BBS MEMO

Ohio Board of Building Standards | Tuesday, August 01, 2006 | 6606 Tussing Road, P.O. Box 4009, Reynoldsburg, Ohio 43068-9009

RESIDENTIAL BUILDING SYSTEM DESCRIPTIONS

In order for a plan examiner to be able to properly ascertain compliance with the Residential Code of Ohio (RCO), information on the residential building must be communicated and submitted to the residential building department. An organized set of construction documents will speed the review and allow the plan examiner to ascertain compliance in the timeliest manner. The construction documents required for review for a residential project are generally quite different in nature that those submitted for a non-residential project. Section 106 of the RCO helps define what should be submitted and the provisions of this section are neither an all-inclusive list nor a list of information without which a complete review cannot be completed. The building official should use good judgment in determining whether adequate information has been submitted. An example of this good judgment is the document index described in Section 106.1(1). An index is also a good tool to assist in the review of the documents when the package is a large set of documents. An index could be placed on the cover sheet of any large set or in a block on the first page of construction documents submitted for review. Judgment should be used when dealing with small sets of documents that can easily be identified as to whether an index is really helpful or needed.
This same practice should be exercised when dealing with all the items listed in Section 106.1(8) of the RCO.

RCO Section 106.1 (8)
*"**8. System descriptions.** Description of the mechanical, plumbing and electrical systems, including: materials; location and type of fixtures and equipment; materials, and sizes of all ductwork; location and type of heating, ventilation, air conditioning and other mechanical equipment; and all lighting and power equipment;"*

Because there appears to be some confusion remaining regarding the descriptions of residential building systems and what must be submitted for review, the Residential Construction Advisory Committee has developed a commentary for Section 106 that is available on the BBS web page at http://www.com.state.oh.us/dic/dicbbs.htm. You will also find electrical system description help there.
An adequate description of electrical, plumbing, or mechanical systems are essential to assuring that the project can be built safely and will meet electrical, energy, and sanitary requirements in Ohio law. This description may take the form of a drawing, isometric, written description, table, schedule, specification, or any other form or method of adequately describing the proposed work and the systems that are a critical part of the building's service equipment that the owner chooses to submit. The system descriptions must include basic information for review:

- *Mechanical – Equipment Type/Size, Location of Equipment, Type of Fuel, Heat Gain/Loss, Square Footage of Conditioned Space, Duct Size (Supply/Return), Equipment Efficiency Ratings*
- *Electrical – Service Size (General Loads, HVAC Loads, Total Loads), Panel Location in Dwelling, Size of Service Entry Cable, Location of Service (Overhead, Underground)*
- *Plumbing – Fixture Types and Locations*

These system descriptions can then be verified by the building official as a part of the plan review and inspection process. A specific plan is not required for each of these descriptions.
Examples of forms that owners can use to describe and submit this system information are included below. Narrative descriptions, graphic, or other pictorial documents could also be submitted by the owner to communicate this system description information to the building official.

Ohio Residential Plan Submittal Form *Part B*
Referenced Code Text

ELECTRICAL

NEC 110.3 All electrical equipment shall be installed and used in accordance with the listing requirements and manufacturer's instructions.

Service

Size of Service in Amperes:

	Copper	Aluminum	Service Rating
□	4 AWG	2 AWG	100 Amps
□	1 AWG	2/0 AWG	150 Amps
□	2/0 AWG	4/0 AWG	200 Amps

NEC 310-15 Conductor Sizes 120/240 VOLT 3-Wire, Single-Phase, Dwelling Services/Feeders

NEC 250.50 All grounding electrodes that are present at each building or structure served shall be bonded together to form the grounding electrode system. Conductor size per NEC 250.66.
NEC 250.52 Permitted Electrodes include:
1. Metal underground water pipe in direct contact with earth for 10 feet or more
2. Metal frame of the building
3. Concrete-encased electrode
4. Rod, pipe & plate electrodes

General Circuitry

NEC 210.11 and **422.12** In addition to the branch circuits installed to supply general illumination and receptacle outlets in dwelling units, the following minimum requirements apply: Two 20-amp circuits for the kitchen receptacles, One 20-amp circuit for the laundry receptacles, One 20-amp circuit for the bathroom receptacles and One separate, individual branch circuit for central heating equipment

NEC 210.52 Receptacles installed in the kitchen to serve countertop surfaces shall be supplied by not less than two separate small appliance branch circuits.

NEC 210.52 Generally, receptacle outlets in habitable rooms shall be installed so that no point measured horizontally along the floor line in any wall space is more than 6' from a receptacle outlet. A receptacle shall be installed in each wall space 2 feet or more in width.

NEC 210.52 At kitchen countertops, receptacle outlets shall be installed so that no point along the wall line is more than 24 inch measured horizontally from a receptacle outlet in that space. Countertop spaces separated by range tops, sinks or refrigerators are separate spaces.

NEC 210.52 & 406.8 At least one receptacle, accessible at grade level and no more than 6.5' above grade, shall be installed at the front and back of a dwelling

NEC 210.12 All branch circuits supplying 125-volt, 15 and 20 ampere outlets in dwelling unit bedrooms shall be protected by a listed arc-fault circuit interrupter device.

NEC 210.8 Ground-fault circuit-interrupter (GFCI) protection shall be provided for all 125-volt, 15 and20 amp receptacle outlets installed outdoors, in boathouses, garages, unfinished accessory buildings, crawl spaces at or below grade level, unfinished basements, bathrooms, at kitchen countertops and within 6' of the outside edge of the sink in laundry rooms, utility rooms, and at wet-bars.

MECHANICAL

M1401.1 Heating and cooling equipment and appliances shall be installed in accordance with the manufacturer's installation instructions and the requirement's of the Residential Code.

Sizing

M1401. 3 Heating and cooling equipment shall be sized based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies.

Gages of Metal Ducts & Plenums Used for Htg/Cooling

Types of Ducts	Size (inches)	Minimum Thickness (inch)	Equiv. Galvanized Sheet Gage	Approx. Aluminimum B & S Gage
Round Ducts & Enclosed Rectangular	14 or less over 14	0.013 0.016	30 28	26 24
Exposed Rectangular Ducts	14 or less over 14	0.016 0.019	28 26	24 22

Access & Installation

M1401.2 Heating and cooling equipment shall be located with respect to building construction and other equipment to permit maintenance, servicing and replacement. Clearances shall be maintained to permit cleaning of heating and cooling surfaces; replacement of filters, blowers, motors, controls and vent connections; lubrication of moving parts; and adjustments

M1601.3.2 Metal ducts shall be supported by 0.5-inch (12.7 mm) wide 18-gage metal straps or 12-gage galvanized wire at intervals not exceeding 10 feet (3048 mm) or other approved means. Nonmetallic ducts shall be supported in accordance with manufacturer's installation instructions.

M1401.4 Equipment installed outdoors shall be listed and labeled for outdoor installation.. Supports and foundations shall prevent excessive vibration, settlement or movement of equipment. Supports and foundations shall be level and conform to manufacturer's installation instructions.

Plumbing

Provide layout of plumbing fixtures on floor plan. Plumbing shall conform to the Residential Code.

Acknowledgement: _____ Date: _____