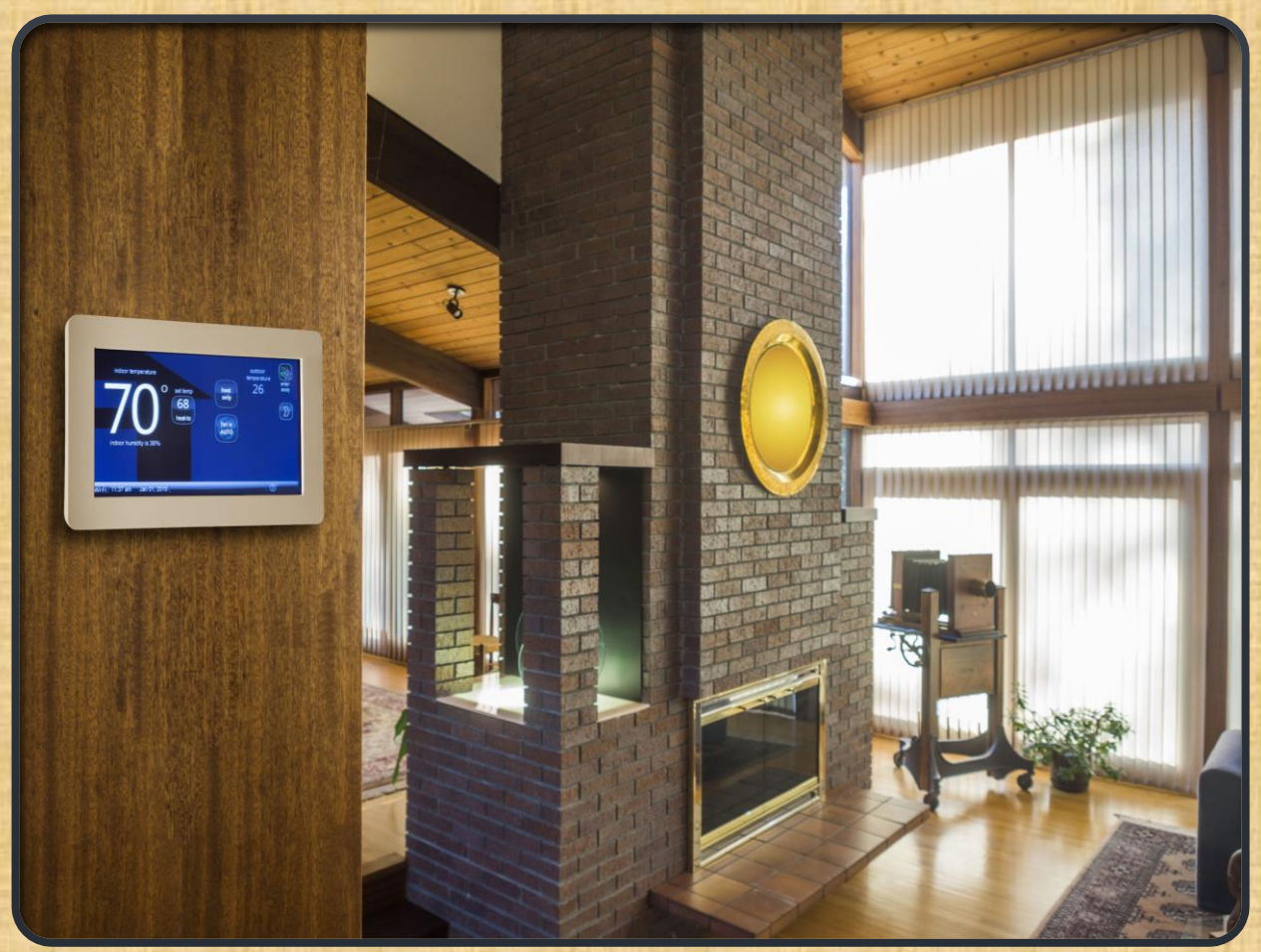
At … Insert Your Name Here …

- Our Technicians are NATE Certified and here is why that is important to you.
- Our company is an ACCA Quality Assured (QA) Accredited Contractor and here is why that is important to you.
- Everybody says that they do it, but we actually do it … and provide written documentation to prove it.

Otherwise, it is easy to take a 95% AFUE furnace and turn it into a 70% AFUE system by installing it improperly.



BE THE EXPERT IN YOUR MARKET



"DO A QUALITY JOB AT A FAIR PRICE AND THE MONEY WILL COME!" JIM ISAAC

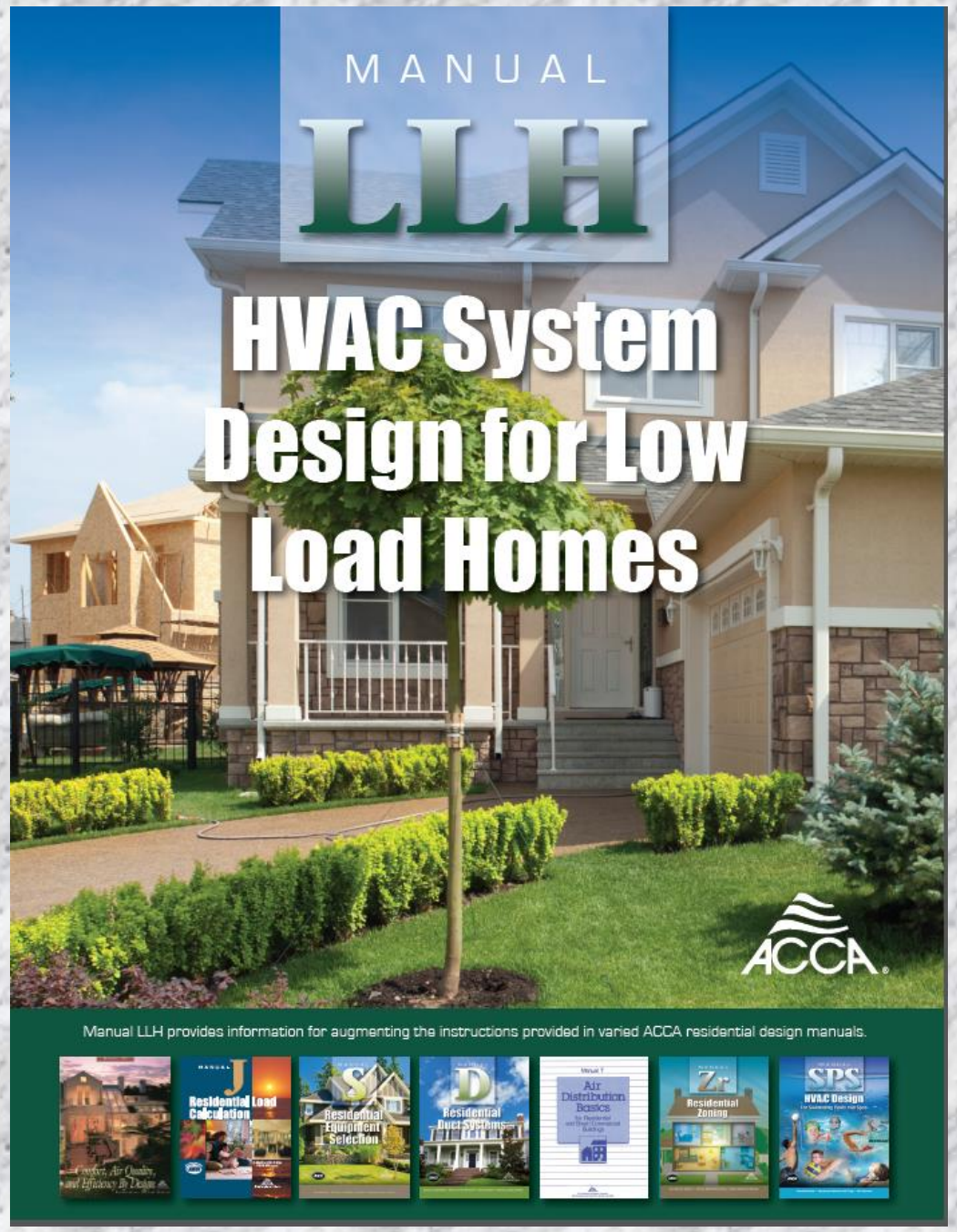
Don’t say things that make you look like everyone else, or mean nothing!

“We do quality work”

“We do that too”

What are some of your favorites?

Don’t Get Caught Up in Making it More than it is!



WHAT IS IN *MANUAL LLH* AND WHY IS IT IMPORTANT?

Manual LLH Preface

- We (ACCA and I) know that Everyone desires to make stand alone manuals or guides that cover EVERYTHING THAT THEY FEEL EVERYONE SHOULD DO!
- So, we decided that a preface was needed to lay out the basis for the intent of and the contents of Manual LLH. This had to be done to keep the document relevant to todays homes and on track.
- It defines a single story, 2,000 sq. ft., three-bedroom, two-bathroom, slab on grade home with an attached garage that is built to meet the requirements of the 2018 IECC and IRC.
- It has an encapsulated attic and upgraded floor insulation.

Manual LLH Introduction

- *Manual LLH* uses the ACCA *Manual J*® load calculation results to define a low load dwelling ("> 1500 ft^2 per ton").
- Being a low Load home does not necessarily mean that a home is an energy efficient dwelling.
  - Indeed, many condominiums / apartments – with small footprints and often only 1 or 2 exposures – have low heating and cooling loads.
- Loads encountered in 'builder grade' homes today.

Built "x" years ago	Cooling Load (ft^2 per ton)
20 yrs ago	**600 – 1000**
10 yrs ago	**800 - 1200**
Currently	**1000 - 1400**

The corresponding heating load for a low load home ranges from 5 Btuh (say Homestead, FL) to 15 Btuh (say, Deluth, MN) per square foot of conditioned space.

Manual LLH Guidance

("Application Manual" … not a "LLH Design Manual")

- Deals with the unique HVAC design issues of low load homes
- Identifies equipment options / approaches that are available in today's marketplace.
- Augments the instructions provided in ACCA's residential design series:

  Manuals J® / D® / S® / T® / Zr® / SPS® / RS® / etc.

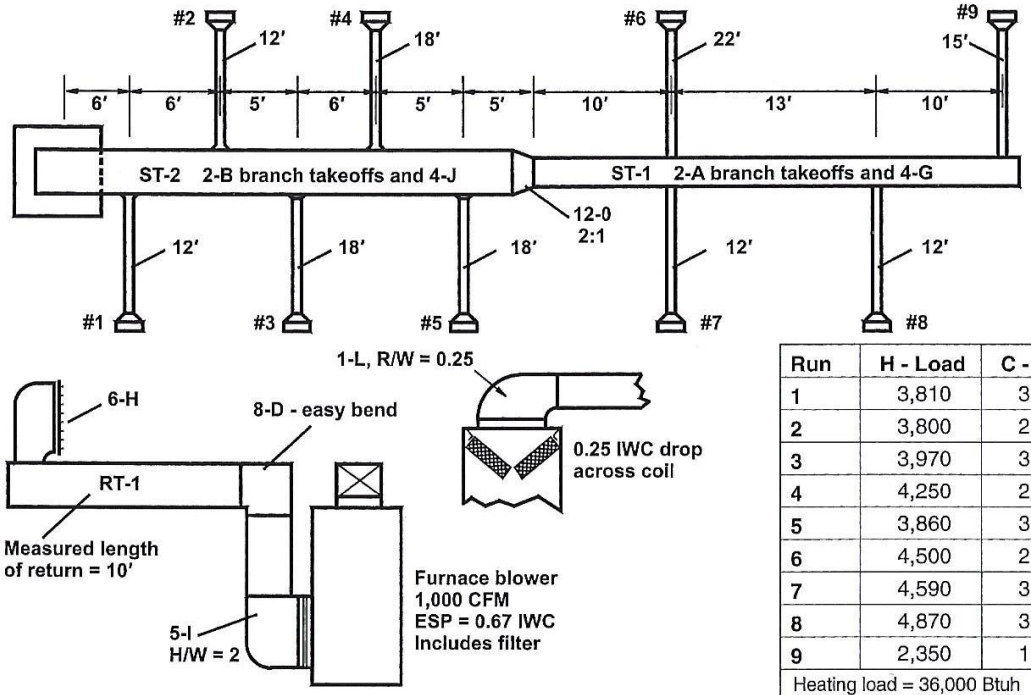
- *Manual LLH* is not intended to be a 'stand-alone' guidance document.


WHAT'S THE
BIG DEAL?

AIRFLOW

ion 7

Galvanized metal duct system



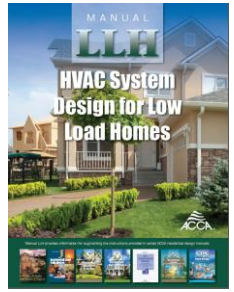
Run	H - Load	C - Load
1	3,810	3,110
2	3,800	2,380
3	3,970	3,200
4	4,250	2,750
5	3,860	3,010
6	4,500	2,610
7	4,590	3,500
8	4,870	3,750
9	2,350	1,690
Heating load = 36,000 Btuh Sensible cooling load = 24,000 Btuh		

Figure 7-12

A typical home requires 0.5 – 1.0 CFM / Ft^2 of floor area in order to provide adequate air circulation for comfort cooling and heating.

Manual LLH Table of Contents

Part 1 – Design Issues and Procedures

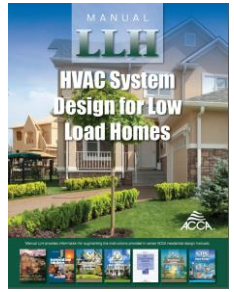


Manual LLH Table of Contents, cont.

Part 2 – Example Solutions

Manual LLH Table of Contents, cont.

Part 3 – Appendices



Part 2
Example Solutions

Sections 11 through 16 apply to Part 1 concepts and procedures to low load homes that use equipment and technologies that are available today. There can be geographic or regional differences that need to be accommodated; such as, using HRVs/ERVs to improve engineered ventilation efficiency, and/or, using a whole house dehumidifier to limit indoor humidity excursions for a dwelling located in a humid climate.

Section 11, Ex 1 – **SDHV Equipment**

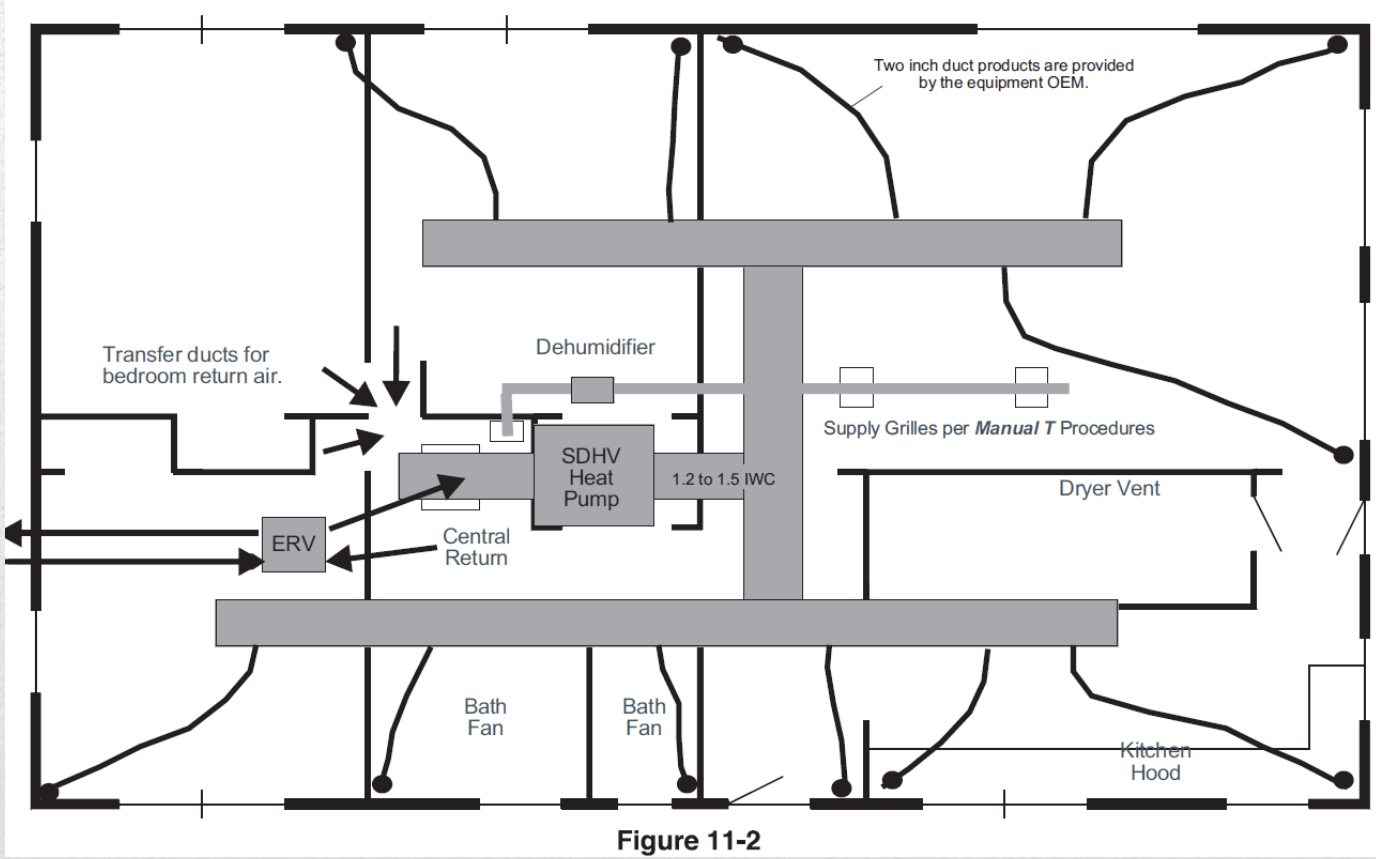


Figure 11-2

- *Small duct, high velocity* (SDHV) equipment … with associated air nozzles … to obtain adequate room air mixing.
- Depending on location, also needed might be:
  - Whole-house dehumidifiers (for humidity control)
  - Heat recovery equipment (ERV/HRV for outdoor air)

§12, Ex 2 – **Ductless Equipment**

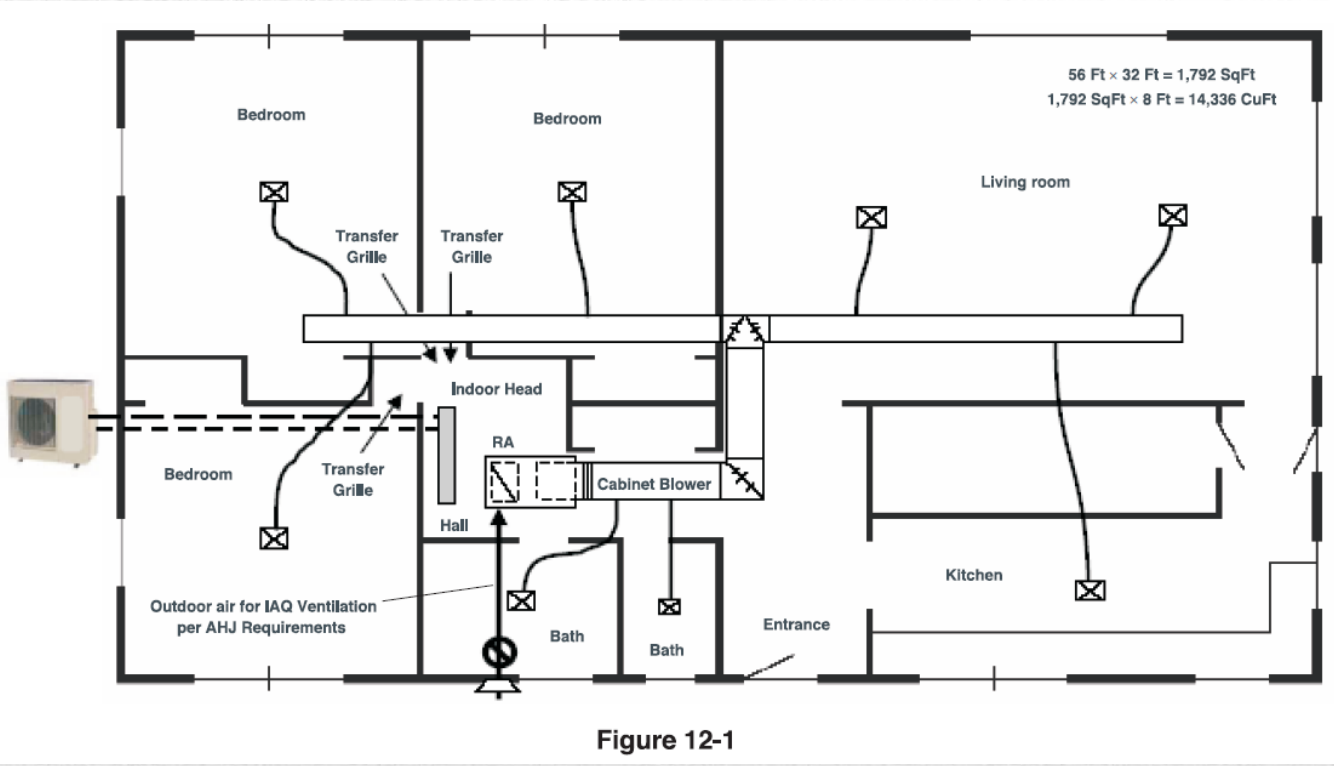


Figure 12-1

Note: Depending on location, also needed might be:

- Whole-house dehumidifiers (for humidity control),
- Heat recovery equipment (ERV / HRV for outdoor air).

- Ductless split-coil head is the coiling/heating source:
  - The room where the head is located quasi 'serves as a plenum'.
  - Separate duct distribution system distributes the air (as well as ventilation air) to the rest of the rooms.

This solution may not be compatible with non-compact home designs; large temperature departures can occur.

§13, Ex 3 – **Fan Powered Mixing Box**

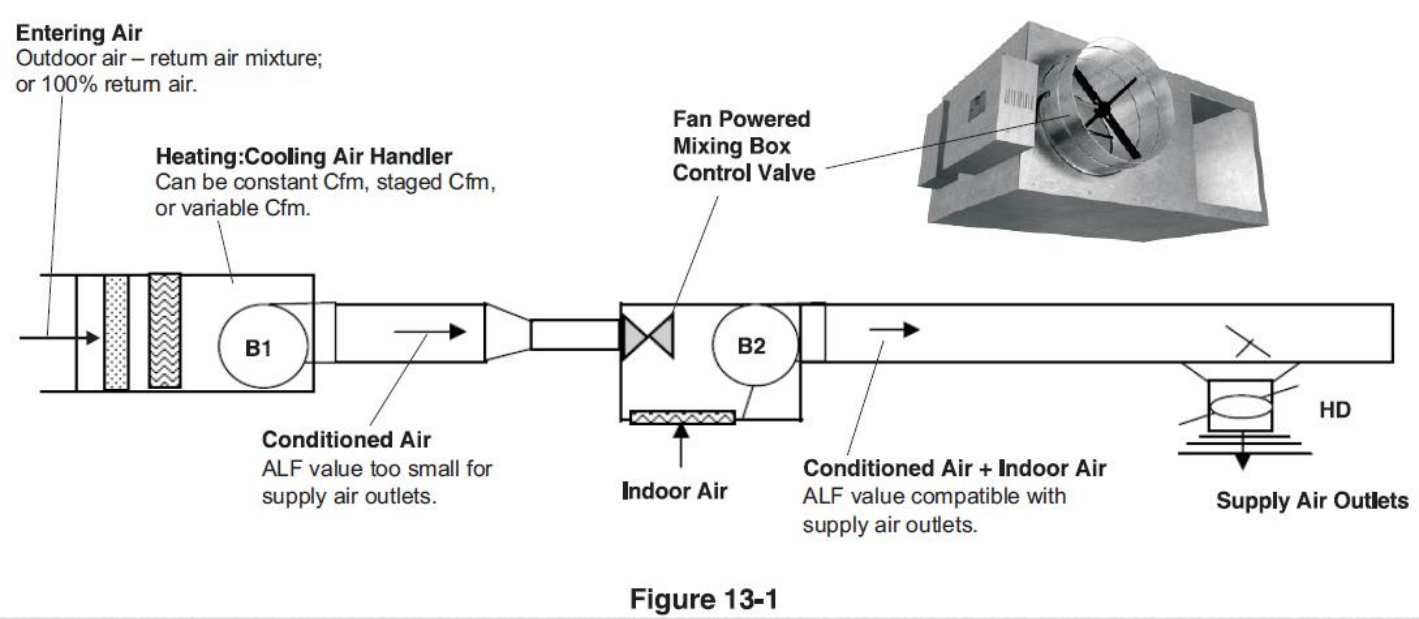


Figure 13-1

- Similar to commercial applications:
  - Fan powered terminal boxes combine primary air with secondary air to achieve adequate room air mixing.

Note: Depending on location, also needed might be:
- Whole-house dehumidifiers (for humidity control),
- Heat recovery equipment (ERV / HRV for outdoor air).

§14, Ex 4 – **Capacity Deployment Systems**

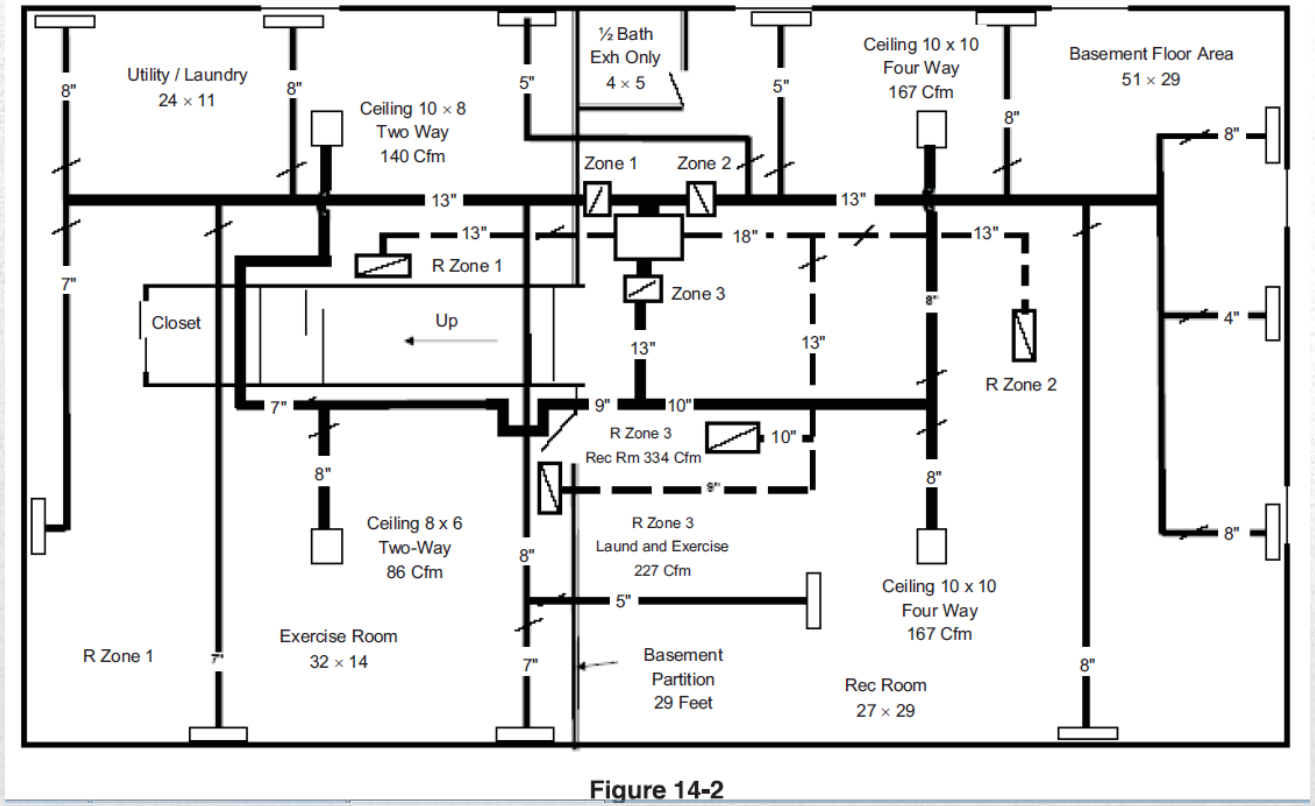


Figure 14-2

Note: Depending on location, also needed might be:

- Whole-house dehumidifiers (for humidity control),
- Heat recovery equipment (ERV / HRV for outdoor air).

- Uses air-zoning dampers
  - Zoned ductwork is sized for nearly the full blower CFM.
  - Conditioned air is serially distributed to one zone at a time (controls are based on furthest from T'stat set-point, priority control, or other.)

<u>Cautions</u>:

- Best designed for 3 zones per system; with no zone being smaller than 25% of the full load.
- Requires specialized controls.
- This approach has not yet been demonstrated in the field.

§15, Ex 5 – **Engineered Bypass Air**

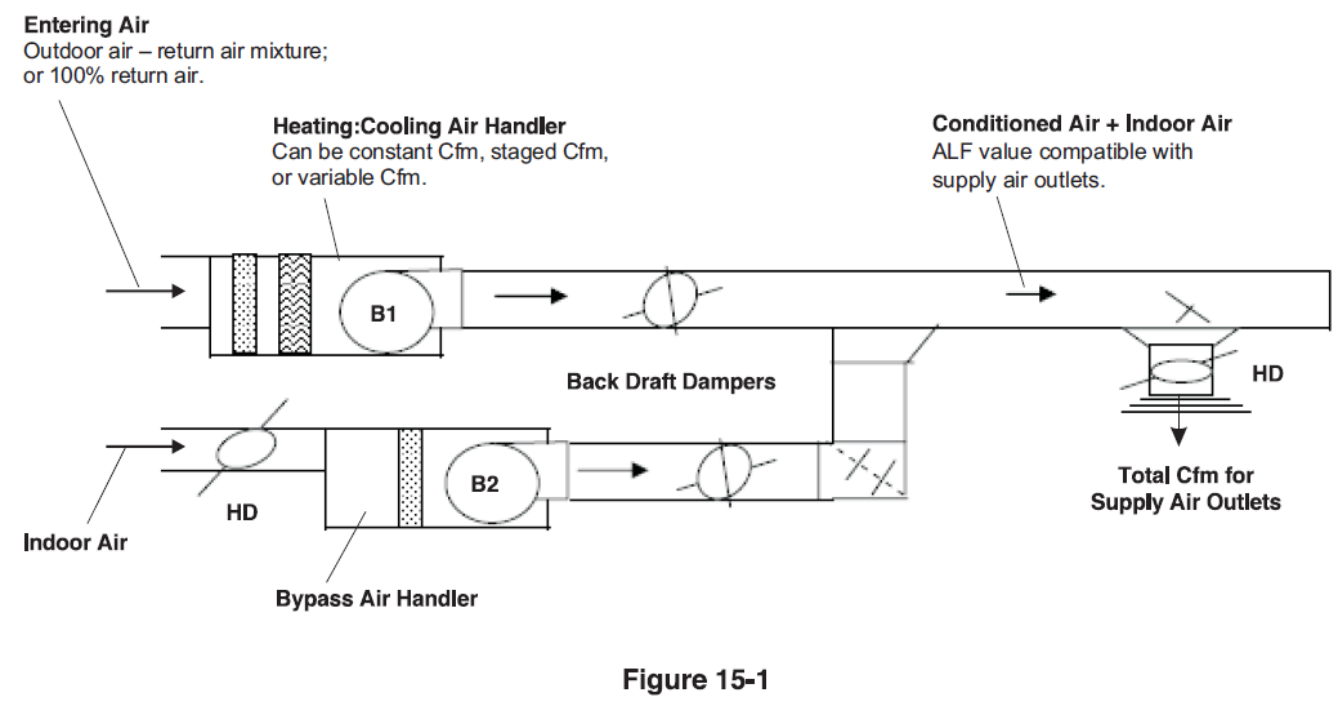


Figure 15-1

Note: Depending on location, also needed might be:
- Whole-house dehumidifiers (for humidity control),
- Heat recovery equipment (ERV / HRV for outdoor air).

- In addition to a system's primary system blower (B1), a separate bypass blower (B2) is used to provide adequate airflow for the entire home.

Cautions:
- When two blowers operate in parallel, the ESP values must each be equal to the design pressure drop value for the duct system.
- If the primary blower is staged or modulated, the bypass blower must be staged or modulated in the opposite direction

§16, Ex 6 – **Standard Equipment with Nozzles**

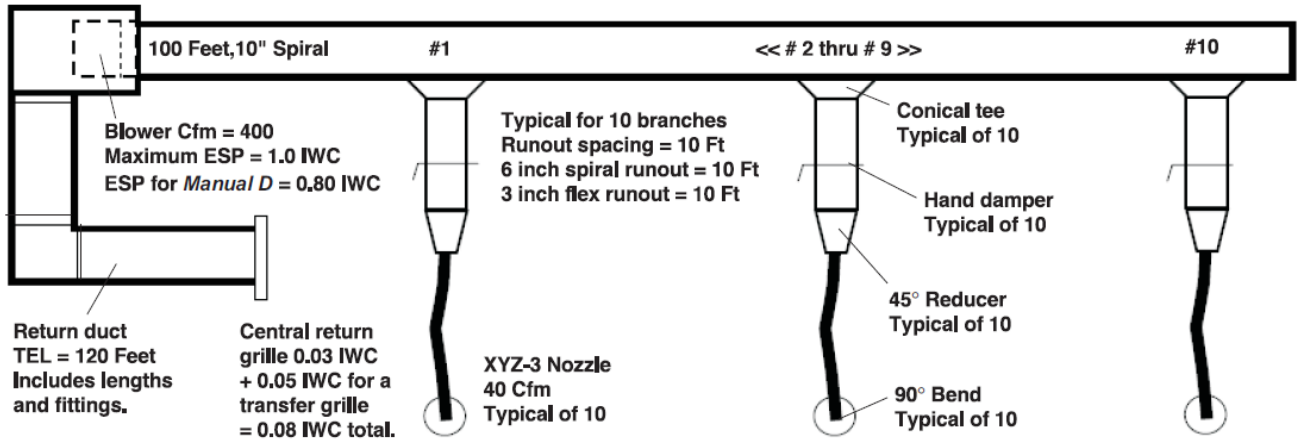
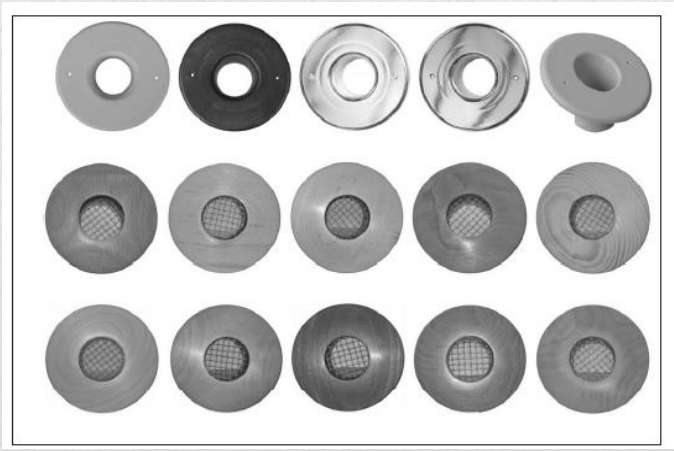


Figure 16-1

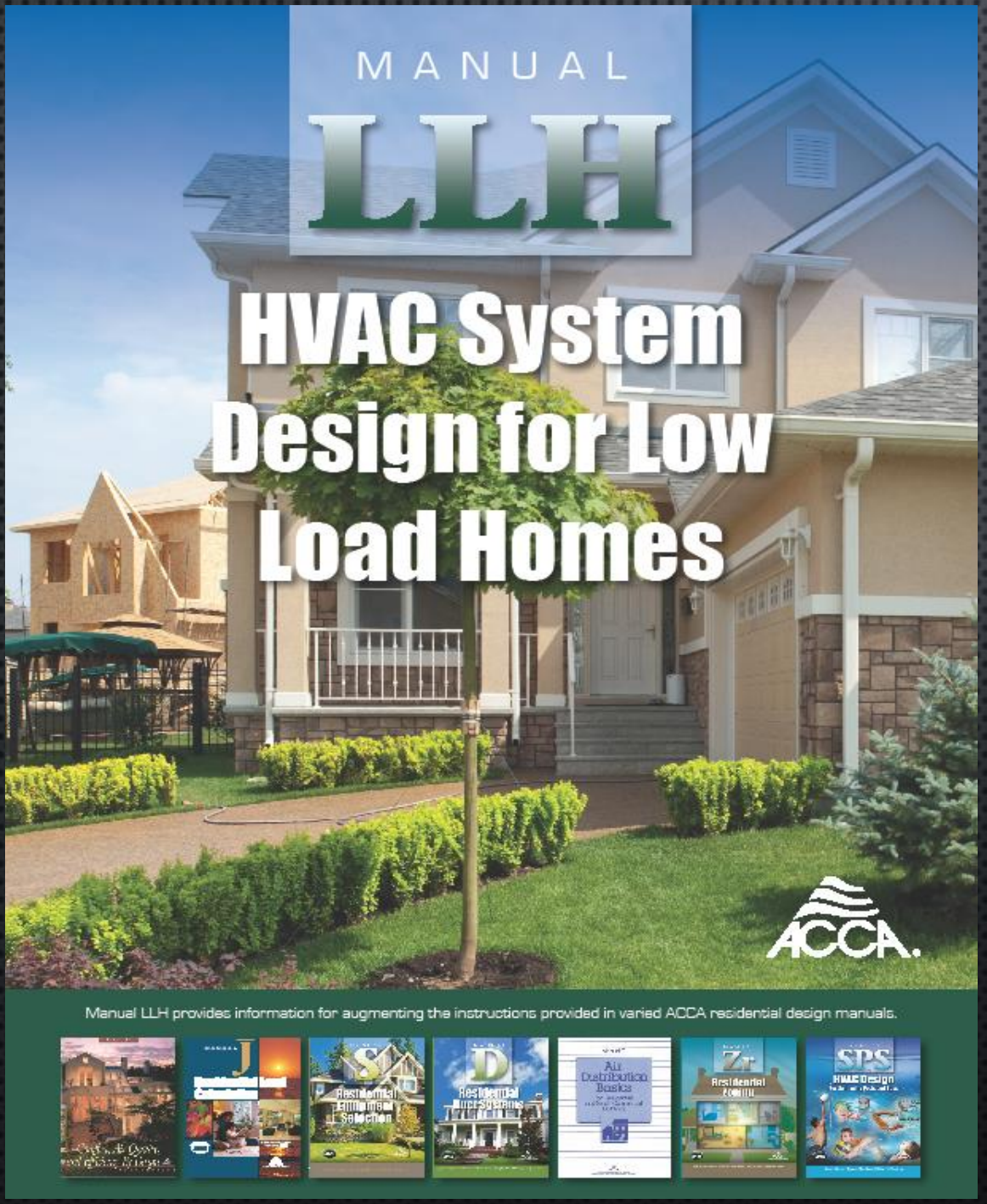


Note: Depending on location, also needed might be:

- Whole-house dehumidifiers (for humidity control),
- Heat recovery equipment (ERV / HRV for outdoor air).

- Uses conventional OEM equipment offerings with *Manual D*® duct systems.
- Uses supply air nozzles (as typically used by SDHV equipment)
- Uses conventional *Manual D*® low pressure, low velocity return air ducts and *Manual T*® grilles / registers.

  [Manual LLH provides details and examples on augmenting *Manual D* and *Manual T* instructions for nozzle use.]



Manual LLH is available at the ACCA Bookstore


THANK YOU